PAPER 3: IMPROVING SUPPLY CHAIN MARKET ACCESS FOR MANGO FARMERS IN FIJI: A TRANSACTION COSTS PERSPECTIVE

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ABSTRACT

Mango industry is significant to the economy of Fiji. Even though mango being recorded as scattered plants in agricultural census 2009, these scattered plants form the basis of the mango industry. The industry consists of various supply chain evolved in Fiji. These supply chains are driven by transaction costs affecting the mango producer's choice of trade in the open market. Since transaction costs have significant impact on mango industry, it is important to understand the effect of transaction costs in the Fijis mango industry. Therefore, this study is aimed at improving the supply chain access for mango farmers by studying transaction costs and ways to improve farmer access to the lucrative mango markets. This study reviews wider literature on transaction costs and supply chains models of mango and fruits in Fiji and other similar countries. The outcome of this study will identify the major supply chain models in Fiji and the effect of transaction costs on mango industry.

Keywords: transaction costs, vertical coordination, horizontal coordination, supply chain

INTRODUCTION

The popularity of mango is increasing in the global market as fresh and processed product (McGregor, Gonemaituba, & Stice, 2009). Over 90 percent of mango is grown by smallholder farmers with low investment capacity (Vayssieres et al, 2008). Due to trade liberalisation, the opportunity for many developing countries has opened up in the export of traditional crops including mangoes (Van Melle & Buschmann, 2013). Fiji being a developing country has also been tapping the locked potential in this industry.

Major important constraints facing the access of these supply chains are inconsistency in supply, the scattering of production, lack of coordination, information asymmetry and lack of quality produce (Brown, 2008; United Nations Industrial Development Organization & World Bank, 1983). Moreover, Young and Vinning (2007), find that there is a definite supply chain for the mango markets in Fiji but farmers are not able to take advantage of the high return markets. This can be due to constraints which lead to high transaction costs. defines Transaction costs are costs of economic exchange or in simple terms costs of participating in the market Williamson (1998). The issue of transaction costs has always been highlighted in the agricultural markets (Assuncao & Wander, 2015). Transaction cost economics (TCE) has influenced the agricultural supply chains and has been a considerable theory in explaining missing markets (Pingali et al., 2005). These are transaction costs in form of missing markets such as credit (Besley 1994), labour markets (Bardhan, 1984), and land production markets (Stiglitz, 1989; Holden & Binswanger 1998) which are seen in developing countries.

Transaction costs in mango industry in Fiji has resulted producers transacting in spot markets. In spot markets, small farmers have an advantage of low transaction costs, family labour and intensive local knowledge (Pingali, Khwaja, & Meijer, 2005) but it is important to understand the transaction costs in accessing input and output market, traceability of product and quality assurance.

Furthermore, there has been no efforts made by individual growers to improve fruit quality for tourist or processing markets and this has prevented hotels, resorts and processors directly dealing with local producers (Young & Vinning, 2007). This has given rise to the middleman in mango supply chains (Brown, 2008; Kumar & Palanivel, 2016; Veit, 2009). These middlemen bear the transaction costs of these high earned supply chains and benefits from better returns whereas the mango producers are presented with lower prices. Farmers are considered price takers here as they are discouraged to anticipate in higher lucrative markets due to transaction costs (Fischer & Qaim, 2012).

On contrary, as noted from farmer producing for exporters, the success of export market can be contributed due to the vertical coordination within the supply chain. There is a use of market contracts which stipulates the price paid to the farmer, the quality of the product and the quantity specifications (Veit, 2009).

From the discussion, above, it can be noted that transaction costs can be a major limiting factor for the smaller mango producers to capitalise on high-value markets (Aphane, 2011). Therefore, the question arises on how these mango producers can access to markets with higher economic gains to improve their living.

Based on the above evidences, firstly this paper will classify the supply chains existing in Fiji mango market and secondly examine the effect of transaction costs on the mango producers in Fiji.

METHOD

The conceptual framework used in answering the research question uses analysis of theories and dimensions of supply chain models. To understand the mango market of Fiji, the supply chain market model is based on research from mango value chain analysis based in Benin, Faso and Ghana (Van Melle & Buschmann, 2013). This model was then adjusted to Fiji's mango supply chains based on evidence from literature on Fiji mango supply chains. These mango supply chain markets identified in Fiji was studied to identify the governance, transaction costs, and institutional arrangements. To add, rapid survey was conducted with the supply chain actors including farmers, Nature's way and exporters. Literature used to identify transaction costs in these supply chain include Coase (1937), Hobbs (1996) and Williamson (1979). Furthermore, the transaction costs in accessibility of supply chain for scattered mango farmers in Fiji will be examined to determine its impact.

MANGO SUPPLY CHAIN MODELS IN FIJI

In developing countries, there are three common market segments emerging as defined by its supply chain; traditional, modern and export markets (Swinnen, 2007; Van Melle & Buschmann, 2013). To make classification of mango supply chains in Fiji, different types of mango chains have been studied to the targeted end market and its main characteristic to define the typology of mango supply chain models. These models has been adapted as per Fijis supply chain markets to resemble the actual actors and transactions involved.

Fiji mango supply industry in this study has been identified into different supply chain markets based on literature. Fiji mango industry has evolved into the three major supply chains which are traditional, modern and export markets (Brown, 2008; Kumar & Palanivel, 2016; & Veit, 2009).

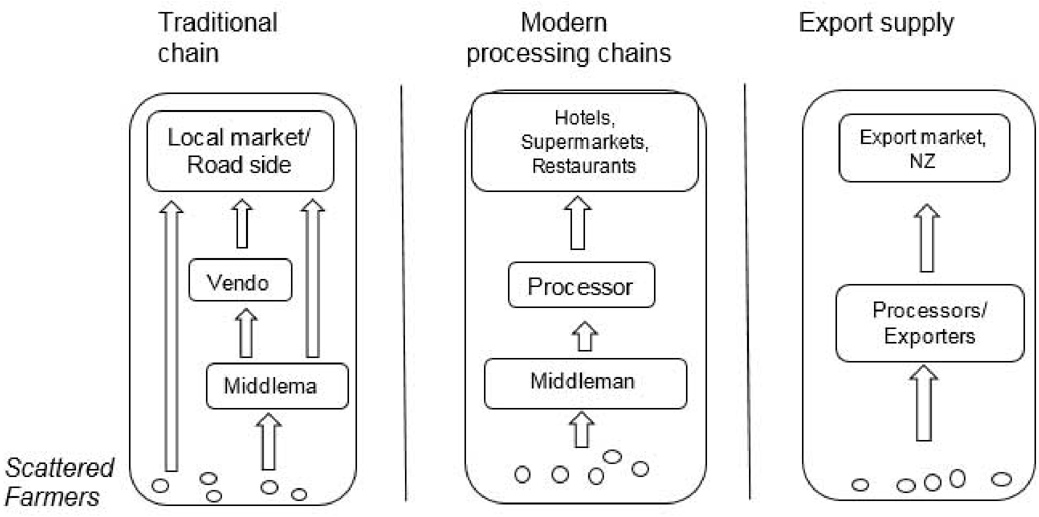

Figure 1: Diagrammatic representation of three mango supply chains model in Fiji (Adapted from Van Melle and Buschmann, 2013)

TRANSACTION COSTS ASSOCIATED WITH SUPPLY CHAINS

Traditional supply chains

There has been a significant increase in road side sellers in past 10 years and market vendors who sometimes are also middleman (McGregor et al., 2009). In this market chain farmers or middleman pick mangoes to be sold along the road side or in the local market (Kumar & Palanivel, 2016). The transactions occur in the spot market with minimum transaction costs. A total of 1380 tonnes of fresh mangoes ranging from green to ripening stage is estimated to be available annually in municipal markets and roadside stalls throughout the two major islands of Fiji (Brown, 2008).

Famers facing transaction costs in spot market are in the form of searching information for market prices, bargaining, and negotiation with the unknown buyers or middleman. Most mango farmers in Fiji are seen transacting in the spot market in traditional supply chain due to lower transaction costs. In the spot market, mango farmer's transaction costs are low and farmers may get a good price for their produce if they directly deal with consumers. Despite this, transacting in spot market also increases the risk of selling mangoes in open market which exposes vendors to price uncertainty and wastage of the produce due to no fixed market.

Apart from farmers selling directly to consumers middleman play an active role in this supply chain. According to Kumar and Palanivel (2016), it found that the wholesale price of mangoes at the farm gate paid by middleman was FJD 10 per 30 kilogram bag which means farmers only get FJD 0.33 cents per kilogram for the produce. The reason for this low price as explained by Pingali et al. (2005) is that farmers seek lower transaction costs and are therefore accept price they receive from the sales.

Modern processing chains

In this type of supply chains a new type of transaction costs has arisen due to demand in improved product quality (Pingali et al., 2005). The three major end markets, processors (Kumar & Palanivel, 2016) supermarkets and tourist market (hotels and resorts) creates demand in this supply chain (Young & Vinning, 2007). Modern supply chains have coordinated vertically but this is only noted between the middleman and the processors (Kumar & Palanivel, 2016). Mango producers in this supply chain are not able to directly deal with the processors, hotels or supermarkets due to high transaction costs. These transaction costs can be due to information asymmetry, increase in quality requirement and consistency in supply (Pingali et al., 2005).

The involvement of intermediaries removes the burden from farmers of meeting the transaction costs and standard requirements of fruits for the domestic supply chains (Mushobozi & Santacoloma, 2010) The relationship between the farmer and the middleman is based on spot market where the middleman buys the mango while still on the tree and uses his own labour for harvesting. The farmer receives FJD 0.33 per kilogram from the middleman for the mango produced which is similar for those dealing with middleman in traditional supply chain.

Export supply chain

Currently, there is a small network of farmers in this supply chain consisting of 12 major exporters (Kumar & Palanivel, 2016) and 39 registered growers (South Pacific Trade Commission, 2000). The producer and exporter have developed strategic alliance through vertically coordinating and the relationship is guided by market contracts in this supply chain.

Strategic alliances are relatively informal agreements between two parties to cooperate in the vertical marketing chain by sharing information while maintaining their formal separate identities (Worley & McCluskey, 2000).

In this supply chain, the role of intermediary or the middleman is played by the exporter who sells the fresh mango and its processed product to the high earned markets. The stakes are high in this market due to some asset specificity, opportunism and requirements of product quality. Therefore, marketing contracts are used to guide this relationship which increases the transaction costs. Ministry of Agriculture and Biosecurity play an important role in regulating the contract between farmers and the exporters. This leads to transaction costs of negotiating and monitoring contracts outweighed by the benefits which both parties get from this relationship. In addition, there is also minimum transaction cost involved in this relation to search for trading partners and bargaining for better prices since contract guides the transaction. The price paid farmers are FJD 40 - FJD60 per 35 kg bag of mango depending on the size and quality (Kumar, 2017). This gives farmers FJD 1.14 - FJD 1.71 per kilogram of mangoes.

Apart from price and market certainty there can be vertical integration along the supply chain so that the farmers are able to get the direct benefit of the export prices. The price received by exporters in this market is a major motivator for the coordination of this supply chain. The price of the mango received is FJD 1 - FJD 3 each which is less than other major exporters due to inferior quality (South Pacific Trade Commission, 2000).

DISCUSSION

In Fiji, the transaction costs to some extent determines farmer’s choice of transacting in various supply chains. As noted in the traditional supply chain, the transaction cost is low therefore farmers prefer transacting in the spot market. This includes farmers who are selling at municipal markets and road sides. There are also some farmers in this supply chain who are unable to meet the transaction costs therefore relay on middleman for sales of their produce. The transaction costs involved in the mango supply chain can be in related to inconsistency in supply, lack of information, poor market price indicators, demand for high quality products, arranging of transportation, assessing finance for adequate facilities (Young & Vinning, 2007) and negotiation costs with the buyers. This has resulted in farmers being presented with lower prices in this supply chain.

A new type of transaction costs has arisen due to improved product quality in modern agriculture market (Pingali et al., 2005). This is due to improvement in living standards of the consumers. Apart from the increase in transaction costs due to product quality, other reasons for an increase in transaction costs can be due to search, negotiation and monitoring costs (Hobbs & Young, 2000). As noted in the traditional and modern supply chains mango market in Fiji, these mentioned transaction costs are affecting mango producers from vertically coordinating. Especially for modern processing and export supply chains, transaction costs increases with stringent product quality requirements (Anon, 1985; Young & Vinning, 2007). Therefore, an increase in product differentiation is notable development associated with closer vertical coordination (Young & Hobbs, 2002). Vertical coordination can be achieved with the use of contracts as seen from the export supply chains success in Fiji. The use of contracts in vertical coordination must be considered to improve farmer access to these supply chains. According to a study, most growers feel that contracts should be used between farmers and final purchasers, thus eliminating the role of middlemen (Young & Vinning, 2007). The administration and monitoring of the contract can be expensive and increase the transaction costs but Government agencies such as Ministry of Agriculture regulate the contracts to ensure mango producers are able to meet the transaction costs. Use of contracts also eliminates transaction costs of searching for trading partners, and market information. This will provide farmers with price certainty and secure market for mango.

Another solution to this problem can be horizontal coordination. Horizontal coordination can be in form of cooperatives and farmer associations. To understand how horizontal coordination affects transaction costs, the causes of transaction costs in the Fiji mango market needs to be understood. Since mango production is scattered (Department of Agriculture, 2009), horizontal coordination can be a means of assisting mango producers to reach economies of scale, better access to assets, improved bargaining power (Pingali et al., 2005) and market information. There is a risk of failure in horizontal coordination due to seeking alternative contractual arrangements where commercialisation demands higher output quality (Pingali et al., 2005). Despite this, the returns from farmer coordination are more lucrative and the risk is shared. The increase in scale through horizontal coordination reduces the transaction cost and supermarkets tend to target those supply chains whose transaction costs are low (Pingali et al., 2005). This solves the issue of scale, consistency, costs of contractual agreement, costs accessing information and costs bargaining for price in the supply since these issues increase the transaction costs.

It is also noted that the middleman play a significant role in the mango industry. Therefore further research can be conducted on their influence in this industry.

CONCLUSION

The wider literature reviewed in this paper indicates that transaction costs has significant impact on mango supply chains based on different markets in Fiji. These markets are categorised into three distinct supply chains characterised by its transactions, relationship amongst the actors and the end markets. The traditional supply chain has the lowest transaction costs for mango producers due to transactions conducted in spot markets. Modern and export market supply chains are faced with a new type of transaction costs which has come from the demand of quality produce. It is recommended that vertical and horizontal coordination can be some of the solutions to overcome the transaction costs in the mango market.

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