# VALUE CHAIN ANALYSIS OF VEGETABLES IN URBAN VIETNAM – CASE OF DANANG CITY

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## ABSTRACT

Safe food has been "a constant worry of the people and a controversial problem that need to be solved at the earliest in Vietnam". Over the past recent years, the government has had a various policies in order to support developing both producing and distributing safe vegetables. However, up to now, the supply chain of safe vegetables (SV) still has some drawbacks. While everybody has the need to consume SV and the government has made so many efforts to support, why the supply chain of SV still has not developed strongly and taken the place of the normal supply chain? This research focuses on analyzing the vegetables value chain, comparing between the supply chain of SV and the supply chain of normal vegetables, including qualitative and quantitative analysis. The finding will partly point out some problems in dividing the cost and the value of the supply chain of SV in order to suggest some solutions for the development of the supply chain.

**Contribution/ Originality:** This study gave the insightful analysis of vegetables supply chain in Danang that includes the normal versus the safety one comparison and the detailed cost, profit-sharing structure in general, which pointed out some exist problems, that may provide some suggestion to improve the value of the whole supply chain.

## 1. INTRODUCTION

Food has some unique characteristics that require the need of "farm-to-table" supply chain. To have an efficient supply chain, the technique of value chain analysis was used to describe and analyze how value distributed in the whole chain, as a key to seeking for value enhancement solutions applied for value chain. Simons (2006) through an UK red meat value chain analysis research, stated that "Food value chain analysis results in a more effective supply chain". In the same case, Taylor (2005) used the value chain analysis to describe the whole chain in detail, from which, recognize the problems and opportunities of each participant. Those results provided firms and managers a steady foundation to improve supply chain efficiency and competitive advantages (Taylor, 2005). In 2008, UK's Department for International Development (DFID) published "Making Value Chains Work Better for the Poor", in

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this publication, agricultural value chain analysis technique and the guideline for improving value chain to raise the poor's income – the one who receives comparatively low distributed value in the chain.

In Vietnam, there are some researchers have used the technique of value chain analysis to investigate the food supply chain. Bui et al. (2011) conducted a research in Sonla, Vietnam fresh milk value chain, Tam and Hai (2014) with the research of Bentre cocoa supply chain or Nguyen (2015) who did a research about beef cattle supply chain in Binhdinh, to name but a few. These findings both did the value chain analysis in a bid to look for solutions to improve the value chain. Our research was conducted in Danang - a municipality, of which 2 percent of GDP added by the agricultural sector, and 90 percent of food delivered from other cities. The objectives of this study are: (1) Define the structure of supply chain, determine the roles and functions of each supply chain participant, (2) analyze the added value created by each participant, (3) compare the safe vegetables supply chain (SVSC) and the normal one, (4) propose some solutions to improve the local value chain of safe vegetables.

## 2. LITERATURE REVIEW

### 2.1. Agricultural Product Supply Chain

Supply chain is defined as *all the functions directly or indirectly related to the work of meeting the demand of customers* (Hugos, 2018). Food supply chain has some distinct characteristics known as: (1) the involvement of many kinds of individual firm in a complex chain like institutes, agricultural firms, farms, farmers, agricultural co-operatives (CO), merchants, producers/processors, carriers, exporters/importers, wholesalers, retailers and customers (Hsiao et al., 2006; Jaffee et al., 2010) (2) these participants have different business ownership structures such as private, state owned, government, association, co-operatives, profit and non-profit organizations, working under the supervision of many governmental as well as international organizations (Bachev, 2012) (3) a large number of supply chain participants (Sterling et al., 2013); (Kpmg, 2013) (4) short life-time products, significant product and difference in product producing process make it difficult to practice food traceability and food quality control (Hsiao et al., 2006).

### 2.2. Agricultural Product Supply Chain in Vietnam

Besides general characteristics mentioned above, agricultural product supply chain in Vietnam also has some distinctive attributes: (1) traditional market and small point of sale account for a great proportion of marketing channel (Huong et al., 2013; Tran et al., 2013) (2) Governance relations are limited due to the fragmented of small-sized producer and distributors (Wang et al., 2012; Tran et al., 2013). As a result, quality control still is a pressing problem of all relative supply chain participantes. There have been many researches proposing solutions in tackling this difficult situation (Wang et al., 2012) such as establish farmer associations (Moustier et al., 2010) or create professional agricultural producing consolidated groups or research institutes with the participation of individual farmers (Huong et al., 2013).

Until now, there are some reasons why agricultural producing and supplying in Vietnam still inefficiently and have to face with many difficulties: (1) The unstable weather condition, the poor techniques and methods, the lack of skilled workforce, high producing cost, the urbanization, the inablility in meeting the international food hygiene and safety requirement; (2) insufficiency inspection system; (3) unsustainability producing and the lack of collaboration between supply chain participants (Huong et al., 2013).

### 2.3. Agricultural Product Value Chain Analysis

Value chain is a set of activities creating product values, which can make profit. Value chain analysis is a method which focuses on analyzing the product flow, information flow and the way that information is managed on the whole chain (Taylor, 2005). In 2008, UK's Department for International Development (DFID) published "Making value chains work better for the poor - A toolbook for practitioners of value chain analysis" (DFID, 2008)

which provided detail instructions about how to analyze an agricultural producing value chain with a couple of steps:

### Step 1: Mapping the Value Chain

Mapping the value chain enables researchers to recognize main activities in supply chain, identify supply chain participants and their specific roles, determine flows within the supply chain, distinguish the quantity of product in supply chain and the number of supply chain components, figure out how value changes and the specific relationship in supply chain.

### Step 2: Quantitative Value Chain Analysis

Quantitative analysis is the work of analyzing cost, profit, added value created in each process for details. In case of agricultural products, one of the difficulties which researchers may encounter with is that many farmers do not have any kinds of annual financial report or do not even make a record about this information (DFID, 2008). Accordingly, without direct data, researchers might have to base on the other information to make a guess about the cost, revenue...of each farmer. DFID (2008) also emphasized some notes that should be considered in the progress of quantitative value chain analysis, when allocating fixed cost, due to the particular instincts of agricultural products supply chain, farmers or even distributors often plant/raise or distribute many kinds of different product, for example, farmer uses a equipment for planting both rice and fruit, or the retailer sells vegetables and meat in her shop...In this case, the fixed cost would be split into two or three, according to the number of activities. With profit and revenue, farmers and some participants in chain often use domestic workforce, so employmental transactions often do not appear and cause a lot of difficulties in employment cost calculation. Therefore, instead of profit analysis, revenue of individual participants might be calculated. Another advice in agricultural product analysis, enough attention should be paid to total revenue as well as grand profit which each participant receives in the same period of time. Agricultural product supply chain might have the difference between the quantity of product in each process, this may lead to the dramatic difference in total profit, some participants receive numerous profit compared to others despite the comparatively small profit ratio they might receive.

## 3. METHODOLOGY

In Danang vegetables value chain analysis, we used process and methods mentioned in DFID (2008) collected both primary and secondary data. Secondary data was gathered from the statistical data of the Danang Department of Agriculture and Rural Development, the Danang Department of Industry and Trade, the Hoavang district Department of Agriculture, the League of Danang Co-operative, the Tuyloan Co-operative of producing and supplying safe vegetables, Pihka ĐN JSC, safe vegetables producing Taman Farm. The primary data was collected from June to December 2016 using survey, of which the respondents were 200 Hoavang vegetables producing farmers, 200 small traders at local traditional markets, 12 merchants (MRC), 20 wholesalers (WO) in Hoacuong junction market. Expert opinion method was also used in the process of data-gathering, the experts jointed in this method was agricultural servants of ward, district, agricultural engineers, co-operative employees, board of directors of farmer council.

As DFID (2008)'s process, after finishing the survey data-gathering, calculating statistics value, we accredited the validation of the data using expert opinion method. Two group interviews were held, a group of vegetables producing experts includes Hoavang agricultural engineers, representative of agricultural co-operative, representative of farmer council; another one includes experts in vegetables distribution such as representative of the management of market, representative of the Danang Department of Industry and Trade, representative of food companies. In the group interview , we provided the experts with the data-gathering result of the survey and asked

them to discuss about the validation of it. This helped us to eliminate the untypical data as well as had the reasonable explaination about the great difference of data.

## 4. DANANG VEGETABLES VALUE CHAIN

### 4.1. Mapping the Value Chain

As shown in value chain map (Table 1), at the first process – supplying agricultural materials (AMs), there is no appearance of producing firms. In SVSC, at the producing process, there is no participation of individual farmers (IF). Although these individual farmers can produce SV, they can not register the certificate of quality or certificate of trademark for their specific products. Consequently, farmers have to join in co-operative so that their product is admitted as SV. The SVSC is shorter than the normal one due to the presence of companies, co-operatives, of which the main responsibilities are product pre-processing, packing and labeling, instead of merchants and wholesalers .

**Table-1.** Main participants and their activities in the Danang vegetables supply chain.

| | Supplying AMs | Producing | Collecting | Wholesaling | Retailing |
|---|---|---|---|---|---|
| **DANANG VEGETABLES SUPPLY CHAIN** | | | | | |
| **Participants** | Sale agencies Retail shops Agricultural servants | Producing firms Agricultural co-operative | Co-operatives Merchants Producing firms | Wholesaler | Small traders at market Farmers selling product at market Retail shops, minimarts Food companies |
| **Main activities** | Sell and give advice about agricultural materials | Plant Harvest Wholesale selling Sell product for wholesaler or retailer | Collect Pre-process Deliver | Collect Preserve Wholesale trade | Collect Preserve Pre-process Retail trade |
| **DANANG SAFE VEGETABLES SUPPLY CHAIN** | | | | | |
| **Participants** | Sale agencies Retail shops Agricultural servants | Producing firms Individual farmers (co-operative members) | Co-operatives Producing firms | | Retail shops, minimarts |
| **Main activities** | Sell and give advice about agricultural materials | Plant Harvest Wholesale selling Sell product for wholesaler or retailer | Collect Pre-process, packing, labeling Deliver | | Collect Preserve Pre-process, packing, labeling Retail trade |

**Source**: Summarized form survey result

As can be seen in Table 2, which displays the supplying structure of vegetables in Danang, SV just accounts for 6.5% of the total vegetables supplied in the city. Moreover, ¾ of this amount still is sold merchants or wholesaler as normal vegetables (in terms of price and packaging). Hence, at retailing process, the percentage of SV sold customer is just 1.6% of vegetables produced in Danang and 0.25% of vegetables consumed in Danang. While the local customers have a great demand on SV, producers or co-operatives just bring ¾ of their production capacity to the market.

Table-2. Supplying structure of vegetables in Danang

| Supplying AMs | Producing | Collecting | Wholesaling | Retailing |
|---|---|---|---|---|
| Sale agencies Retail shops Agricultural servants | **Co-operative 2.89** | **Co-operative 25** | | **Retail shops, minimarts** |
| | | Merchant 75 | Wholesaler | Small traders at market/ Food companies |
| | Co-operative group (COG) 0.58 | Individual farmer 20 | | Retail at markets (RM) |
| | | Merchant 80 | Wholesaler | Small traders at market/ Food companies |
| | **Firms 3.52** | **Firms 25** | | **Retail shops, minimarts** |
| | | Merchant 75 | Wholesaler | Small traders at market/ Food companies |
| | Individual farmer 93.1 | Individual farmer 20 | | Retail at markets |
| | | Collector 80 | Wholesaler | Small traders at market/ Food companies |

**Note:** SV in bold

Because the majority of supply chain participants are small business units, household businesses without business registration certificate so the relationships between them are often long-term relationships without contracts, legal constraints or agreements about price, quantity as well as quality (Figure 1). As a result, if the input agricultural materials are in poor quality which causes loss for the farmers, they will be the only one who has to endure it, without any compensation or reimbursement from their suppliers. If there is a bumper crop, farmer will be forced to sell with a cheaper price by merchants or wholesaler. At present, there are two firms which are producing SV in Danang vegetables supply chain, however because of the low capacity, 365 ton/year just accounts for 3.6% of Danang vegetables capacity and 0.05% consumption demand, these two firms hardly have any power in supply chain, and there is no difference in the relationship between them and merchants/wholesalers compared with that of the individual farmers and merchants/wholesalers. These firms have not been able to launch their products on big supermarkets's shelves such as Co-opmark, Lotte or Big C due to the limited of product category as well as unstable capacity. Similarly, co-operatives and co-operative groups have to encounter with the same situation, the relationship of co-operative/co-operative group and other supply chain participants and that of individual farmer and others supply chain participants are the same, so these organizations have little role in the supply chain.
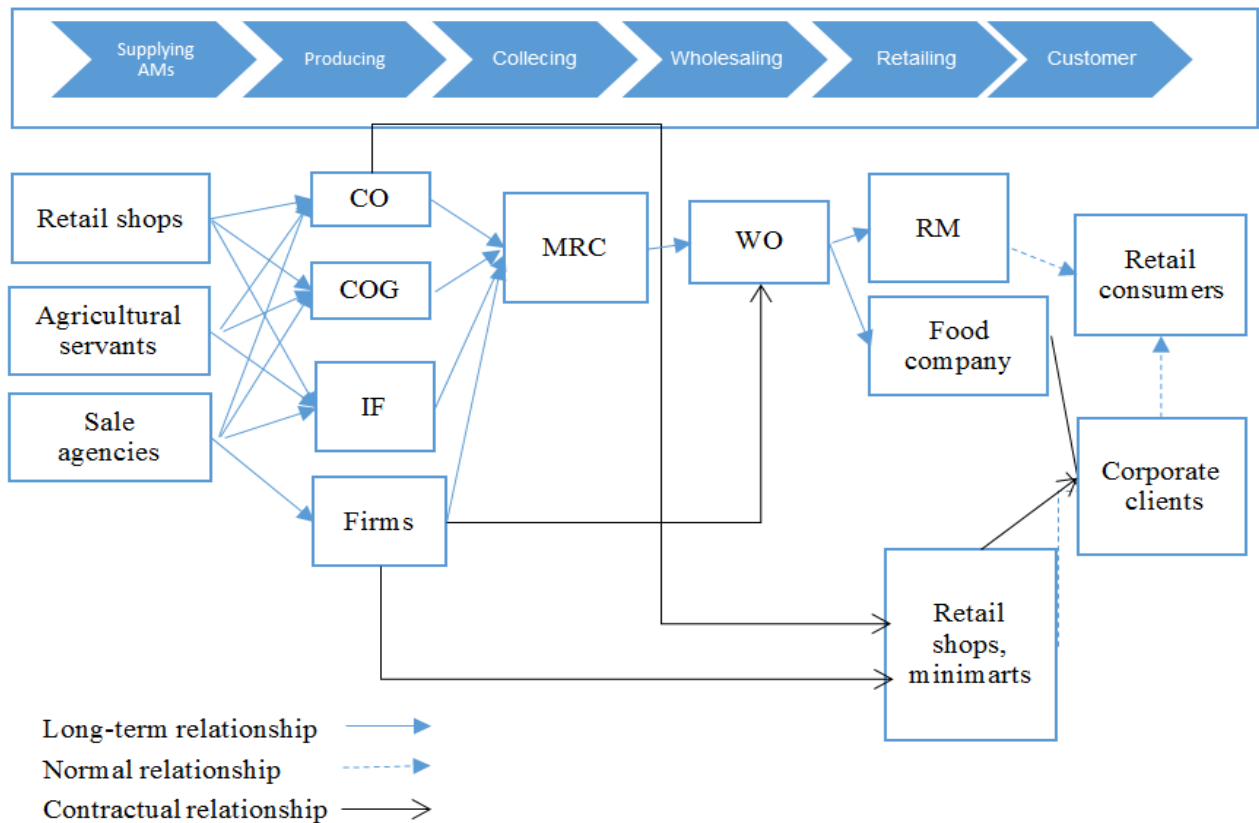
**Figure-1.** The relationship between participants in Danang vegetables supply chain

**Source:** Drawn form survey result

### 4.2. Quantitative Value Chain Analysis

**At producing process,** in Danang vegetables supply chain, there are two subjects who directly take part in this stage, individual farmers and firms. Co-operatives just act as input materials suppliers and output distributors, take responsibilities for pre-processing. In Danang, the area under cultivation of each farmer is small, just 1-2sao/farmer (1 sao is equal to 500m²), in this area farmer might grow many kinds of vegetables like rice, fruit or even raise cattle...Because of the un-specialization, these individual farmers often use available domestic workforce – family members to work from 2-4 hour/day in the early morning or late evening instead of hiring employees. At plough stage, the farmers often use some outsource services like plough service, which costs about 200.000 VND/sao (source: survey result). The infrastructure of the city can well facilitate all agricultural activities, there are electricity and water available at the cultivated sites, transport systems are in good condition, which makes it easy for producing and delivery products. Base on data gathered from the survey and information collected from the expert opinion method, we estimated the cost of vegetables producing in table 3.

In term of fixed assets cost, in order to produce SV, firms have to invest in drip irrigation system, tarpaulin, planting nets, equipment, the initial cost is 100 million VND/ hectare with the depreciation time is 10 years. In term of employment cost, all individual farmers took part in the survey said that they did not hire anyone as employee and just use the domestic workforce while firms have to pay that cost, about 3 million VND/ month for worker to handle a 1 sao –cultivated -area.

**Table-3.** Producing cost (Unit: 1000VND)

| ODER | Factor | IF (sao/month) SV | IF (sao/month) NV | Firm (sao/month) SV | IF (kg) SV | IF (kg) SV | Firm (kg) SV |
|------|--------|------|------|------|------|------|------|
| **I.** | **Producing cost** | **1,802** | **2,256** | **4,102** | **2.897** | **2.590** | **4.395** |
| 1 | Seed | 127 | 127 | 135 | 0.205 | 0.146 | 0.145 |
| 2 | Plough | 137 | 110 | 0 | 0.220 | 0.126 | 0 |
| 3 | Pesticide | 67 | 87 | 50 | 0.108 | 0.1 | 0.054 |
| 4 | Tarpaulin, planting nets | 160 | 0 | 167 | 0.257 | 0 | 0.179 |
| 5 | Employment cost | | | 3,000 | 0 | 0 | 3.214 |
| 6 | Electricity, water | 68 | 68 | 150 | 0.110 | 0.79 | 0.161 |
| 7 | Fertilizer | 1,242 | 1,863 | 350 | 1.997 | 2.139 | 0.375 |
| 8 | Depreciation cost | 0 | 0 | 250 | 0 | 0 | 0.268 |
| **II** | **Capacity** | **622** | **871** | **933** | **1** | **1** | **1** |

**Source:** Calculated form survey result

As shown in table 3, the producing cost of SV is higher than that of the normal one, due to the need of more pesticide and fertilizer, but this leads to the higher capacity. The producing cost of firms is higher than that of individual farmers because of the fact that they have to pay the employment cost while individual farmers consider this cost as a part of their income.

**Table-4.** Cost of supply chain participants (Unit: 1000 VND)

| Cost/Subject | CO | Firm | Merchant | WS | RT | RS |
|--------------|-----|------|----------|-----|-----|-----|
| Fixed cost | 0 | 0 | 0 | 0 | 0 | 1.222 |
| Initial cost | 7 | | | 7 | 8.5 | 13 |
| **Variable cost** | **3.55** | **2.4** | **0.4** | **0.45** | **1.45** | **1.3** |
| Wastage cost | 0.7 | | | 0.35 | 0.85 | |
| Pre-processing, packing cost | 0.8 | | | | | 1.3 |
| Packaging cost | 1.4 | 1.4 | | | | |
| Delivery cost | 0.65 | 1 | 0.4 | | 0.5 | |
| Market management cost | | | | 0.1 | 0.1 | |
| Total cost | **3.55** | **2.4** | **0.4** | **0.45** | **1.45** | **2.522** |

**Source:** Calculated form survey result

Using the same data-gathering and data analysis method, we also came up with a cost calculation of each participant in supply chain (Table 4). Most wholesalers and retailers do not need to invest in fixed assets, hire employee and run marketing campaigns to promote the sale while SV shops often have to spend a big investment about 80 million VND in-store equipment, which will be depreciated in 10 years. Those stores often located in the city center, and the rental cost is about 7 million/10m²-store. The salary for 2 shopkeeper is 4 million VND/month. The majority of retail stores sell many kinds of food such as meat, fish, milk, ready-made food... so the revenue from selling vegetables just accounts for 20% of the total revenue (Source: Survey result).

From the cost displayed above, using the quantitative value chain analysis of DFID (2008) we calculated the cost structure of Danang vegetables supply chain (Table 5) and profit sharing structure (Table 6) .

**Table-5.** Cost structure of Danang vegetables supply chain (Unit: VND)

### Marketing channel (MC) 1: Farmer - merchant - retailer (NV)

| Subject | Unit cost ( ND/kg) | | | Price | Profit | | Price | |
|---|---|---|---|---|---|---|---|---|
| | Cost | Added cost | % of added cost | Price | Profit | % Profit | Added price | % Added price |
| Farmer | 2,590 | 2,590 | 68.34 | 6,500 | 3,910 | 47.62 | 6,500 | 54.17 |
| Merchant | 6,500 | 400 | 10.55 | 8,500 | 1,600 | 19.49 | 2,000 | 16.67 |
| Retailer | 8,500 | 800 | 21.11 | 12,000 | 2,700 | 32.89 | 3,500 | 29.17 |
| **Total** | | **3,790** | **100.00** | | **8,210** | **100.00** | **12000** | **100** |

### MC 2: Farmer-merchant-wholesaler-retailer (NV)

| Subject | Unit cost (VND/kg) | | | Price | Profit | | Price | |
|---|---|---|---|---|---|---|---|---|
| | Cost | Added cost | % of added cost | Price | Profit | Cost | Added cost | % of adde cost |
| Farmer | 2,590 | 2,590 | 61.09 | 6,500 | 3,910 | 50.39 | 6,500 | 54.17 |
| Merchant | 6,500 | 400 | 9.43 | 7,500 | 600 | 7.73 | 1,000 | 8.33 |
| Wholesaler | 7,500 | 450 | 10.61 | 8,500 | 550 | 7.09 | 1,000 | 8.33 |
| Retailer | 8,500 | 800 | 18.87 | 12,000 | 2,700 | 34.79 | 3,500 | 29.17 |
| **Total** | | **4,240** | **100.00** | | **7,760** | **100.00** | **12,000** | **100** |

### MC 3: Farmer – co-operative-retailer (SV)

| Subject | Unit cost (VND/kg) | | | Price | Profit | | Price | |
|---|---|---|---|---|---|---|---|---|
| | Cost | Added cost | % of adde cost | Price | Profit | Cost | Added cost | % of adde cost |
| Farmer | 2,897 | 2,897 | 32.30 | 6,500 | 3,603 | 27.65 | 6,500 | 29.55 |
| Co-operative | 6,500 | 3,550 | 39.58 | 13,000 | 2,950 | 22.64 | 6,500 | 29.55 |
| Retailer | 13,000 | 2,522 | 28.12 | 22,000 | 6,478 | 49.71 | 9,000 | 40.91 |
| **Total** | | **8,969** | **100.00** | | **13,031** | **100.00** | **22000** | **100** |

### MC 4: Firm-wholesaler-retailer (NV)

| Subject | Unit cost (VND/kg) | | | Price | Profit | | Price | |
|---|---|---|---|---|---|---|---|---|
| | Cost | Added cost | % of added cost | Price | Profit | Cost | Added cost | % of adde cost |
| Firm | 4,395 | 4,395 | 78.55 | 7,000 | 2,605 | 40.67 | 7,000 | 58.33 |
| Wholesaler | 7,000 | 400 | 7.15 | 8,500 | 1,100 | 17.17 | 1,500 | 12.50 |
| Retailer | 8,500 | 800 | 14.30 | 12,000 | 2,700 | 42.15 | 3,500 | 29.17 |
| **Total** | | **5,595** | **100.00** | | **6,405** | **100.00** | **12000** | **100** |

### MC 5: Firm-retailer (SV)

| Subject | Unit cost (VND/kg) | | | Price | Profit | | Price | |
|---|---|---|---|---|---|---|---|---|
| | Cost | Added cost | % of added cost | Price | Profit | Cost | Added cost | % of adde cost |
| Firm | 6,795 | 6,795 | 72.93 | 13,000 | 6,205 | 48.93 | 13,000 | 59.09 |
| Retailer | 13,000 | 2,522 | 27.07 | 22,000 | 6,478 | 51.07 | 9,000 | 40.91 |
| **Total** | | **9,317** | **100.00** | | **12,683** | **100.00** | **22000** | **100** |

**Source:** Analyzed form survey result

**Table-6.** Profit sharing structure in Danang vegetables chain

| MC | CATEG | Price | Total cost | Profit | Profit sharing structure | | | | | | % profit | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | IF | CO | Firm | MRC | WO | RO | IF | CO | Firm | MRC | WO | RO |
| 1 | NV | 12,000 | 3,790 | 8,210 | 3,910 | | | 1,600 | | 2,700 | 47.62 | | | 19.49 | 0.00 | 32.89 |
| 2 | NV | 12,000 | 4,240 | 7,760 | 3,910 | | | 600 | 550 | 2,700 | 50.39 | | | 7.73 | 7.09 | 34.79 |
| 3 | SV | 22,000 | 8,969 | 13,031 | 3,603 | 2,950 | | | | 6,478 | 27.65 | 22.64 | | | | 49.71 |
| 4 | NV | 12,000 | 5,595 | 6,405 | | | 2,605 | 1,100 | | 2,700 | | | 40.67 | 17.17 | | 42.15 |
| 5 | SV | 22,000 | 9,317 | 12,683 | | | 6,205 | | | 6,478 | | | 48.93 | 0.00 | | 51.07 |

**Source:** Analyzed form survey result

According to DFID (2008) agricultural product supply chains have the differences between the quantity of product in each process, each marketing channel. Hence, besides supply chain profit structure analysis, total revenue of each participant should also be considered. As survey result, there is the difference in size between business units, therefore, we reckoned average income of each subject base on the minimum and maximum income they might have.

**Table-7.** Average income per month

| Subject | CATEG /MC | Profit/kg | Min | | Max | |
|---------|-----------|-----------|-----|------|-----|------|
| | | | Capacity | Total income | Capacity | Total income |
| Farmer | NV/1,2 | 3,910 | 871 | 3,405,986 | 1,742 | 6,811,972 |
| | SV/3 | 3,603 | 622 | 2,242,176 | 1,244 | 4,48 ,352 |
| Co-operative | SV /3 | 2,950 | 1,500 | 4,425,000 | 3,000 | 8,850,000 |
| Firm | NV/4 | 2,605 | 4,100 | 10,681,964 | 6,333 | 16,500,595 |
| | SV /5 | 6,205 | 1500 | 9,308,036 | 3,000 | 18,616,071 |
| | Total | | 5,600 | 19,990,000 | 9333 | 35,116,667 |
| Merchant | NV /1 | 1,600 | 6000 | 9,600,000 | 30000 | 48,000,000 |
| | NV /2 | 600 | 6000 | 3,600,000 | 30000 | 18,000,000 |
| | NV /4 | 1,100 | 6000 | 6,600,000 | 30000 | 33,000,000 |
| Wholesaler | NV /2 | 550 | 30000 | 16,500,000 | 90000 | 49,500,000 |
| Retailer | NV /1,2,4 | 2,700 | 1500 | 4,050,000 | 6000 | 16,200,000 |
| | SV /3,5 | 6,478 | 600 | 3,886,667 | 1500 | 9,716,667 |

**Source:** Analyzed form survey result

From above data, in the whole chain, the income of farmers is lowest, despite they receive the highest profit rate compared to other participants, this due to the low capacity, just about 1-2sao/individual farmer. The income of firms is highest, due to the high capacity, however, the amount of just 20-30 million VND/month is too small compared to their big investment. This might be the reason why there are just two firms that operate in this field of business, despite many incentives which government and the local authority have given to encourage firms to enter this market.

The income of participants who act as distributors is quite high, the income of retail traders is often higher than that of vegetables stores or minimarts due to the fact that there is a difference in initial investment, while the sale in these point of sale is not high. In general, the total cost to producing and distributing safe vegetables is double compared to that of the normal one, but actually, there is no difference in the real cost between the two categories (Table 3). The high total cost of SV is because the added cost occurred in pre-processing, packing, marketing and sale. It can be said that the customers are having to pay the price, which is 1.8 as much as the real price when purchasing SV, however, the true reason for this is because of non-producing cost.

## 5. CONCLUSION AND POLICY IMPLICATION

The research of Danang vegetables value chain analysis has pointed out some exist problems in civic SVSC, which lead to the difficulties in development and maintenance of SV in Danang, particularly , and in Vietnam, generally. Although the SVSC is shorter than the normal one, however, because some added costs like pre-processing cost, packing cost make it cost 80% as much as the later one. Furthermore, the appearance of modern SV retail shops in chain leads to the increase of 40% in total cost, compared to the normal vegetables supply chain. As a result, despite the higher price (as 1.8 as much as the normal price) the added profit that participants received is comparatively small. Moreover, due to the small capacity so the total income of participants participating in SVSC is also lower than that of their counterpart.

From the result of qualitative and quantitative value chain analysis, we propose that instead of focusly investing on distribution to create the difference between to categories, some solution should be put into practice to tackle this situation. Because the product life-time of vegetables is transient, consumption habit of the majority of

Vietnamese customers is making daily purchase from the market without the packaging, cool preservation in refrigerator and cook within the day. In this case, additional costs in distribution like pre-processing cost or packing cost do not bring any additional value for the customer but make the cost increase and just are useful if there is change in customer habit. It need to be emphasized that this change might be difficult, especially in small cities, where the consumption capacity is low, which can not become a motivation for supply chain participants to enter the SV market sector.

Though our research, it is clear that in Danang, individual farmers still is the main participant in vegetables producing, the income of these is 1,2 million VND/sao/month lower than their counterpart. This is the principal reason why the individual farmers do not obey the SV producing rules. Although firms have more advantages in SV producing, however, the income from SV producing still is not enough attractive to them. Moreover, land policies still cause a lot of inconveniences for them in attempt to enlarge the cultivation area. Therefore, local authority should consider more effective incentives to help firms and individual in SV producing.

In spite of the fact that it is just a case study about the vegetables supply chain in Danang, difficulties in data-gathering, big standard error, after all this research is the very first one vegetables value chain analysis in Vietnam, which presents the comparison between SVSC and normal vegetables supply chain as well as mentions some exist problems that should be solved in SVSC in small cities of Vietnam.

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