

Oil Palm Industry Economic Journal

O P I E J

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EXPLORING THE INTERPLAY BETWEEN PALM OIL AND FOOD SECURITY: A BIBLIOMETRIC ANALYSIS OF LITERATURE

RAFIZAH MAZLAN^{1*}; SUBASHINI NADRAS¹ and HISHAM HUSSAIN¹

ABSTRACT

Despite the vital role of palm oil in the global food system, academic attention to its relationship with food security remains relatively recent. This article aims to understand the relationship between food security and palm oil by employing a bibliometric analysis using Bibliometrix software to investigate publication characteristics, authorship, international collaborations, and research trends. Surprisingly, our analysis reveals that Malaysia, not Indonesia (the largest producer of palm oil), emerges as the most productive and influential country in this area of research. Most research focuses on the environmental impact of oil palm cultivation, neglecting crucial aspects like its direct influence on food security through factors like nutrition and accessibility. Furthermore, the academic discourse lacks diversity, with only a handful of authors actively engaged in exploring the palm oil-food security nexus. The analysis found that publications focus heavily on palm oil compared to other vegetable oils like soybean, rapeseed, and sunflower oils within the context of food security. This reflects the controversial position palm oil holds. Even though they play an equally important role in fulfilling global fat and oil needs, unlike palm oil, they haven't been subjected to the same level of scrutiny. This study raises a critical concern: Are certain publications objectively addressing food security, or is there a tendency to disproportionately target highly productive oil crops like palm oil? This imbalance begs the question: Are there surface-level explanations, or are there more complex factors driving this research bias? It paves the way for future research directions, emphasising the need for a more holistic and balanced approach to the intersection of food security and palm oil production to address global challenges effectively.

Keywords: bibliometric, bibliometrix, food security, palm oil, sustainability.

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INTRODUCTION

World Food Summit defined food security in 1996 as a condition when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (Russell *et al.*, 2011; World Bank, 1996). Food security has different dimensions and can be studied at several levels. The Food and Agriculture Organization (FAO) has identified four pillars:

Food availability, economic and physical access to food, food utilisation, and stability. Conversely, the Global Food Security Index has benchmarked food security based on affordability, availability, quality and safety, and natural resources and resilience (Figure 1). Affordability evaluates the ability to buy food and the availability assesses national food sufficiency. The quality and safety criteria measure diversity, nutrition and safety while natural resources and resilience look at country's resilience to climate change impacts (Economist Intelligence Unit, 2012). However, given the intricate nature of food security related policy, food policy governance often is fragmented and infrequently considers these fundamental pillars simultaneously (Vel *et al.*, 2016).

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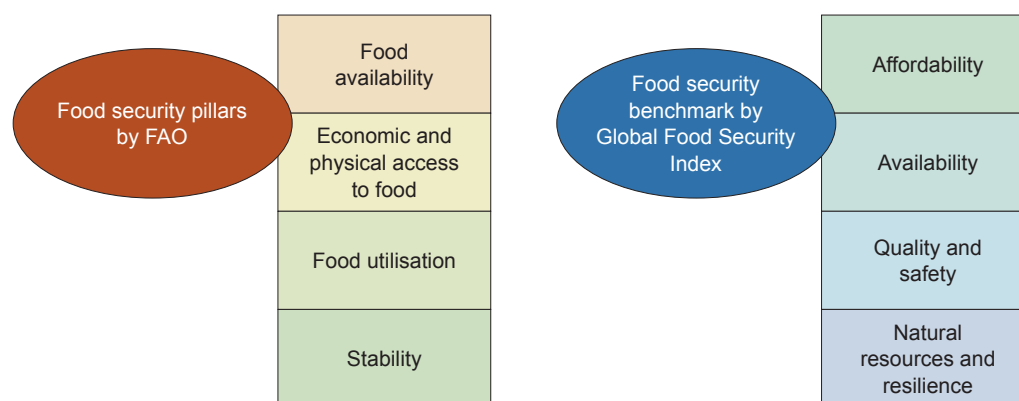
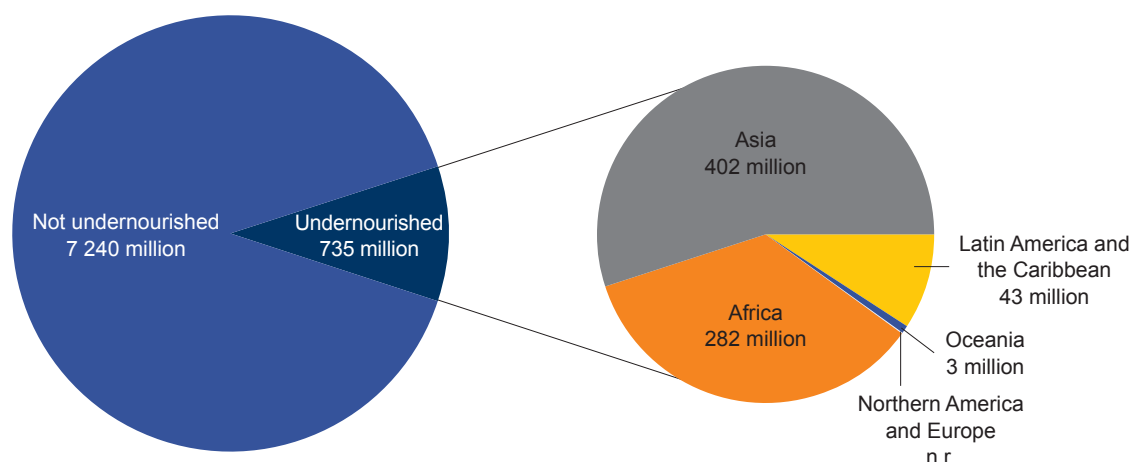


Figure 1. Food security pillars and benchmarks as defined by FAO and Global Food Security Index.



Note: Number of undernourished in millions (projected values). n.r. - not reported, as the prevalence is less than 2.5%.

Source: FAOStat (2023).

Figure 2. Number of undernourished in millions in 2022.

Food security is a complex issue influenced by various factors such as environment, culture, geography and demographics. At the national level, food security is typically discussed concerning food self-sufficiency and self-reliance. Meanwhile, at the household level, a critical factor for food security is access to an adequate supply of food (FAO, 2009). The challenges associated with food security, known as food insecurity, are generally described in two situations. The first is chronic food insecurity, a prolonged state where people struggle to always meet their basic food needs. The second type is a temporary situation referred to as transitory food insecurity (Abdul Manap *et al.*, 2015).

Before the COVID-19 pandemic, the world was already falling short of the target to eliminate world hunger and malnutrition by 2030. The pandemic has further aggravated the situation. FAO estimated that 720-811 million people in 2020 and 691-783 million people in 2022 experienced hunger worldwide. According to FAO, the majority of low and middle-income countries in 2020 were impacted by economic downturns and

undernourished increased more than fivefold than the highest recorded figure in the last 20 years (FAO *et al.*, 2021). In 2022, approximately 9.2% of the global population faced chronic hunger, marking an increase from 7.9% in 2019. Asia accounts for about half of the undernourished population, while over than one-third live in Africa (Figure 2).

Food insecurity leads to several consequences. A key challenge is meeting nutrient requirements due to reduction in quantity and dietary diversity causing a decline in health and nutritional status. This has immediate implications, such as the increase in morbidity and mortality rates. Moreover, food insecurity has a long-term effect as it can impact an entire generation of young children, affecting their health and well-being for the rest of their lives (de Pee, 2013). In today's environment, food security has become a major priority in global sustainable development. Goal No. 2 of the United Nation Sustainable Development Goals (UNSDGs) targets to end hunger, achieve food security, improve nutrition, and promote sustainable agriculture by the year 2030 (United Nation, 2024). FAO's

projections indicate that by 2030, nearly 600 million people might suffer from chronic undernourishment. This projection is around 119 million more than in a scenario in which neither the pandemic nor the war Russia-Ukraine had occurred (FAO *et al.*, 2021; 2023), highlighting the significant and complex challenge towards eradicating hunger.

Food Security and Economic Growth

The discourse surrounding food security evolves over time. In the 1980s, nutritional security is identified as an important component of food security. During the 1990s, more complex variables related to food security such as economic growth, agricultural development, poverty alleviation, rising incomes, food consumption patterns and environmental factors were studied.

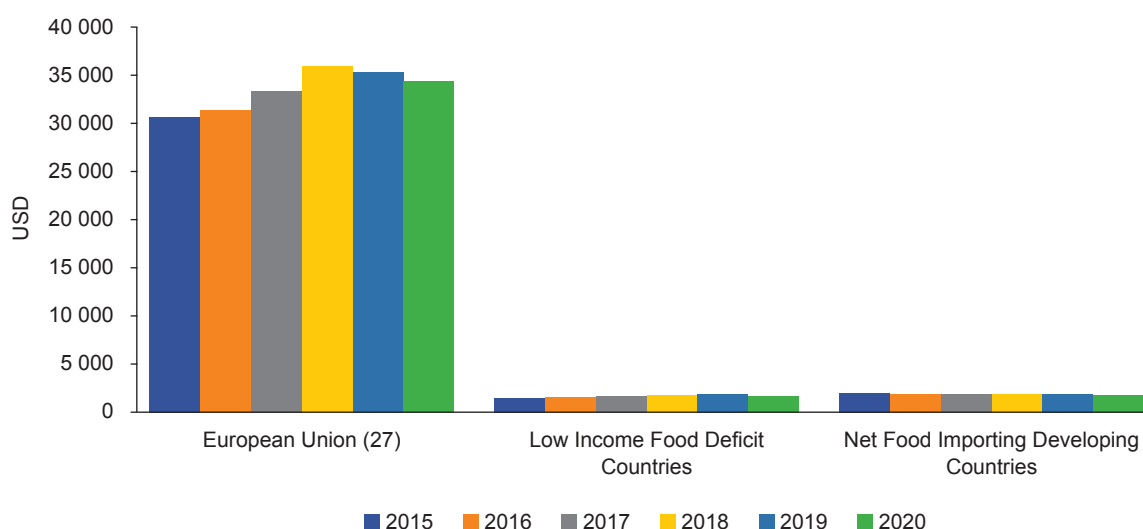
While it is widely acknowledged that economic growth is an essential condition for providing a sustainable solution to poverty and food insecurity, the causal relationship between economic growth and food security remains a subject of debate (Desta, 2017; Kavallari *et al.*, 2014; Prosekov and Ivanova, 2018; Stevano *et al.*, 2020). Whether food security drives economic growth, economic growth impacts food security, or both have a two-way causal correlation is still less clear (Fernandes and Samputra, 2022).

Several studies found a positive relationship between economic growth and food security. For example, Kavallari *et al.* (2014) analysed the repercussions of shocks in economic growth on food security. She found that both positive and negative shocks in global economic growth have an impact on food security. The paper also suggests that higher economic growth is expected to increase the average income level and make it easier for

people to have access to food. Similarly, Świetlik (2018) believed that economic growth improves food security and real incomes, particularly in low-income countries. On the other hand, Fan *et al.* (2021) found that slower economic growth and lack of purchasing power affect access to food, particularly for those who live in the cities. Furthermore, sustained economic growth has a greater positive outcome on undernutrition as compared to short-term economic growth (Soriano and Garrido, 2016).

One common indicator of economic growth is Gross Domestic Product (GDP) (Arvemo and Gråsjö, 2012). Figure 3 illustrates the GDP in 2015-2020 for the European Union, low-income food deficit countries and net food-importing developing countries. The graph shows that the GDP per capita in the European Union, comprised of developed nations is considerably higher than those in food deficit countries and net importing countries. A straightforward observation is that robust GDP per capita; reflecting economic strength plays a significant role in securing food security.

On the other hand, Headey (2013) pointed out that economic growth has flaws as an indicator of general economic development and its direct relationship with food security. For example, Indonesia has experienced strong economic growth in the last 15 years. Yet, there is a decline in the quality of food security levels in most provinces in Indonesia (Widada *et al.*, 2017). In the same way, Breisinger and Ecker (2014) found that growth in GDP in Arab countries did not translate into a substantial reduction in undernutrition among children in the recent decades. Carolan (2012) also argued that economic growth is not strong enough to tackle food insecurity. Their arguments were further supported by Ruel and Alderman (2013)



Source: FAOStat (2022).

Figure 3. GDP per capita (USD) between 2015-2020.

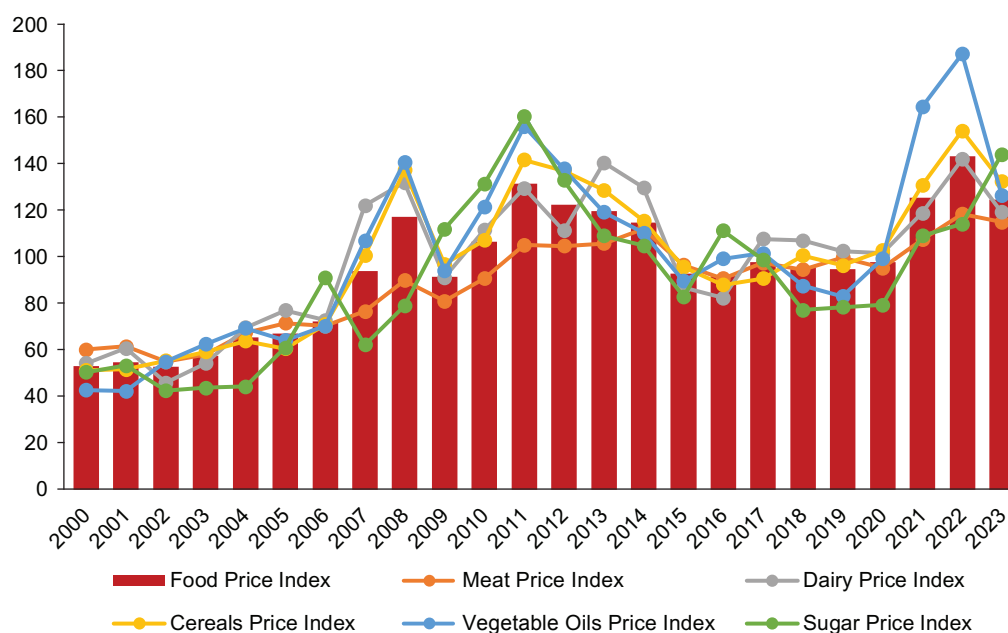
who believed that economic growth alone would not resolve the problem of stunting, which is one of the key issues in food security. Indeed, economic growth is important, but it is insufficient to accelerate the achievement of food security, especially for the very poor (McGuire, 2013).

The Rise of Food Prices Including Vegetable Oils

The recent spike in global food prices has deteriorated the circumstances and brought the topic of food security back to the top of the global agenda. Figure 4 shows the evolution of the food price index from 2000-2023, where the average international price index of five commodity groups consisting of cereal, vegetable oil, dairy, meat, and sugar are measured. The fact that vegetable oils index price is closely monitored among the commodity groups reflects its importance in the global food systems. Between the years 2000 to 2006, the food price index increased slowly and rose upward from 2006 to 2008. This situation resulted in a global food crisis that undermined the economic stability of poor and developing countries. The food price fluctuated until 2017 and remained stable between 2018-2019. However, in 2020, the COVID-19 pandemic caused the index to surge. The ongoing health crisis could add another 130 million to the severe food insecurity population, nearly doubling from 2019's number (Fan *et al.*, 2021). Even though global food prices were increasing steadily even prior to the Russian-Ukraine conflict, the uncertainty brought about by the conflict contributed further to

higher food prices and is likely to aggravate food insecurity. Notably, Russia and Ukraine are major exporters of wheat, maize, rapeseed, and sunflower seeds. The conflict led to a shortage of sunflower oil which triggered price hikes (FAO *et al.*, 2023) and widening price premiums over competing vegetable oils such as palm oil. Consequently, the disruption fuelled higher demand for palm oil as an alternative to sunflower oil. The ripple effect drove up palm oil prices, thereby contributing to global food inflation.

Palm oil's role in global food production has attracted interest in the scientific community due to its widespread use and impact on both economic and environmental aspects. Several research findings suggest that oil palm crops contribute positively to food security by ensuring food availability and alleviating malnutrition (Budidarsono *et al.*, 2012; Chiriaco *et al.*, 2022; Khatun *et al.*, 2017). Palm oil contributes to securing the supply of essential dietary fats (Ong and Goh, 2002; Pande *et al.*, 2012), making it an indispensable part of many diets worldwide (Chiriaco *et al.*, 2022; Tabe-Ojong *et al.*, 2023). On the other hand, some studies draw attention to the polarised debate about the impact of palm oil production on food security, particularly in relation to biofuel production. For those already against oil palm, the notion of palm-based biofuel appears evillier than palm oil for food uses (Meijaard and Sheil, 2019). They argued that extensive production of biofuels led to increased soil erosion, reduced carbon stocks, imposed strain on water resources, and other ecosystem services (Rosillo-Calle, 2012).



Note: Index for 2023 is a projection.
Source: FAOStat (2023).

Figure 4. Annual FAO Food Price (nominal) Index from 2000-2023.

Nevertheless, it is important to take a step back and consider a broader perspective on global oil and fat dynamics. Globally, there are 17 main oils and fats of plant and animal origins, and more than 200 million tonnes of oils and fats are produced yearly. Among these, palm, soybean, rapeseed and sunflower stand out as major vegetable oils constituting a dominant 75% of global consumption (Figure 5). Since the 1980s, global vegetable oil usage has increased across various industrial sectors and economic activities. Sunflower, rapeseed and soybean oils are grown in most temperate countries, while palm oil is the only vegetable oil that requires humid tropical conditions. The oil palm is a crop of important economic value that plays a crucial role in maintaining food security particularly as it has significantly higher productivity per hectare in comparison to other major oil crops (Khatun *et al.*, 2017).

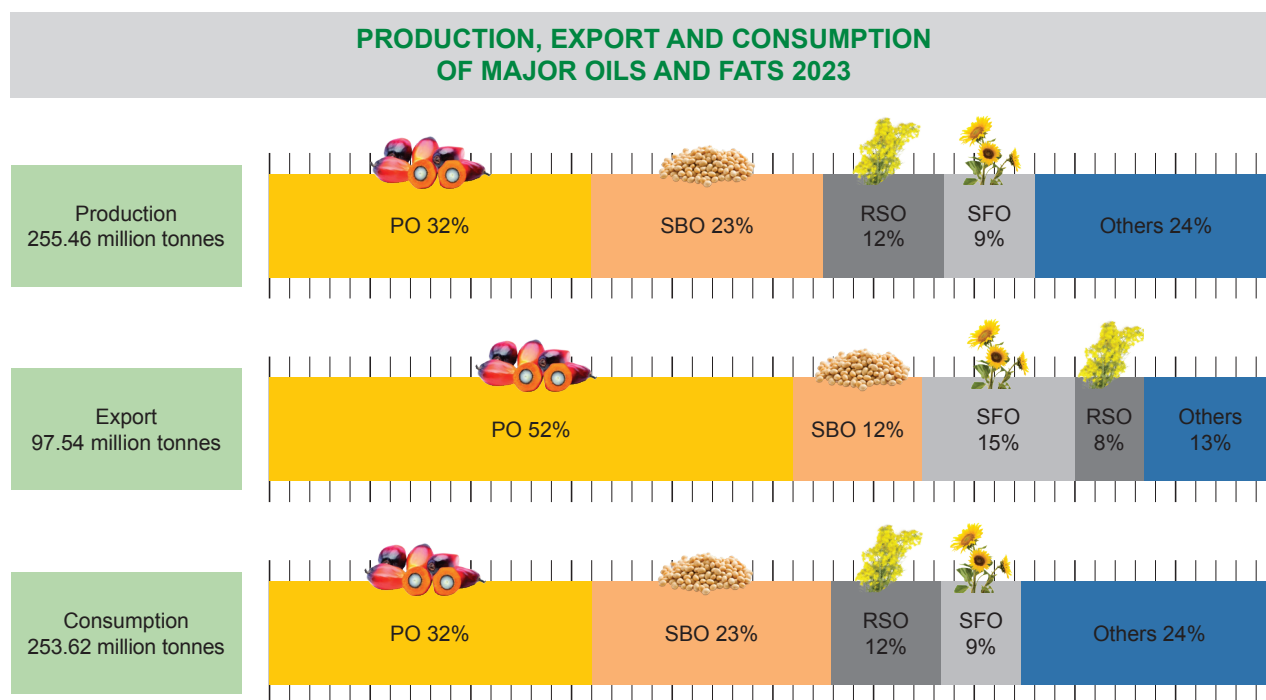
The impact of surging food prices in recent months put pressure on many households worldwide, as palm-based cooking oil is a staple in many countries. Palm oil is a key input in many essential products used daily including packaged food, cosmetics, toiletries, *etc.*

Palm oil is the powerhouse in the global oils and fats market, leveraging its myriad application advantages *vis-à-vis* other edible oils. Since the 1960s, there has been a steady rise in the global consumption of crude palm oil (CPO) overtaking soybean oil in 2007 and became the dominant vegetable oil globally. About 80%-90% of palm oil

uses are for the food industry while about 10%-20% is destined for non-food applications (Oil World, 2021). As such, palm oil has a significant role in securing food security.

In the food security discourse, the role of palm oil as a critical global commodity is widely acknowledged (Khatun *et al.*, 2017; Palm Oil Today, 2019). While the discourse on food security has evolved to encompass economic growth, agricultural development, and sustainability, the specific contributions and challenges posed by the palm oil sector to food security remain underexplored. Moreover, the scholarly conversation around palm oil and food security is fragmented, with limited exploration into the integration of research findings, authorship diversity, and international collaborations that could offer a more holistic understanding of palm oil's role in food security.

This paper aims to bridge this gap by conducting a bibliometric analysis to shed light on the research directions, the principal contributors, and potential avenues for future investigation. Bibliometric analysis is an established research method, and this analysis was conducted using Bibliometrix software, where we identified the most productive authors, the collaboration between countries, and emerging research trends. In doing so, this study seeks to enrich the dialogue on palm oil's relationship with food security and provide a foundation for a balanced and effective public and scientific debate.



Note: PO - palm oil; SBO - soybean oil; RSO - rapeseed oil; SFO - sunflower oil.
Source: Oil World (2024).

Figure 5. Palm oil position in the global oils and fats market in 2023.

METHODOLOGY

Bibliometrix

Introduced by Pritchard, Bibliometric analysis is an interdisciplinary approach that integrates mathematics, statistics, and bibliography to analyse quantitatively and qualitatively published academic literature.

It could track the development of a certain research field over a specific timeframe and demonstrate information about a specific field to researchers by investigating the publication characteristics, such as authorship, sources, institutions, journals, citations, corresponding author's country and even co-citation network (Huang *et al.*, 2021). For this report, the analysis takes advantage of *Bibliometrix* software (with *Biblioshiny* package) to assist in the analysis process. *Bibliometrix* is an open-source software programmed in R-language suitable for extensive science mapping analysis of scientific literature (Aria and Cuccurullo, 2017).

In alignment with the important step of selecting a suitable database for bibliometric analysis, this study selected Scopus database as the primary source for retrieving relevant documents. Scopus is widely recognised for its extensive coverage of diverse research disciplines, ensuring a comprehensive dataset for analysis. Its advanced functionalities not only facilitate precise document retrieval but also enable efficient data export compatible with bibliometric tools like *Bibliometrix*. Scopus has over 2.4 billion cited references dating back to 1970 with content from journals, conferences, books, patents and serials (Elsevier, 2024).

Information Gathering and Software Selection/ Data Collection

A simple initial sweep to identify the most frequent keywords related to food security in Scopus database was conducted. The first search returned with more than 60 000 results. A narrower second search string which includes the word 'oil' resulted in a manageable result of around 1000 documents.

The next step was conducting a brief bibliometric study. The data used in this study were retrieved from a search on the Scopus database using the basic search function (within "article title" and "abstract and keywords"). The search string is "food security" AND ("palm oil" OR "oil palm") to compile bibliographic data and obtain scientific documents published related to food security and palm oil in the English language. The search is limited to a period between 2000 to 2022 and filtered to only include articles, reviews,

books and book chapters. The data set was then exported in CSV format to facilitate the bibliometric analysis process conducted mainly in *Biblioshiny* *Bibliometrix* R-package (version 4.0.0). The search resulted in 126 publications and was used for this study (Figure 6).

Figure 7 gives a snapshot of the data primary information generated on food security and palm oil for a period between 2000 to 2022, where 126 documents were found that match the search criteria, including articles, reviews, books and book chapters. A tree map analysis was conducted to visualise the most frequent words cited along with food security (Figure 8).

RESULTS AND DISCUSSION

Based on the tree map visualisation (Figure 8) generated by *Biblioshiny*, we observed the keyword 'palm oil and 'Elaeis' constitutes a significant 16% of the overall keyword occurrences, followed by 'food supply' and 'biodiversity'. This may suggest that while palm oil is indeed a topic of academic interest in the context of food security, the focus among the scientific communities also includes themes like 'sustainable development', 'climate change' and 'deforestation'. Initially, we assumed that discussions on food security would directly discuss access to sufficient and nutritious food when considering the urgency of addressing food security issues.

Contrary to our assumption, we observed that although the keyword for the meta-analysis is 'food security', the main pillars of food security-availability, access, utilisation, and stability-are not as prominently featured as might be expected. Furthermore, the presence of other keywords such as 'biofuel', 'land use', 'biomass', and 'biodiversity' in proximity to 'food security' points to the current academic inclination towards an overwhelming emphasis on the environmental impacts of palm oil production rather than prioritising research on the critical issues of food insecurity and malnutrition faced by vulnerable populations. Additionally, the absence of other major vegetable oils like soybean, rapeseed, and sunflower in the treemap amplifies the distinctive position of palm oil in the academic conversation. This suggests a potential bias toward palm oil research. Often associated with controversial issues, more discourse is being directed towards palm oil as opposed to other major vegetable oils, which might be perceived to be less impactful or less central to the debate on sustainable agriculture and food security.

This absence also suggests that these oils, despite having equal importance in meeting the global oils and fats demand, are not scrutinised

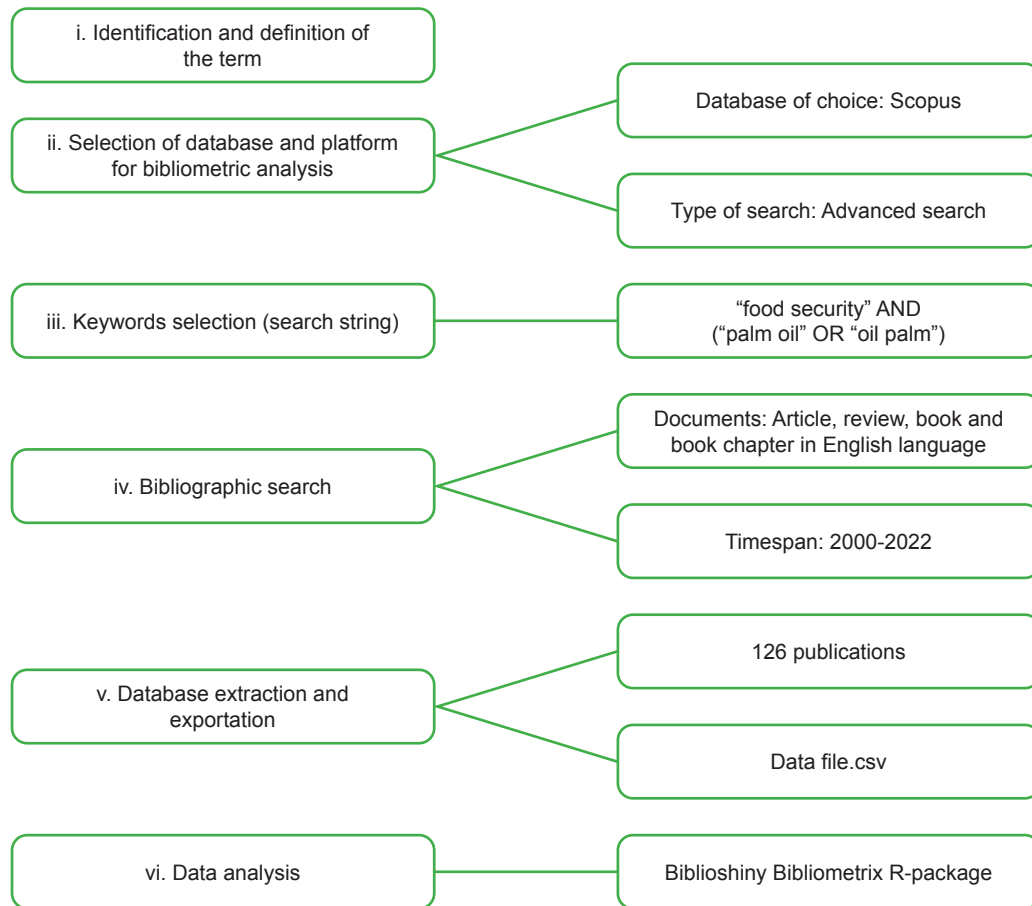


Figure 6. Bibliometric process of the study.



Figure 7. Overview information about the data.

under a similar lens in the context of food security and environmental impact compared to palm oil.

This observation emphasizes on environmental impacts and the distinctive stance of palm oil in the academic conversation raised questions on how publications evolved.

Bibliometrix allows to study for publication trends over time. Figure 9a shows the number of publications per year. Although palm oil is the major vegetable oil traded in the world (Hamidi *et al.*, 2022; Omar *et al.*, 2015), we can see that the relationship between food security and

palm oil is a topic of recent integration in the academic world. Based on the data extracted, no publication was recorded between 2000 to 2005. Hence the final studied timespan is 2006-2022. The annual growth rate of publication reaches 17.39%. From 2006, the number of publications maintained linear growth until 2010. Publications on this research topic started to pick up in 2011, while the highest number of publications related to the topic was in 2019, with 20 publications. This increase could be seen as a response to the integrated framework of the UNSDGs particularly Goal 2 which aims for 'zero hunger'

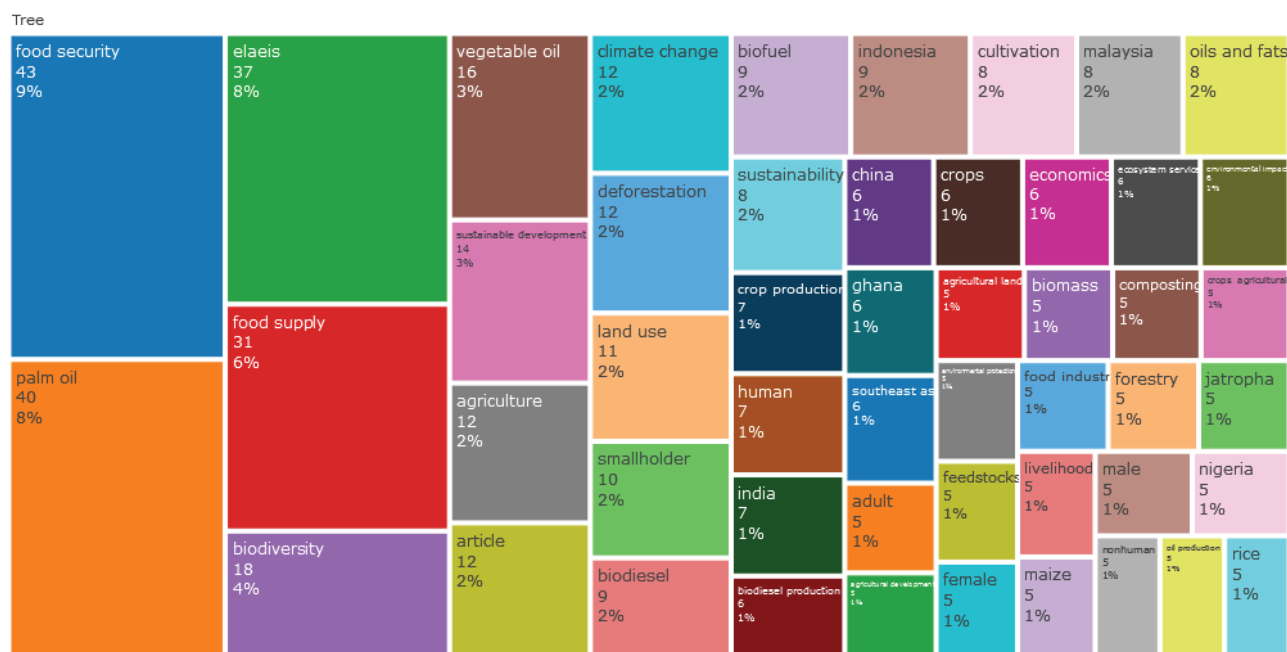


Figure 8. Brief treemap analysis generated by Biblioshiny Bibliometrix R-package.

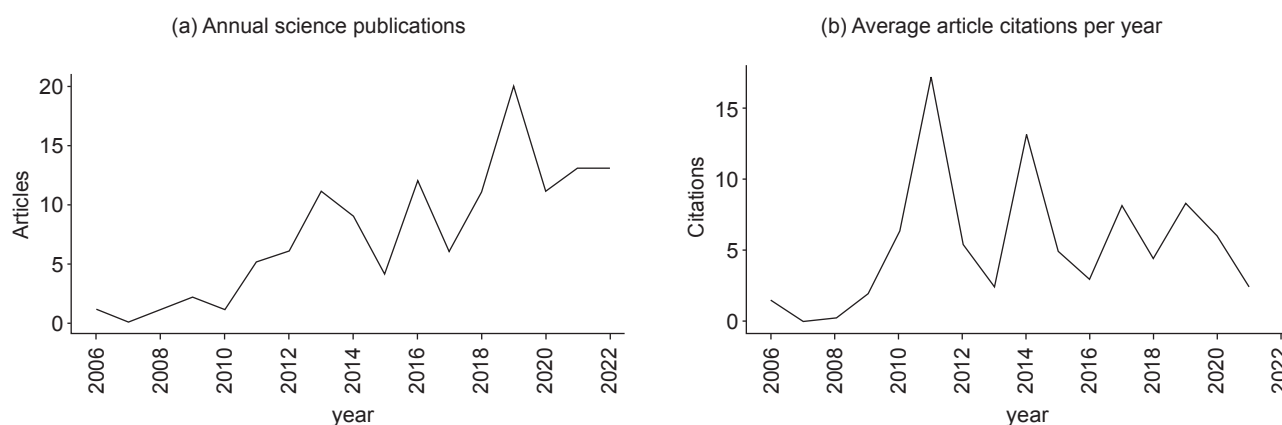


Figure 9. (a) Trend of publications by year between 2006-2022 (until 15 August 2022); and (b) average article citations per year.

(United Nations, 2024). This goal emphasises the need to achieve food security, improve nutrition, and promote sustainable agriculture. It could be reflective of a collective effort within the scholarly community to contribute to the attainment of the UNSDGs.

The average citations per year, as in Figure 9b showed that research interest is continuously present although declining in the past few years. This shows that this research area is in a phase of steady growth in the scientific community. The declining trend in average citations could be due to a dilution effect, where citations are spread across a larger number of papers, reducing the average citations per paper. Nevertheless, it does not necessarily indicate a decrease in the significance or relevance of the research area (Jones, 2003).

Productivity and Collaboration Networks of Authors and Countries

Bibliometrix can generate plots to show the most productive first authors based on the number of publications during the timeframe of the study (Figures 10 and 11). Their publications can be used as a resource to have a deeper understanding of food security in palm oil. Azhar was the most active author with six publications between 2017-2022. Tohiran, Zulkifli, Koh and Nobilly were in the second to fourth places with four to five publications, respectively. Koh and Curry have been active since 2011, with Koh having the longest history in the research conversation.

Figure 12 shows the graph of the top corresponding author's country distributed based on multiple country publications (MCP) and single

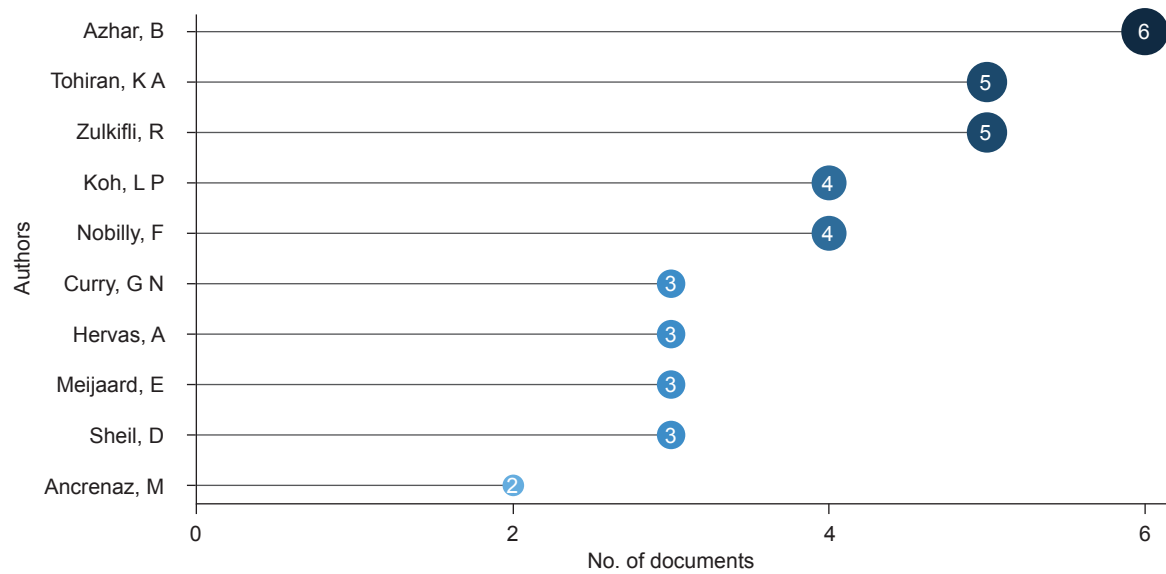


Figure 10. Most productive first authors based on the number of publications generated by Biblioshiny Bibliometrix R-package.

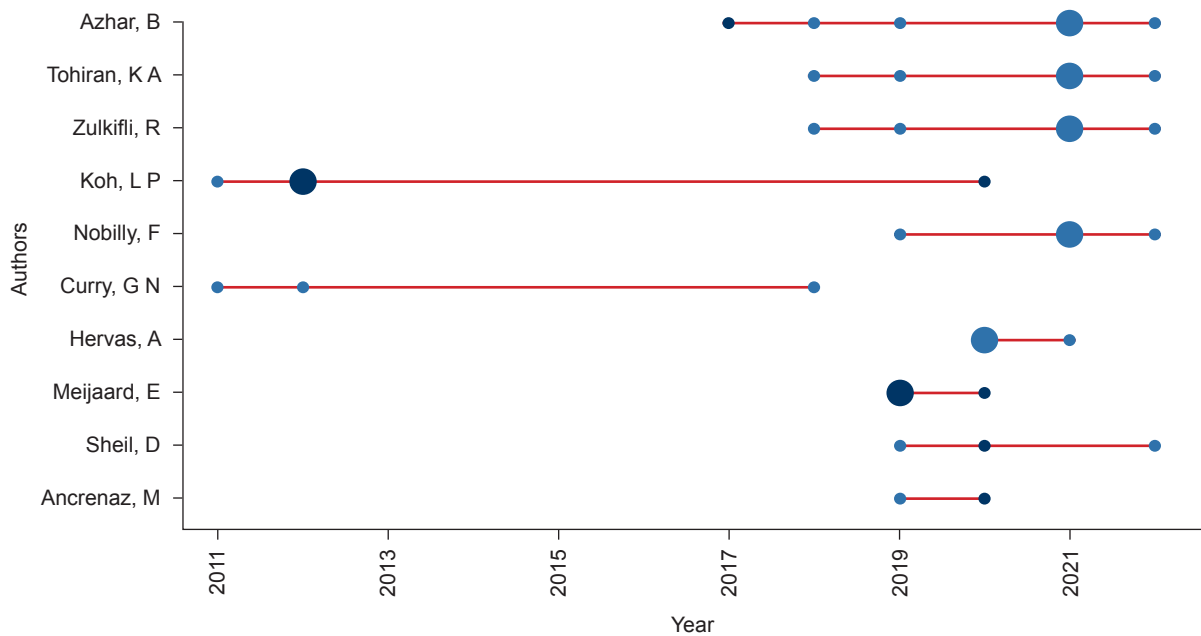
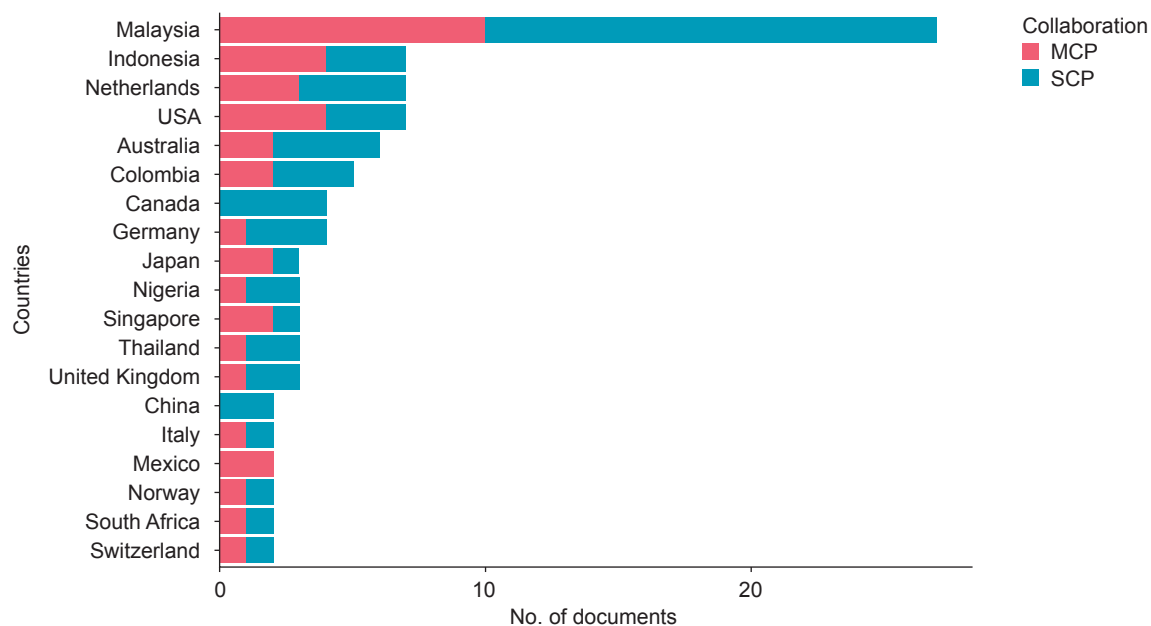


Figure 11. Most productive first author's production trend overtime generated by Biblioshiny Bibliometrix R-package.

country publications (SCP). MCP measures the international collaboration intensity of a country. It indicates, for each country, the number of documents in which there is at least one co-author from another country. Malaysia is the most productive and influential country in the research area, a leading country by far in the number of MCP and SCP. Most publications have co-authors from different countries while countries like China and Canada are SCP. It is worthwhile to mention that although African countries received more attention in relation to food insecurity (Aworh, 2023; Nkiaka *et al.*, 2023) and many of its countries are palm producers (Oil World,

2021), research linking palm oil and food security appears to be under-focused in that region.

Bibliometrix also generated the global distribution related to food security and palm oil publications (Figure 13). The thickness of the edges size in the map represents the countries according to the number of published papers. The colour intensity in the map is proportional to the number of publications. International co-authorships are rated at 42.86% (Figure 7). This shows that the research topic attracts the interest of international collaborations where scientific community members work together to



Note: MCP - multiple country publications; SCP - single country publications.

Figure 12. Most productive corresponding author's country.

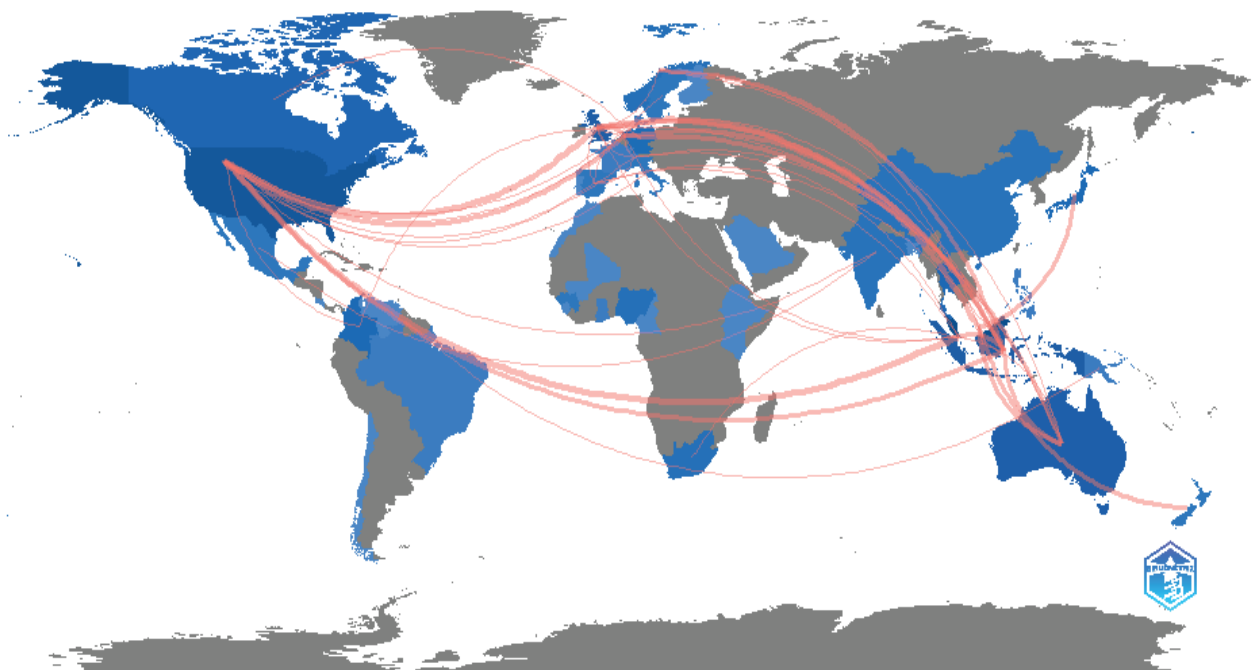


Figure 13. Scientific collaboration map generated by Biblioshiny Bibliometrix R-package.

provide new insights. It inspires new researchers to work at the global level on the same or related fields.

The three-field plot (Sankey diagram) analysis showed the intersection between the top 10 authors, countries, and author's keywords, allowing us to see the intellectual contributions between the collected data (Figure 14). In general, 480 authors from 34 countries have contributed to the list of publications led by Malaysia, followed

by the USA and Indonesia. Trends of the author's keywords that emerged from this search such as "biodiversity", "agriculture", "climate change", "conservation," and "deforestation". As discussed earlier, this shows that the scientific community tends to associate environmental issues with food security and palm oil. However, economic and socioeconomic keywords are absent, which indicates that the discussion of food security and palm oil is unbalanced.

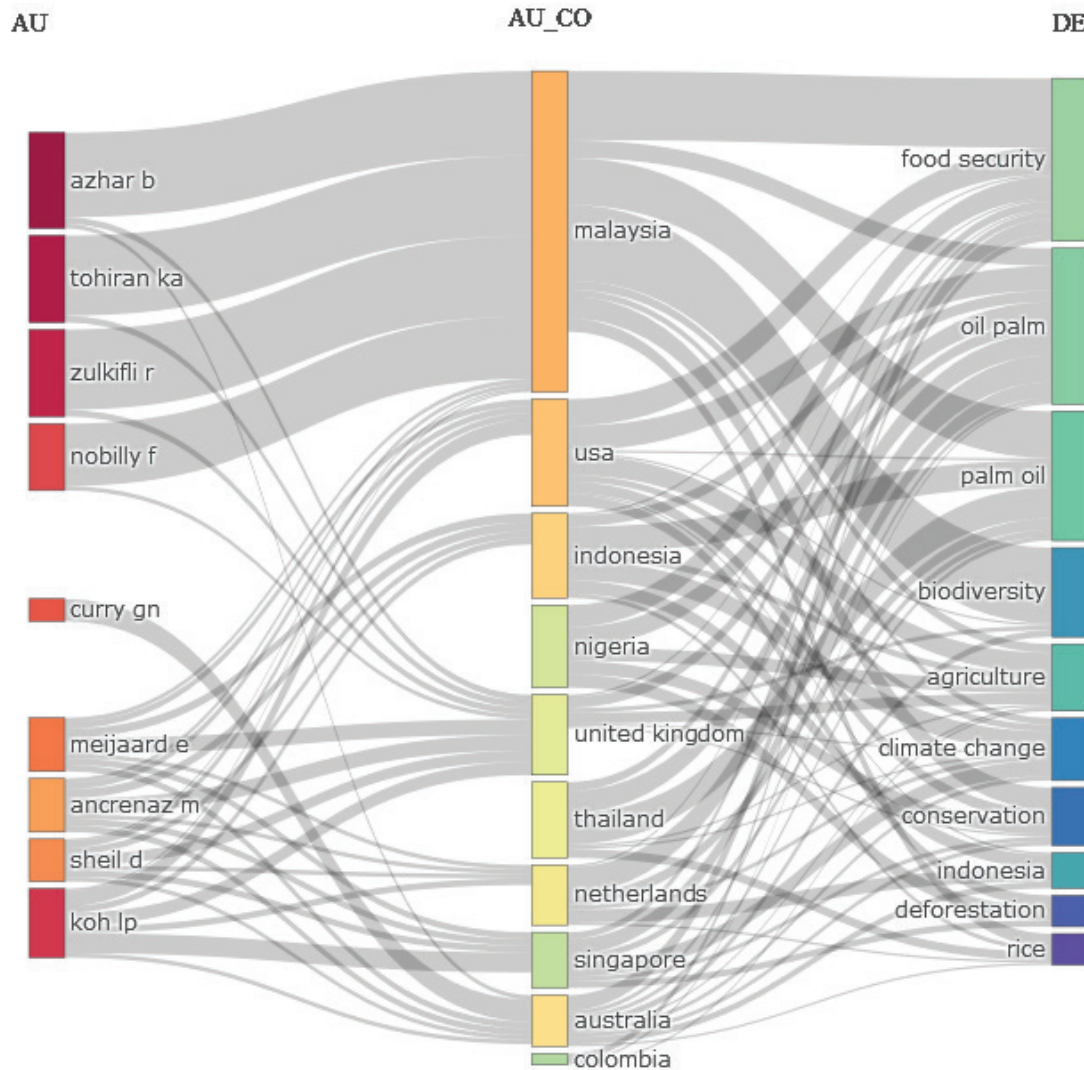


Figure 14. The three-fields plot relating to the main authors (AU), countries (AU_CO) and author's keywords (DE) generated by Biblioshiny Bibliometrix R-package.

Figure 15 illustrates trending topics from 2016. The size of the circles represents the number of publications about that topic. Sustainability related to agriculture and forestry has become a hot topic in recent years with trends starting to emerge in 2013 onwards. It is interesting to note that biomass has not been linked to food security in relation to palm oil post-2006. It is observed that topics focused on sustainable development, biodiversity, agriculture and biofuels have gained much attention in recent years. However, deforestation which has a negative connotation to sustainable development appears to have gained much traction recently which raised a question on whether the scientific community is objectively looking at solving the issue of food security or finding fault at certain highly productive oil crops.

Bibliometrix is also a powerful tool for factorial analysis (data reduction techniques),

which helps identify subfields. We used multiple correspondence analysis (MCA) techniques (Figure 16). The map is interpreted based on the proximity between words. Keywords that are close to each other are chosen because a large number of articles treat them together. In contrast, keywords that are further apart from one another mean that a small proportion of articles use these words together. The map also allows us to visualise and understand the common and large-shared topics of the research field. Based on this figure, it is worth noting that although biodiesel and biodiesel production are recurrent keywords in this search data set, they are discussed and treated separately from, for example, agriculture, environmental protection, and crop production. There are various discourses related to food versus fuel but the research to cover a broader perspective linking food security and biodiesel production is still weak.

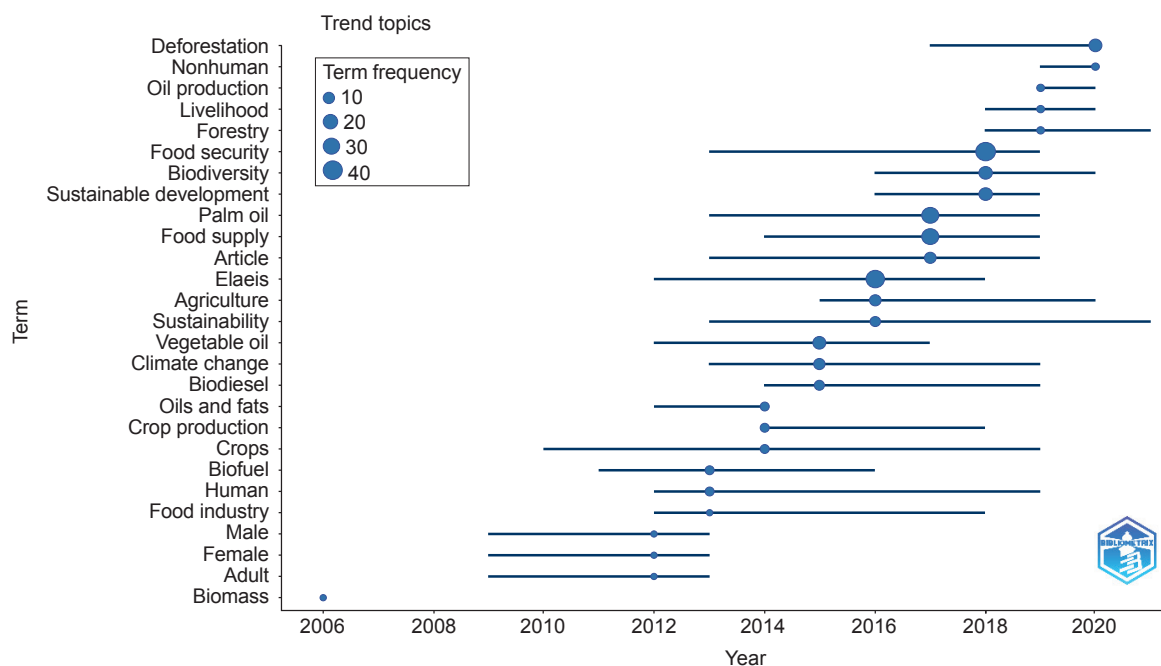


Figure 15. Trend topics based on keywords plus generated by generated by Biblioshiny Bibliometrix R-package.

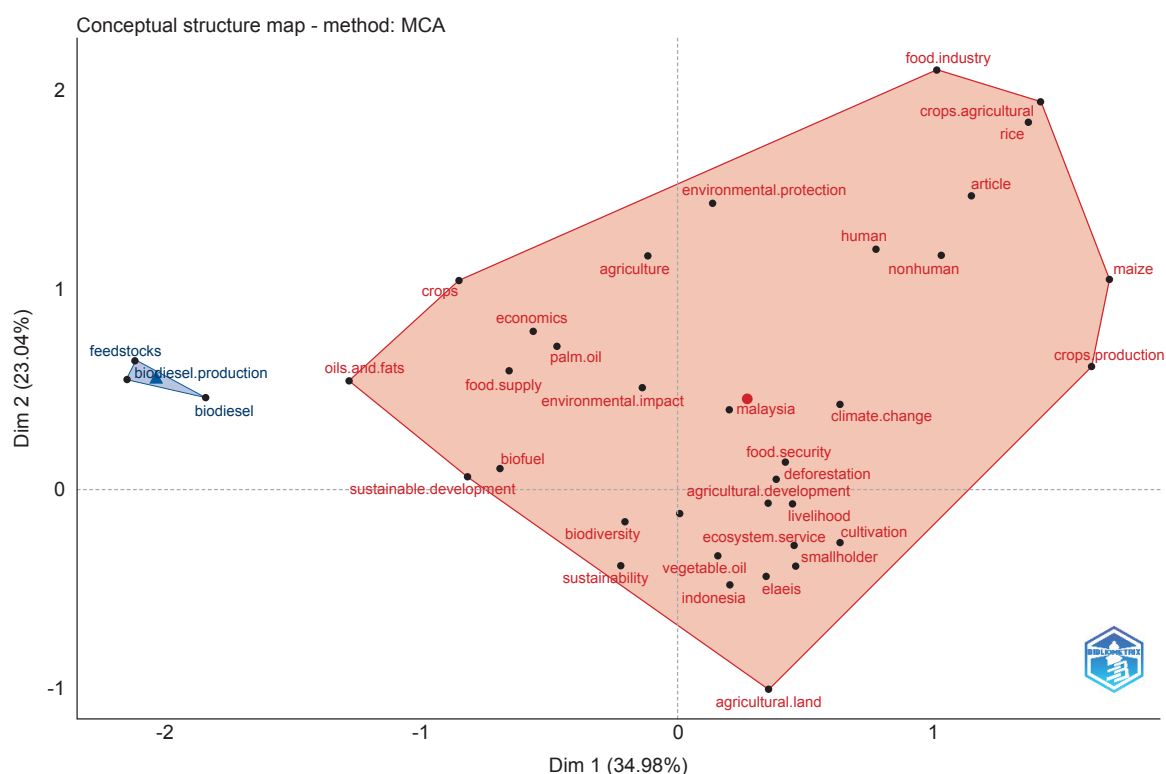


Figure 16. Conceptual structure map with multiple correspondence analysis (MCA) of keywords.

CONCLUSION

This is the first attempt to understand the link between palm oil and food security through bibliometric analysis using *Bibliometrix* software. This type of analysis could also be applied to identify specific gaps in food security in relation to palm oil. While palm oil plays a significant role in addressing

global food security issues, we can see that the relationship between food security and palm oil is a topic of recent integration in the academic world. Based on the data extracted, publications started to pick up only in 2006. Nevertheless, interest in this research area has been steadily growing among the scientific community. Environment-related subjects are closely linked to food security-related issues.

Thus, it is undeniable that the efforts in plotting strategies to resolve global food security issues led to environmental uncertainties. Furthermore, although food versus fuel is a much-debated topic, biodiesel has been treated distinctly in agriculture, environmental protection, and crop production. Still, in-depth research on linking food security and biodiesel production is underexplored.

It is surprising to see Malaysia as the most productive and influential country in this research area even though Indonesia is the biggest palm oil producer. The limited studies in African countries in this area suggest an urgent need for national efforts to develop capacity towards achieving food security. Furthermore, only a handful of authors with four to six publications per author are seriously exploring the relation between palm oil and food security.

This area of research is significantly lacking critical attention in the academic world, despite food security being a crucial issue. Nevertheless, this research topic garners global collaborative interest and a positive outlook where more scientific publications could be undertaken with members of the scientific community working together to provide new insights. More authorship diversity is crucial for fostering a global perspective on the issue and bringing a wide array of viewpoints to the table.

Palm oil is one of the solutions to global food insecurity, and the link to sustainability needs to be more frequently integrated into the food versus fuel discussion. Considering the importance of food security, multi-country authors should be the way forward in discourse related to food security and palm oil. This is important so that the publications have a fresh perspective and are able to provide new insights.

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OPINION PAPER: OIL PALM AND ISLAMIC FINANCE AS THE TWO INTERCONNECTED INDUSTRIES

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ABSTRACT

This paper investigates the evolving dynamics of the oil palm industry and its intricate implications for Islamic finance, particularly in the context of Malaysia where both sectors hold significant economic importance. Given the pivotal role of oil palm as a key commodity in Islamic financial instruments, notably in tawarruq (commodity trading), understanding the interplay between these two industries is crucial for charting a strategic path forward for both. Building upon prior research that has explored the oil palm-Islamic finance nexus, this study delves deeper into the specific Malaysian context, where oil palm reigns as the most frequently utilised commodity by Islamic financial institutions. By analysing the latest developments, we aim to uncover not only the inherent risks but also the untapped potential that oil palm presents for the Islamic finance sector. Effectively managing the risks associated with oil palm production and trade, while simultaneously harnessing its potential benefits, can significantly enhance the growth trajectory of both the oil palm industry and the Islamic finance sector in Malaysia. This, in turn, could have far-reaching implications for the overall economic development of the country. The insights gleaned from this research will be invaluable for policymakers, financial institutions, and industry stakeholders alike, enabling them to make informed decisions that foster sustainable growth and resilience in these interconnected sectors.

Keywords: commodity, interconnected, Islamic finance, oil palm, *tawarruq*.

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INTRODUCTION

Malaysia implements a dual-financial system, wherein both Islamic and conventional forms of financing are utilised simultaneously to accomplish the country's economic objectives. Malaysia's competitive advantage lies in its ability to establish itself as the leading global hub for Islamic finance.

Thus far, the government's endeavour has shown positive results, positioning Malaysia as a reference in this specialised industry, while facing fierce competition from other countries such as Bahrain, the United Arab Emirates, Saudi Arabia and Indonesia as depicted in the recent global report, the Islamic Financial Services Board (IFSB) Stability Report 2023.

However, Malaysia is fortunate to possess an abundance of natural resources, some of which are particularly advantageous for the Islamic finance industry. These resources include commodities like oil palm, rubber, tin mines, iron ore, and several others. This study seeks to examine the progression of the oil palm sector and its effects on Islamic finance within the context of commodities trading.

Commodity trading in Islamic finance strictly follows the rules of Islamic law, often known as Shariah. Shariah-compliant commodities trading adheres to precise criteria and limits to guarantee that transactions align with Islamic principles.

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This specialised financial industry advocates for ethical and socially conscious trade. Investments and trading operations that include the exploitation, unjust treatment, or harm to society are unequivocally forbidden.

The commodity trade in Islamic finance must guarantee that the transaction takes into account these essential elements:

Prohibition of Interest, Extreme Uncertainty, and Gambling

Riba or usury is categorically forbidden in Islamic finance. Hence, any commodity trading transaction that incorporates interest is deemed non-compliant. Islamic finance is built on the premise that the industry prioritises the profit-and-loss sharing agreements over other forms of transactions, although in reality the predominant modes of Islamic finance transactions are debt trading, leasing and asset-backed trading, just to name a few.

The tension between theory and practice underscores the ongoing evolution of Islamic finance as it seeks to balance its core principles with the practicalities of the modern financial landscape and often, asset-backed trading that utilises commodity such as oil palm in the form of *tawarruq* (commodity trading) contract becomes the preferred model. *Gharar* is the term used to describe an excessive level of uncertainty, ambiguity, or conjecture in a contract. Islamic commodities trading opposes agreements that have ambiguous terms or high unpredictability (Ali Azizan *et al.*, 2022; Muhamat *et al.*, 2023). Contracts must possess clarity, transparency, and be devoid of any ambiguity. Transactions characterised by considerable uncertainty and resembling gambling or are strictly forbidden in Islamic finance. Any speculative deals and significant uncertainty are prohibited.

Physical Assets Support

Shariah-compliant commodities trading frequently includes tangible assets (Muneem *et al.*, 2024, Muneeza *et al.*, 2020). Transactions ought to be associated with tangible assets, such as physical commodities, as opposed to speculative financial instruments.

Spot Transactions

Islamic finance prioritises spot transactions, which include the instantaneous exchange of goods at the prevailing market price (Rahman and Rahman 2023). Nevertheless, Shariah-compliant financial practices permit the use of deferred payment methods, such as *murabahah* (cost plus mark-up) and *salam* (sale with advance payment).

Acceptable Goods

The goods being exchanged must adhere to Islamic standards. Trading in alcohol, pork, and other forbidden commodities is strictly banned. Nevertheless, commodities such as food, metals, and agricultural items are often deemed acceptable.

UTILISATION OF COMMODITIES IN ISLAMIC FINANCE

It is crucial to acknowledge that there might be divergent interpretations of Islamic financial principles, and experts may hold differing perspectives on specific activities (Rahman and Rahman, 2023). Hence, people and institutions engaged in commodities trading in the realm of Islamic finance frequently consult Shariah scholars for assistance to guarantee adherence to Islamic standards. Islamic finance allows for the utilisation of many commodities in transactions and investment frameworks that adhere to Shariah rules. Here are some prevalent examples of commodities commonly utilised in Islamic finance:

Valuable Metallic Elements

Gold (*dhahab*) and silver (*fiddah*) are frequently utilised in Islamic finance due to their inherent worth and longstanding recognition as a means of trade. Gold is extensively employed in numerous Islamic financial products, including gold-based savings accounts and Islamic gold bonds.

Commodities of the Farming Industry

Agricultural commodities, such as palm oil, wheat, barley, and rice, have a substantial impact on Islamic financing. Agricultural items are frequently traded via contracts like *salam* (sale with advance payment) and *istisna* (manufacturing contract), which entail selling in advance and delivering at a later date. These goods are vital for ensuring food security and facilitating commerce.

Domesticated Animals Such as Cattle and Sheep

The inclusion of livestock in Islamic contracts, such as *murabahah* and *qard hassan*, is possible. They also hold significance in Islamic agricultural and farming initiatives.

Energy and Natural Resources

Oil and gas. Although fossil fuels are often sold in traditional markets, Shariah-compliant frameworks can be employed in the Islamic

financial industry. Energy resources can be subject to contracts such as *murabahah* and *ijarah*. Allocating funds towards renewable energy sources, such as solar and wind projects, adheres to the concepts of sustainability and environmental responsibility in Islamic banking.

Metals and minerals. Copper, iron, and other industrial metals are utilised in many industrial applications and infrastructural projects. Transactions involving these metals can adhere to Islamic financial rules, such as *tawarruq* (commodity trading), *murabahah* (cost plus mark-up sale), and *mudarabah* (partnership contract).

Agricultural commodities. Cotton, coffee, and other soft commodities refer to agricultural items that are cultivated rather than extracted from mines. These terms are frequently employed in Islamic finance agreements, particularly in relation to commodities trade and supply chain financing, such as *salam* and *istisna*.

COMPATIBILITY OF OIL PALM AS COMMODITY FOR ISLAMIC FINANCE

Oil palm is extensively utilised across several sectors and is regarded as a commodity. Within the context of Islamic finance, oil palm can be employed in transactions and investments, but it is imperative that such utilisation adhere strictly to Shariah law. Islamic financial institutions may impose specific requirements on oil palm farmers and merchants to ensure compliance with ethical and sustainable business practices, as per Shariah guidelines (Nordin *et al.*, 2017).

The acceptability of oil palm in Islamic financing is contingent upon examination by Shariah experts and adherence to Islamic norms, similar to any other product. The acceptability of oil palm-related transactions in Islamic finance by Shariah scholars and local regulatory agencies may be influenced by local legislation and guidelines. Islamic financial firms commonly consult Shariah boards to guarantee adherence to Islamic rules when handling different sorts of commodities.

Characteristics of palm oil that render the product appealing for Islamic finance:

Halal Nature

Palm oil is halal under Islamic dietary regulations due to its plant-based origin. This renders it widely permissible within the context of Islamic financing.

Trading of Commodities

Palm oil is often exchanged as a commodity in global marketplaces. Palm oil transactions can be conducted using Shariah-compliant commodity trading mechanisms, such as *murabahah* (cost-plus mark-up) or *salam* (sale with advance payment) (Uluyol, 2024).

Supply Chain Finance

It refers to the financial activities and strategies involved in managing the flow of funds within a supply chain. The application of Islamic finance can facilitate supply chain financing for the palm oil sector. For example, *murabahah* contracts may be employed to fund the acquisition and trade of palm oil along the whole supply chain.

Principles of Sustainability

Shariah principles promote the adoption of ethical and sustainable business operations. Islamic financial institutions may prioritise palm oil production methods that comply with environmental and social responsibility criteria (Sufian, 2018). The ideals of Islamic financing are in harmony with the sustainable and ethical sourcing of palm oil.

Typically, Islamic financing contracts commonly involve the use of palm oil as a commodity in their transactions. However, among these contracts, *tawarruq* stands out as the primary contract that extensively utilises commodities, including palm oil. This is because *tawarruq* is specifically designed to employ commodities as its asset-backed financial transaction.

PALM OIL DEMAND

The demand for palm oil is influenced by several factors, necessitating consideration of both global and regional dynamics. By 2024, it is projected that there would be a little increase in the demand for palm oil compared to 2023 (The Star, 2024). However, the supply is predicted to remain stable owing to adverse weather conditions caused by the *El Nino* phenomena. According to Alam *et al.* (2024), *El Nino* poses a significant threat to palm oil production and meteorological conditions.

As reported by Standard and Poor's, the projected value of crude palm oil futures is RM4000/t, which is an increase from RM3798/t in 2023 (Kondalamahanty *et al.*, 2023).

Indexmundi (2024) sources provide information on the primary nations which are the major producers of palm oil in 2023.

Indonesia, Malaysia, and Thailand, among other Southeast Asian nations, constantly play a significant role in the global production of palm oil. Similarly, this is a key factor that makes palm oil the favoured commodity for Islamic financial transactions in the country, as compared to other commodities.

TABLE 1. MAJOR PALM OIL PRODUCERS IN 2023

Rank country	Production (1000 t)
1 - Indonesia	47 000
2 - Malaysia	19 000
3 - Thailand	3 450
4 - Colombia	1 800
5 - Nigeria	1 400

Source: Indexmundi (2024).

Several crucial elements that exerted effect on such demand are:

Food Sector

Palm oil is extensively utilised in the food sector as a cooking oil, margarine, and in the production of other processed goods. The escalating worldwide population and surging per capita income in developing nations contribute to the burgeoning demand for edible oils, particularly palm oil (World Bank, 2024).

Developing Economies

Palm oil is often in high demand due to the growth of emerging markets in Asia, Africa, and Latin America (Furumo and Aide, 2017). These areas undergo population expansion and urbanisation, resulting in a rise in the consumption of processed and convenient goods that use palm oil as an ingredient.

Renewable Fuels Derived from Biological Sources

Palm oil is utilised in the manufacturing of biofuels, specifically biodiesel. The implementation of government policies that encourage the use of biofuels as a sustainable energy alternative can have an effect on the market demand for palm oil (Kaniapan *et al.*, 2021).

Industries That Do Not Include the Production or Distribution of Food

Palm oil is utilised in the manufacturing of several non-edible commodities, such as soaps, cosmetics, and detergents (Sulaiman *et al.*, 2022). Factors such as economic development

and changes in personal hygiene exert a significant influence on the demand for these items.

Public Policies Implemented by the Government and International Trade Dynamics

Palm oil demand may be influenced by government policy, both domestically and globally (Salleh *et al.*, 2021). The palm oil sector may be affected by policies concerning biodiesel requirements, trade laws, and environmental sustainability.

The worldwide movement of palm oil can be influenced by international trade agreements and geopolitical concerns. Trade policy and agreement modifications can impact the movement of palm oil between nations that produce it and those that consume it.

The palm oil business has been subject to scrutiny due to environmental and social issues, prompting initiatives to advocate for sustainable methods. Consequently, several firms and consumers are actively pursuing and advocating for the use of sustainably and ethically derived palm oil.

Current Atmospheric Conditions

Palm oil output can be influenced by weather circumstances, such as the presence of *El Niño* or *La Niña* phenomena. Unfavourable weather conditions, such as droughts or heavy rainfall, can affect crop production and have an impact on pricing (Abubakar *et al.*, 2022).

INTERTWINING OF ISLAMIC FINANCE AND PALM OIL

Three primary challenges provide a vulnerability to the palm oil sector. Firstly, let's discuss the meteorological phenomenon known as *El Nino* and *La Nina*, which were previously discussed. Following that is the volatility of pricing, and finally, trade conflicts, namely with the European Union (EU).

Although weather is sometimes attributed to divine intervention as it is beyond human control, individuals may nevertheless minimise its effects via effective preparation. During the *El Nino* era, it is feasible to utilise treated wastewater for agricultural purposes and employ cloud seeding or rain-inducing techniques in the affected regions.

The volatility of palm oil prices is crucial in the context of Islamic finance as it can impact the borrowing costs. This is because a significant portion of Islamic financial transactions rely on commodity trade, with physical assets playing a role

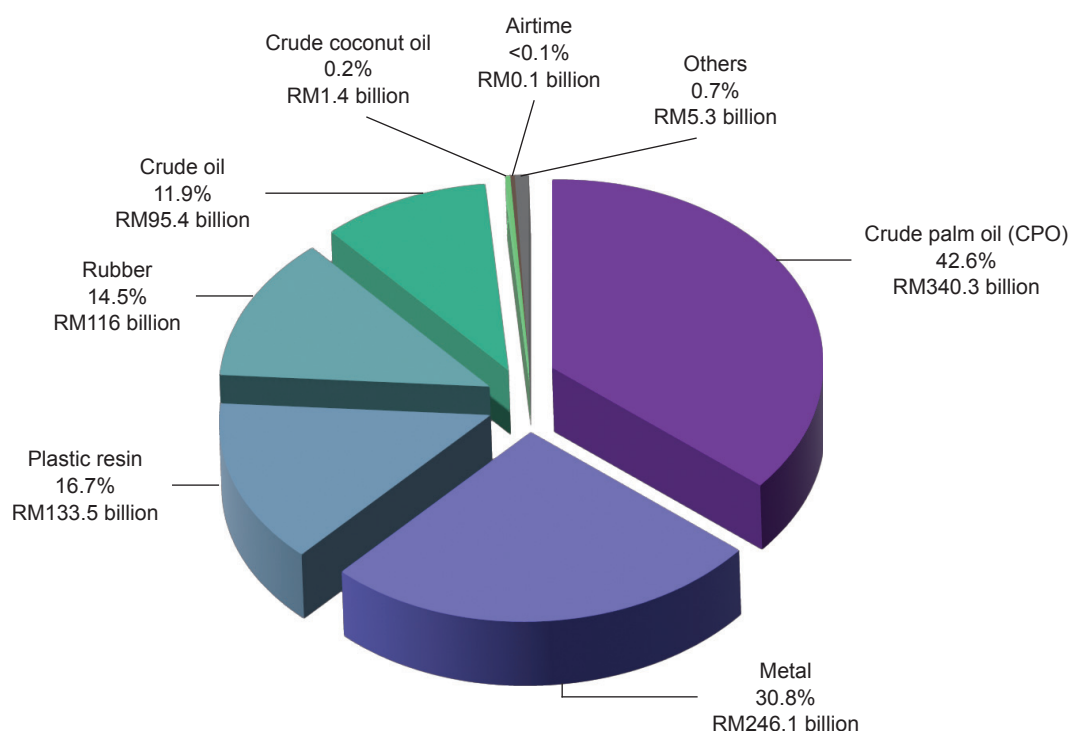
in many processes such as investment, borrowing, and settlement. While other commodities may be utilised, palm oil stands out as a primary commodity.

Figure 1 depicts the utilisation of commodities in Islamic financial transactions. It reveals that palm oil holds the largest share, accounting for 42.6% or RM340.3 billion in 2022. The numbers indicate the strong dependence of Islamic finance on the commodity. They also demonstrate that Islamic financial institutions are actively involved in trading the commodity, both as sellers and purchasers. This direct involvement has a significant impact on the demand for the commodity and, consequently, its price. Furthermore, Malaysia is leading the global Islamic finance industry. This implies that the involvement of Islamic financial institutions in international trade will also support the worldwide demand for palm oil. However, it is crucial for us to comprehend the inherent risks that arise from this circumstance.

A number of Islamic finance experts raised this concern about 15 years ago at a period of rapid development in the field of Islamic finance (Liau 2008). Kuen (2022) expresses a similar viewpoint while evaluating the agency's performance in the Islamic capital market platform for commodities trading in 2022, referred to as Bursa Suq Al-Sila. During that year, the average daily volume amounted to RM41.92 billion, in contrast to RM37.28 billion recorded in the initial three months of 2021.

Here, it is noteworthy to emphasise the interdependence between the Islamic stock market price and the movement of crude palm oil (CPO) price. Razak and Masih (2017) highlighted the strong correlation between the movement of the CPO and the Islamic stock market, which is particularly relevant for long-term projections. However, a discrepancy is observed when it comes to short-term forecasts. A study conducted in 2021 observed similar results in Indonesia about the correlation between the stock market movement and the CPO price. Therefore, it is imperative to maintain the price movement of palm oil to ensure the spread is not too big.

A significant factor exacerbating the situation is the escalating trade tensions between the Southern Hemisphere nations, primarily palm oil producers, and their Northern Hemisphere counterparts, who are both consumers and competitors (through canola and sunflower oil production). These tensions have been fuelled by accusations against palm oil producers regarding human rights abuses and environmental degradation. The palm oil stakeholders are currently working to counteract the sentiments and actions taken by the EU (Saratian and Arief, 2018; Neo, 2023). A prohibition on palm oil in Islamic finance transactions in Europe, due to human rights and environmental concerns, could significantly impede the growth trajectory of the Islamic finance industry, particularly impacting Islamic financial institutions operating in Europe and their involvement in international transactions.



Source: Bank Negara Malaysia (2022).

Figure 1. Composition of commodities used in Islamic finance in 2022.

This possibility of disruption stems from the fact that oil palm is a key commodity in many sectors, and its exclusion from Islamic finance could severely limit the scope of permissible investments and financial activities. This limitation could create substantial challenges for European Islamic financial institutions, potentially hindering their ability to expand their operations and engage in cross-border transactions.

Moreover, the exclusion of palm oil could also have ripple effects on other sectors and industries connected to Islamic finance, further exacerbating the disruption. The resulting uncertainty and complexity could deter investors and clients, ultimately undermining the industry's overall growth potential in the region.

In addition, it is a widespread practice for well-known and established firms, particularly Islamic financial institutions, to associate themselves with the United Nations' Sustainable Development Goals (SDGs). The Malaysian Islamic Financial Market Report 2023 emphasises the ongoing trend among Islamic financial institutions to align with the central bank's agenda on value-based intermediaries (VBI). These institutions are introducing environmentally conscious and socially responsible products, implementing policies that support environmental protection, and engaging in corporate social responsibility activities and campaigns for flora and fauna (Bank Negara Malaysia, 2023).

Figure 2 illustrates the procedural steps involved in *tawarruq* as practiced by Islamic financial institution in Malaysia. *Tawarruq* is one of the popular modes of financing that is used by the Islamic financial institutions.

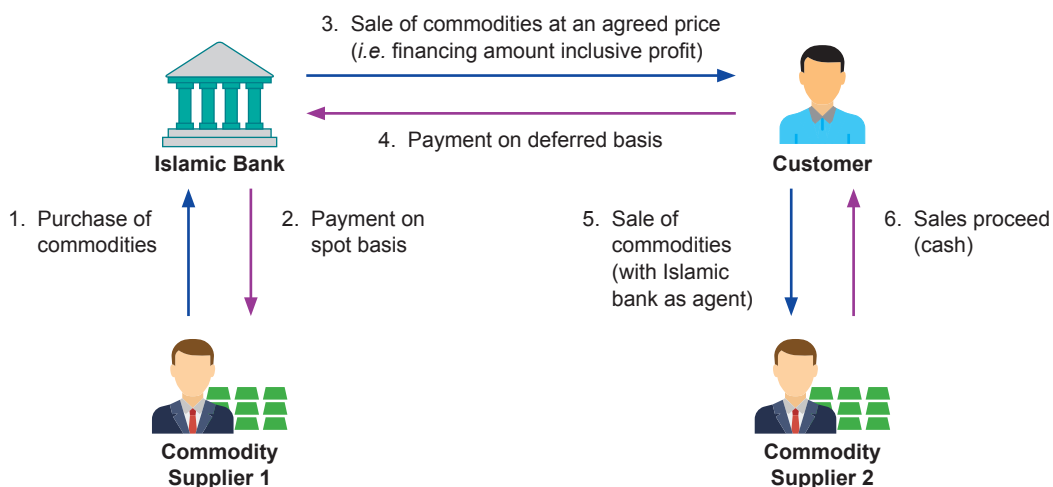
The procedural steps of *tawarruq* in Islamic financial transactions will include two commodity providers, with the Islamic financial institution acting as the overseeing agent. The Islamic financial institution will get the commodity, such as palm oil, from supplier 1 at the current market price and thereafter sell it to the customer at a later date, at a price greater than the initial transaction with supplier 1. The client has the option to either utilise it for their own business or transfer it to another provider (supplier 2).

CONCLUSION

This paper has outlined the impact of palm oil towards Islamic finance which can be described as critical interdependency due to the closely interconnected of the Islamic financial institutions over the palm oil as their asset-backed commodity in their financial transactions.

For a country like Malaysia, which excels in both the Islamic finance industry and palm oil production, the expansion of either sector will positively impact the other. Put simply, Malaysia, as a nation, will reap advantages from this circumstance. However, as previously mentioned, the oil palm industry bears a greater burden due to its nature – Agriculture. The success of palm oil manufacturers in managing the risks associated with agricultural production specifically the oil palm plantations, while capitalising on available opportunities, greatly impacts both industries.

Hence, the Islamic financial institution must possess an understanding of the ramifications resulting from the variability in both the demand



Source: Bank Negara Malaysia (2022).

Figure 2. Tawarruq mechanism.

and price of the product. This can be achieved by the use of Shariah-compliant hedging instruments and the deployment of risk management strategies, such as procuring the palm oil supply in advance.

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MALAYSIAN PALM OIL INDUSTRY PERSPECTIVE IN PRE AND POST-AFRICAN CONTINENTAL FREE TRADE AGREEMENT

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ABSTRACT

The Malaysian Palm Oil (MPO) industry is important in the global oils and fats market, significantly contributing to economic value in Africa. As the African trade bloc represents the second largest export market for this industry, such implementation of the African Continental Free Trade Agreement (AfCFTA), could have profound influence on Malaysia's market position. This study explores the potential effects of AfCFTA on the MPO industry within African trade blocs using a mixed-method approach. Quantitative methods in this study include the use of paired sample t-tests to analyse differences in the MPO industry's metrics before and after the implementation of the agreement, assessing how AfCFTA influence the trade dynamics for MPO products. Qualitative approaches are utilised to investigate shifts in market access, tariff regimes, and non-tariff measures (NTMs), providing a comprehensive view of the trade environment. The results revealed that AfCFTA and associated trade liberalisation have not significantly enhanced the trade performance of Malaysian Palm Products (MPPs) exports. These findings suggest that external factors may play a critical role in shaping export dynamics, indicating the need for further research to fully understand AfCFTA's effectiveness within the palm oil sector. The findings offer deeper understanding of the complex interactions between trade agreements and the MPO industry, delivering actionable recommendations that could enhance trade relations between Malaysia and African countries.

Keywords: AfCFTA, Malaysian palm oil, trade agreement, trade openness.

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INTRODUCTION

The world population for the African region is 1.46 billion (18.2%), which makes it the second largest population after Asia (Worldometer, 2024). The Eastern and Western African blocs which are part of Sub-Saharan Africa contribute to more than half of Africa's population. The African continent is widely diverse in terms of culture, language, and economic output (Lu, 2024). As reported by the International Monetary Fund (2023), the African region has a combined gross domestic product (GDP) of USD3 trillion. Its biggest economy is

South Africa (USD401 billion) and Nigeria (USD395 billion), followed by Egypt (USD358 billion). The top three African economies combined make up almost half of the African region's GDP. Although none of the African countries have a GDP of over USD600 billion, the African region still has the potential to expand its trade and infrastructure development.

For economic integration and harmonisation in the region, African countries relied on the Regional Economic Committees (RECs). However, in March 2018, the African Continental Free Trade Agreement (AfCFTA) was established by the African Union (AU) to consolidate trade amongst the African countries. The AfCFTA agreement creates the largest free trade area in the world where it connects 1.46 billion people across 54 countries with a combined GDP valued at USD3.4 trillion.

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Trades under the AfCFTA agreement commenced on the 1 January 2021 and is expected to increase intra-trade and secure socio-economic benefits for member countries (Debrah *et al.* 2024).

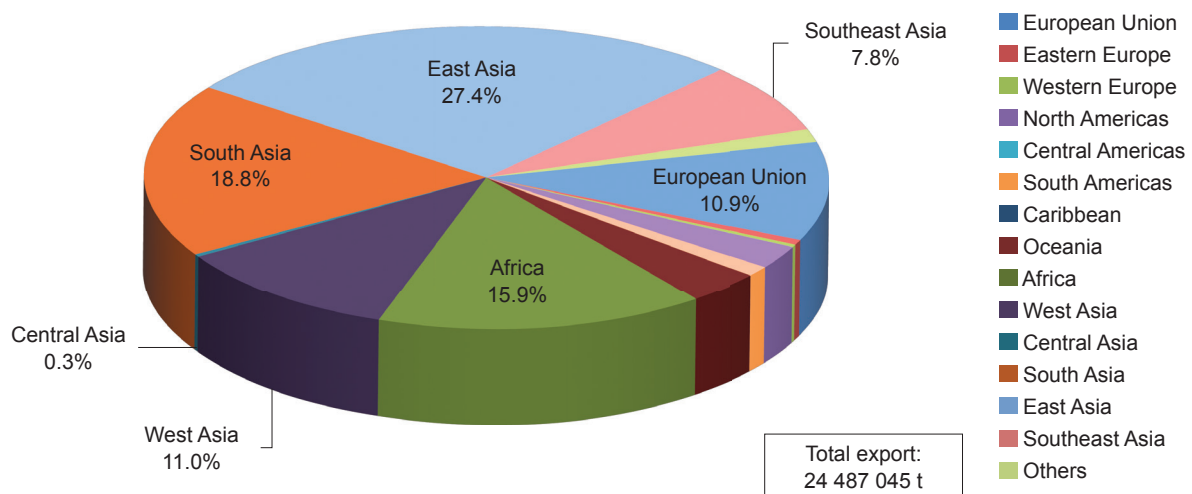
The African continent, as the second-largest importer of Malaysian Palm Products (MPPs) with a total export volume of 3 901 580 t, holds a significant 15.9% share of the MPPs export market (Figure 1), making it an important market for the MPO industry. While numerous studies on the AfCFTA exist, most focus on its framework of extra and intra-African exports and its benefits to African trade blocs (Keita, 2024; Stack *et al.*, 2023). There is a notable study that addresses the AfCFTA's impact on food commodity exports, highlighting how it can enhance food security by improving market access, increasing food availability, and improving livelihoods for farmers in the Southern African Development Community (SADC) region (Alhussam *et al.*, 2023). However, there appears to be a gap in the literature specifically examining the AfCFTA's impact on MPPs exports. Therefore, this study aims to address that gap by exploring the implications of the AfCFTA for the MPPs export market through a t-test analysis.

This study also aims to address this gap by examining market access, tariff regimes, and non-tariff measures (NTMs) to provide insights into the effectiveness of AfCFTA within the MPO industry. The paper's structure includes an introduction to the AfCFTA, methodology detailing mixed-method approaches, results and analysis sections, a discussion of findings, and a conclusion with recommendations and suggestions for future research.

Overview of Free Trade Agreement (FTAs)

Free Trade Agreements (FTAs) are key instruments in international trade, facilitating economic integration among countries by reducing or eliminating both tariff and non-tariff barriers. FTAs can take various forms, including unilateral, bilateral, multilateral, and regional agreements, each designed to foster economic cooperation and enhance trade liberalisation among member nations while maintaining established trade policies with non-member countries (Ornelas and Turnes, 2024; Teteryatnikova, 2008). These agreements enable participating countries to improve their global competitiveness, stimulate domestic industries, and lower the cost of goods and services for consumers. Additionally, FTAs play a critical role in breaking down global monopolies and promoting economic growth by bolstering international relationships and fostering robust alliances among member states.

In the context of the MPO industry, the implementation of the AfCFTA represents a significant opportunity. The AfCFTA aims to establish a unified market for goods and services across African nations, thereby expanding market access and enhancing trade liberalisation. For Malaysia, whose palm oil industry is a major contributor to the global oils and fats market, the AfCFTA could facilitate an increased export of palm products to Africa. This expansion is expected to occur through improved market access and reduced trade barriers, aligning with Malaysia's strategic interests in diversifying its trade relations and economic ties with the African continent. Such



Source: MPOB (2024).

Figure 1. Exports of MPPs to different region in 2023.

developments could reshape the trade dynamics for MPO, reinforcing its position in the African oils and fats market while contributing to broader economic goals.

Regional Economic Communities (RECs) in Africa

RECs are crucial components of the AU, serving as foundational elements for broader African integration. RECs were initially proposed under the Lagos Plan of Action and later was formalised by the Abuja Treaty. These RECs, which include several FTAs, are governed by significant frameworks like the 2008 Protocol on Relations between the RECs and the AU, and the Memorandum of Understanding on Cooperation in the Area of Peace and Security. The Lagos Plan of Action, established in 1980, aimed to enhance Africa's self-sufficiency by maximising local resources and reducing dependency on Western economies. The Abuja Treaty, adopted in 1991, further promoted socio-economic and cultural development through economic integration. Together, these initiatives have significantly influenced trade openness among member countries, facilitating large-scale trade in both financial and non-financial goods and services, thus shaping the economic landscape of the region (AfCFTA, 2024; Oloyede *et al.*, 2021; Simola *et al.*, 2022).

The Economic Community of West African States (ECOWAS) is particularly important to Malaysia as the trading bloc's import of MPPs accounts for over one-third of Malaysian exports to the African region. Some of the biggest MPPs exports to ECOWAS countries are Nigeria, Ghana, Ivory Coast, Togo, and Benin. Although the AfCFTA has introduced new elements for social and economic integration, the REC FTAs are still expected to coexist and function alongside the AfCFTA. These agreements are essential building blocs for regional integration in Africa (Erasmus and Hartzenberg, 2022).

The Importance of AfCFTA for African Regional Economic Integration

AfCFTA is the world's largest free trade area and a major part of the African region's plan called African Agenda 2063. The Agenda comprises a set of developmental goals and a framework for the socio-economic transformation in Africa, aimed at achieving its own national and regional development priorities, as well as adapting to international development conventions and practices. AfCFTA is a trade agreement designed to consolidate African countries into a single market. It encompasses key sectors of the continent's economy, including digital trade and investment protection, and aims to foster economic and social integration across the region (Garfias Royo *et al.*, 2022; Union, 2024).

The AfCFTA aims to eliminate trade barriers in Africa and thus, create better market access for trade in all sectors among African member states which will have a combined consumer of 1.7 billion with business spending of USD6.7 trillion by 2030 and USD29.0 trillion by 2050 (Signé, 2020), creating a trading bloc powerhouse for Malaysian goods, especially palm products. About 54 African countries have signed the agreement and submitted their tariff offer which was adopted and included in the Ministerial Directive on Provisional Schedule of Tariff Concessions on 26 October 2021. Initially, the United Nations Economic Commission for Africa projected that AfCFTA would increase intra-African trade by 52.0% by 2022 (Breuss, 2022). Nonetheless, a 2023 report by Okwatch (2023) reveals that as of January 2023, intra-African trade remains low, at just 14.4%. This figure indicates a sluggish pace in policy integration among the member states, impeding progress towards achieving the initial targets of the AfCFTA. However, it is important to verify the latest figures and outcomes as these projections were made prior to significant global disruptions, including the COVID-19 pandemic, which may have impacted the agreement's anticipated benefits (Asiedu, 2022).

The establishment of AfCFTA has also changed the current structure of import duties. Currently, the base rates follow Most Favoured Nation (MFN) tariffs for individual countries and the applied Common External Tariffs (CETs) for customs unions and ECOWAS. Special tariffs under the AfCFTA are expected to gradually reduce tariffs by about 2% annually until it reaches zero. The tariffs are expected to phase out entirely by 2050. Palm products are categorised under Category A which is under the non-sensitive label in which the tariffs will be eliminated over 10 years for Least Developed Countries (LDCs) and five years for non-LDCs. For crude palm oil (CPO) the tariff rates could be up to 10%, while tariffs on refined palm oil are around 10% to 25%, making palm oil processing and cultivation attractive (AfCFTA, 2024; Boysen, 2024).

As regional trade among African countries is low, AfCFTA seeks to remove barriers in these areas of interest and thus allow free flows of goods and services among the contracting parties and provide a platform for challenging issues to be addressed (Munemo, 2021). AfCFTA could also strengthen Africa's partnerships with some of its largest traders. This trading could help facilitate and accelerate infrastructure developments, including improved ports, transportation, and energy. As logistics costs are reduced, palm oil products in intra-African trade may increase. Study conducted by Kuteyi and Winkler (2022) has shown that logistics will remain a stumbling block for intra-African trade until a proper and efficient infrastructure is in place. With appropriate infrastructure in place, the enhancement

of intra-regional trade is anticipated, facilitating more efficient operations, reducing substantial transportation expenses, and mitigating delays, particularly in remote and landlocked regions. Such improvements in trade logistics are likely to lead to a reduction in trade costs, thereby enabling quicker availability in local markets.

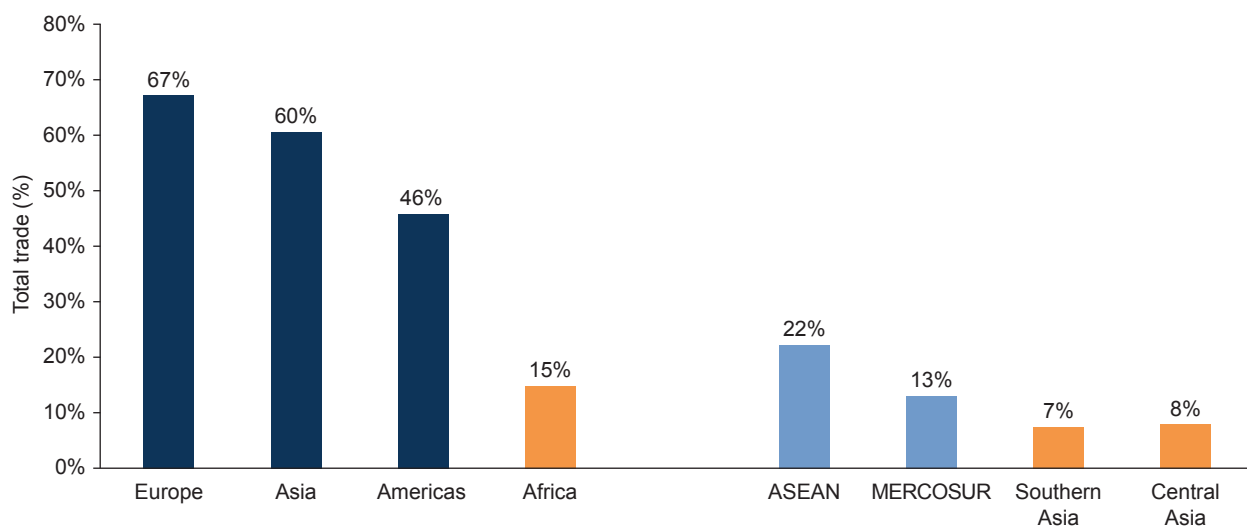
Africa's intraregional trade makes up 15% (Figure 2) and relies on global trade to meet its other demands. The AfCFTA hoped to increase Africa's intraregional trade as other world intraregional trade agreements have shown higher intraregional trade percentages. The AfCFTA has launched the Guided Trade Initiative (GTI) involving 27 member countries to enhance intra-African trade, which remains relatively low compared to other continents. This initiative serves as a pilot to demonstrate the effectiveness of AfCFTA by facilitating smoother trade processes, including faster customs clearance and reduced tariffs (Department of Commerce USA, 2024). Although palm products are not currently included under the GTI, the initiative's success could potentially extend its benefits to these products in the future, potentially benefiting sectors such as the MPO industry. The GTI aims to foster sustainable and inclusive economic development by proving that streamlined intra-African trade is feasible under the AfCFTA framework.

Malaysian Palm Products (MPPs) Export Performance to Africa

Since 2018, ECOWAS member countries have been significant players in the trade of MPPs in Africa. As detailed in Table 1, Nigeria, Ghana, and Togo have notably contributed to the increasing import revenue from MPPs. The substantial

population of ECOWAS, which accounts for approximately 30% of Africa's total population, drives high demand within the region. This demand facilitates intra-regional trade, extending even to neighbouring landlocked countries such as Mali and Niger. However, Congo is not a part of ECOWAS and should be considered separately. Since 2020, Kenya has surpassed Nigeria as the primary importer of MPPs in Africa. This development is part of Kenya's strategic implementation of its Big Four Agenda, which emphasises efficient governance practices. Additionally, Kenya has established itself as a critical re-export hub for palm products, facilitating trade not only within East Africa but also extending to Central African nations. This role shows Kenya's importance in bolstering regional trade networks across the continent.

Figure 3 illustrates the export volume of MPPs to Africa from 2014 to 2023. Despite the implementation of the AfCFTA in January 2021, the data indicates that MPPs exports to Africa have continued an upward trajectory. This trend suggests that the AfCFTA has not had a significant adverse impact on MPPs export performance to Africa. On the contrary, the steady growth in export volumes, reflected by the R^2 value of 0.5594, implies that the agreement has not negatively affected Malaysia's position in the African market. This period incorporates recovery phases from significant economic disruptions: Firstly, from the downturn due to the mineral oil price collapse between 2014 and 2017, and secondly, from the COVID-19 pandemic impacts between 2020 and 2022. The latter period observed a marked increase in export volumes, attributable to a base effect from subdued pre-pandemic levels. Empirically, this finding was supported by Asiedu (2022) and Morsy *et al.* (2021)



Source: Andrew (2021).

Figure 2. Intraregional trade (imports and exports) as percentages of total trade.

TABLE 1. MALAYSIAN EXPORT OF MPPs TO TOP 10 AFRICAN IMPORTERS

Countries	January-December Quantity (t)					January-December Value (RM Million)				
	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
Nigeria	326 831	404 193	354 220	241 626	320 380	843.52	1 150.71	1 528.41	1 193.09	1 301.66
Ghana	177 222	279 445	230 091	77 643	97 139	422.16	816.58	974.66	417.75	423.55
Benin	125 065	114 750	46 923	779 520	139 092	369.32	373.55	233.74	581.41	643.34
Kenya	197 955	532 723	692 636	779 520	935 537	422.54	1 503.97	3 040.60	4 155.95	3 651.67
Djibouti	98 079	147 472	172 261	292 516	316 469	266.90	437.84	729.63	1 708.27	1 362.24
South Africa	264 839	256 948	174 948	167 440	160 058	677.77	766.98	834.13	1 056.80	720.04
Mozambique	203 949	309 710	288 582	208 725	276 579	438.16	883.36	1 275.73	1 146.73	1 079.84
Tanzania	222 146	204 219	207 146	253 420	324 314	560.29	608.49	999.62	1 453.27	1 384.43
Ethiopia	66 674	22 287	13 058	7 482	6 678	178.50	67.20	56.38	46.77	29.41
Togo	86 828	175 307	139 616	136 956	238 053	212.34	520.68	646.17	770.26	1 017.66
Total	1 769 588	2 447 054	2 319 480	2 944 846	2 814 300	4 391.50	7 129.36	10 319.07	12 530.30	11 613.84
Total MPPs Exported to Africa	2 760 415	3 535 789	3 218 083	3 331 372	3 901 580	7 238.70	10 621.92	13 932.84	19 131.47	16 589.27

Source: MPOB (2024).

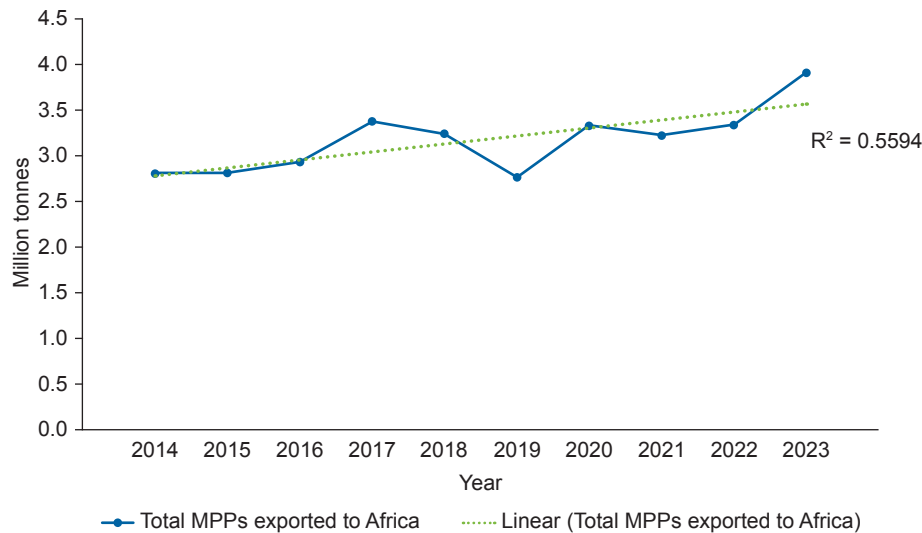
who demonstrated the subsequent stabilisation of demand post-2022 which highlights adaptability in the African markets to global economic shifts, justifying further analysis of the resilience mechanisms employed by these economies.

MPPs exports are significantly influenced by existing trade agreements, as demonstrated by Malaysia's trade interactions with Pakistan and Türkiye. Following the establishment of FTAs with Pakistan and Türkiye, an increase in the export of MPPs to these markets are evident (Balu and Nazlin, 2011). Similarly, the AfCFTA holds the potential to boost the economies of African countries and, by extension, could enhance the trade performance of MPO products in Africa. This suggests that the AfCFTA should align with other existing FTAs to optimise trade outcomes. Additionally, local government policies and regulatory landscape are fundamental in shaping the trade performance of palm oil, indicating that both international agreements and domestic policies are crucial for the export success of this commodity.

MATERIALS AND METHODS

This study employed a mixed-method approach, utilising both qualitative and quantitative analyses to assess the impact of the AfCFTA on the MPO industry. In examining the current state of research and key developments related to the AfCFTA and its effects on the MPO industry, a narrative literature review was conducted. Although narrative reviews lack standardised guidelines, their quality can be enhanced by incorporating elements from systematic literature review (SLR) methodologies. By doing so, the process can minimise potential biases in the selection and analysis of articles, thereby providing a more comprehensive and objective assessment (Ferrari, 2015). The review process was started with a targeted search using key terms such as 'AfCFTA,' 'trade liberalisation,' 'palm oil industry,' 'free trade agreement,' and 'economic integration in Africa' The primary platforms used for sourcing academic articles were Scopus and ScienceDirect, known for their extensive databases of peer-reviewed journal articles.

To ensure a strong literature framework, we established specific inclusion and exclusion criteria for our document analysis. We included documents that were peer-reviewed, published within the last decade, and directly addressed topics such as trade agreements, economic integration, and the palm oil industry. Documents older than 10 years were generally excluded unless they were deemed relevant and important to the literature review. This ensured that the study's theoretical foundation was well-supported and coherent (Foster *et al.*, 2021; Locke and Golden-Biddel, 1997). The search



Source: MPOB (2024).

Figure 3. Total export of MPPs to Africa from 2014-2023.

involved initial screening of titles and abstracts to assess relevance, followed by a full-text review of selected articles. This process ensured that the most pertinent literature was included in the review. Additionally, a quality assessment was performed to evaluate the methodological consistency and relevance of the selected articles.

The document analysis incorporated a wide range of materials, including peer-reviewed articles discussing economic integrations like AfCFTA, official reports from the AfCFTA secretariat offering updates and guidelines, and other relevant documents that elucidate trade regulations and their implications. To complement these academic sources, we also included market research data and analysis from Euromonitor International, a leading provider of business intelligence and market analysis. This review of diverse sources enabled a thorough examination of the intricate relationship between trade policies and industry dynamics, thereby offering a nuanced understanding of the potential impacts of the AfCFTA on the MPO industry.

Quantitative research designs apply a comparative approach to assess the impact of the AfCFTA on the MPO industry. The research focuses on examining the export volume trends over a decade, specifically comparing the periods before and after the implementation of the AfCFTA. Data collection involved gathering 10 years of annual export statistics from authoritative sources. Statistical methods were then applied to analyse these trends, providing a quantitative measure of the AfCFTA's effect on export volumes. This methodology allows for a precise quantification of changes in export patterns, offering clear insights into the trade dynamics influenced by the AfCFTA.

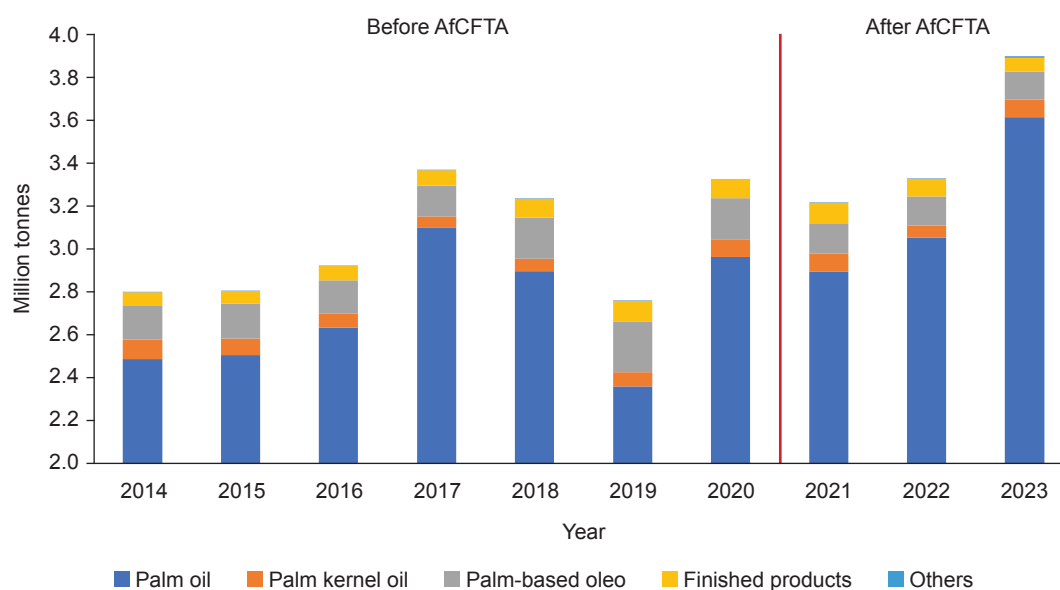
Through this comparative analysis, the study aims to identify significant shifts in the export behaviour of the MPO industry, attributing these changes to the trade liberalisation effects of the AfCFTA. The study divides the time series data into two different periods as follows:

- i. From 2014 to 2020, indicated as the 'pre-AfCFTA' period.
- ii. From 2021 to 2023, indicated as the 'post-AfCFTA' period.

In addition to the comparative time series data, this study also produces a five-year projection of MPPs export from 2024 to 2028 based on the same export data from 2019 to 2023. This section thus, facilitates a detailed examination of any important changes in the export dynamics of MPPs to African nations in response to the AfCFTA.

Data Collection

The dataset for this study consists of annual export data from 2014 to 2023 obtained from the MPOB database (Figure 4). This dataset specifically covers the export volumes of MPPs to the African region. To enhance transparency and facilitate reproducibility, comprehensive details regarding the data source and its format are provided. The segmentation of the dataset into distinct periods aligns with the annual intervals, thus reflecting the temporal distinction coinciding with the implementation of the AfCFTA. This temporal alignment ensures that the analysis captures the relevant periods before and after the initiation of AfCFTA, allowing for a focused examination of any visible changes in MPPs exports to Africa.



Source: MPOB (2024).

Figure 4. Exports of MPPs to Africa, 2014-2023.

Statistical Test Selection

Given the nature of the objective and the characteristics of the data, the paired sample t-test is chosen for its ability to compare the related export performance of MPPs, control for variability, assume normality in differences, handle small sample sizes effectively, and provide easily interpretable results, all of which are essential for analysing the impact of AfCFTA on the MPO industry.

Statistical Assumptions and Data Characteristics

This section addresses the assumptions inherent in the paired samples t-test methodology and examines into the characteristics of the dataset under examination. The key assumptions of the paired samples t-test include the normality of differences and the acknowledgment of dependent observations. Notably, in the case of larger sample sizes, the assumption is that the differences are approximately normally distributed. This section intentionally does not explicitly address homogeneity of variances, recognising that this assumption is not required for paired samples t-tests.

The dataset employed in this study spans a decade whereby each year is represented by a singular data point, resulting in a sample size of 10. Using a consistent 10 year period helps ensure comparability across the data points, providing a balanced view of trends and reducing the impact of anomalies that could skew the shorter-term

analysis. This sample size is generally considered sufficient for conducting a paired t-test, allowing for adequate statistical power to detect meaningful differences (Fritz *et al.*, 2012). Despite the relatively small number of observations, the paired sample t-test is resilient to deviations from normality and small sample sizes, making it a valuable analytical tool in this study. Furthermore, the repeated measurements over a 10-year period hold the potential to yield meaningful insights into the impact of the AfCFTA on MPPs exports to the African region.

Significance Level

A significance level (alpha) of 0.10 was selected for this analysis. This conventional threshold is employed to determine the statistical significance of observed differences, providing a balance between Type I and Type II errors.

Export Projections of the MPPs from 2024 to 2028

A time series forecasting function to predict future values based on historical data using an advanced machine learning algorithm called Exponential Triple Smoothing (ETS) is adopted to produce a five-year projection of MPPs export from 2024 to 2028 (Figure 5). The projection method collects historical MPPs export data from 2019 to 2023. The ETS algorithm was selected for its robustness in handling time series data. ETS breaks down the time series into three components; trend, seasonal, and error (residual) which allows

the model to capture different aspects of the data effectively:

- i. Trend Component: Represents the long-term progression of the time series.
- ii. Seasonal Component: Accounts for repeating patterns or cycles within specific intervals.
- iii. Error Component: Captures random variations and noise in the data.

This function requires the timeline to be organised with a constant step between the different points suitable for a yearly timeline. Once the timeline is organised and data points have been determined, the ETS is guided to observe the historical MPPs export data and project MPPs export data for the next five years. The predicted export values are a continuation of the historical data whereby it extends the timeline into the future.

RESULTS AND DISCUSSION

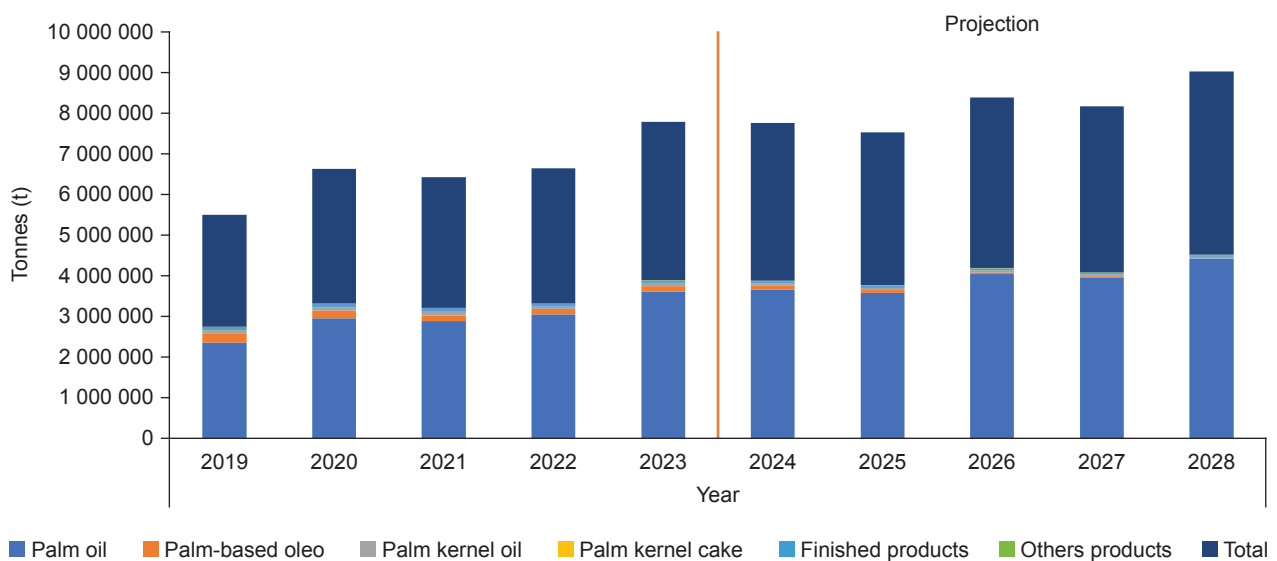
This section presents a detailed exploration of the findings obtained from the investigation into the impact of the AfCFTA on the export of MPPs to the African region. This section also unfolds the statistical outcomes, effect sizes, and implications, thus providing an understanding of the complex dynamics surrounding palm oil trade in the pre- and post-AfCFTA implementation periods. While the interpretation of these results predominantly relies on statistical significance derived from t-test analyses, the focus extends beyond broad statistical outcomes.

The study examines the practical implications of the observed changes, emphasising the importance of a holistic approach in determining the true effects of AfCFTA on the MPO industry. Even within the confines of t-test analyses, the goal is to provide a detailed understanding that goes beyond statistical significance and considers the broader implications of the observed variations. Additionally, the discussion explores into contextual factors, potential limitations, and avenues for further research, supporting the narrative with a broader perspective on the complex interplay between trade agreements and the dynamics of MPO trade.

T-Test Analyses

The paired samples t-test was employed as a key analytical tool in this study to carefully investigate the effects of the AfCFTA on the export dynamics of various MPO products to the African continent. The result of the t-test is outlined in *Table 2*.

In examining the t-test results of palm oil and palm kernel oil, our analysis identified non-significant mean differences, with p -values of 0.072 and 0.698 respectively. This suggests that there were no statistically significant changes in export volumes before and after the AfCFTA. While these statistical tests did not demonstrate significant changes, the observed effect sizes warrant further consideration due to their potential implications in practical contexts. This emphasises the importance of assessing the real-world impacts alongside statistical outcomes, as results that are not statistically significant can still hold considerable relevance for policy and strategic decision-making.



Source: MPOB (2024).

Figure 5. Export projections of MPO to Africa.

TABLE 2. PAIRED SAMPLES T-TEST RESULTS

Products	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. deviation	Std. error mean	90% Confidence interval of the difference				
				Lower	Upper			
Palm oil	-660 234.32	323 913.67	187 011.64	-1 206 305.61	-114 163.02	-3.530	2	0.072
Palm kernel oil	4 090.28	15 816.82	9 131.84	-22 574.56	30 755.13	0.448	2	0.698
Palm-based oleo	25 465.15	7 563.27	4 366.66	12 714.58	38 215.72	5.832	2	0.028
Finished products	-18 572.64	17 664.25	10 198.46	-48 351.99	11 206.71	-1.821	2	0.210

This also applies to finished products with p -value of 0.210 which are also directly imported from Malaysia and do not qualify for special tariff under AfCFTA.

The primary exports of MPPs to Africa are refined, bleached and deodorised (RBD) cooking oils, predominantly exported in bulk and subsequently repackaged into consumer packaging. Similarly, palm kernel oil, primarily used in the confectionery industry, follows a comparable export pattern. Notably, neither product qualifies for tariff liberalisation (Table 3) under the AfCFTA, which may explain the observed p -values. Given these conditions, it is anticipated that the trend in export volumes will remain consistent in the foreseeable future.

In contrast, the investigation into the export of palm-based oleo yielded a significant increase in production levels ($p = 0.028$) post-AfCFTA. This statistically significant finding is crucial in shedding light on the tangible impact of AfCFTA on this specific palm-based product. The significant effect size, coupled with statistical significance, emphasises the economic significance of the observed significant changes in the export volume of palm-based oleo.

The importation of palm-based oleochemicals into Africa can largely be attributed to their critical role in the production of cleaning and disinfectant products. As these oleochemicals are imported as raw materials, the finished products derived from them may qualify for preferential tariff rates under the AfCFTA. This regulatory framework potentially explains the observed increase in demand for Malaysian palm-based oleochemicals. This also supports the study conducted by Othman *et al.* (2022) demonstrated that Malaysia, even though as the second largest producer of palm oil, has higher trade advantages relative to other main producers of oleochemical products and this applies to high dependency of African countries in sourcing oleochemical products. Additionally, the tariff concessions under AfCFTA are likely to make these raw materials more economically attractive for manufacturers in Africa, fostering a market environment that

encourages the use of imported oleochemicals in the production of various consumer goods (Table 3).

Interestingly, inflation was argued to have a significant impact on trade dynamics. External factors such as high inflation at the state level were argued to significantly impact economic growth (Mandeya and Ho, 2021) and consequently influence trade dynamics (Yiheyis and Musila, 2018). Babangida *et al.* (2024) empirically demonstrated that inflation do adversely affect business growth and reduce consumer spending. Major economies in African countries, including Nigeria, Egypt, and South Africa, have been impacted by high inflation rates. As reported by the Euromonitor International (2023), inflationary conditions have been severe since 2022 and worsened in 2023, exacerbated by the continuing depreciation of the local currencies. This depreciation is attributed to government policies on demonetisation and increased fuel prices in 2023, which have dampened the anticipated benefits of the AfCFTA on trade performance in Africa. Inflationary conditions increase trade costs through the depreciation of local currencies and indirectly affect market demand as unit prices increase. This contributes to the slow impact of AfCFTA since its implementation in 2021, highlighting the complexity of regional trade dynamics influenced by economic policies and global economic conditions.

Impacts of AfCFTA on Palm Products Import into Africa

As of 2024, Malaysia does not have any FTAs with the African region, nor does it have bilateral relations with any specific African country through an intercontinental FTA (MITI, 2024). Despite the absence of formal trade agreements, the relationship between Malaysian oil palm stakeholders and Africa operates on a business-to-business basis. Moreover, the trade relationship between Malaysia and African countries remains strong or at least consistent over the year, as evidenced by the strong trade performance metrics between Malaysia and the region (Figure 1).

TABLE 3. RULES OF ORIGIN CRITERIA

Wholly obtained	Substantial transformation
Goods that occur naturally in the free trade area	Change in tariff classification
	Specific processing
	Value added
	Value of non-originating material content

Source: AfCFTA Secretariat (2022).

However, Malaysia's primary competitor in the palm oil sector, Indonesia, has significantly strengthened its trade position in Africa through strategic agreements. In 2019, Indonesia signed the Indonesia-Mozambique Preferential Trade Agreement (IMPTA), which eliminates tariffs on hundreds of products and is designed to enhance trade volume between the two nations. This agreement strategically positions Mozambique as a hub for Indonesia to improve its market reach across Southern Africa (Ayman, 2023). The preferential tariffs resulting from Indonesia's trade agreements with African nations may impact negatively to Malaysia's export performance in the region.

Furthermore, Indonesia is currently negotiating with the Southern African Customs Union (SACU), which includes South Africa, to establish a similar preferential trade agreement aimed at reducing tariffs. The South African Deputy Director General of Asia and the Middle East from the South African Foreign Ministry has expressed support for Indonesia, indicating openness to a preferential trade agreement with Indonesia should the negotiations with SACU face hurdles (Sri, 2019). In their bilateral discussions, both nations have committed to expanding trade and investment, particularly in sectors such as infrastructure, manufacturing, and agriculture. These proactive efforts by Indonesia in securing advantageous trade terms could afford it a competitive edge over Malaysia in capturing market share within Africa.

In the context of AfCFTA, the agreement provides exclusivity to its member states, thus making it more attractive to trade among its contracting members than countries outside of the agreement. Nonetheless, it does not necessarily mean that it cannot benefit non-member states or the MPO industry. It is worth noting that there are rising demands for palm oil in Africa that the region cannot fulfil. In 2021, the Sub-Saharan African domestic consumption was 3.58 million tonnes and its domestic production which are mainly from Nigeria, Ghana, and Cote D'Ivoire only produced 2.13 million tonnes (Oil World Annual, 2023). This indicates that Africa is a net importer of palm oil whereby it is unable to meet the demand of its

domestic consumption, thus relying on imports to fulfil such demand well into the foreseeable future.

As the world's two largest palm oil producers, the situation in Sub-Saharan Africa creates an attractive opportunity for Malaysia and Indonesia. It may take some time before the region can domestically produce goods by itself and not rely on others to fulfil its domestic consumption. In fact, with the limited infrastructure in place, there is a chance that intra-regional trade may not be able to benefit fully from the AfCFTA. Imports from suppliers of goods and services to develop infrastructure in the region are still required, which means there are still potential gains to be taken.

Opportunities for the MPO Industry in Africa

The shift of MPPs towards the African market can be analysed through three main areas: Market access, tariff regimes, and NTMs. These aspects offer valuable opportunities and insights for the MPO industry to penetrate the Africa market effectively. This analysis draws on a comprehensive review of journal articles, the latest reports, and current news regarding the AfCFTA. The recommendations provided are based on the results gathered from this study, highlighting potential strategic advantages and areas for further exploration. The findings suggest that while AfCFTA's impact may be gradual, strategic partnerships and adherence to trade regulations can provide significant benefits to Malaysian exporters.

Market Access

Implementing AfCFTA could further increase MPPs consumption in Africa as loosened trade barriers allow palm oil import to landlocked countries and reduce trade costs. Although only member states may have preferential tariff rates, the MPO industry can indirectly benefit from this because, as discussed earlier, Africa's palm oil consumption still requires import to fulfil its local demand. Palm oil is the preferred type of oils and fats among consumers as it is the cheapest compared to soybean oil and sunflower oil. It will continue

to be the preferred type of oils and fats for as long as its price is more competitive than others. MPPs have shown increasing exports to Africa with the exception from the year 2020 to 2021 which is the result of a global pandemic, severely affecting and halting many trade movements.

Based on the projections in *Figure 5*, the projected exports of MPPs to the African region did not show any significant changes in the next five years and may continue to gain a gradual increment, whilst noting that unanticipated changes that might take place in the forecasted future may affect the projections. By 2028, the MPPs, particularly palm oil, export to Africa is expected to increase but may have very little to do with the AfCFTA.

As the AfCFTA only came into effect in January 2021, not all member states have commenced trading under its provisions, as previously noted under the GTI of AfCFTA. Consequently, the export projections for MPPs may demonstrate modifications as additional member states begin to leverage the benefits of AfCFTA. A declining trend in the export of palm-based oleochemical products is observed due to reduced utilisation following the COVID-19 pandemic. Furthermore, the consumption of high value-added palm-based products, particularly palm-based oleochemicals, in Africa remains low, as illustrated in *Figure 4*. This trend can be attributed to the rising cost of living and price sensitivity among consumers. A significant portion of the African population lives below the poverty line, with limited income levels (Okwatch, 2023). In 2023, the average household disposable income in Africa was USD4221, substantially lower than the global average of USD27 653. Consequently, African consumers primarily allocate their spending to essential food items, limiting the market for non-essential, high-value-added products (Euromonitor International, 2023). It is also important to acknowledge that Indonesia may outpace Malaysia as a source of palm-based oleochemicals, as evidenced by trends in palm oil and palm kernel oil exports, which may explain the observed decrease in Malaysia's export volumes to Africa.

The Malaysian oil palm industry can take advantage of the local supply deficit to Africa's palm oil consumption by having a presence locally. A strategic partnership with local oils and fats companies, especially in African countries that produce palm oil, may allow MPO to enjoy the benefits of AfCFTA.

Tariff Opportunities

To acquire the preferential tariff under AfCFTA, Malaysian exporters must follow the AfCFTA Rules of Origin (RoO) from the Protocol on Trade in Goods, Annex 2 on RoO and its Appendix IV

(AfCFTA Secretariat, 2022). RoO will determine and specify the condition required from a product to be considered as originating in the free trade area. Most MPPs imported from Malaysia are refined palm products (RBD palm olein and crude palm olein). However, according to the AfCFTA Annex 2 on RoO on minimal processes, simple packaging operations such as placing bottles or polybags are considered finished goods and would not enjoy the preferential tariff and therefore, it would not have a direct impact on the trade (*Table 3*).

Referring to AfCFTA Annex 2 on RoO, the origin criteria are categorised as follows: Working or Processing not Conferring Origin, Malaysia could take advantage of exporting crude palm olein, whereby it is treated as semi-finished products and will undergo further processes before turning into high value-added palm-based products in the member country. Change of Tariff Heading (CTH) and Change of Tariff Sub-Heading (CTSH) shall apply in this case. On the other hand, as it is not mentioned in the AfCFTA Annex 2 on RoO, Refining Rules might also apply for Crude Palm Olein to enjoy preferential tariffs in the member country with further chemical refining.

Non-Tariff Measures Opportunities

NTMs refer to policy measures other than tariffs that can affect the price and quantity of internationally traded goods (Disdier *et al.*, 2019). These measures include quotas, embargoes, sanctions, and bureaucratic regulations. While NTMs are often perceived as obstacles, they can also present opportunities for businesses looking to expand into new markets. In the context of the AfCFTA, these opportunities are particularly relevant for the MPO industry. The AfCFTA not only offers new market access but also enhances the potential for MPO exports through improved infrastructure and regional integration in Africa.

Collaborating with a local business in a strategic partnership is one way to navigate the local regulations, converting the barrier into a potential competitive advantage. There is also a potential advantage within a NTMs whereby as outlined by the Division for Africa (2018) in Article 9: Goods Produced under Special Economic Arrangements/Zones (SEZs). SEZs would typically offer relaxed regulations and incentives to businesses, thus making the area appealing to set up foreign operations. There is potential for the MPO industry to either collaborate with strategic partners in Africa or establish operational entities that would favourably position MPPs within SEZs. Specifically, Article 9, Sub-regulation 1 outlines how such entities could be formed, facilitating enhanced market access and possibly incentivising

investment in the palm oil sector within these economically strategic zones. Under this Article 9 Sub-regulation 1 has stated that:

“Goods produced in SEZs shall be treated as originating Goods provided that they satisfy the rules in this Annex and in accordance with the provisions of Article 23.2 of the Protocol on Trade in Goods”.

This provision offers a strategic advantage for Malaysian oil palm stakeholders to establish processing hubs within SEZs. Such hubs could facilitate better market access of MPPs to neighbouring countries through re-exporting, while also encouraging investment and capacity building within the refining sector. By aligning operations with the AfCFTA rules of origin, these hubs can produce high-value palm-based products that are competitively priced due to favourable tariff structures under the agreement. This alignment not only enhances the competitive stance of MPO in the African market but also potentially boosts income generation from these value-added exports. By understanding and strategically navigating NTMs, businesses can not only mitigate potential trade obstacles, but it could also unlock new growth opportunities in international markets.

CONCLUSION

AfCFTA is the largest free trade agreement in the world in terms of land area, but the African region still has a long way to go before member states can reap benefits from the full extent of the AfCFTA. Free trade among the African countries may take some time to increase palm oil consumption and as the region has been relying on imports of palm oil to fulfil its local demands. It may take quite some time for these countries to meet their local demands for palm oil, but at least the AfCFTA can serve as a stepping stone.

The result of the study concludes that there is no significant difference in MPPs trade performance before and after the implementation of the AfCFTA. The ratification of AfCFTA in 2021 may explain its limited immediate impact on the MPO industry especially during the pandemic period. Alternatively, Indonesia benefits from the FTAs signed with the African countries, which provide preferential tariffs and strengthens its market position in Africa and further challenge Malaysian exports to the region. Given these aspects, it is important for Malaysia to establish or strengthen cooperative ties within the African region to enhance the competitiveness of its palm oil industry and to foster growth in palm oil trade with Africa.

In relation to strengthening trade relations, strategic partnerships between members of the MPO industry and manufacturers within African trade blocs could provide mutual benefits for all parties involved. It would be a strategic move for Malaysia to establish a regional hub in Africa for its palm oil exports, which could also serve as a central point for re-exporting MPPs to other African countries, particularly countries that are landlocked.

This study acknowledges limitations, particularly in assessing the governance of the AfCFTA across different African countries. Therefore, future research should focus on analysing the level of trade governance under AfCFTA to comprehensively evaluate its impact on MPPs trade with the region. This would provide deeper insights into how trade policies and practices influence the participation of stakeholders, trade flows and market access in this emerging economic landscape.

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