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Domestic Resource Cost Approach for International Competitiveness of Vietnamese Dailoan-Mango

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Abstract

The purpose of this study is to ascertain the presence of a comparative advantage in terms of social costs in the export routes of DaiLoan-mango. The determination of this is facilitated by the use of the DRC/SER ratio, which stands for domestic resource cost to shadow exchange rate ratio. A comprehensive dataset including 843 observations was collected by the administration of questionnaires to individuals involved in various stages of the agricultural value chain, including farmers, cooperatives, collectors, wholesalers, supermarkets, and retailers. Based on the available data, it can be inferred that the three export routes for DaiLoan-mango have a comparative advantage, as shown by a DRC/SER ratio below one. The DRC/SER ratio exhibits variations within the range of 0.61 to 0.62 to 0.59 over Seasons 1-3 in the major export channel. In seasons 1, 2, and 3, the export channel 2 had values of 0.57, 0.59, and 0.59, respectively. During the first three seasons on export channel 3, the DRC/SER ratio exhibited values of 0.61, 0.64, and 0.45. The third agricultural season is regarded favorably among the three export channels because to its significant comparative advantage. Channels 2 exhibit a higher magnitude of export-related advantages in comparison to Channels 1 and 3. In order to maximize the benefits derived from favorable climatic, soil, and water conditions, it is recommended that policymakers and governmental entities implement incentive schemes aimed at enhancing product quality, eliminating trade barriers (including both tariff and non-tariff barriers), and optimizing the utilization of natural resources. The inclusion of these ingredients is of utmost importance for the continued development and profitability of the DaiLan-mango.

Keywords: *Domestic Resource Cost, Dailoan-Mango, Competitiveness.*

Introduction

Currently, Vietnam has the position of the seventh biggest mango grower in Asia and ranks as the thirteenth largest mango producer globally. According to the 2019 edition of the Food and Agriculture Organization Statistical Yearbook for Asia and the Pacific (FAOSAT, 2019), Vietnam has the third position in Southeast Asia with regards to mango production. Vietnam ranks as the third most significant mango grower in Southeast Asia, behind Indonesia and Thailand. The projected decline in the export value of fruits and vegetables for the years 2019 and 2020 is anticipated to be a direct result of the Covid-19 epidemic, as compared to the levels seen in 2018. Based on a study conducted by Khoi (2021), it is projected that the monetary worth of mango exports originating from Vietnam would undergo a significant increase, surpassing a twofold growth. Specifically, the value is anticipated to rise from $68 million in 2016 to $279 million by the year 2020. According to the Vietnam General Statistics Office, mango cultivation has been seen in all provinces of Vietnam as of 2022. In the year 2019, an area above one hundred thousand acres was designated for the cultivation of mangoes, resulting in a substantial domestic yield of more than 815,200 tons.

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There exists empirical data indicating a correlation between the Mekong Delta (MD) and the widespread cultivation of mangoes in Vietnam. This connection is responsible for a substantial portion of the country's mango production capacity, estimated at 62.2%, as well as a significant proportion of the overall land dedicated to mango cultivation, reaching 46.3%. The research's result was derived by aggregating many estimations. Given the fact that mango cultivation is mostly carried out by small-scale farmers, often on land parcels ranging from 0.5 to 1.0 hectares in size, mangoes have significant economic potential for persons with little financial resources. There are several elements that provide challenges for smallholder farmers in adopting new technologies and establishing robust market links, hence contributing to the proliferation of a complex network of relationships between farmers and customers. The agricultural business has a significant problem in translating market indicators related to demand, diversity, quality, and food safety into tangible enhancements (Peter, 2020; William, 2014). Pilar et al. (2021) have identified some issues encountered along the fresh produce value chain in Vietnam. This particular context presents many challenges, including inadequate cold storage infrastructure, limited availability of client data, insufficient transfer of market information, breakdowns in inter-business communication, and logistical disruptions. Enhancing and broadening Vietnam's export endeavors has been a crucial focus. Anh et al. (2020) conducted research which indicates that the majority of commodity processing takes place inside export markets. It is noteworthy to mention that China accounts for around 60% of the global market for Chu-mango (William, 2014).

The Vietnamese government is now involved in bilateral and global Free Trade Agreement (FTA) negotiations as part of its strategic efforts to enhance agricultural exports. Vietnam has derived advantageous outcomes from its Free Trade Agreements (FTAs) with a cumulative count of 13 nations so far, and is now engaged in discussions with an additional three countries. Given that Vietnam's manufacturers and exporters are increasingly integrated into global value chains, they will be compelled to engage in competition with other entities in order to attract foreign investment. The mango trade is significantly influenced by many free trade agreements (FTAs), such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), the Europe-Vietnam Free Trade Agreement (EVFTA), and the United Kingdom-Vietnam Free Trade Agreement (UKVFTA). The growth in mango exports may be attributed to the establishment of the ASEAN Economic Community (AEC), which is shown by the presence of a second Free Trade Agreement (FTA) among the member nations of the Association of Southeast Asian Nations (ASEAN). Based on the research conducted by Brian et al. (2021) and Thang (2018), it has been observed that countries that have entered into Free Trade Agreements (FTAs) with Vietnam refrain from imposing duties on the export of fresh mangoes and mango-derived items originating from Vietnam. The decline in mango exports has considerable significance for the mango trade industry, as it serves as an indicator of the impact of Free Trade Agreements (FTAs) on the shipping of mangoes to countries that have established FTAs. The inclusion of Vietnam on the list of the top 10 mango-importing nations, with countries such as the USA, UK, Canada, and Malaysia, suggests that there is potential for further development in Vietnam's mango export industry. It is anticipated that there would be a significant surge in the import value of mangoes from Vietnam in 2020, mostly driven by escalating demand in China and the United States. According to the Food and Agriculture Organization (FAO), there was a significant increase in both imports and exports compared to the previous year. The rate of growth in imports saw a rise of 7.7 percent, whilst the rate of growth in exports observed an increase of 5.2 percent. Based on current knowledge, it seems that the global mango trade has had a consistent growth trajectory and has reached its pinnacle. It is projected that global mango exports will see a consistent annual growth rate of 2.9% over the course of the next ten years. The data presented in this study was compiled using predictive models. It is projected that global mango output would reach 72.8 million tons by the year 2029, with Asia contributing around 71% of this total. According to the OECD-FAO (2020), it is projected that there would be a rise in yearly food consumption from 9.8 kg in 2019 to 12.1 kg in 2020.

The mango trade in Vietnam has promising prospects for the future due to increasing demand in both local and international markets. There are several opportunities available for growth and expansion. The implementation of a comprehensive strategy to maintain high standards throughout all phases of production and distribution is crucial in order to sustain a competitive edge over other companies operating in the same sector. The purposeful implementation of policies that foster the long-term sustainability of the supply chain is of utmost importance. The main aim of this research is to enhance our comprehension of the evolving characteristics of Vietnam's mango export industry by an examination of its many aspects, competitive advantage, and fundamental drivers. The implications derived from the results of this research suggest that by increasing Vietnam's mango exports, the nation might potentially enhance its competitiveness within the global market.

Methodology

Sampling Technique

Considerable attention was devoted to meticulously devising and implementing our data collection protocols. The research focused on the southern region of Vietnam due of its notable mango production system. According to the General Statistics Office (2022), the provinces of Dong Thap, An Giang, Tien Giang, Hau Giang, Vinh Long, and Tra Vinh together account for more than 75% of the volume and over 70% of the total land area inside the Mekong Delta. Additionally, it is worth noting that Dong Nai province constitutes around 56% of the total volume of the southeast region and encompasses 50% of its overall geographical expanse. A total of seven provinces were selected for the reason described above. A random sample technique was used to choose a total of 843 data points from a diverse range of sources, including 720 farmers (235, 242, and 243 observations for seasons 1, 2, and 3, respectively), 12 cooperatives, 32 collectors, 28 wholesalers, 14 supermarkets/fruit shops and 40 retailers.

Literature Review

Two conflicting sets of criteria for forming judgements have been in opposition to each other for an extended period. The study of international commerce encompasses two primary methodologies. The central topic of discussion should be on Ricardo's method, which has significant importance within the realm of mainstream economics. The Balassa approach, named after its originator who widely implemented it in 1965, is referred to as the second strategy. The concept of comparative advantage is the fundamental basis for this strategy. The conventional approach is founded upon the principles of profitability, specialization, factor endowment, and technical advancement. The availability of technical intensity indicators, manufacturing input unit prices, and local and global product pricing might be advantageous in many scenarios. Balassa's method is based on the premise that economic activity is influenced by variations in non-price factors and relative costs. The following content outlines the fundamental ideas of this particular technique. According to Zawalinska (2002), the use of this method may provide an explanation for the cyclical fluctuations seen in economic indices. The evaluation of a country's "export competitiveness" may be conducted by examining its past export information, in line with Balassa's theory of revealed comparative advantage. This conclusion is derived from the fundamental assumption at hand. Based on the strategic approach outlined, a crucial recommendation for government policymakers is to enhance the exportation of sectors in which the nation has previously shown proficiency in exporting. When a firm formulates a strategic plan that enables it to surpass its competitors, it acquires a competitive edge. Given this circumstance, it is plausible that the company might see a more rapid expansion in comparison to its competitors. A notable competitive advantage may be achieved when consumers perceive a company's performance to be of higher quality compared

to that of a competitor. Within the field of economics, the concept of "competitive advantage," often referred to as "competitiveness," is used to evaluate the prospective profitability of a company or individual advantage in relation to the current market conditions. Nevertheless, according to Porter (1990), many organizations possess an excessively simplistic comprehension of competition, despite its evident significance. An effective method for evaluating a country's global competitiveness is examining the extent to which its marketplaces facilitate international trade. Hence, rivalry might be seen as a "zero-sum game," when the gains of one nation come at the expense of another.

The assessment of competitive advantage is often conducted in ex-ante research via the use of domestic resource cost (DRC). The ideas proposed by Ricardo in 1817 have had influence on the aforementioned method, which has a lengthy historical trajectory. The DRC is widely acknowledged as a legitimate approach for assessing the market position of a product. When determining a country's total production, it is essential to include the prices at which economic activity inside the nation use resources. These components are used due to their favorable impact on the economy, whether it be immediate or indirect. The estimation of the societal cost associated with acquiring an additional unit of foreign currency may be conducted by using these expenditures as a foundational reference point. The concept of "domestic resource cost" (DRC) refers to the anticipated expenses associated with reducing a nation's reliance on foreign currency via the augmentation of its exports or the local production of export-oriented goods. It is important to always consider the opportunity cost associated with an increase in net foreign exchange. The concept of comparative advantage, which plays a pivotal role in international commerce, is intricately linked to the topic under consideration. Consequently, the concept of comparative advantage has significant importance within this particular viewpoint. In order to conduct an analysis of the DRC, it is necessary to make some assumptions. Consequently, the determination of whether inputs and outputs are classified as domestic or foreign relies on the country of origin. The calculation of the input and output shadow pricing of the system is widely acknowledged. The level of confidence in relying on this assumption will eventually be determined by the availability of cost information for similar components. To ensure a consistent flow of productivity, it is essential for governments to actively participate in endeavors that facilitate the establishment of policies and laws. A discernible correlation exists between the questionable conduct and both the specific commodities transaction under scrutiny and the currency's valuation.

Considerable research and development efforts are concentrated on the DRC, often referred to as the DRC, across several industries. The differentiation between efficiency and effectiveness in the realms of business and manufacturing may be elucidated via the methodologies expounded upon by Gorton et al (2000). The need of strategically planning and implementing steps to reduce manufacturing costs is emphasized. The DRC index has a strong correlation with the concept of comparative advantage, a crucial factor in the context of globalization and commercial activities. Numerous scholarly investigations have been conducted to explore the favorable impacts arising from the exportation of fruits and vegetables originating from the DRC. There exists a substantial cohort within the academic community that is committed to the pursuit of knowledge pertaining to agriculture and its many aspects. In their study, Gao et al. (2012) conducted a comprehensive analysis of the international competitiveness of China's agricultural industry. A comprehensive examination was conducted on the Chinese market, focusing on the seven fruit species that are most often consumed. Among the seven fruit species examined, it was found that only the pear had a significant competitive advantage in international markets. Jiang (2011) conducted a study to examine the level of competition within the fresh vegetable export industry in China. It is evident that the Chinese play a significant role in shaping the dynamics of this market. The author does this by constructing a conceptual framework that relies on the juxtaposition of evaluations on the comparative worth or value. The concept of global competitiveness is central to research in this field. The implications of the results suggest that Chinese exporters of apples and pears

might potentially gain a competitive advantage by implementing more effective pricing strategies. Recent research has shown that the competitiveness of fresh Chinese exports is comparatively lower when compared to exports from other countries.

According to Soetriono et al. (2019), the Pronojiwo region demonstrated a cultivation success rate of 0.20 for snake fruit. This finding is considered favorable since it falls below the threshold of one. This demonstrates that our horticultural efforts have had positive results. Hu et al. (2008) identified many export goods, including citrus, bananas, grapes, oranges, and apricots, in which China had comparatively worse competitiveness than other exporting countries. Prior research has provided valuable insights into this phenomenon. The study conducted by Li (2011) examined the level of international competitiveness within the apple industry in the Hebei province. The data included in this study encompassed the years 1996 to 2010. The author has knowledge on the significant competitive advantage that Hebei Province holds within the Chinese apple industry. Nevertheless, the study undertaken by the author indicates that the United States has achieved little progress in this particular field in comparison to other nations. In their study, Mao and Chen (2011) examined the global competitive landscape of China's agricultural industry with the aim of enhancing public awareness and understanding. The findings of the study indicate that the Chinese fruit industry has unique characteristics when compared to the export sectors of other prominent countries worldwide. The uniqueness of fresh and preserved fruit shipped from China is somewhat less pronounced when compared to fruits originating from other nations.

The Siamese orange cultivar has a significant competitive advantage in the Kanagarian Koto Tingg region in Indonesia (DRC 0.11). The advantage seen in this particular context might perhaps be attributed to the presence of favorable agroclimatic conditions and the prudent use of diverse local resources. Several studies have proposed various strategies to enhance export agreements, increase awareness, enhance quality, reinforce inspection systems, and implement other procedures (Wei et al., 2010; Han et al., 2008; Hui and Yin, 2011) with the aim of achieving a competitive advantage. The objective of this study is to analyze the many factors influencing the export of fruits from China. Hence, a substantial portion of the study is dedicated to examining these facets. Yang (2011) employs the trade gravity model as a robust theoretical framework in his examination of China's fruit export industry. The objective of the study was to examine the patterns of exportation for a selection of fifteen distinct varieties of Chinese fruit throughout the period spanning from 1992 to 2010. The research used panel data analysis as a methodological approach. An analysis has been conducted to examine the potential impacts of Chinese fruit and vegetable exports, considering several pertinent factors. Several essential factors to consider are the agricultural production of China, the duration of the travel, the involvement of the importing country in the Asia-Pacific Economic Cooperation (APEC), and the prevailing currency exchange rates between the two nations. According to the data presented by Khan et al. (2006), it is argued that Pakistan should redirect its focus from export goals to achieving self-sufficiency in sugarcane production. The data presented suggests that the coefficient associated with the exportation of domestic resources in this particular context is 1.31, above the minimal threshold of 1. Given the prevailing circumstances, the potential benefits associated with sugarcane exports are surpassed by the expenses and risks entailed. The DRC has a relatively low import dependence ratio of 0.59, while facing greater local production expenses in comparison to importing sugarcane. The aforementioned juxtaposition suggests that import substitution does not constitute a significant element of the DRC's comprehensive strategy for ensuring food security. Although the cost of importing sugarcane is higher than that of local agriculture, there is ongoing consideration of this alternative. Liu et al. (2006) suggest that many variables have an influence on the export of Chinese citrus. The drop may be attributed to many factors, including insufficient export infrastructure, limited variety in exportable species, a lack of competitiveness in labor costs, and restrictions on international green commerce. According to a study conducted by Li et al.

(2008), the impact of food security regulations on Chinese fruit exports to the United States, Japan, and the European Union was shown to be somewhat less significant compared to the influence of tariffs, technical trade barriers, and requirements related to product conformity standards and certifications. According to the findings of Olayinka et al. (2014), the enhancement of pineapple crop yields in Nigerian farms might potentially be achieved by the use of feeder and crown systems. The aforementioned benefits may be attributed to the adaptability of pineapple cultivation practices. The DCR was computed to be 0.27 for the feeder approach and 0.22 for the crown method.

This inquiry specifically examines the many factors that lead to the occurrence of competition in the global mango produce market. However, it is crucial to bear in mind that research on Vietnam's agricultural exports sometimes lacks comprehensive examination of international marketing strategies.

Empirical model

In 1972, Bruno introduced the quantified DRC methodology. The objective of this exercise is to determine the financial implications, in terms of foregone opportunities, associated with the production or maintenance of a single unit of foreign currency. The incorporation of prospective expenses associated with the reallocation of federal money is included into the computation of this tax. Monke and Pearson (1989) assert that the DRC has significant importance as a tool for examining the comparative efficacy of diverse agricultural policies. The primary objective of this research is to assess the competitive advantages that agricultural enterprises possess in comparison to their rivals. In their study, Funing and Xu (2002) conducted an investigation to assess the comparative advantages of various regions in China with regard to the cultivation of cereal grains. As a result of their analysis, the researchers were able to draw certain findings. Bishnu (1983) conducted preliminary study on the economic aspects of tea cultivation in Nelap, with a specific emphasis on the advantages and disadvantages associated with the use of only indigenous resources.

The computational procedure used for calculating the DRC exhibits a multitude of possible applications..

$$DRC_i = \frac{\sum_{j=k+1}^{n} a_{ij} \; V_j}{p_i^r - \sum_{j=1}^{k} b_{ij} \; p_j^r}$$

The variable Vj represents the opportunity costs associated with local production. This variable specifically represents the shadow price associated with domestic resources and non-tradable inputs. Furthermore, the variables denote the technical coefficients pertaining to non-tradable inputs and domestic resources. Here, the index j may take on any integer value ranging from k+1 to n. This range encompasses a broad spectrum of potential values. Gorton et al. (2000) established that the technical coefficient for traded inputs is represented by the symbol bij, where the value of j may range from one to k. Furthermore, the symbol Pr_i represents the price of traded inputs, often referred to as the border or reference price. In the context of the exchange, the variable denoted as Pr_j serves as a symbolic representation of the maximum threshold or benchmark price that might potentially be attained.

DRC/SER < 1, the trade system has a comparative advantage (economic efficiency).
DRC/SER > 1, the trade system does not have a comparative advantage (economic efficiency).
The shadow exchange rate can be estimated through the following formula:
SER = OER * (1+ FX premium)
Whereas:

1. SER: Shadow Exchange Rate
2. OER: Official exchange rate (OER—Official Exchange Rate),

3. FX premium is suggested 20% (0.2) by the World Bank applying for developing countries (Minh et al., 2016)

Could you kindly provide an explanation of the idea of "opportunity cost"? The concept of opportunity cost gains significance within the framework of an efficiently functioning labor market, particularly when analyzing the allocation of employees in the industrial process. The projected price is derived from empirical data obtained via the observation of real customer expenditures. This research utilizes domestic land lease rates to determine the possible land values for coffee farmers. When calculating the value of land, it is essential to include the cost of its internal resources. In his study, Lorenzo (2013) employs the assumptions of consistent efficiency over time and annual devaluation of value in order to project forthcoming expenditures linked to agricultural technology.

The prices are shown in the form of "Cost, Insurance, and Freight" (CIF). The acronym CIF, which stands for Cost, Insurance, and Freight, is often used within academic circles to denote the financial evaluation of imported commodities. Rather of include the expenses associated with relocation, the "Free on Board" (FOB) pricing methodology just takes into account the cost of the item itself. The term "exports" refers to commodities and services that are produced inside a nation's borders but are eventually traded on global markets.

The phrase "tradable commodities" is used to denote goods that possess the characteristic of being able to be purchased and exchanged. The value of a traded commodity is determined using methodologies such as border pricing and global price assessments. The pricing structure consists of three distinct tiers, namely the farm gate price, retail price, and transportation cost price. An alternative strategy to include shadow pricing is the inclusion of transfer variables inside the pricing process. The transfer factor refers to the extent to which actual sales of a product deviate from the expected market price.

The term "non-tradable commodities" refers to goods or assets that pose challenges in terms of their purchase, sale, or exchange with other parties. Social pricing systems are responsible for determining prices for goods and services that are not often traded in traditional markets. This is in contrast to market forces, which determine prices for commercial goods and inputs such as labor and land. Consequently, there exists a limited correlation between the Gross Domestic Product (GDP) and the economy's ability to engage in international trade, both in terms of imports and exports. The Democratic Republic of the Congo (DRC) often emerges as a prominent subject of discussion within policy circles. In their 2000 publication, Gorton et al. established a correlation between the approach used and inefficient production. The study not only emphasizes the need of targeted endeavors to enhance productivity, but also proposes specific areas of governmental importance to achieve this objective.

Result and Discussion

The export system of the DaiLoan-mango export channel includes the following three main export channels:

Channel 1	Farmer	Cooperative	Export Enterprise
Channel 2	Farmer	Collector	Wholesaler
Channel 3	Farmer	Wholesaler (Chinese market)	

Export Channel 1: One of the primary avenues for export is directed towards highly industrialized nations that have developed a significant reliance on imports of DaiLoan-mango, like the United States, Russia, and Australia. This industry is subject to rigorous sanitary and phytosanitary regulations. The use of aircraft is often seen in global commercial dealings. The DaiLoan-mango is classified as meeting the

"A" quality grade. The principal source of grade 1 DaiLoan mango is derived from cooperatives that adhere to pesticide use rules in a responsible manner. The agricultural cooperatives own their own safety certificates, namely VietGAP and GlobalGAP, and maintain agricultural diaries while using traceability codes. The grade 1 DaiLoan-mango has several distinguishing characteristics. The aforementioned characteristics include their visually appealing nature, modest mass (about 550 grams), secure packaging, flawless surface (lacking any folds or imperfections), and vibrant yellow color (without any discernible fading layers). The aforementioned results align with the research conducted by Fernandez-Stark et al. (2011). In light of the significant competition within the export value chain, firms are compelled to consistently engage in innovation in order to maintain their competitiveness and effectively meet the demands of importers across the various stages of the value chain.

Export Channels 2 and 3: The distribution hub has the third position in terms of significance within the distribution network, and its primary responsibility is in the exporting of channels two and three. Channel 3 places significant emphasis on the Chinese market, devoting substantial efforts to meet the demands and preferences of this particular market segment. Official border trade gates are often used by large commercial trucks to transport DaiLoan-mango from Vietnam to China for the purpose of global exportation. The use of the third approach is anticipated to yield DaiLoan-mango of worse quality. Objects in this category are categorized based on traceability codes, weights ranging from 450 to 800 grams, the presence of a packing bag, the capability to detect partial faults, the absence of pleats, and vibrant colors. Additionally, the distributor assumes a pivotal function in facilitating the prompt delivery of recently harvested mangoes to the Chinese consumer market. The majority of mangoes are transported to the wholesale market and China mostly using land-based vehicles. To maintain a consistent temperature throughout the transportation of commodities to distant locations like as Danang, Hanoi, and China, refrigeration systems equipped with electrical devices are installed in heavy-duty vehicles. The duration of travel from Ho Chi Minh City to Danang in the central region is around 16 hours, while the journey from Ho Chi Minh City to Hanoi in the northern region often spans between 48 and 52 hours. Moreover, the duration required to go from China to the border of Vietnam is between 60 and 72 hours. The exclusive business engagement pertaining to Channel 3 is limited to China and Vietnam. The anticipated range for customs processing expenses associated with containers weighing between 25 and 30 tons upon entry into the Chinese market is projected to be between $300 and $350.

Monke and Pearson (1989) propose that the concept of social profit may serve as a suitable substitute for comparative advantage, particularly when considering the inclusion of social pricing. This research focuses on the notion of comparative advantage and investigates the DRC/SER ratio as a metric for assessing equivalent levels of efficiency. Minimizing the deadweight loss from monopoly, also known as the DRC, is crucial for optimizing social value. The value chain of DaiLoan-mango may be delineated into five discrete parts, whereby each component corresponds to one of the five primary marketing channels.

The statistics shown in Tables 1, 2, and 3 indicate that the three-year mean of income generated by Channels 1, 2, and 3 surpasses the total expenditure incurred by these channels, both domestically and internationally. This study posits that the use of channels 1, 2, and 3 within the agricultural calendar confers societal benefits by efficiently allocating scarce resources at prices deemed socially acceptable. The DaiLoan-mango export system has the potential to generate revenue from overseas via three unique channels, each corresponding to a certain season. The DaiLoan-mango export system is widely recognized as a socially beneficial enterprise.

Table 1: The Comparative Advantage of Dailoan-Mango in the Export Channel 1 Unit: USD/ton.

No.	Indicator costs	Season 1 (n=235)	Season 2 (n=242)	Season 3 (n=243)	Sig.
	Official exchange rate in 2022 (USD 1 = 23.612 VND)				
1	Tradable inputs	675.87[b]	662.15[b]	527.61[a]	**
1.1	Root fertilizer	41.85[ab]	43.39[b]	34.17[a]	**
1.2	Leaf fertilizer	11.17[ab]	11.81[b]	8.99[a]	*
1.3	Paclobutrazol	3.31	3.28	2.76	*ns*
1.4	Herbicide	47.02[c]	33.21[b]	13.58[a]	***
1.5	Pesticide	104.77	112.61	96.58	*ns*
1.6	Fungicide	349.76[b]	336.48[ab]	274.09[a]	*
1.7	Fuel	3.30	4.01	4.29	*ns*
1.8	Wrapping bag	81.59	89.38	72.24	*ns*
1.9	Machine depreciation	33.11	27.97	20.92	*ns*
2	Domestic factors	857.01[ab]	884.11[b]	737.39[a]	*
2.1	Root fertilizer	93.35[ab]	96.77[b]	76.22[a]	**
2.2	Leaf fertilizer	24.91[ab]	26.35[b]	20.04[a]	*
2.3	Paclobutrazol	0.68	0.67	0.56	*ns*
2.4	Herbicide	9.61[c]	6.79[b]	2.78[a]	***
2.5	Pesticide	21.42	23.02	19.75	*ns*
2.6	Fungicide	71.51[b]	68.79[ab]	56.03[a]	*
2.7	Fuel	16.88	20.53	21.94	*ns*
2.8	Wrapping bag	17.00	18.62	15.05	*ns*
2.9	Machine depreciation	11.82	9.99	7.47	*ns*
2.10	Transport	3.69	4.43	4.73	*ns*
2.11	Hired labor	137.46	115.26	111.00	*ns*
2.12	Family labor	290.86[ab]	337.58[b]	239.37[a]	**
2.13	Land rent	157.83	155.30	162.44	*ns*
3	Marking cost of traders	5,066.00	5,066.00	5,066.00	*ns*
3.1	Cooperative	182.30	182.30	182.30	*ns*
3.2	Export enterprise	4,883.70	4,883.70	4,883.70	*ns*
4	Total Domestic = (2) +(3)	5,923.01[ab]	5,950.11[b]	5,803.39[a]	*
5	Revenue	8,860.44	8,860.44	8,860.44	*ns*
6	Domestic resource cost	0.73[b]	0.74[b]	0.70[a]	**
7	Comparative advantage	0.61[b]	0.62[a]	0.59[a]	**

Source: Field survey data in 2022

Note: Tradable input is CIF price, and Tradable output is FOB price. The numbers of the same row are followed by the different letters being significant at a 5% level via the statistical Ducan test. * Significant at 10% level, ** significant at 5% level, *** significant at 1% level, and ns is non-significant.

Table 1 presents the data and findings pertaining to the Domestic Resource Cost (DRC) and the DRC/SER for Export Channel 1. The first three seasons exhibited a DRC that was less than 1, namely 0.73, 0.74, and 0.70, in sequential order. The corporation operating inside export channel 1 has the capability to convert a sum of 1 USD into foreign currency, using a domestic factor cost of around 0.27 USD throughout season 1, 0.26 USD during season 2, and 0.30 USD during season 3. Based on the DRC indicators, the expenditure associated with the production of DaiLoan-mango accounts for 73%, 74%, and 70% of the total import costs for seasons 1, 2, and 3, respectively. The use of local resources in an effective manner has shown to be advantageous in the production and exportation of DaiLoan-mango.

Table 2: The Comparative Advantage of Dailoan-Mango in the Export Channel 2 Unit: USD/Ton.

No.	Indicator costs	Season 1 (n=235)	Season 2 (n=242)	Season 3 (n=243)	Sig.
	Official exchange rate in 2022 (USD 1= VND 23.612)				
1	Tradable inputs	403.44[b]	382.49[ab]	328.31[a]	**
1.1	Root fertiliser	26.10	26.19	21.54	*ns*
1.2	Leaf fertiliser	6.59	7.03	5.71	*ns*
1.3	Paclobutrazol	1.79	1.85	1.71	*ns*
1.4	Herbicide	28.10[c]	20.35[b]	8.53[a]	***
1.5	Pesticide	62.69	64.03	60.67	*ns*
1.6	Fungicide	207.39	188.97	168.22	*ns*
1.7	Fuel	2.02[a]	2.22[a]b	2.68[b]	*
1.8	Wrapping bag	49.79	54.98	46.01	*ns*
1.9	Machine depreciation	18.97	16.87	13.25	*ns*
2	Domestic factors	523.57	526.79	461.17	*ns*
2.1	Root fertiliser	58.21	58.41	48.05	*ns*
2.2	Leaf fertiliser	14.70	15.68	12.73	*ns*
2.3	Paclobutrazol	0.37	0.38	0.35	*ns*
2.4	Herbicide	5.74[c]	4.16[b]	1.74[a]	***
2.5	Pesticide	12.82	13.09	12.40	*ns*
2.6	Fungicide	42.40	38.63	34.39	*ns*
2.7	Fuel	10.37[a]	11.36[ab]	13.71[b]	*
2.8	Wrapping bag	10.37	11.45	9.58	*ns*
2.9	Machine depreciation	6.78	6.02	4.73	*ns*
2.10	Transport	2.38	2.62	3.00	*ns*
2.11	Hired labour	84.18	70.65	70.35	*ns*
2.12	Family labour	177.21[b]	197.72[ab]	147.77[a]	*
2.13	Land rent	98.06	96.61	102.35	*ns*
3	Marking cost of traders	335.40	335.40	335.40	*ns*
3.1	Collector	90.80	90.80	90.80	*ns*
3.2	Wholesaler	244.60	244.60	244.60	*ns*
4	Total Domestic = (2) +(3)	858.97	862.19	796.57	*ns*
5	Revenue	1,926.96	1,926.96	1,926.96	*ns*
6	Domestic resource cost	0.68	0.70	0.71	*ns*
7	Comparative advantage	0.57	0.59	0.59	*ns*

Source: Field survey data in 2022

Note: Tradable input is CIF price, and Tradable output is FOB price. The numbers of the same row are followed by the different letters being significant at a 5% level via the statistical Ducan test. * Significant at 10% level, ** significant at 5% level, *** significant at 1% level, and ns is non-significant.

Table 2 presents the findings indicating that export channel 2 has DRC/SER values that are below 1, aligning with the anticipated outcome. The DRC/SER values for the first three seasons are 0.57, 0.59, and 0.57, respectively. The magnitudes of the DRC/SER values are comparatively less than those of the DRC readings. This exemplifies how the effective use of household resources may provide favorable societal outcomes. Hence, the export channel 2 exhibits a competitive advantage and proposes strategies to improve the current input-output dynamics and pricing within a commercial framework.

Table 3: The Comparative Advantage of Dailoan-Mango in the Export Channel 3 Unit: USD/Ton.

No.	Indicator costs	Season 1 (n=235)	Season 2 (n=242)	Season 3 (n=243)	Sig.
	Official exchange rate in 2022 (1 USD= 23.612 VND)				
1	Tradable inputs	403.44[b]	382.49[ab]	328.31[a]	***
1.1	Root fertiliser	26.10	26.19	21.54	***
1.2	Leaf fertiliser	6.59	7.03	5.71	***
1.3	Paclobutrazol	1.79	1.85	1.71	*ns*
1.4	Herbicide	28.10[c]	20.35[b]	8.53[a]	***
1.5	Pesticide	62.69	64.03	60.67	*ns*
1.6	Fungicide	207.39	188.97	168.22	***
1.7	Fuel	2.02[a]	2.22[ab]	2.68[b]	*ns*
1.8	Wrapping bag	49.79	54.98	46.01	*ns*
1.9	Machine depreciation	18.97	16.87	13.25	***
2	Domestic factors	523.57	526.79	461.17	***
2.1	Root fertiliser	58.21	58.41	48.05	***
2.2	Leaf fertiliser	14.70	15.68	12.73	***
2.3	Paclobutrazol	0.37	0.38	0.35	*ns*
2.4	Herbicide	5.74[c]	4.16[b]	1.74[a]	***
2.5	Pesticide	12.82	13.09	12.40	*ns*
2.6	Fungicide	42.40	38.63	34.39	***
2.7	Fuel	10.37[a]	11.36[ab]	13.71[b]	*ns*
2.8	Wrapping bag	10.37	11.45	9.58	*ns*
2.9	Machine depreciation	6.78	6.02	4.73	***
2.10	Transport	2.38	2.62	3.00	*ns*
2.11	Hired labour	84.18	70.65	70.35	*
2.12	Family labour	177.21[ab]	197.72[b]	147.77[a]	***
2.13	Land rent	98.06	96.61	102.35	*ns*
3	Marking cost of traders	244.60	244.60	244.60	*ns*
3.1	Wholesaler (China)	244.60	244.60	244.60	*ns*
4	Total Domestic = (2) +(3)	768.17	771.39	705.77	*ns*
5	Revenue	1,778.52	1,778.52	1,778.52	*ns*
6	Domestic resource cost	0.74	0.77	0.54	*ns*
7	Comparative advantage	0.61	0.64	0.45	*ns*

Source: Field survey data in 2022

Note: Tradable input is CIF price, and Tradable output is FOB price. The numbers of the same row are followed by the different letters being significant at a 5% level via the statistical Ducan test. * Significant at 10% level, ** significant at 5% level, *** significant at 1% level, and ns is non-significant.

The conclusions of Export Channel 3's investigation into comparative advantage, based on the DRC/SER ratio, are shown in Table 3. The study's conclusions were supported by the observation that the DRC/SER ratios for all three growth seasons of DaiLoan-mango were below 1. Specifically, the values observed for seasons 1, 2, and 3 were 0.61, 0.64, and 0.45, respectively. According to the results obtained, it is projected that Channel 3 may potentially achieve savings of 0.39, 0.36, and 0.55 USD in foreign currency for Seasons 1, 2, and 3, respectively, by using local resources. This research elucidates the optimal use of restricted household resources by these things. This suggests that DaiLoan-mango Channel 3 has a competitive advantage in terms of exporting goods from its place of origin.

Although each of the three export channels has its own advantages, there are noticeable differences in the DRC/SER ratio and agricultural seasons connected with each channel. Channel 1 has a much worse

comparative advantage in comparison to Channels 2 and 3, all of which are primarily used for the purpose of exporting goods. When doing a comparative analysis of the first two agricultural seasons, it becomes evident that the third season exhibits a higher degree of comparative advantage. The main aim of this research is to highlight the economic and competitive benefits associated with DaiLoan's mango production system for the purpose of exportation. It is advisable for governments to use incentive-driven strategies in order to enhance the quality of products, reduce both border and non-tariff obstacles, and maximize the competitive advantage derived from ideal climatic, soil, and water conditions. These criteria are crucial in facilitating sustained economic expansion and fostering overall well-being.

Conclusion

The economic viability of the DaiLoan-mango trade may be assessed by an analysis of the comparative advantage of export channels. This can be achieved by calculating the DRC/SER ratio using social price. This assessment may be conducted to ascertain the economic feasibility of the activity. The DRC/SER ratio is used to evaluate the relative benefit of trade activities done via the three exporting channels when its value is below one. Based on comparative advantage, the export channel with the greatest level of advantage is channel 2, followed by the export channel 3 with the second highest level of advantage, and finally, the export channel with the lowest level of advantage, which is channel 1. Furthermore, it can be seen that season 3 had the greatest level of comparative advantage, with season 1 ranking second and season 2 displaying the lowest performance.

The study of Domestic Resource Cost (DRC) serves as a valuable instrument in assessing the impact of international trade on domestic economies. This study examines the benefits associated with the use of social pricing comparisons across various distribution channels. The FOB (Free on Board) pricing system is used for the exchange of products, whereas the CIF (Cost, Insurance, and Freight) pricing mechanism is utilized for pricing inputs. The acronym "CIF" is an abbreviation for "cost, insurance, and freight." The term "net profit" refers to the residual amount derived from gross revenue after deducting various expenditures, including those related to production, promotion, lost opportunities, and land. The phrase "net profit" may also be used to denote the ultimate amount remaining after subtracting all essential expenses and investments. This study provides empirical evidence in favor of Ricardo's methodology for assessing the competitive dynamics of export supply chains, with a specific focus on the tropical fruit sector within the realm of global trade. In the contemporary era characterized by increasing globalization and liberalization, nations engage in trade and prioritize the production of products and services that effectively use their comparative advantages. In order to enhance their competitiveness in the global market, nations must strive to reduce their production expenses associated with international trade commodities. The research provides empirical support for Ricardo's concept of optimal value in international trade.

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