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The Impact of Government Intervention on Comparative Advantage of Coconut Farming: A Systematic Review

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ABSTRACT

Opportunities in the coconut industry are promising. However, several issues remain unresolved, including ageing coconut plants, shrinking land area, inaccessible technology for farmers, a lack of financing, uneven market absorption, and a dearth of diverse coconut products. This study aims to look at the impacts of government intervention on the comparative advantage of coconut farming in Malaysia. Scopus, the Web of Science, and Emerald were the three electronic databases that were searched for publications between 2010 and 2023 (i.e., a cumulative index to give an overview of the impacts of government intervention on the comparative advantage of coconut farming in Malaysia). Titles and abstracts were checked separately from the entire content. Furthermore, this review highlights that out of the twenty articles examined, no single article was authored in Malaysia. This suggests that there needs to be more research conducted in Malaysia on this subject. The analysed research demonstrates that government interventions can have both positive and negative effects on the comparative advantage of coconut farming. Supportive policies such as subsidies, research funding, and infrastructure development aimed at enhancing productivity and competitiveness can bolster Malaysia's position in the global coconut market.

1. INTRODUCTION

Coconuts are a one-of-a-kind plantation product, Leterulu et al. [1] found that the economic value of the coconut plant may be derived from nearly every component of the plant. Today, coconut is a fundamental commodity in tropical areas worldwide. It trades and increases the value of coconut food-derived products every year, although non-food derivates with or without processing also provide an income [2]. Bireuen Regency has a lot of untapped potential for coconut farming, and a lot of untapped potential for using coconuts. Opportunities in the coconut industry are promising. However, several issues remain unresolved, including ageing coconut plants, shrinking land area, inaccessible technology for farmers, a lack of financing, uneven market absorption, and a dearth of diverse coconut products [3]. Coconuts are grown in coastal areas and on islands in over 93 nations throughout the world's tropics and subtropics. Their yearly production amounts to approximately 96.15 billion nuts from an area of 11.58 million hectares, with an average yield of 8307 nuts per hectare [4]. Altogether, Sri Lanka, Indonesia, India, and the Philippines accounted for 79 percent of global coconut production and owned 83 percent of the world's coconut fields.

There are two distinct varieties of coconut (Cocos nucifera L.)-the tall and dwarf varieties, respectively [5]. The bowl, annual stem height increment (YSI), nut size, and yield are just a few of the distinguishing features that separate the two varieties of coconuts [6]. The YSI trait is a crucial measure for distinguishing between the two varieties of coconut [7]. Hybrid coconut varieties have good nut yields and high-quality endosperm for processing, just like their tall and dwarf parents [8]. In addition, the YSI characteristic of these hybrid coconuts falls somewhere in the middle of that of their parents. In terms of global production, Malaysia ranks 11th, and coconut is the fourth-largest industrial crop there, after oil palm, paddy, and rubber [9]. Malaysia produces a total of 63% of its coconuts for domestic use, with the remaining 37% going primarily to exports and industrial processing. More than 90% of coconut farms are smallholders, with typical holdings of less than one hectare. The greatest concentration of smallholdings that grow coconuts is found in Peninsular Malaysia, with Sabah and Sarawak following closely behind, with between 90,000 and 100,000 families residing there [10].

Due to a shortage of raw materials, Malaysia must continuously increase its imports of raw materials and decrease its exports of coconut products to meet the demand for coconut production [11]. It was discovered that another issue facing the coconut industry is the underdevelopment of infrastructure connecting rural and urban areas. According to Tracey-White [12], insufficient transportation, infrastructure,

and logistics are common challenges for rural areas' mobility. Both the marketing channel and long-term output productivity have been impacted by the lack of transportation. The distance and time of the trip will have an impact on the cost of transportation and the effectiveness of the marketing channel. Therefore, this study aims to look at the impacts of government intervention on comparative advantage of coconut farming.

To the best of our knowledge, this study is the first to conduct a systematic literature review and the first to examine how government intervention affects Malaysia's comparative advantage in coconut cultivation. This research is paramount to identify those areas in which the government could intervene to solve the difficulties facing the comparative advantage of coconut in Malaysia.

2. PREVIOUS STUDIES

2.1 Comparative advantage of coconut

As stated by Danna-Buitrago and Stellian [13], a key element within economic theory is represented by the notion of comparative advantage. Based on the Ricardian theory, variations in relative productivity give rise to trading trends, which can then serve to uncover hidden disparities in relative productivity [14]. Nonetheless, several research works have underscored the shortcomings of the Ricardian theory, such as its failure to address income distribution and the evolution of trade terms over time [15-17]. Their approach postulated that even when sharing access to and preference for the same technologies, distinct countries possess varying levels of productive resources [18]. According to the Heckscher-Ohlin theorem, countries will specialise in manufacturing commodities that employ their relatively abundant factors more intensively. Furthermore, it contends that disparities in the comparative advantage of a commodity stem from discrepancies in the quantities and proportions of its constituent elements [19]. The Ricardian theory advocates for specialization in activities where a country has a comparative advantage. In the case of coconut farming, the comparative advantage might lie in factors such as climate, soil conditions, or expertise. Governmental actions that support and enhance coconut farming align with the principle of specialization, allowing Malaysia to capitalize on its strengths in coconut production.

The Balassa RCA index is favored by many due to its straightforward computation. This index relies on an industry's economic efficiency and serves the purpose of pinpointing a country's robust and weak export sectors, while also evaluating its trade strategies [20, 21]. The RCA indices offer diverse ways to assess trade performance. For example, the computed values can be employed for comparing different industries, whether on a countrywide or regional scale [21, 22]. Another use involves contrasting the calculated value with a neutral reference point. Some studies have employed the RCA indexes to appraise the relative strengths in agricultural trade, both nationally and regionally. This is crucial due to the prominent role of agricultural trade within the overall economy, with its substantial impact on domestic agricultural production, employment, and global food security. For instance, research revealed that Serbia exhibited a comparative advantage in agricultural trade when compared to European counterparts, yet this advantage was not present in relation to Asian nations. The Ricardian theory underscores the importance of international trade based on comparative advantage. By supporting coconut farming through favorable policies, Malaysia can strengthen its position in the global coconut market and engage in mutually beneficial trade relationships with other countries. This aligns with the theory's emphasis on maximizing gains from trade by specializing in the production of goods and services in which a country has a relative advantage.

As stated by Ismail and Yusop [23], an assessment of comparative advantage investigates the potential for resources utilized in a specific economic sector to yield greater profitability in an alternative sector. For instance, the rise in import expenses and the depreciation of the Malaysian ringgit might induce a change in comparative advantage, favoring production techniques that make use of domestic resources.

2.2 Government intervention

To find out if Ghana has a comparative advantage in maize production given the impact of current international pricing and national regulations, Scheiterle and Birner [24] carried out an empirical analysis. They use the Policy Analysis Matrix (PAM) to assess how the government's FSP affects the system of maize production to achieve this goal. This assessment examines the way a policy influences private and public revenues, expenditures, and profits within a budget-oriented approach. As highlighted in Okubo's [25] study, higher transportation costs tend to foster concentration in a specific location, while lower transportation costs encourage broader regional diversification.

As indicated in the research conducted by Mohanty and Peterson [26], to maintain its self-sufficiency in wheat, India might have to enhance its wheat output at a notably accelerated pace compared to rice production. This could be accomplished with limited or no government intervention, given that wheat holds a comparative advantage over rice in the primary cultivation areas, as suggested by the PAM assessment. However, the significant advantage of an expansive agricultural enterprise and the goat sub-sector can be chiefly attributed to their ability to operate with higher cost efficiency. Nevertheless, the influence of government policies, particularly those involving non-tariff measures related to poultry and livestock production, has revealed a slight impact on domestic output, as observed in the research by Mohamed et al. [27]. The concept of comparative advantage, frequently linked to alterations in a nation's resource endowments, is broadly employed to elucidate trends in global trade. Government policies can influence trade dynamics within agricultural sectors. While variations in trade patterns for commodities like grains, cotton, oilseeds, and, to a lesser extent, meat products, along with an aggregate measure encompassing all agricultural goods, are largely accounted for by a country's resource endowments, elements denoting governmental intervention do not play a substantial role in elucidating trade patterns, according to Peterson and Valluru [28].

Up until recently, the Malaysian government has placed an increasing emphasis on raising agricultural productivity and developing new technologies [29]. There has been a downward tendency in coconut production, despite widespread encouragement to increase production [9]. To attract the younger generation, the government implemented various incentives aimed at strengthening and rejuvenating the

business sector. These incentives include the National Agricultural Skills Training Programme (PLKPK), the Young Agropreneur Programme, the National Young Agropreneur Council (MAM), and micro-lending facilities [30]. Furthermore, the Malaysian government aims to reduce its dependency on coconut imports through the augmentation of domestic coconut production. Several strategies and projects were developed based on the National Agricultural Policy and the Malaysian Development Plan as guiding principles [30].

2.3 Relationship between government intervention and comparative advantage

Numerical evaluations and analysis studies have shown that both direct and indirect government interventions outperform taking no action in terms of consumer surplus, market results, environmental performance, and social welfare [31]. Furthermore, the impacts of government interventions on performance improvements are the same whether they are direct or indirect. This finding supports the idea that government intervention can be strategically employed to boost profitable sectors like agriculture. Comparatively, Ajefu and Barde [32] underscore the limitations of relying solely on market forces without government intervention.

Wang et al. [33] suggest that positive effects resulting from certain government policies do not exhibit incremental growth over time. This lack of sustained growth could be attributed to weak policy implementation in trade matters, coupled with the overall contraction of global trade. It indicates that favorable policies alone might not lead to consistent positive outcomes in the absence of comprehensive and effective implementation strategies. The results of the policy analysis matrix indicate that local selling prices for dates are lower than their global prices, motivating farmers to export dates [34]. This underscores the role of price differentials in influencing export decisions in agricultural markets. However, Gaubert et al. [35] suggest that while subsidizing "national champions" in closed economies can lead to excessive market power, it might have beneficial effects in open economies. This finding underscores the need to consider the broader economic context when formulating industrial policies. Hassan et al. [36] suggest that the company's performance improved after deregulation. This indicates that the deregulation of the energy sector in Nigeria had a positive effect on the performance of Oando Group. Deregulation likely allowed for increased market competition and operational flexibility, contributing to the improved performance of the company.

Farmers in Danish agriculture are having difficulty refinancing and keeping a profit because of the recent financial crisis. In Latvia, agriculture crediting has just recently gained major governmental support [37]. In the UK, banks and farmers have long-standing links, but these ties are deteriorating because of reduced returns from producer investments in agriculture. The study of Wentzel and Steyn [38] focused on the potential benefits of government intervention to attract foreign direct investment (FDI) in the manufacturing industry in South Africa. It suggests that introducing or modifying incentives can enhance the country's competitive advantage, making it more appealing to foreign investors. Government intervention in this context is seen to stimulate economic growth and development by leveraging external investments. According to Shi et al. [39], subsidies can lower the barriers for entrepreneurs to start their businesses, leading to an increase in the number of startups. However, these subsidies might not necessarily boost the overall worth of entrepreneurship, particularly in terms of investment and the growth of high-tech entrepreneurial wealth. This highlights that while subsidies can boost the quantity of startups, they might not always translate into improved entrepreneurial outcomes. On the other hand, Aliyeva et al. [40] concluded that a nation may not need to prioritise agriculture or expand government intervention if it does not have a competitive advantage in this area. Liberalisation of international commerce may be a better strategy for guaranteeing food security. This suggests that the policy focus should be determined by a country's comparative advantage and economic realities.

To ascertain whether Ghana has a comparative advantage in maize production given the impact of current global pricing and domestic regulations, Scheiterle and Birner [24] carried out an empirical analysis. They use the Policy Analysis Matrix (PAM) to assess the effects of the government's FSP on the system of maize production to accomplish this goal. This analysis scrutinizes the way a policy influences private and public earnings, costs, and profits within a framework grounded in budget considerations. Based on the findings of Okubo [25], increased transportation expenses encourage centralization to a specific area, while reduced transportation costs encourage spreading activities across regions. Uneven diversification leads to a steady balance wherein, for moderate transit costs, the less populous location experiences higher wages and a reduced external influence, and conversely for the more populous location.

As per the research conducted by Mohanty and Peterson [26], for India to maintain its self-sufficiency in wheat, it might be necessary for wheat production to experience a notably more rapid growth rate compared to rice production. Given that wheat holds a comparative advantage over rice in the primary cultivation areas, as indicated by the PAM ranking, achieving this could potentially require minimal or no government intervention. The primary reason for the substantial advantage of a very large farm and the goat sub-comparative sector lies in their ability to function with enhanced cost-efficiency. Nonetheless, governmental policies, specifically those of a non-tariff nature about to livestock and poultry production overall, have demonstrated minimal impact on domestic output, as outlined in the study by Mohamed et al. [27].

3 MATERIALS AND METHODS

3.1 Search strategy

With the guidance of an experienced librarian, we developed a search strategy. In the early phases of the search, we generated and improved search terms by going through multiple iterations until we arrived at the final terms. The term “Government subsidy” AND “Comparative advantage” “Government intervention” AND “Comparative advantage” “Agricultural policy” AND “Comparative advantage” “Price support program” AND “Comparative advantage” were employed to locate abstracts and titles. The Web of Science and Emerald databases were searched using the original Scopus search technique. We looked for original, peer-reviewed research publications published between 2010 and 2023 in reputable and well-known electronic databases including Scopus, Web of Science, and Emerald.

3.2 Review planning

A thorough investigation, evaluation, and analysis of pertinent literature for a specific research question, problem, or phenomenon can be accomplished with the use of a systematic review [41]. Dabic et al. [42] and Paul et al. [43] define it as a technique that streamlines the processes for locating, organising, and evaluating literature within a certain review topic. It was decided that using a systematic review would be appropriate for this inquiry, given the study's goal of emphasising noteworthy discoveries in recent research and providing recommendations for additional exploration [44-46]. When using this method, researchers are urged to follow the protocols and guidelines related to systematic reviews [41].

The quick implementation of Tranfield et al.'s [47] recommended technique for the identification, selection, and assessment of pertinent material is critical to the success of the systematic review. According to Boell and Cecez-Kecmanovic [48], the systematic method requires adherence to standards including repeatability, transparency, objectivity, impartiality, and rigor. While Paul and Criado [49] divided systematic reviews into several sub-forms, such as domain-based reviews (framework-based, conceptual, hybrid, structured theme-based, and bibliometric reviews), other academics categorised them as domain, theory, and method-based reviews by Palmatier et al. [50]. The adoption of systematic reviews, which are becoming more and more crucial for all firms, is being led by the IT and healthcare sectors [51].

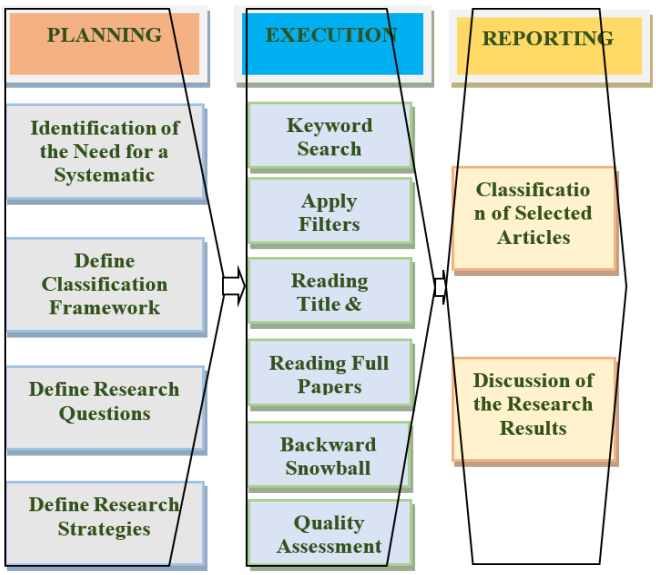

Figure 1. Systematic review stages
Source: Researcher

Using methods and suggestions from Kitchenham and Charters [41] and Ali et al. [52-54] this work uses a systematic review methodology. The study employs the three-step methodology proposed by Watson [55], as well as the procedures described by Kitchenham and Charters [41] and Ali et al. [52-54], integrating shared standards and guidelines at different phases of the systematic review. During the planning stage, this entails creating a classification framework, specifying research techniques, identifying study subjects, and figuring out whether a systematic review is required. In the execution phase, various strategies were employed, including the application of filters, keyword searches, backward snowballing, thorough reading from cover to cover, quality assessment, and reviewing titles and abstracts. The reporting aspect involved categorizing selected papers into groups and thoroughly examining the outcomes. Figure 1 outlines the protocols, standards, and rules adhered to in conducting this systematic review.

3.3 Planning stage

Acknowledging the systematic review's requirements is the first step in the first planning phase. When it becomes important to gather all the available data on a specific phenomenon in a thorough and unbiased manner, such a review is called for. Regretfully, there is a dearth of pertinent studies in this context due to the lack of studies done thus far on the impact of government inter on the comparative advantage of coconut farming.

The development of the research review technique is the second stage of the organizing procedure. The framework for comprehending the prevalent theoretical and practical perspectives on the subject is provided by this protocol. The study's review procedure outlines how to conduct a specific systematic review. To lessen the chance of researcher bias, predetermined protocols need to be set.

3.4 Defining the research questions

The formulation of research questions is considered a crucial phase in the planning process, occurring at the third level, for all systematic reviews [43]. When the systematic review can answer these research questions, its goals have been fulfilled [45]. The present systematic review study poses the research questions below:

i. How does government intervention affect the overall comparative advantage of coconut farming?
ii. What specific types of government interventions have been implemented in the coconut farming sector, and how do they influence comparative advantage?

The study's subsequent phases were determined by the responses to these questions. An inclusion and exclusion set of criteria was established to guarantee the uniformity of these procedures. As a result, the following criteria were used to choose the papers.

3.5 Defining the strategies for article selection

The fourth phase in the preparation phase of article selection is to determine the selection method. These selection procedures aim to locate primary papers that offer strong evidence in favour of the research question. While refinement of article selection methods may occur throughout the search process, it is advisable to determine them during protocol creation to minimize the potential for bias, as suggested by Dabic et al. [42]. This approach consisted of a thorough automated search strategy that examined multiple online databases in addition to a manual review of a subset of articles. Golder et al. [56] and Rosado-Serrano et al. [57] supported a thorough automated search strategy that made it easier to include the most pertinent online sources. Online databases

like Web of Science, Scopus, and Emerald were specifically chosen for this in-depth analysis.

3.6 Study selection

After extracting citations from three databases, redundant items were eliminated using EndNote and the Systematic Review Assistant-Deduplication tool. The imported citations were then evaluated using the Covidence Systematic Review Software [58], as shown in Table 1. Titles and abstracts were assessed during the screening process to ascertain their applicability considering the inclusion criteria. A detailed analysis of the entire text was done for those found to be pertinent. This evaluation's main goal was to determine how government intervention affected coconut farming's comparative advantage. Any article that discusses how different government interventions impact the comparative advantage of coconut farming might be taken into consideration thanks to this strategy. Research carried out outside of this framework was not included in the analysis. Research using mixed, quantitative, or qualitative approaches must be published in peer-reviewed journals for the studies to be eligible. Both observational and interventional research were included in this. theses, editorials, comments, study protocols, grey literature, opinion pieces, grey literature, conference abstracts, and systematic or narrative literature reviews were among the submission formats that were accepted.

Table 1. Inclusion and exclusion criteria for the documents used in the systematic review

Criterion	Criteria Dimensions
Inclusion	(1) The document is located in the SCOPUS, Web of Science, and Emerald (2) The document contains the terms "Government subsidy" AND "Comparative advantage", which are simultaneously cited in the title, abstract, or the keywords (3) "Government intervention" AND "Comparative advantage", which are simultaneously cited in the title, abstract, or the keywords (4) "Agricultural policy" AND "Comparative advantage", which are simultaneously cited in the title, abstract, or the keywords (5) "Price support program" AND "Comparative advantage", which are simultaneously cited in the title, abstract, or the keywords (6) The document was published between 1 January 2010 and 31 December 2023
Exclusion	(1) The document is not completely written in English (2) The document does not count as a Conference Paper, Article Review, Book, Journal (conference proceeding, book chapter) (3) The document is less than 2010 (4) The document that had nothing to do with government intervention or coconut farming (5) The document that does not fulfil the relevance criterion, which include availability, methodological limitations, relevance of findings, and coherence

Source: Researcher

The papers that were located were chosen based on a series of criteria to ensure uniformity in the research. The collected papers were either included or excluded based on the criteria listed in Table 1. The triage considered variables like the date, the subject of study, and the English language usage. By eliminating articles that had nothing to do with government intervention or coconut farming, we were able to define the boundaries of the chosen research areas based on factors such as proximity to different forms of government intervention on the comparative advantage of coconut cultivation. Furthermore, the paper's relevancy was considered. As a result, our analysis approach paid close attention to comprehending the practical goals and the contextual significance of these investigations.

3.7 Data extraction

After searches were conducted in databases such as Web of Science, Scopus, and Emerald, a total of thirty-two papers were discovered. After eight duplicate studies were eliminated, a thorough text review was carried out to thoroughly assess 24 research. The eligibility of each of the 24 articles is assessed. During the full-text review, four articles were eliminated due to off-topic content and issues with language translation. Twenty papers ultimately satisfied the inclusion criteria for our review, which examined the effects of government intervention on the comparative advantage of coconut cultivation, as seen in Figure 2 below.

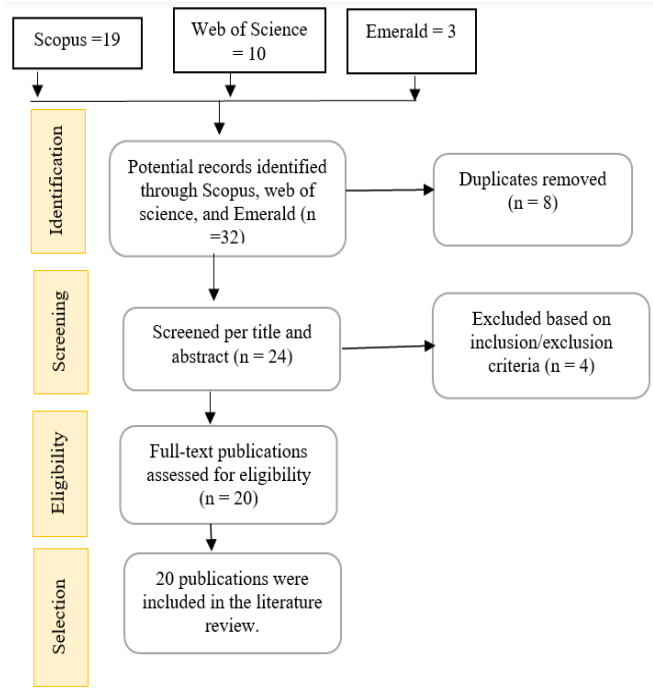

Figure 2. Sampling & screening for literature review
Source: Researcher

4. RESULTS

Feng et al. [59] in Appendix Table 1 in demonstrate that, irrespective of the type of subsidy, government support can strengthen the flexible contract's comparative advantages. However, the same outcomes are shown by the comparativeness measures, Social Benefit Cost Ratio (SBC) (1.11) and Domestic Resource Cost (DRC) (0.83). The Nominal Protection Coefficient Ratio (NPC) (1.01) and Effective Protection Coefficient (EPC) (1.05), which have values greater than unity, suggest that export promotion of rice

production is supported. This demonstrates how the current policies to comply with competitiveness [60]. This finding supports the idea that government intervention can be strategically employed to boost profitable sectors like agriculture. The potential advantages of government action to draw foreign direct investment (FDI) in South Africa's manufacturing sector were the main subject of Wentzel and Steyn's study [38]. It suggests that introducing or modifying incentives can enhance the country's competitive advantage, making it more appealing to foreign investors. Government intervention in this context is seen to stimulate economic growth and development by leveraging external investments.

Agricultural production systems with yields above a certain threshold contribute positively to economic growth and household profits [24]. Production systems that record negative social profits and depend on government intervention are those whose yields fall below this threshold. This highlights the significance of productivity benchmarks and the part played by government action in bolstering less successful systems. The results of the policy analysis matrix indicate that local selling prices for dates are lower than their global prices, motivating farmers to export dates [34]. This underscores the role of price differentials in influencing export decisions in agricultural markets. Furthermore, according to Ma and Li [61]: (1) There is a cutoff point for the HWC manufacturer's subsidy coefficient when deciding between outsourcing and self-saving. (2) In cases where WSSC and the manufacturer have a comparable technological advantage, government subsidies encourage HWC firms to choose outsourcing as a cost-saving measure. (3) In the event of a water-saving mode, government subsidies for investment costs are a more efficient way to get improved environmental performance.

Even with the stringent laws in Guatemala, US, Mexico, China, Thailand, and India, the comparative advantage is strong up to seven or nine sugar categories, according to the findings of Sheetal et al. [62]. Furthermore, even with Canada, Brazil, and Colombia's indulgent restrictions, the comparative benefit only holds for two or three sugar categories. Similarly, Pérez-Méndez et al. [63] findings indicate that the subsidies received had a favourable impact on both conceptions. Based on the calculations, we can determine that the Principality of Asturias' implementation of Measure 123 has made investment projects possible that, during the last analysis period, would have yielded returns of 8% and 32% for forestry and agrifood companies, respectively. Consequently, it may be said that this measure's implementation was successful. Additionally, the actual protection coefficient was 1.56 and the nominal protection coefficient was almost 1.48.

The value of the first element indicates that the government backs the domestic producer indicated earlier, and the value of the second indicates that the domestic producer stands to gain more from government action than from its non-intervention [64]. Likewise, Balogh and Jámbor [65] conclude that the 2008 wine CMO reform reduced European winemakers' ability to compete globally. The EU appears to have overlooked addressing emerging global issues such as climate change, shifting agricultural and food prices, the rise of New World wine exporters, and shifting wine preferences among consumers by focusing solely on vineyard reorganization and planting rights.

To maintain Australia's competitive edge in agricultural exports, authorities will need to keep striking a balance between measures that boost the industry's financial success and those that represent public expectations of support for the farming community [66]. Additionally, it was discovered that Chinese businesses benefited from government interference by getting assistance for the advancement of their human resources. Excellent access to a wide range of inputs, including technology, building materials, and machinery, benefits China as well. India, conversely, gains from the heightened competition due to its more "hands-off" approach to government policies that focus on fostering a business-friendly environment. These policies include favourable taxation, laws and regulations, code/standard systems, and market entrance policies [67]. Correspondingly, the operational and survival of agricultural firms, such as family farms in Slovenia and agricultural enterprises in Ukraine, have been primarily impacted by the availability of state support, as confirmed by their historical experience and practices [68].

On the contrary, Ito et al. [69] claim that the disruption was not successfully remedied despite later government involvement in the rice futures markets. This points to the complexities of managing disruptions caused by external factors and the challenges governments might face in stabilizing commodity markets.

According to Shi et al. [39] the government of China provides enough subsidies before an entrepreneur enters the market to support the start-up. The initial firm size is still less than that of the US, though. Should the subsidy be awarded after the entrepreneurship, the impact will be so minimal as to increase by a mere 0.5. It is implied that the caliber of entrepreneurship won't be altered by a one-time payment. Additionally, Aliyeva et al. [40] conclude that if a country lacks a competitive advantage in the agricultural sector, Government intervention in this field may not need to increase or be given priority. Liberalisation of international commerce may be a better strategy for guaranteeing food security.

This suggests that the policy focus should be determined by a country's comparative advantage and economic realities. Similarly, Agricultural crediting is very new in Latvia and is substantially subsidised by the government; in Denmark, farmers are having difficulty refinancing and making a profit after the agricultural sector went through a financial crisis [37]. A spike in price volatility would also considerably increase revenue risk in addition to eliminating direct payments, which would reduce dairy production's competitive advantage for risk-averse decision-makers [70]. Similarly, in 2007, the policy intervention resulted in a negative revenue divergence by driving down the domestic price of wheat relative to the international price. Wheat was still in short supply on the global market in 2008, which led to price increases [71]. However, Padilla-Bernal et al. [72] explained the fact that the difference between the price of tomatoes at the market and their economic worth surpasses the discrepancy resulting from the exchange rate policy that overvalues tradable inputs, along with the interest rate subsidies and electricity costs associated with pumping irrigation water.

5. DISCUSSION

The findings presented in Appendix Table 1 underline the strategic role of government intervention by enhancing competitiveness in promoting exports, attracting foreign investment, and influencing firms' decision-making processes in various sectors. These findings are consistent across studies by Feng et al. [59], Ud Din and Khan [60], Wentzel and Steyn [38], and Ma and Li [61]. The results of Sheetal et al.'s [62],

Pérez-Méndez et al.'s [63], and Lateef et al.'s [64] investigations further highlight the important role that government involvement plays in determining comparative advantage, assisting domestic producers, and influencing economic outcomes across a range of industries. Subsidies, rules, and investment initiatives are examples of how government policies can positively impact profitability and competitiveness, which benefits both home businesses and the economy. Correspondingly, Botterill [66], Chen et al. [67], and Bojnec et al. [68] draw attention to the various effects that government intervention has on companies and agricultural enterprises in various nations. To ensure the sustainability of different sectors and promote economic development, governments must implement effective policies that balance industry growth, public expectations, and competitiveness promotion.

Ito et al. [69], Shi et al. [39], and Aliyeva et al. [40] contend that despite later government action, the disrupted comparative advantage was not adequately corrected, which runs counter to the results mentioned above. This suggests that government investment in the agriculture sector may not need to rise or be prioritised if a nation lacks a competitive advantage in this area.

Additionally, the research conducted by Grivins et al. [37], El Benni and Finger [70], Zheng et al. [71], and Padilla-Bernal et al. [72] emphasises how some government interventions negatively impact the agricultural sectors' comparative advantage by causing lower profitability, higher revenue risk, and distorted market dynamics. Such interventions have the potential to undermine agricultural firms' comparative advantage by impeding their ability to compete successfully in both domestic and international markets.

The results of studies by Scheiterle and Birner [24], Mohammad and Ibrahim [34], and Balogh and Jámbor [65] highlight how important government involvement is in determining export choices, agricultural productivity, and overall competitiveness. While ignoring new issues could make it more difficult for the agricultural sector to adapt and prosper in a fast-paced global market, effective government policies and reforms are crucial for promoting growth, profitability, and sustainability in agricultural systems.

These findings underscore the strategic role of government intervention in shaping economic outcomes and promoting competitiveness across various sectors, in line with the principles of the Ricardian theory of comparative advantage. Effective government policies that facilitate specialization, export promotion, and investment attraction are essential for maximizing economic welfare and promoting sustainable development. While the Ricardian theory advocates for government policies that promote comparative advantage and specialization, the findings suggest that not all government interventions align with these principles. In some cases, government actions may fail to correct disrupted comparative advantage or may even exacerbate challenges within the agricultural sector, highlighting the complexities of policy implementation and the need for careful consideration of the effects of intervention on economic outcomes.

6. CONCLUSIONS AND RECOMMENDATIONS

The examination of the impacts of government intervention on the comparative advantage of coconut farming in Malaysia reveals a complex interplay between policy measures and economic dynamics. Through a systematic review of relevant studies, it becomes evident the important role that government intervention plays in determining comparative advantage, assisting domestic producers, and influencing economic outcomes across a range of industries. Subsidies, rules, and investment initiatives are examples of how government policies can positively impact profitability and competitiveness, which benefits both home businesses and the economy. However, the concept of comparative advantage, which underlines the efficiency gained from specializing in activities, is significantly influenced by governmental actions in the context of coconut farming. The research that has been reviewed shows that government interventions can affect coconut farming's comparative advantage in both positive and negative ways. Supportive policies such as subsidies, research funding, and infrastructure development aimed at enhancing productivity and competitiveness can bolster Malaysia's position in the global coconut market.

This study also reveals how some government interventions negatively impact the agricultural sectors' comparative advantage by causing lower profitability, higher revenue risk, and distorted market dynamics. Such interventions have the potential to undermine agricultural firms' comparative advantage by impeding their ability to compete successfully in both domestic and international markets.

Furthermore, this review highlights that out of the twenty articles examined, no single article was authored in Malaysia. This suggests that there needs to be more research conducted in Malaysia on this subject. Supportive policies such as subsidies, research funding, and infrastructure development aimed at enhancing productivity and competitiveness can bolster Malaysia's position in the global coconut market.

This study has revealed that government intervention could influence comparative advantage both positively and negatively. Also reveals different kinds of government interventions available to enhance comparative advantage. Therefore, future studies should focus on those factors preventing the government from influencing comparative advantage.

7. IMPLICATIONS OF THE STUDY

The implications of these findings for current and future policy can be significant, especially in the realm of agricultural policy and economic development. Here are some potential implications:

(1). The findings offer insights into effective strategies for maintaining a competitive edge in agricultural exports, aiding policymakers in formulating balanced approaches that support industry success while meeting public expectations.

(2). The studies shed light on how different types of government interventions, such as support for human resources development or fostering a business-friendly environment, can benefit agricultural sectors in various countries.

(3). Agricultural firms can use the findings to understand how state support impacts their operational and survival prospects, allowing them to make informed decisions about resource allocation and strategic planning.

(4). By examining historical experiences and practices in different regions, the studies identify successful approaches to government intervention that can be emulated or adapted to support agricultural development in other contexts.

8. LIMITATION

Our study utilized three databases: Scopus, Web of Science, and Emerald. However, this selection may have limited the number of reviewed articles due to our inability to access other databases. Therefore, future research endeavors should consider exploring additional databases to enhance the comprehensiveness of the literature review and capture a broader range of relevant articles.

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APPENDIX

Appendix Table 1. Showing the number of articles reviewed

S/N	Authors	Title	Aim(s)	Country Setting	Key Findings	Year
1	Mohammad, A.N., Ibrahim, S.J.	Measuring the comparative and competitive advantage of Iraqi dates production using the policy analysis matrix.	This study came to analyze the impact of government intervention in the production of this important crop and to determine the extent of its global competition and whether it has a	Iraq	According to the results, farmers export dates because local dates are sold for less than their international counterparts. Additionally, the negative value of net transfers (L) suggests that the government intervention	2023

			comparative advantage in its production or not.		policy's overall impact will not benefit domestic producers in the near term.	
2	Feng, Z., Song, J., Yang, X., Guo, R.	Contractual flexibility, firm effort, and subsidy design: A comparison of PPP project contracts.	Examined are the impacts of various government subsidies on raising business effort to the top under the two contract types.	China	We demonstrate that, irrespective of the type of subsidy, government support can strengthen the flexible contract's comparative advantages.	2023
3	Ma, W., Li, X.	Impact of government subsidy on the optimal strategies of improving water use efficiency for a high-water-consumption manufacturer.	The authors infer the manufacturer's water-saving approach and the participant's equilibrium decisions in this environment. Furthermore, the impact of subsidies on the earnings of stakeholders and WSE are examined.	China	According to the study, (1) there is a cutoff point for the HWC manufacturer's subsidy coefficient when deciding between outsourcing and self-saving. In cases where WSSC and manufacturer have a comparable technological advantage, government subsidies encourage HWC firms to choose for outsourcing as a cost-saving measure. (3) In the event of a water-saving mode, government subsidies for investment costs are a more efficient way to get improved environmental performance.	2023
4	Grivins, M., Thorsøe, M. H., Maye, D.	Financial subjectivities in the agricultural sector: A comparative analysis of relations between farmers and banks in Latvia, Denmark and the UK.	To show how financial markets are constructed as locally embedded reinterpretations of the financialization of agriculture that guide local agro-financial relation.	Latvia	Agricultural crediting is very new in Latvia and is substantially subsidised by the government; in Denmark, farmers are having difficulty refinancing and making a profit after the agricultural sector went through a financial crisis.	2021
5	Shi, H., Mu, C., Yang, J., Huang, W.	A Sino-US comparative analysis of the hi-tech entrepreneurial model.	Examining the impact of productivity shifts and market portfolio volatility involves studying factors such as internal entry and exit dynamics, investment patterns, consumption trends, enterprise value, and more, using 15 parameters and 21 variables.	China	The government of China provides enough subsidies before an entrepreneur enters the market to support the start-up. The initial firm size is still less than that of the US, though. Should the subsidy be awarded subsequent to the entrepreneurship, the impact will be so minimal as to increase the by a mere 0.5. It is implied that the calibre of entrepreneurship won't be altered by a one-time payment.	2021
6	Kumar R.	Export competitiveness and concentration analysis of major sugar economies with special reference to India.	This study looks at the level of concentration and export competitiveness among the top 15 sugar exporting nations over the course of the last 18 years (2001-2018), with a focus on India.	India	The results confirmed that, despite the stringent regulations in Guatemala, US, Mexico, China, India, and Thailand the comparative advantage is high up to seven or nine sugar categories. Furthermore, even with Canada, Brazil, and Colombia's indulgent restrictions, the comparative benefit only holds true for two or three sugar categories.	2020
7	Aliyeva, L., Huseynova, S.A.,	Food security and optimal government intervention level in	To evaluate the relative effects of governmental involvement in the	Azerbaijan	It is not necessary to give strategic emphasis to the agricultural sector if the nation	2019

	Babayeva, S.J., Huseynova, V.A., Nasirova, O.A., Hasanzade, F.	agriculture (comparative analysis).	agriculture sector on food security.		does not have a competitive advantage in it; instead, increasing trade liberalization is more suited for ensuring food security.	
8	Ud Din, Z., Khan, N.P.	Comparative advantage and policy analysis of rice production in Swat District Khyber Pakhtunkhwa.	Examine the competitive landscape and comparative advantage of rice crop production in the Swat district by analyzing data from the harvesting year of 2013-14.	Pakistan	The same outcomes are shown by the comparativeness measures, Social Benefit Cost Ration (SBC) (1.11) and Domestic Resource Cost (DRC) (0.83). The Nominal Protection Coefficient Ratio (NPC) (1.01) and Effective Protection Coefficient (EPC) (1.05), which have values greater than unity, suggest that export promotion of rice production is supported. This demonstrates how the current policies are in compliance with competitiveness.	2019
9	Pérez-Méndez, J.A., Pérez-Urdiales, M., Roibas, D.	Evaluating the effect of subsidies for rural development on agri-food and forestry firms: Technical progress and efficiency.	This study aims to evaluate the effects of subsidies under Measure 123 of the Rural Development Policy on the production of a sample of forestry and agri-food firms in the Asturian region between 2006 and 2009.	Spain	The findings indicate that the subsidies received had a favourable impact on both conceptions. Based on the calculations, we can determine that the Principality of Asturias' implementation of Measure 123 has made investment projects possible that, during the last analysis period, would have yielded returns of 8% and 32% for forestry and agrifood companies, respectively. Consequently, it may be said that this measure's implementation was successful.	2019
10	Ito, M., Maeda, K., Noda, A	The futures premium and rice market efficiency in prewar Japan.	From the standpoint of market efficiency, this study examines the relationship between spot and futures prices in the two main pre-war rice markets in Japan.	Japan	First, the rice futures were upset by a rise in the quantity of imported rice that was not the same variety as domestic rice. Subsequently, efforts by the government to mitigate the disturbance in the rice futures markets were unsuccessful.	2018
11	Scheiterle, L., Birner, R.	Assessment of Ghana's comparative advantage in maize production and the role of fertilizers.	The competitiveness of Ghanaian maize production is evaluated in this study, along with the importance of socioeconomic and managerial factors in predicting high yields in northern Ghana.	Ghana	The findings imply that whereas production systems below this threshold show negative social profits and rely on government intervention, production systems with Ghana's above-average yields of 1.5 Mt/ha are lucrative at the household level and support the country's economic growth.	
12	Lateef, M. A., Kasar, A.D., Mudhi, A.A.	Policy analysis matrix for the essential cereal crops varieties (Rice Buhooth 1, and Corn Synthetic genotype	This study utilizes the characteristics inferred from the policy analysis matrix technique (PAM), compare the private and social pricing for the two staple cereal crops, rice (Buhooth1) and	Iraq	The protection coefficients that were nominal and effective were roughly 1.48 and 1.56, respectively. The value of the first element indicates that the government backs the domestic	2017

		Baghdad 3) (study case) in Iraq for the year 2012.	synthetic genotype Baghdad3. This will enable us to evaluate how government action affects the economy.		producer indicated earlier, while the value of the second factor indicates that the domestic producer stands to gain more from government action than from its non-intervention.	
13	Balogh, J.M., Jámbor, A.	The global competitiveness of European wine producers.	To analyse the European Union's (EU) wine industry's worldwide comparative advantage and evaluating the longevity and stability of trade indices.	Hungary	We can draw the conclusion that the 2008 wine CMO reform reduced European winemakers' ability to compete globally. The EU appears to have overlooked addressing emerging global issues such as the climate change, rise of New World wine exporters, shifting agricultural and food prices, and shifting wine preferences among consumers by focusing solely on vineyard reorganisation and planting rights.	2017
14	Botterill, L.C.	Agricultural policy in Australia: deregulation, bipartisanship and agrarian sentiment.	To look at how Australian agriculture policy changed over the course of the 20th century, from a complex web of government interference in the sector to the deregulation of the last 40 years.	Australia	To maintain Australia's competitive edge in agricultural exports, authorities will need to keep striking a balance between measures that boost the industry's financial success and those that represent public expectations of support for the farming community.	2016
15	Chen, C., Martek, I., Shah, M.	The advantages of the construction sector of China and India: A comparison.	To find managerial and policy implications that would help both the two rapidly expanding economies as well as other developing nations, this study looked at and evaluated the comparative and competitive advantages of the two rapidly expanding economies in the building industry.	China and India	Government assistance has been demonstrated to benefit Chinese enterprises by providing support for the development of their human resources. Excellent access to a wide range of inputs, including technology, building materials, and machinery, benefits China as well. India, on the other hand, benefits from the increased competition due to its more "hands-off" government policies, which are focused on fostering a business-friendly environment and include favourable tax laws, market entrance policies, code/standard systems, and regulations.	2014
16	Wentzel, M.S.I., Steyn, M.	Investment promotion in the South African manufacturing industry: Incentive comparisons with Malaysia and Singapore.	To investigate potential short-term measures that could be implemented to increase the nation's appeal to international investors.	South Africa	By adding or changing these incentives, South Africa may be able to attract foreign investment and grow its inward FDI in the manufacturing sector by giving it a competitive edge.	2014
17	Bojnec, Š., Kvasha, S., Oliynyk, O.	Agricultural financial systems in Slovenia and Ukraine.	To examine agricultural finance systems, their parallels and divergences, relative benefits, and associated development challenges in the future.	Ukraine	The operational and survival of agricultural firms, such as family farms in Slovenia and agricultural enterprises in Ukraine, have been primarily impacted by the availability of state support, as confirmed by their historical experience and practises.	2014

18	El Benni, N., Finger, R.	Gross revenue risk in Swiss dairy farming.	This study investigated the impacts of agricultural policy adjustments such as market liberalization and deregulation, on the gross revenue risk faced by Swiss dairy producers, utilizing farm-level panel data from 1990 to 2009.	Switzerland	Together with the removal of direct payments, a rise in price volatility would significantly raise revenue risk and lessen the comparative advantage of dairy production for risk-averse decision makers.	2013
19	Zheng, S., Lambert, D., Wang, S., Wang, Z.	Effects of agricultural subsidy policies on comparative advantage and production protection in China.	Using a Policy Analysis Matrix (PAM) model, determine the extent to which subsidies have distorted domestic markets and whether they have aided China's competitive advantages in crop production and increased farm revenue.	China	In 2007, the policy intervention resulted in a negative revenue divergence by driving down the domestic price of wheat relative to the international price. Wheat was still in short supply on the global market in 2008, which led to price increases.	2013
20	Padilla-Bernal, L.E., Lara-Herrera, A., Reyes-Rivas, E., Perez-Veyna, O.	Competitiveness, efficiency and environmental impact of protected agriculture in zacatecas, Mexico?	This study examines how agricultural policy affects the production of protected tomatoes in the Mexican state of Zacatecas. It does this by looking at efficient and competitive technologies as well as alternative sustainable production methods.	Mexico	This is explained by the fact that the difference between the price of tomatoes at the market and their economic worth surpasses the discrepancy resulting from the exchange rate policy that overvalues tradable inputs, along with the interest rate subsidies and electricity costs associated with pumping irrigation water.	2012

Source: Researcher