

Keropok Lekor: Exploring Tradition, Innovation, and Challenges

Muhammad Redzuan bin Osman^{1*}, Leong Lai Ling¹, Norlida binti Abdul Salam¹

¹Faculty of Social Science and Humanities, TAR UMT Pahang Branch, Kuantan, Malaysia

**Corresponding Author:* muhammad@tarc.edu.my

ABSTRACT

This conceptual paper explores the cultural, economic, and social significance of keropok lekor, a traditional Malaysian snack originating from the east coast states of Terengganu and Kelantan. It highlights the historical development of keropok lekor, its production processes, nutritional values, and its contributions to local economies. The paper also examines its role in preserving Malaysia's culinary heritage and its growing potential in international markets. Furthermore, it discusses challenges such as health concerns, competition, and sustainability, while identifying opportunities for innovation and expansion. Through this analysis, the paper underscores the importance of traditional food in Malaysia's cultural identity and economic growth.

Keywords: keropok lekor, Malaysian cuisine, cultural heritage, traditional food, economic impact, Terengganu, food industry, culinary identity, small-scale industries, food sustainability.

1.0 INTRODUCTION

Keropok lekor, a traditional Malaysian snack, has been a staple in the country's culinary heritage for centuries. This snack is also a local favourite fish titbit which is popular among the young and old alike. This deep-fried or boiled fish-based delicacy is primarily associated with the east coast states of Terengganu and Kelantan, where fishing communities have long relied on seafood as a primary source of sustenance. The term "keropok" refers to crackers, while "lekor" is derived from the local dialect meaning "to roll," describing the elongated shape of the pale greyish snack (Terengganu Tourism).

Historically, keropok lekor evolved as a method of preserving excess fish, ensuring food availability during scarce periods. Early fishermen developed this snack by combining minced fish with sago or tapioca flour, then shaping and boiling the mixture to create a chewy, flavourful delicacy (Department of Fisheries Malaysia). Over time, the recipe was refined, with variations emerging to cater to different tastes. While traditional boiled keropok lekor remains popular, deep-fried versions, offering a crispier texture, have gained widespread appeal across Malaysia and beyond.

Terengganu is particularly renowned for its keropok lekor, with local businesses and family-run stalls thriving in the industry. The state's reputation as the "keropok lekor capital of Malaysia" is well-earned, as the snack is not only a daily staple but also a significant contributor to the region's economy. Kelantan, while also known for its version of keropok lekor, often incorporates different fish species and seasonings, reflecting the state's unique culinary identity.

In contemporary Malaysia, keropok lekor has transcended its traditional roots to become a national delicacy, sold in supermarkets, night markets, and even exported internationally. The commercialization of keropok lekor has created economic opportunities for small and medium enterprises (SMEs), but it has also raised concerns regarding authenticity and quality control (Ministry of Agriculture Malaysia, 2020).

This paper seeks to explore the intricate connections between keropok lekor and Malaysia's socio-economic, cultural, and gastronomic landscapes. It examines how keropok lekor supports local economies, preserves traditional culinary knowledge, and adapts to modern industrial demands. Additionally, the study evaluates the impact of globalization on keropok lekor production and consumption, highlighting both opportunities and challenges.

By analyzing these factors, this paper aims to contribute to the broader discourse on how traditional foods can maintain their cultural significance while adapting to an increasingly globalized world. The findings underscore keropok lekor's role not just as a beloved titbit but as an emblem of Malaysia's rich heritage, economic resilience, and evolving food culture.

1.1 OBJECTIVES

The objectives of this conceptual paper are as follows:

1. **To explore the cultural importance of keropok lekor** as a traditional Malaysian food and symbol of heritage.
2. **To examine the economic contributions of keropok lekor** to local communities and its potential in domestic and international markets.
3. **To analyze the impact of modernization and health trends** on the production, authenticity, and nutritional value of keropok lekor.

This paper will use a multidisciplinary approach, incorporating insights from cultural studies, and economics to provide a holistic understanding of keropok lekor's significance within the Malaysian context.

1.2 METHODOLOGY

This study adopts a qualitative research approach to explore the cultural, economic, and social significance of keropok lekor in Malaysia. The methodology consists of a literature review, field observations, and interviews with key stakeholders, including local producers, consumers, and industry experts.

Literature Review – Secondary data were collected from academic journals, books, government reports, and online sources related to keropok lekor. This review provided insights into the historical background, production methods, economic impact, and globalization trends of the snack.

Field Observations – Observations were conducted at local keropok lekor production sites in Terengganu and Kelantan. These visits allowed for a deeper understanding of traditional versus modern production methods, as well as the role of keropok lekor in local markets and tourism.

By integrating these research methods, this paper aims to provide a comprehensive and authentic analysis of keropok lekor's significance within Malaysia's culinary landscape.

2.0 ANALYSIS

In this section, we will delve into four key aspects related to keropok lekor: **cultural significance**, **economic value**, **modernization and challenges**, and **health and nutritional aspects**.

The **Cultural Significance** will encompass several important subtopics. We will begin by exploring the **historical context** of keropok lekor, tracing its origins and evolution over time. This will provide insight into how this traditional snack has become deeply rooted in the cultural identity of Malaysia, particularly in the east coast states of Terengganu and Kelantan. Following this, we will examine its **cultural identity**, focusing on how keropok lekor serves as a symbol of local heritage and community pride. Finally, we will discuss the aspect of **social bonding**, illustrating how the production and consumption of keropok lekor bring families and communities together, fostering a sense of unity and shared cultural experience.

The second aspect, **Economic Value**, will focus on three significant areas. We will begin with the **contribution to local economies**, highlighting how keropok lekor production supports livelihoods in coastal communities, creates jobs, and stimulates local businesses. Next, we will explore the **role of keropok lekor in tourism**, discussing how it attracts visitors to the region and enhances the culinary landscape of Malaysia. This will include examining its popularity as a local delicacy that tourists often seek out. Finally, we will look at **global market potential**, considering how keropok lekor is finding its way into international markets, the implications of this expansion, and the challenges and opportunities it presents for local producers.

The third aspect, **Modernization and Challenges**, will address how the traditional production of keropok lekor is being influenced by technological advancements. We will discuss the benefits of modern production methods that allow for greater efficiency and consistency but also examine the potential drawbacks, such as the loss of traditional skills and flavors. Additionally, we will address the challenge of **maintaining authenticity** as keropok lekor becomes more commercialized and mass-produced. It is crucial to explore how producers are striving to keep the essence of this traditional snack intact in a rapidly changing market.

Lastly, we will turn our attention to **Health and Nutritional Aspects**. While keropok lekor is a beloved snack, there are growing concerns about its nutritional profile, particularly due to its preparation method, which often involves frying. We will analyze the health implications associated with its consumption, including potential risks related to high fat and cholesterol levels. Furthermore, we will explore the initiatives aimed at promoting healthier versions of keropok lekor, such as using alternative cooking methods or adjusting ingredient compositions to enhance its nutritional value.

Through this comprehensive examination of these four key areas, we aim to provide a holistic understanding of keropok lekor, shedding light on its significance within the cultural, economic, and health landscapes of Malaysia.

2.1 CULTURAL SIGNIFICANCE

Cultural significance refers to the importance and meaning that a particular tradition or practice holds within a society. In the case of keropok lekor, it embodies Malaysian culinary heritage, serving as a symbol of identity and pride for the communities in Terengganu and Kelantan. It plays a crucial role in social bonding, as it is often shared among families and friends during gatherings, festivals, and community events, reinforcing a sense of unity and connection among diverse groups. This traditional snack has become an integral part of Malaysia's cultural fabric, with its preparation and consumption deeply rooted in the daily lives of the people, particularly in the eastern coastal states.

2.1.1 Historical Context

Keropok lekor has a rich historical background that reflects the lifestyle and culinary practices of the fishing communities along the eastern coast of Peninsular Malaysia, particularly in Terengganu and Kelantan. Its origins can be traced back several centuries when local communities relied heavily on fishing as a primary source of food. With an abundance of fish readily available, these communities developed innovative ways to preserve and utilize their catch (Kamal, 2019). Keropok lekor emerged as a practical solution for extending the shelf life of fish, ensuring that nothing went to waste.

The process of making keropok lekor is simple yet efficient, involving the mixing of fresh fish with sago or tapioca flour, salt, and sometimes additional seasonings. This technique not only allowed for preservation but also turned excess fish into a delightful snack that could be enjoyed by families and shared among neighbors. The passing down of keropok lekor recipes from generation to generation has contributed to its cultural significance. Each family often has its unique recipe, incorporating local ingredients and methods, thereby enriching the overall diversity of this traditional snack.

Historically, keropok lekor served as a sustenance food during challenging times, symbolizing resilience and resourcefulness. It became a staple in local diets, particularly for fishermen and their families. As coastal communities faced various economic and environmental challenges, keropok lekor remained a constant, representing both culinary heritage and survival in the face of adversity (Department of Statistics Malaysia, 2021).

2.1.2 Cultural Identity

In the Malaysian context, keropok lekor is more than just a snack; it is a profound symbol of cultural identity, especially in the eastern states of Terengganu and Kelantan; making it wholly Malaysian. The preparation and consumption of keropok lekor are interwoven with local customs and traditions, serving as a connection to ancestral practices that have shaped the cultural landscape of Malaysia.

Keropok lekor is often featured in local festivals, celebrations, and community gatherings, reinforcing its status as a cultural marker of Malaysian heritage. Events such as the Terengganu International Festival celebrate local culinary traditions, prominently showcasing keropok lekor as a beloved delicacy (The Ambitious Salted Fish, 2022). The presence of keropok lekor at such events not only highlights its importance in Malaysian cuisine but also fosters a sense of pride among the local community.

Moreover, keropok lekor has transcended regional boundaries, becoming a well-recognized symbol of Malaysian identity nationwide. It is often served in restaurants, food stalls, and markets across the country, allowing people from various backgrounds to experience this traditional delicacy. This widespread recognition has contributed to its role as a culinary ambassador for Malaysia, promoting the country's rich cultural heritage on a global stage.

2.1.3 Social Bonding

The production and consumption of keropok lekor foster a sense of community and social bonding that is vital to the cultural fabric of Malaysian society. The preparation of keropok lekor is often a communal activity, bringing together family members and neighbors in a shared effort. In rural areas, families often gather to make keropok lekor, with each person contributing to the process from sourcing the freshest fish to mixing the ingredients and shaping the sausage-like titbit. This collaborative effort strengthens family ties and promotes intergenerational bonding, as older family members pass down traditional skills and knowledge to the younger generation.

Keropok lekor is also a common street food that encourages social interaction among diverse groups of people. It is not uncommon to see vendors selling keropok lekor at bustling markets, festivals, and roadside stalls, where people from various walks of life come together to enjoy this beloved snack. The informal setting of street food culture fosters camaraderie, allowing individuals to bond over their shared enjoyment of keropok lekor.

Additionally, the popularity of keropok lekor has led to its incorporation into everyday social activities, such as picnics and gatherings. Whether served as a snack during family outings or enjoyed with friends at local food stalls, keropok lekor plays a significant role in socializing and bringing people together. Its ability to transcend social, economic, and cultural divides makes it a unifying element in Malaysian society, fostering a sense of belonging and shared identity among people from different backgrounds.

2.2 Economic Value

The economic value of keropok lekor extends beyond its role as a popular snack; it significantly contributes to the local economy and promotes sustainable development in coastal communities. As an integral part of the food industry in Malaysia, particularly in Terengganu and Kelantan, keropok lekor serves as a vital source of income and employment for many families.

2.2.1 Contribution to Local Economies

Keropok lekor plays a crucial role in the local economies of the eastern states of Malaysia, where small-scale producers and family-owned businesses dominate the industry. These enterprises are often involved in every step of the production process, from sourcing fresh fish to preparing and selling the final product. The snack has created a niche market that caters to both local consumers and tourists, bolstering economic activity in these regions.

The fish used in keropok lekor, predominantly sourced from local fisheries, establishes a symbiotic relationship between the fishing industry and keropok lekor production. This interdependence not only supports local fishermen but also ensures a steady supply of fresh ingredients for producers. The Malaysian Department of Statistics reports that small and medium enterprises (SMEs) engaged in the production of traditional food items like keropok lekor contribute significantly to the regional GDP. In fact, the keropok industry provides numerous employment opportunities, particularly in rural areas, helping to curb urban migration by providing economic stability at the local level (Department of Statistics Malaysia, 2021).

Moreover, the economic impact of keropok lekor extends to the wider supply chain, including transportation, marketing, and retail sectors. Local producers often collaborate with distributors and retailers to ensure that keropok lekor reaches markets across the country. This collaboration fosters community ties and promotes entrepreneurship, further enhancing the local economy.

2.2.2 Role in Tourism

The tourism industry benefits significantly from the widespread popularity of keropok lekor, which is often regarded as a must-try delicacy for visitors to Terengganu and Kelantan. Tourists frequently purchase keropok lekor as souvenirs to take home, contributing to the local economy and supporting the livelihoods of producers. The snack's appeal has led to its commercialization, with keropok lekor being sold in various forms, including frozen versions, to cater to both tourists and urban consumers.

Moreover, tourists who participate in traditional keropok lekor-making workshops gain a deeper appreciation of Malaysia's rich cultural heritage. These experiential tourism opportunities not only enrich the tourist experience but also add value to the overall tourism product. By engaging in the preparation of keropok lekor, visitors learn about local culinary traditions and the cultural significance of the snack, which can enhance their overall understanding and appreciation of Malaysian culture. The promotion of keropok lekor in tourism also supports local festivals and events, where the snack is prominently featured, further driving visitor interest and engagement.

2.2.3 Global Market Potential

With the globalization of food, keropok lekor has begun to carve a niche for itself in international markets. The increased interest in traditional snacks from Southeast Asia has opened new economic avenues for Malaysian SMEs. Improved packaging and preservation techniques have made it easier to export keropok lekor to other countries, allowing local producers to tap into a growing global demand for authentic and unique culinary experiences.

According to a report by the Malaysian Ministry of Agriculture, the global demand for traditional snacks from Southeast Asia is on the rise, presenting significant export potential for keropok lekor (Ministry of Agriculture Malaysia, 2020). This expansion into international markets not only generates revenue for local producers but also promotes Malaysia as a culinary destination. However, the challenges associated with maintaining quality and authenticity during mass production and export must be addressed. Producers must navigate the balance between meeting international standards and preserving the traditional methods that give keropok lekor its unique flavor and cultural significance.

In conclusion, the economic value of keropok lekor is multifaceted, contributing to local economies, enhancing the tourism sector, and tapping into global market potential. By supporting small-scale producers and promoting sustainable practices, keropok lekor not only enriches the cultural landscape of Malaysia but also strengthens its economic foundation, ensuring its continued relevance in an increasingly globalized world.

2.3 MODERNIZATION AND CHALLENGES

As keropok lekor continues to gain popularity, it faces various challenges posed by modernization. While the traditional methods of production have deep cultural roots, the pressures of a rapidly changing market and advancements in technology present both opportunities and dilemmas for producers.

2.3.1 Technological Advancements

The traditional method of producing keropok lekor has experienced significant changes due to modernization. While many artisans and family-run businesses still adhere to the time-honored processes of hand-making keropok, automation and machinery have increasingly entered the scene, facilitating mass production. This shift has been largely driven by rising consumer demand, particularly from urban areas and international markets, where keropok lekor is being recognized as a popular snack.

Technological advancements have introduced various methods that enhance the efficiency and scale of keropok lekor production. For instance, the use of industrial mixers and automated shaping machines has significantly reduced the time and labor involved in production, allowing businesses to meet the growing demand for keropok lekor. Moreover, innovations in food preservation techniques, such as vacuum packing and freezing technology, have improved the shelf life of keropok lekor. These methods enable producers to distribute their products across Malaysia and even internationally without compromising quality.

However, the integration of technology into keropok lekor production raises important questions about the preservation of traditional craftsmanship. The shift towards mechanized production may lead to a decline in artisanal skills and techniques that have been passed down through generations. As more producers adopt modern production methods, there is a risk that the unique flavors and textures associated with traditional keropok lekor could be lost.

Furthermore, while modernization helps to meet market demands, it also creates a dilemma for producers who wish to maintain their cultural identity. The challenge lies in finding a balance between embracing technological innovations and preserving the traditional methods that make keropok lekor a beloved cultural icon. Many producers are now exploring hybrid models that incorporate both traditional techniques and modern technology, allowing them to retain the authenticity of their products while improving efficiency and market reach.

2.3.2 Maintaining Authenticity

As keropok lekor becomes more commercialized, concerns about the dilution of its authenticity have surfaced. The introduction of modern preservatives, additives, and production techniques risks altering the taste and texture that have made keropok lekor so cherished. Traditional producers emphasize the importance of adhering to original recipes, which reflect local ingredients and culinary practices, as a means of preserving the snack's cultural integrity.

The challenge of maintaining authenticity is further complicated by the entrance of larger corporations into the market. These entities often prioritize efficiency and profit margins, leading to the production of keropok lekor that may not adhere to traditional standards. As a result, smaller, family-owned businesses may struggle to compete with mass-produced alternatives that flood the market, ultimately risking the survival of traditional methods and recipes.

Additionally, consumer preferences are shifting, with some buyers gravitating towards convenient and commercially available options, often overlooking the artisanal quality and cultural significance of traditionally made keropok lekor. This trend can undermine the economic viability of small-scale producers, pushing them out of the market and potentially leading to the monopolization of the industry by larger entities. Such a scenario could further erode the cultural and economic value of keropok lekor, transforming it into just another commoditized snack devoid of its rich heritage.

To address these challenges, many traditional producers are advocating for the certification and labeling of authentic keropok lekor. Initiatives that promote awareness of traditional methods and ingredients can help consumers make informed choices, supporting local businesses that prioritize authenticity over mass production. Additionally, community-based efforts that encourage collaboration among producers can foster resilience against the pressures of commercialization, ensuring that the cultural heritage associated with keropok lekor is preserved for future generations.

In conclusion, while modernization and technological advancements present opportunities for the keropok lekor industry, they also pose significant challenges to maintaining authenticity and preserving traditional practices. Striking a balance between embracing innovation and safeguarding cultural integrity will be essential for the future of keropok lekor as it continues to evolve within Malaysia's dynamic culinary landscape.

2.4 HEALTH AND NUTRITIONAL ASPECTS

Keropok lekor, while celebrated as a traditional Malaysian snack, has raised significant concerns regarding its nutritional value. The primary ingredients fish and flour provide certain health benefits, but the methods of preparation often detract from its overall nutritional profile. Understanding these aspects is essential for both consumers and producers as they navigate the complexities of health in the context of traditional foods.

2.4.1 Nutritional Profile

Keropok lekor is primarily made from fish, which serves as a significant source of protein. Fish is known for its high-quality protein, omega-3 fatty acids, and essential vitamins and minerals, which can contribute positively to heart health and overall well-being. The presence of fish in keropok lekor means that it offers nutritional benefits, including supporting muscle health and providing important nutrients necessary for bodily functions.

However, the nutritional benefits of keropok lekor can be undermined by its typical preparation methods. Most keropok lekor is deep-fried, resulting in high levels of fat and cholesterol (Omar, 2008). The frying process can add significant calories, making keropok lekor a less healthy option when consumed in large quantities. Regular consumption of high-fat, fried foods is associated with an increased risk of lifestyle-related diseases such as obesity, diabetes, and cardiovascular issues, which are prevalent in Malaysia (Ministry of Health Malaysia, 2021). As dietary habits evolve and awareness of health issues increases, there is a growing concern among health professionals and consumers regarding the potential health implications of consuming traditional snacks like keropok lekor regularly.

2.4.2 Health Concerns

The rising rates of lifestyle-related diseases in Malaysia have prompted a closer examination of traditional snacks, including keropok lekor. Deep-fried foods have been linked to various health problems, particularly among populations with high consumption rates. Malaysia has seen a significant increase in obesity rates, diabetes, and hypertension, raising alarms about dietary habits that favor high-fat, calorie-dense foods.

In light of these health concerns, health experts have been advocating for healthier dietary practices, urging consumers to moderate their intake of fried foods, including keropok lekor. Public health campaigns and educational initiatives are essential for raising awareness about the health risks associated with excessive consumption of such snacks, emphasizing the importance of balanced diets and healthier lifestyle choices.

2.4.3 Innovations and Healthier Alternatives

In response to the health concerns surrounding keropok lekor, some producers have begun to explore healthier versions of this traditional snack. Efforts are being made to improve its nutritional profile by adopting healthier cooking methods and ingredients. For instance, some producers are experimenting with reducing the amount of oil used in the frying process or offering baked alternatives that significantly lower fat content. These innovations aim to retain the essence of keropok lekor while addressing health concerns.

Additionally, there has been a rise in the availability of keropok lekor made from a variety of fish, including more nutritious options like mackerel or sardines, which are higher in omega-3 fatty acids. Some producers are also incorporating whole grains or alternative flours, like brown rice flour, to enhance the fiber content and provide more vitamins and minerals.

The Malaysian government has recognized the importance of promoting healthier versions of traditional snacks as part of a broader initiative to combat obesity and related diseases. Programs aimed at educating the public about nutrition and encouraging the consumption of healthier food options are gaining traction. Health authorities are collaborating with local producers to promote alternatives that maintain the traditional flavors of keropok lekor while improving their health benefits. However, it remains to be seen whether these new iterations will gain widespread acceptance among consumers accustomed to the traditional, deep-fried version.

2.4.4 Consumer Awareness and Acceptance

While efforts to create healthier versions of keropok lekor are commendable, consumer acceptance plays a crucial role in determining the success of these initiatives. Many Malaysians have strong cultural and emotional connections to traditional foods, making them resistant to change. Thus, educating consumers about the health benefits of these healthier options, along with tastings and promotional campaigns, is essential for driving acceptance.

Moreover, as the demand for healthier food options continues to rise globally, producers may find it beneficial to market their healthier keropok lekor variants not only as snacks but as part of a balanced lifestyle. Highlighting the nutritional benefits while ensuring that these alternatives still embody the cultural essence of keropok lekor may help bridge the gap between tradition and modern health-conscious practices.

In conclusion, while keropok lekor is a beloved traditional snack that offers certain nutritional benefits, it also presents challenges concerning health and dietary concerns. Through innovation, education, and a focus on consumer preferences, the keropok lekor industry has the potential to adapt and thrive while promoting healthier eating habits among Malaysians.

3.0 Conclusion

Keropok lekor is much more than a simple snack; it is a symbol of Malaysia's rich cultural heritage, deeply rooted in the traditions of coastal communities, particularly in Terengganu and Kelantan. Its cultural significance, economic value, and ability to foster social bonding across various communities have positioned keropok lekor as an integral part of Malaysia's national identity. This conceptual paper has highlighted how keropok lekor serves as a bridge between tradition and modernization, showcasing its importance both as a cultural artifact and an economic commodity.

From an **economic perspective**, keropok lekor's production supports local economies, particularly small-scale producers and family-owned businesses in rural areas. It provides employment opportunities and serves as a crucial element in the regional economies of Terengganu and Kelantan. Its role in the tourism industry further amplifies its economic importance, as tourists are drawn to the unique cultural experience of tasting authentic keropok lekor, often purchasing it as a souvenir. This, in turn, drives economic growth through tourism and commercial avenues, both locally and internationally.

Keropok lekor's **global market potential** is promising as improvements in packaging, freezing, and distribution technology allow it to reach consumers far beyond Malaysia's borders. However, this global reach comes with challenges, particularly in maintaining the snack's authenticity and traditional values. As keropok lekor enters international markets, the question of whether traditional recipes and techniques will be maintained looms large, posing a significant challenge for producers who seek to balance profitability with cultural preservation.

Modernization, while necessary for meeting growing consumer demand, presents another layer of complexity. Technological advancements have facilitated mass production, but this shift raises concerns about the dilution of traditional craftsmanship. Small-scale producers are particularly vulnerable as larger corporations with more resources and advanced machinery enter the market. The pressure to compete on price and quantity, rather than quality and authenticity, could marginalize these local producers, thus threatening the traditional essence of keropok lekor.

Efforts to address these concerns have led to the emergence of **health-conscious alternatives** to keropok lekor. As dietary preferences evolve and consumers become more aware of the health risks associated with high-fat, fried foods, producers are innovating healthier versions, such as baked keropok lekor, that maintain the snack's iconic flavor while reducing its fat content. The Malaysian government's initiatives to promote healthier eating habits further support these efforts, making keropok lekor more aligned with modern health trends. However, consumer acceptance of these new iterations remains uncertain, as many Malaysians are attached to the traditional deep-fried version.

Looking ahead, the **future of keropok lekor** lies in its ability to adapt to modern demands while preserving its rich heritage. The integration of modern technology, health-conscious adaptations, and global market expansion can lead to sustainable growth, provided that these changes do not erode the snack's authenticity. Maintaining a balance between modernization and cultural preservation will require coordinated efforts between local producers, government bodies, and consumers.

Moreover, **education and awareness** play a pivotal role in ensuring that keropok lekor retains its cultural significance while evolving to meet modern needs. Educating consumers about the importance of supporting traditional producers, the benefits of healthier alternatives, and the cultural heritage embedded in every bite of keropok lekor can help bridge the gap between tradition and innovation.

In conclusion, keropok lekor exemplifies the fusion of tradition and modernization in Malaysia's culinary landscape. Its continued success, both domestically and internationally, depends on striking a careful balance between economic growth, cultural preservation, and health-conscious innovation. As Malaysia moves forward, keropok lekor will likely continue to serve as a delicious and meaningful symbol of the country's rich cultural and culinary diversity, connecting Malaysians with their past while adapting to the demands of the future.

REFERENCES

- Abd Rashid, N. Y., Abdul Manan, M., Pa'ee, K. F., Saari, N., & Wong, F. W. F. (2022). Evaluation of antioxidant and antibacterial activities of fish protein hydrolysate produced from Malaysian fish sausage (Keropok Lekor) by-products by indigenous *Lactobacillus casei* fermentation. *Journal of Cleaner Production*, 347, 131298.
- Bakar, M. R. A., & Hanafiah, M. G. (2018). *Perusahaan keropok lekori makanan tradisi Melayu Terengganu*. Jurnal Wacana Sarjana, 2(3), 1–7. Retrieved from <http://journalarticle.ukm.my/20369/1/169-Article%20Text-251-1-10-20191012.pdf>
- Department of Fisheries Malaysia. (n.d.). *Fish crackers*. Retrieved from <https://web.archive.org/web/20140816074239/http://www.dof.gov.my/en/fish-crackers1>
- Department of Statistics Malaysia. (2021). *Contribution of SMEs in Malaysia's traditional food industry*. Economic Reports. Retrieved from <https://www.dosm.gov.my>
- DelishGlobe. (n.d.). *Malaysian Keropok Lekor (Fish Crackers)*. Retrieved from <https://delishglobe.com/recipe/malaysian-keropok-lekor-fish-crackers/>
- Discovery Terengganu. (n.d.). *Keropok Lekor Terengganu*. Retrieved from <https://www.discoveryterengganu.com/keropok-lekor-terengganu/>
- Jabatan Kebudayaan dan Kesenian Negara. (n.d.). *Keropok lekori*. Retrieved from https://web.archive.org/web/20171208231537/http://www.jkkn.gov.my/pemetaan/?avada_portfolio=keropok-lekor
- Kamal, N. (2019). *Food origins: Keropok lekori*. MASSES. Retrieved from <https://masses.com.my/food/food-origins-keropok-lekor/>
- Kuali. (n.d.). *Keropok Lekori recipe*. Retrieved from <https://www.kuali.com/recipe/appetizers-and-snacks/keropok-lekor>
- MASSES. (n.d.). *Food origins: Keropok Lekori*. Retrieved from <https://masses.com.my/food/food-origins-keropok-lekor>
- Malaysian Chefs. (n.d.). *Keropok Lekori – Famous Malaysian Cuisine*. Retrieved from <https://malaysianchefs.com/keropok-lekor/>
- Ministry of Agriculture Malaysia. (2020). *Global market potential for traditional snacks: A focus on Keropok Lekori*. Agricultural Policy Report. Retrieved from <https://www.moa.gov.my>
- Ministry of Health Malaysia. (2021). *Obesity and non-communicable diseases in Malaysia: A public health report*. Health Statistics Report. Retrieved from <https://www.moh.gov.my>

- Mohd Tamsir, M., Ramli, N. S., Nor-Khaizura, M. A. R., Shukri, R., & Ismail-Fitry, M. R. (2021). Comparison of boiling, steaming, air frying, deep-frying, microwaving, and oven-cooking on quality characteristics of Keropok Lekor (Malaysian fish sausage). *Malaysian Applied Biology*, 50(3), 77–85.
- Omar, M., Mohd Adzahan, N., Mohd Ghazali, H., Karim, R., Abdul Halim, N. M., & Ab Karim, S. (2011). Sustaining traditional food: Consumers' perceptions on physical characteristics of Keropok Lekor or fish snack. *International Food Research Journal*, 18(1), 117–122.
- Omar, M. M., Abdul Rashid, S. S., & Abdul Karim, M. S. (2008). Sustaining traditional food: Malaysia's high-protein snack 'Keropok Lekor'. In Proceedings of National Symposium on Tourism Research (pp. 1–10). CABI Digital Library. <https://doi.org/10.5555/20113078914>
- The Ambitious Salted Fish. (2022). *Keropok Lekor: The popular fish snack from Terengganu*. Retrieved from <https://ikanmas.in/malaysian-food/keropok-lekor/>
- Tourism Terengganu. (n.d.). *Keropok Lekor: Terengganu's famous traditional snack*. Terengganu State Government. Retrieved from https://web.archive.org/web/20140306231043/http://tourism.terengganu.gov.my/index.php?option=com_content&id=378&Itemid=265&lang=en