

ROADS TO THE INTERNATIONAL MARKET THROUGH RURAL TRANSPORT AND LOGISTICS IN THE PEPPER INDUSTRY IN SRI LANKA

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ABSTRACT - Rural transportation and logistics play a vital role in determining the quality of any agricultural commodities and not are exceptional to pepper. Assess, the availability and affordability of appropriate transport facilities and logistics are essential elements to reaching the geographically distinct export market. This paper aimed to identify the present status of rural logistics and transport and issues that hinder the market access of the black pepper supply chain and develop participatory mitigating strategies to overcome the challenges. A mixed-method approach was adopted to collect qualitative and quantitative data in major pepper growing districts in Sri Lanka. Results revealed that insufficient drying, threshing, and storage facilities lead to quantity, quality, and economic losses to the small-scale pepper farmers. Moreover, the less-developed road systems, high transportation costs especially due to the rapidly increasing fuel cost, improper packing materials, and poor storage facilities also poor compliance on safety and safety levels limit the earnings. In addition, lack of knowledge on safety and quality standards, and lack of literacy in marketing attributed to the farmers to still following the traditional methods in the production process (improper traditional primary processing). Results suggest implementing cluster processing centers for threshing, drying, and storing dried pepper and highlighted the need for the establishment of community-managed sun-drying yards. Further, developing rural road systems, and disseminating the knowledge on safety and quality standards of the pepper to the farmers were also identified as important strategies to overcome the existing challenges related to logistics and transportation.

Keywords: *Pepper; Logistics; Rural; safety and Quality; Transportation*

1. INTRODUCTION

The logistics and transportation issues are understood as critical factors determining the quality and safety characteristics, especially in food commodities. Though there is an enormous potential for the Sri Lankan pepper industry to be fully exploited in the high-end international markets, the low level of quality and safety compliance of the industry resulting from these kinds of concerns hinders the industry to be fully exploited in the high-end international markets. Meanwhile, the paper value chain encompasses mainly the producers, intermediaries, and exporters, and the pepper value chain is considered one of the fragmented value chains which consists of numerous value chain actors (IPS, 2017). Therefore, the quality deterioration can be seen along the value chain of the pepper, and it is well-noted fact that the transportation and logistics facilities have a drastic effect on determining the quality of pepper because of the underdeveloped characteristics of the logistics and transportation systems. Especially logistics and transportation are complex to manage in the agriculture sector rather than in the other industry due to the perishable nature of the agricultural commodities (Remondino and Zanin, 2022). It is, therefore, important to study the current logistics and transportation facilities of the pepper industry in Sri Lanka. The main objective of the study is to identify the issues related to the transportation and logistics of pepper along the pepper supply chain and to identify the mitigating strategies to overcome the challenges of transportation and logistics.

2. MATERIALS AND METHODS

Data collection was done in the main pepper growing areas; Matale, Kandy, Kegalle, Rathnapura, and Badulla in Sri Lanka, and mainly focused on the rural areas such as Aranayaka, Hingula, Kehelpannala, Wattedagama, Galaha, Yatawara, Balangoda, Godakawela, Pallebedda, Balutota, Rattota, and Ukuwela. From these areas, a total sample of 100 was selected randomly representing the main supply chain actors; farmers (70%), and intermediaries (30%). Secondary data were collected by annual reports of the Institute of Policy Studies in Sri Lanka, the Department of Export Agriculture, and the Department of Agriculture. Descriptive analysis was applied for the analysis of data.

3. RESULTS AND DISCUSSION

3.1. Farmers

Generally, the pepper is considered a small holders' crop, especially in rural areas which can be grown in backyards and home gardens with minimum input supply. It is also supported by the results of our study where 42% of the farmers in the study sample belong to the < 2 acres category. Manual harvesting should be used to harvest black pepper and the results of our study found pepper growers in rural areas, especially the small-scale farmers, still use traditional methods for harvesting such as hand-harvesting. The pre-matured harvesting which is identified as one of the prominent issues which can be considered as a tragedy of the pepper industry creates huge economic losses to the farmers as well as to the industry. The main reasons for the pre-matured harvest are identified as theft issues, climatic changes, lack of infrastructure facilities, and lack of storage facilities.

Farmers also perform post-harvest tasks such as drying and cleaning in addition to pepper cultivation and harvesting. Farmers still use traditional methods for threshing such as sun drying. Black pepper farmers used to store their harvest after it had dried in their homes. Improper drying and storage practices pose an aflatoxin contamination problem which has become a severe problem with respect to the quality and safety of pepper in Sri Lanka. In addition, inappropriate storage facilities lead to severe problems concerning the quality deterioration of pepper. Farmers claimed that drying was impossible during wet seasons, affecting the quality of the pepper; as a result, they tend to sell fresh green pepper at a lesser price. Further, though the traditional way of storing is abandoned, households turned to strategies like selling their products as green berries or leasing the entire crop at a mature stage.

The results indicate that the packaging and packing material supplies were limited, and usually, farmers and collectors use recycled polythene bags (poultry feed bags, fertilizer bags, etc.) which will cause contamination issues and cause a reduction in the aroma of pepper. Further using appropriate packaging caused quality deterioration due to mechanical damage during transportation. Moreover, the road system in rural areas has not been well developed in Sri Lanka and the effect of vibrant also cause quality deterioration considerably.

According to the Food and Agriculture Organization of the United States (FAO), the transformation from the field to the farm is should be fastest as soon as possible to reduce the losses due to the high temperatures, such as excessive water loss and increased metabolic activity. Unfortunately, the majorities (75%) of farmers who are selling green berries in the studied sample take approximately 3-4 days for plucking their harvest and keep the harvested pepper until transport to the processing centers. There are mainly two modes of transportation for the commodities and those are motor bicycles and three-wheelers. Approximately 95 % of the farmers use this method and if the quantity exceeded more than 120 kg of dried pepper they used to hire a "Dimo Batta" track or tractor to transport the commodity. Further, all the farmers stated that the rapidly increasing fuel price and the transportation cost are also a huge concern to them.

3.1.1. Intermediaries

Under specific name tags, the intermediaries are introduced as mobile collectors, village collectors, traders, commission agents, and brokers who operate different scales in the supply chain. Mainly traders and brokers are handling high volumes of the harvest and earn more profit by contacting exporters. Adverse climatic conditions make trade operations irregular and reduce the net profit. As an alternate source, traders used to purchase green pepper as bulk allocation and transport it to paddy drying yards in Eastern province and North Central provinces. Therefore, due to the lack of drying facilities, the trader obtains additional costs for transportation of green pepper to the drying field and dried pepper to market outlets. Further, rapidly increasing fuel prices and transportation costs is also become huge burden to the intermediaries.

3.1.2 Application of transportation and logistics along the value chain of pepper

Transportation and logistics are essential and strategic processes where it is essential at each step in the value chain and the positive and negative factors are indicated in the flowing flow chart.

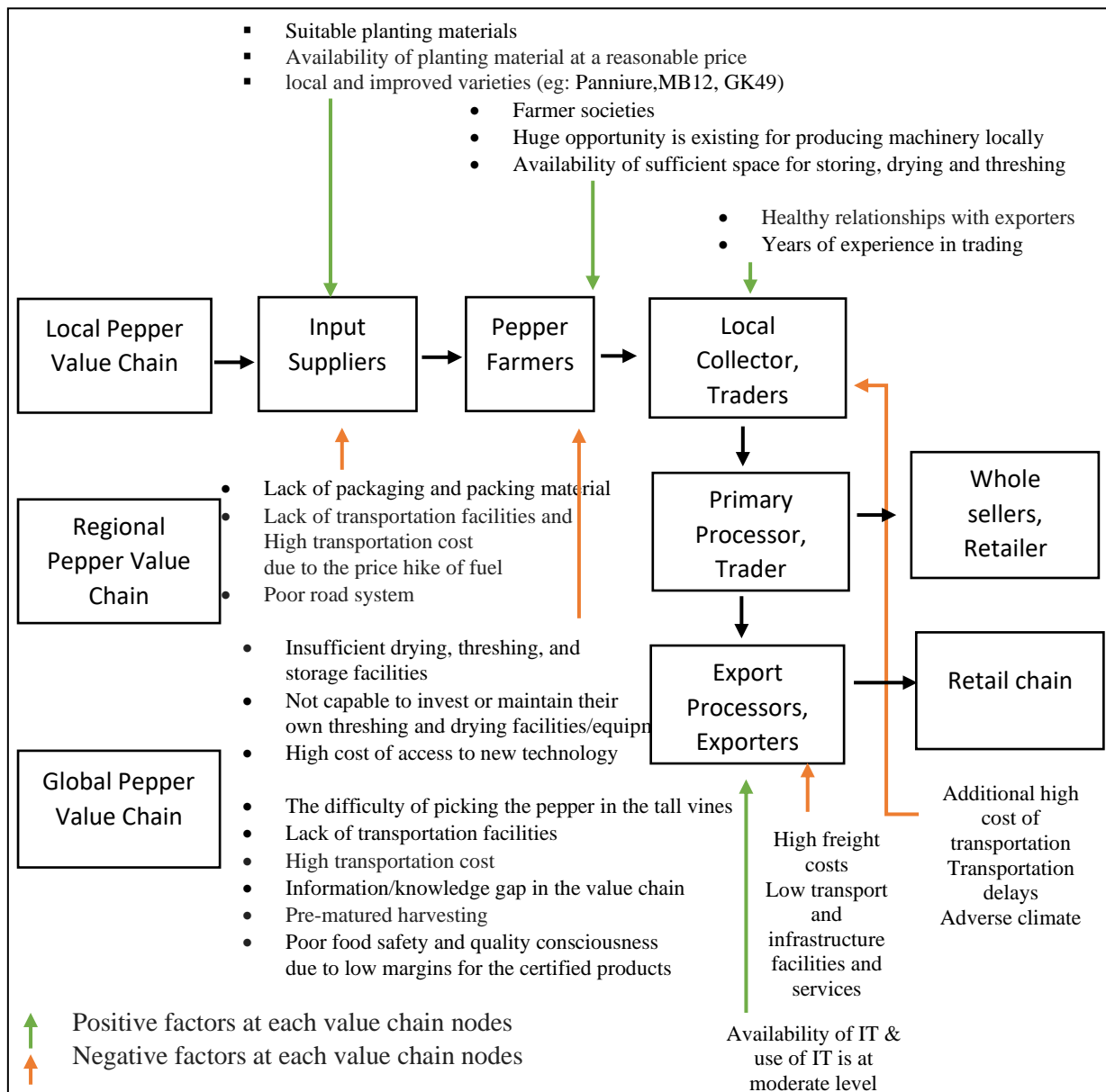


Figure 1. Positive & negative factors in transportation and logistics at each pepper value chain nodes

4. CONCLUSION

The less-developed road systems, high transportation costs especially due to the rapidly increasing fuel cost, improper packing materials, poor storage facilities, poor compliance with safety and safety, and lack of knowledge on safety and quality standards, are mainly attributed to the quality deterioration of pepper In Sri Lanka. Results mainly suggest implementing community-based participatory as well as community-managed and community financed primary processing centers. Further, developing rural road systems, implementing solar power can be used by inventing modified dryers, and disseminating the knowledge on safety and quality standards of the pepper to the farmers were identified as important strategies to overcome the existing challenges related to logistics and transportation.

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