

MAPPING SUPPLY CHAIN STRATEGY ON SWEET POTATO COMMODITY IN MEDAN CITY

Mapping Supply Chain Strategy pada Komoditas Ubi Jalar di Kota Medan

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ABSTRACT

The concept of supply chain management (SCM) has been widely used but is limited to industrial products, while in agriculture, especially fresh products, it has received little attention. In fact, when viewed from the characteristics of the product, agri-fresh supply chain management (FSCM) is very necessary. This study was carried out in addition to identifying the supply chain of sweet potato which is an important food crop in North Sumatera as well as being an additional reference in research that focuses on sweet potato commodities. This research was conducted in the area of Sei Beras Sekata, Sunggal, Deli Serdang. Respondents are actors in the supply chain, starting from farmers to consumers. The sample is determined through the snowball sampling technique because there is no sample frame. The research showed that there are three sweet potato supply chain lines, involving four marketing agencies. The first channel is a supply chain channel without intermediaries, meaning that farmers sell directly to consumers. The second channel is a channel with one intermediary, where farmers first sell sweet potatoes to retailers and then retailers sell to consumers. The third channel is the channel that has the longest chain, which involves collectors, agents, and retailers.

Keyword : *agri-fresh supply chain management, supply chain, sweet potato*

ABSTRAK

Konsep supply chain management (SCM) sudah banyak digunakan namun terbatas pada produk industri sedangkan dalam bidang pertanian khususnya produk segar hanya mendapat sedikit perhatian. Padahal apabila dilihat dari karakteristik

produknya, agri-fresh supply chain management (FSCM) sangat diperlukan. Penelitian ini dilakukan selain untuk mengidentifikasi rantai pasok ubi jalar yang merupakan tanaman pangan penting di Sumatera Utara juga sebagai tambahan referensi dalam penelitian yang berfokus pada komoditas ubi jalar. Penelitian ini dilakukan di daerah Sei Beras Sekata, Sunggal, Deli Serdang. Responden adalah pelaku yang berada pada rantai pasokan, dimulai dari petani hingga konsumen. Sampel ditentukan melalui teknik snowball sampling karena tidak ada sample frame. Berdasarkan penelitian yang telah dilakukan, diketahui bahwa alur dalam rantai pasok ubi jalar di Kota Medan, diawali dari petani di daerah Sei Beras Sekata. Terdapat tiga alur rantai pasok ubi jalar, dengan melibatkan empat lembaga pemasaran. Alur pertama adalah alur rantai pasok tanpa perantara, artinya adalah petani langsung menjual kepada konsumen. Alur kedua adalah alur dengan satu perantara, dimana petani menjual terlebih dahulu ubi jalar ke pengecer dan kemudian pengecer menjual kepada konsumen. Alur ketiga adalah alur yang memiliki rantai terpanjang, dimana melibatkan pengepul, agen, dan pengecer.

Kata kunci : agri-fresh supply chain management,antai pasok, ubi jalar

INTRODUCTION

Currently, consumer concern for the safety and quality of the products purchased is increasing. This makes the company should be able to collect information and track what institutions are involved in distributing the products sold. The concept of SCM (Supply Chain Management) is a solution to this problem. Supply Chain Management (SCM) is a set of approaches used to efficiently integrate suppliers, manufacturers, warehouses, and stores, thus merchandise is produced and distributed in the right quantities, to the right locations, and at the right time, to minimize costs at the right place. The entire system at the same time providing a good level of satisfaction (Simchi-Levi et al, 2008). In addition, an effective supply chain can integrate existing resources and improve logistics cost efficiency (Fan et al, (2013); Septiana et al, (2017)). Proper supply chain management can also create a competitive advantage (Heizer & Reinder, 2010).

The concept of supply chain management (SCM) has been widely used but is limited to industrial products, while in agriculture, especially fresh products, it has received little attention. When viewed according to the characteristics of its products, SCM or what is known in agriculture as agri-fresh supply chain management (FSCM) is very necessary. i.e. the process from production to delivery of agricultural fresh produce, i.e. from farmer to customer. FSCM is more complex than SCM in other sectors because of the perishable, bulky nature of the product, continuous decline in quality (Nagurney et al, 2013), high demand and price fluctuations, increasing consumer concerns about food safety (Van Der Vorst & Beulens, 2002), and dependence on climatic conditions (Salin, 1998).

FSCM mainly includes four activities of production, harvesting, storage and distribution (Ahumada & Villalobos, 2009). As research conducted in India (Kundu, 2013; Rais & Sheoran 2015), in Indonesia has the same problem, that these four activities are fragmented due to the lack of interaction, collaboration, and information sharing between supply chain actors both horizontally and vertically. Yields in over/under production situations often occur in certain productions and problems such as price fluctuations, yield wastage and low profitability of farmers arise in the farming system. On the other hand, these unorganized intermediaries play their monopoly in pricing and in adjusting market supply and demand. (Patidar et al, 2018) stated that the existence of FSCM will ensure the reduction of monopoly risk on intermediaries and maintain transparency in business transactions and integrate demand and supply. Supply chain analysis is critical to developing sustainable and reliable supply chain management systems and enabling the rural poor to participate profitably in local, regional, and global trade (Batt & Cadilhoon, 2007; Mitchell et al, 2009).

One commodity that has the potential for development in North Sumatra is sweet potato. This is shown through (Habib et al, 2015)'s research using the Location Quotient method where sweet potato plants have the best development potential in North Sumatra with an LQ value of 1.31. In addition, the Director-General of Food Crops of the Ministry of Agriculture, Mr. Suwandi said that sweet potatoes are starting to become a trend for healthy food in Japan and Korea (Anonymous, 2019). This led to an increase in the export value of sweet potato plants, wherein 2019 sweet potato exports reached a value of 55 billion rupiahs. Moreover, in its cultivation, sweet potato is a commodity that is easy to grow and does not require soil with special characteristics. Further research by (Habib & Risnawati, 2017) also shows that sweet potato farming is considered feasible and profitable to cultivate based on the calculation of the B/C ratio. And being in quadrant I, which is a very good situation to develop. The huge potential of this sweet potato commodity is an important reason why it must be researched and traced its supply chain. Loss during the distribution of this commodity will be a loss that should be handled.

Many types of research on the supply chain of agricultural commodities have been carried out, including Setiawan et al, (2012); Dinata et al, (2014); Sucipta et al, (2016), Septiana et al, (2017), and Armansyah et al, (2019). Until now, research on the supply chain of sweet potato commodities is very limited and has never been conducted in North Sumatra. Research on the sweet potato supply chain has been conducted only by Munawir et al, (2018) in Karang Anyar and Addlillah et al, (2021) Regencies in Cianjur, West Java. This research is based on the results of previous studies (Habib et al, 2015) which show that sweet potato has enormous potential to be developed. There is no previous research that clearly explains in detail about the sweet potato supply chain. The

results of the research more focused on the value chain than the three main activities in the supply chain, namely the flow of goods, information and the flow of money. Therefore, this study was carried out in addition to identifying the supply chain of sweet potato which is an important food crop in North Sumatra as well as being an additional reference in research that focuses on sweet potato commodities.

RESEARCH METHOD

The research area is Sei Beras Sekata Village, Sunggal, Deli Serdang. This area was selected purposively, according to the phenomenon and research objectives. Sei Beras Sekata area is an area where the majority of the people have a livelihood as farmers with food commodities.

Supply chain research begins with identifying the sample through key informants from the Department of Agriculture. The informants will then provide information about key farmers that can be used as research samples. This research was conducted at every institution involved in the supply chain starting from farmers to consumers, so the snowball sampling method was used. By using this method, you will see the flow of the sweet potato supply chain to consumers and the marketing activities carried out. The sample is determined through the snowball sampling technique because there is no sample frame. There were 29 informants in this study consisting of farmers, collectors, agents, traders and consumers. The sample will be interviewed with several questions to collect the data needed, including supply chain flow mapping, supply chain actors mapping, and activities carried out.

RESULT AND DISCUSSION

Supply Chain Mapping

This research started from sweet potato farmers in Sei Beras Sekata Village, which is one of the sweet potato production centers for the Medan area. Based on interviews that have been conducted with several sweet potato farmers in Sei Beras Sekata Village, it is known that there are three alternative routes in selling sweet potato harvests.

The first channel is a one-level marketing channel, where farmers who double as retailers also sell directly to consumers. There are 4 farmers out of 10 farmers who choose the first channel. One of the reasons for this is that the farmers' residences are strategically located so that their crops can be directly sold. Usually, farmers like this one of them also because they have a family business, then they also sell their harvest directly. This flow is considered to be the best supply chain flow, as stated by Bubun et al, (2018) that good supply chain management is a supply chain that can cut the supply chain framework

so that farmers can directly have access to consumers and sell their products at relatively high prices.

The second line is that it comes from farmers, then the harvest is directly sold to retailers, then retailers sell directly to consumers. This path was chosen by farmers 3 farmers out of 10 because although the first path is said to be the most effective, most farmers usually continue to go through a longer route. After all, apart from a contract with the collector, the harvest is also carried directly by the collector so that the harvest is not damaged during the storage process. According to Kambey et al, (2016), selling through collectors is more profitable than selling them to consumers themselves because collectors usually buy sweet potato commodities per farmer's land.

The third line in this supply chain starts with farmers as producers, then sells them to collectors. This channel selected by 3 other farmers. Buying and selling are usually done on agricultural land or farmers who come to collectors. The reason farmers prefer to sell directly to middlemen or collectors is that the process of selling sweet potatoes is considered easier, both in the buying process and in payment problems, especially by farmers who produce sweet potatoes in large quantities and traders in this channel can absorb sweet potatoes in large quantities. more. The collectors then collect the harvests of other farmers as well until the daily target is reached and then sell them to agents. The collector will deliver to the agent and then the agent brings it to the wholesale market or wholesale market to be sold to retailers. Usually sold in the Medan Metropolitan Trade Centre (MMTC) market, the market in Medan Tuntungan, some are to Aceh, and even to Dumai. In summary, the flow of the sweet potato supply chain can be seen in the image below.

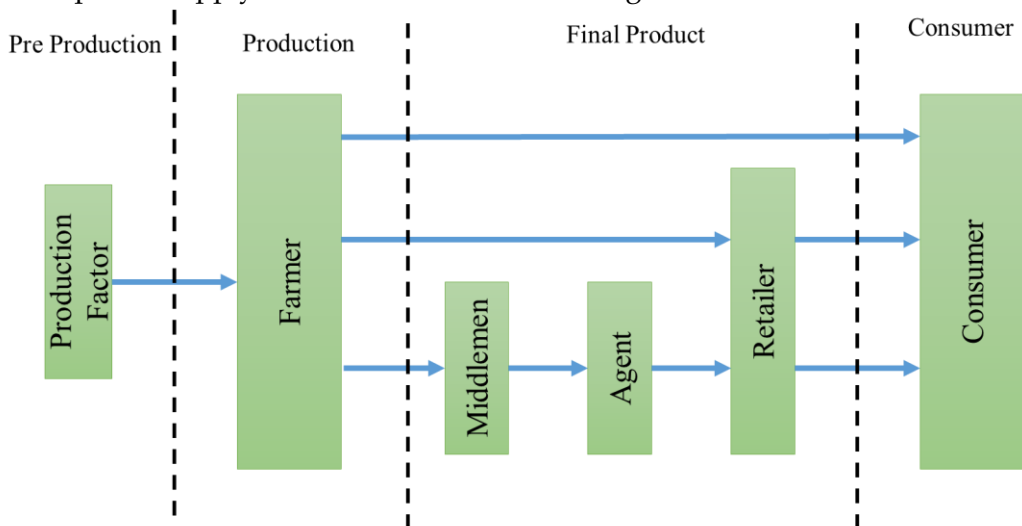


Figure 1.
Supply Chain of Sweet Potato

Mapping of Actors in the Supply Chain

The supply chain structure explains the parties involved and their roles and the flow of product and money information in the supply chain (Astuti et al., 2010). Based on the research that has been done, in total there are four actors involved in the supply chain of sweet potato commodities to consumers, which are:

1. Farmer. Farmers are suppliers or producers who are the beginning of the supply chain. Farmers as producers will produce goods that are traded, in this case, sweet potatoes.
2. Collectors / Middlemen. A collector is a marketing agency that has sufficient capital. does not guide farmers, has the freedom to make purchases without binding, in terms of quantity, quality, or price. Collectors/middlemen play a role in collecting production from several sweet potato farmers to be sold in bulk to agents.
3. Agent. Agents are also commonly referred to as big collectors. Big collectors are suppliers who take raw materials from both farmers and small collectors. Agents are marketing agencies that buy large quantities of crops from middlemen and then resell them to retailers.
4. Retailer. Retailers offer their goods to consumers. Retailers usually buy sweet potatoes from agents in wholesale markets. Usually, retailers will buy in large quantities and then repackage them when they are sold to consumers.

Both collectors and agents usually provide information on prices and market demand for sweet potatoes to farmers. Collectors and agents also usually make initial purchases by providing initial capital or other production facilities for sweet potato cultivation. In line with Husnarti, (2017) explanation which states that collectors also play a role in providing capital to farmers and providing information on prices and demand for agricultural commodities. In the process, there are three flows in the sweet potato supply chain, namely the flow of materials, information, and the flow of money which is presented in the image below.

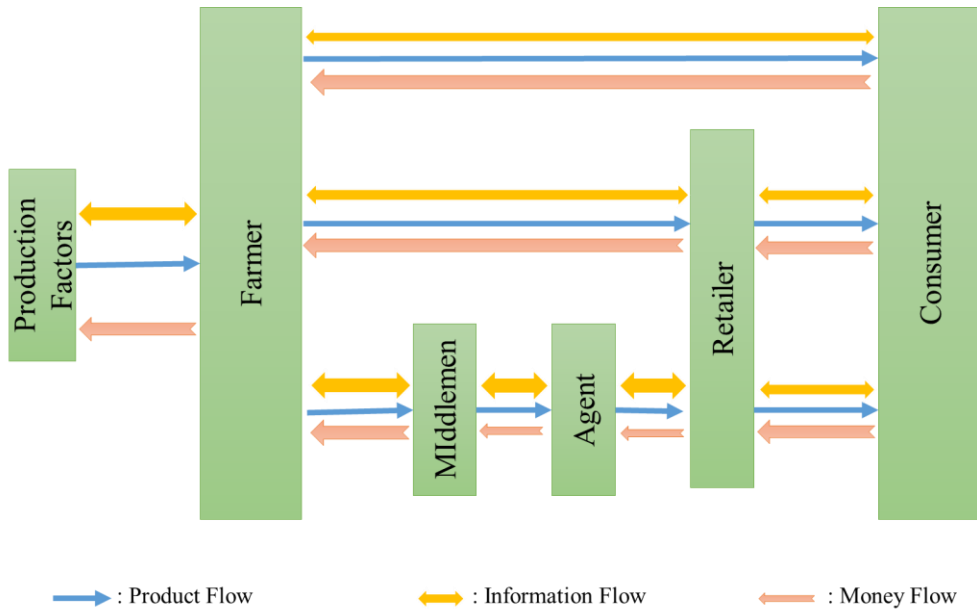


Figure 2. The Flow of Product, Information and Money on Sweet Potato Supply Chain

Product flow is the process of moving sweet potatoes from producers or farmers to consumers. The figure shows three distribution channels for product movement involving middlemen, collectors, and retailers. Information flow is the process of transferring information from one institution to another during the buying and selling process of sweet potatoes that occurs on a reciprocal basis. The information in question is in the form of price information, capacity, technical information, availability of sweet potato, and other information from farmers to consumers and vice versa from consumers to farmers. The third flow is the flow of money, namely the movement of money that occurs in the sweet potato supply chain system. In this flow, money flows from consumers and ends to farmers.

Activities in the Supply Chain

Mapping was carried out to determine supply chain patterns and important activities carried out by each actor in sweet potato farming and marketing institutions (Jannah et al, 2015). These important activities are aimed at creating and increasing value, delivering products to consumers. In the supply chain flow from producers to consumers, of course, the actors in the chain carry out several marketing activities, as detailed below.

1. Farmers to middlemen, the activities carried out are sorting and packaging. Farmers after harvesting sweet potatoes carry out cleaning or sorting, namely removing the parts that are not needed in the harvest. The discarded parts or damaged yams are collected for pig feed. Sweet potatoes

that have been cleaned and sorted are then packed in sacks and then weighed. The selling price of sweet potatoes is 700 rupiah if the retailer who picks up the land by transportation is charged to the retailer, the selling price is 1,000 rupiah per kilogram if the farmer delivers the harvest to the middleman.

2. Middlemen - Agents: Agents buy sweet potatoes from middlemen with prices ranging from 1,000 - 1,250 rupiah. Agents will come to some collectors with a pickup or truck. The activities carried out are loading and unloading and sorting or sorting of products that have decreased in quality. This activity is carried out by observing the mechanical damage that occurs during transportation and packaging activities. Mechanical damage that occurs in a series of activities in the supply chain needs to be considered because it can be a starting point for other damages such as chemical and microbiological damage (Amalia et al, 2018). In addition, sweet potatoes were also grouped based on their size. When agents buy sweet potatoes from middlemen, they unload the sacks containing sweet potatoes that have been packed by farmers for sorting.
3. Agent - Retailer: Before the agent sells to the retailer, the sweet potatoes that have been purchased from the collectors are re-sorted. This is done to get the best quality of sweet potatoes before being sold to consumers. Sweet potatoes with good quality are then washed and packaged in clear plastic with a load of 25 kg and transported by agents to market centers or wholesale markets to be sold to retailers for 1,200 - 1,500 per kg.
4. Retailers - Consumers: Retailers sell to consumers at a price range of 1,500 - 2,500 per kg. Retailers spend 20 million a year on their stalls, 20,000 rupiahs for electricity, and cleaning fees.

The most effective supply chain path according to Marimin & Maghfiroh, (2010) is the shortest supply chain path, namely from producers directly to consumers without intermediaries, so that the profits obtained by producers are greater. This is because more and more intermediary institutions and marketing activities carried out will increase marketing costs so that the price of agricultural commodities traded will reach consumers at a higher price. The supply chain scheme of sweet potato in its marketing can be seen in the image below.



Figure 3.

Cost Scheme Supply Chain of Sweet Potato

Based on the picture above, it is known that the shortest supply chain line is the first line, which is from sweet potato farmers directly sold to consumers. Farmers who sell directly to consumers will get more profit, compared to farmers who sell sweet potatoes using the second and third channels. This is because each marketing agency will carry out marketing activities and will take advantage of these activities so that the required marketing costs are also increasing, which causes the price of sweet potatoes to increase. Meanwhile, if farmers sell directly to consumers, the marketing costs required are less but the selling price is competitive or the same as other chain channels, so that the profits received by sweet potato farmers are greater.

CONCLUSION AND SUGGESTION

Conclusion

Based on the research that has been done, it is known that the flow in the sweet potato supply chain in Medan, begins with farmers in the Sei Beras Sekata area. There are three sweet potato supply chain lines, involving four marketing agencies. The first channel is a supply chain channel without intermediaries, meaning that farmers sell directly to consumers. The second channel is a channel with one intermediary, where farmers first sell sweet potatoes to retailers and then retailers sell to consumers. The third channel is the channel that has the longest chain, which involves collectors, agents, and retailers.

The results of the analysis of marketing costs and the difference in sales of sweet potatoes from each marketing agency show that the most efficient supply chain channel is the first channel. Marketing carried out without intermediaries will make farmers as producers get the largest share of profits because commodity prices at the consumer level will be the same as market prices, but these prices are not reduced by marketing operational costs carried out by other marketing agencies. The costs and profits will all be received by the farmer. Although the first supply chain channel is the most profitable, it is not widely used by farmers. This is because other marketing institutions, such as middlemen and retailers, are a source of capital for farmers in farming. So like it or not, other marketing institutions have to take part in the sweet potato supply chain system in Medan.

Suggestion

It is necessary to strengthen the capital for sweet potato farmers and equal distribution of information as well as the creation of a partnership between each marketing agency, then the profit-taking at each institution can be monitored. This needs to be done, as much as possible the share obtained by

farmers who carry out the most activities to produce sweet potatoes is greater than institutions in other supply chains.

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