

Traditional and Modern Distribution Channels for Vegetables in Vietnam: A Case Study in Hanoi City

Nguyen Thi Kim Oanh^{*}, Doan Thi Ngoc Thuy & Nguyen Thi Thu Trang

Faculty of Accounting and Business Management, Vietnam National University of Agriculture, Hanoi 131000, Vietnam

Abstract

This study aimed to provide a clear overview of the vegetable distribution system in Hanoi city which is dominated by traditional combined with the emergence of modern distribution channels, including supermarkets. The analysis was based on secondary data sources, a primary survey among 60 vegetable farmers, and in-depth interviews with other marketing system stakeholders including two agribusiness farms, four agricultural cooperatives, trade intermediaries (five collectors, three wholesalers, and three trading companies), and three supermarkets. Comparative and descriptive statistics were applied to get the full picture of vegetable distribution system, including traditional and modern channels. While traditional distribution channels involved various intermediaries, supermarket channels tended to be shorter due to direct producer-buyer relationships. In addition, while supermarket distribution channels focused on safe vegetables, including VietGAP and organic certified vegetables, there was no difference between safe and conventional vegetables in traditional channels. Therefore, producers may get 50% higher prices when supplying supermarkets compared to traditional channels. Recommended solutions to strengthen the distribution system of vegetables are to encourage the development of agricultural cooperatives, raise vertical integration, and develop sustainable cooperation among stakeholders in the supply chain.

Keywords

Vegetables, distribution system, traditional channel, modern channel, Hanoi city

Introduction

Over the past several decades, fresh vegetable production has been one of the most important industries in people's daily lives (Wang, 2015). Vegetables provide vitamins, minerals, and fiber to help keep the body healthy. On average, Vietnamese inhabitants

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Correspondence to
ntkoanh@vnua.edu.vn

consume about 0.4kg of vegetables per day. The total consumption of vegetables in Hanoi was estimated at 2,800 tons per day in 2014 (World Bank, 2017). However, food quality and food safety issues draw considerable attention throughout the food supply chain in Vietnam, especially issues related to vegetables owing to increasing pesticide residues during production (Pham *et al.*, 2016; Nguyen *et al.*, 2017). The Vietnamese government, therefore, tried to improve food safety by setting numerous standards in the vegetable sector, and modernizing retail by replacing wet markets with supermarkets (Nguyen *et al.*, 2017). Supermarkets are rapidly becoming important outlets for vegetables (Neven *et al.*, 2006). In recent years, the vegetable sector, especially safe vegetables, has developed rapidly and is getting more and more specialized in Hanoi city. Safe vegetables include all vegetables that retain their intrinsic characteristics, with toxic chemical and microorganism levels below the MRLs (Maximum Residual Levels) that are considered safe for consumers and the environment (Ministry of Agriculture and Rural Development, 1998). By 2020, the total harvested areas for vegetables reached 34,000ha spread over 22 districts, an increase of 2,273ha compared to 2015. (Hanoi Department of Agriculture and Rural Development, 2020). As for safe vegetables, the certified area was around 5,044ha, an increase of 11% compared to 2015 (Hanoi Department of Agriculture and Rural Development, 2020). In 2020, the yield of safe vegetables increased by 30.6%, the volume increased by 40.7% compared to 2016, and contributed to improving the living standards of farmers with the average turnover raising from 300 million to 500 million VND per ha per year. The production value of safe vegetables sector being around 10% to 20% higher than that of traditional vegetables (Thu Hang, 2021). However, vegetable production in Hanoi city currently only meets the needs of about 65% of the local consumers (Minh Huong, 2019). Many researchers have focused on the significance of the emergence of modern distribution channels, including supermarkets, in the food distribution systems of developing countries (Reardon *et al.*,

2003; Deloitte, 2005). However, fresh food, especially fruits and vegetables, is still mostly traded via traditional distribution channels (Cadilhon *et al.*, 2003).

In Vietnam, the marketing channels of agricultural products can be grouped into two types, namely traditional and modern distribution channels (Masayoshi & Le, 2012). The structure of the vegetable distribution system involves a large number of intermediaries. About 60% of safe vegetables are sold to collectors at farmgate, then distributed at wholesaler markets and traditional markets (Hanoi Department of Agriculture and Rural Development, 2020). Modern retail outlets, such as supermarkets, hypermarkets, and convenience stores are mushrooming in major cities and can now be found across the whole country (Masayoshi & Le, 2012). While traditional marketing channels continue to predominate, modern retail channels, especially supermarkets have emerged and developed impressively, from only 10 supermarkets in 1995 to 812 supermarkets in 2015 (Nguyen & Sakazume, 2020). The emergence of supermarkets in recent years has changed how vegetables, especially safe vegetables, move from producer to consumer (Nguyen, 2020). In addition, the traditional distribution system has been gradually changed because of the rapid development of supermarkets (Masayoshi & Le, 2012). Many researchers have focused on safe vegetable value chains (Wang *et al.*, 2012), food safety in Vietnam (Wertheim-Heck *et al.*, 2014; Wertheim-Heck *et al.*, 2015; Enthoven & Van den Broeck, 2021). Other studies have highlighted the development of supermarkets in Vietnam (Nguyen *et al.*, 2005; Masayoshi & Le, 2007). On the contrary, few studies have clarified the vegetable distribution system in Vietnam and in Hanoi city in particular. This study aimed to provide an overview of the vegetable distribution system in Hanoi city by clarifying the traditional and modern distribution channels in terms of channel structure, actors, quality management, coordination, and price. It then makes some recommendations to strengthen the vegetable distribution system in Hanoi city.

Methodology

Conceptual framework

Distribution channel

Distribution channels can be seen as the route along which products move from the manufacturer through marketing intermediaries including wholesalers, distributors, and retailers to the final consumers. This flow of product may involve physical movement or only simply the transfer of title to it. Other terms for a distribution channel include marketing channel, distribution chain, supply chain, or market channel (Ostrow, 2009).

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Traditional distribution in Vietnam

The traditional distribution system seen today in Vietnam was formed largely after the Doi Moi policies (Motoi, 2020). The first type of traditional retail distribution channels in Vietnam was made up of independent small-scaled retailers with millions of these types of stores across the whole country (Masayoshi & Le, 2012). The next type of traditional retail sector was made up of public or private wet markets that focused on fresh foods, daily goods, and clothing. This paper considers the traditional distribution system as the channels that moves products via the traditional retail market (wet markets).

Modern distribution in Vietnam

In Vietnam, the modernization of the distribution sector emerged in the 1990s. The modern distribution system moves products from producers to wholesalers and assemblers, and then to modern retail outlets such as supermarkets or convenience stores, trading centers, and finally to the end consumers (Masayoshi & Le, 2012). In this research, we consider the modern distribution system to encompass supermarket distribution channels.

Figure 1 shows the two types of vegetable distribution channels considered in this study, including traditional and modern channels. The

differences between these channels are related to *the structure of the channel* (number of intermediaries - one or several) (Adriano, 2008), length (long, short), and type of channel (direct, indirect) (Szeląg-Sikora & Rorat, 2016); *actors* (wholesalers, retailers, buyers, and direct consumers); *quality management* (which standards are required, level of quality, and monitoring, etc.); *coordination* (how the actors work together, coordination mechanisms); and *price* (who determines the price and how the price is set up).

Selection of the study site

Status of vegetable production in Vietnam

In recent years, vegetable production areas have developed rapidly (**Figure 2**). In 2010, the harvested areas for vegetables in the whole country was only 0.43 million ha. This number reached 0.8 million ha in 2015 and slightly increased to 0.85 million ha in 2020. The vegetable yield in the period from 2010 to 2020 fluctuated from around 15 tons per ha to around 18 tons per ha, and stability increased from 2015 to 2020 (FAOSTAT, 2020).

Hanoi city was selected as the study site because of the following reasons: (i) Hanoi city is one of the pioneers in vegetable production, especially for safe vegetables, in Northwest, Vietnam; (ii) the total vegetable production reached 720,000 tons per year, meeting about 65% of the demand of Hanoi's consumers, and is one of the biggest markets for vegetables in Vietnam; and (iii) the number of modern retail channels have gained significant importance in Hanoi city, with the first supermarket established in 1995 and developed to hundreds of outlets today.

Overview of the development of vegetables in Hanoi city

Details of the increases in vegetable area and productivity in Hanoi city are presented in **Table 1**.

In 2015, the harvested area for vegetables was 31,727ha with an output of 650,434 tons. By 2020 the harvested area for vegetables reached 34,000ha, an increase of 2,273ha compared to 2015. The total vegetable production reached 720,000 tons, and the average growth rate was around 2.05% per year.

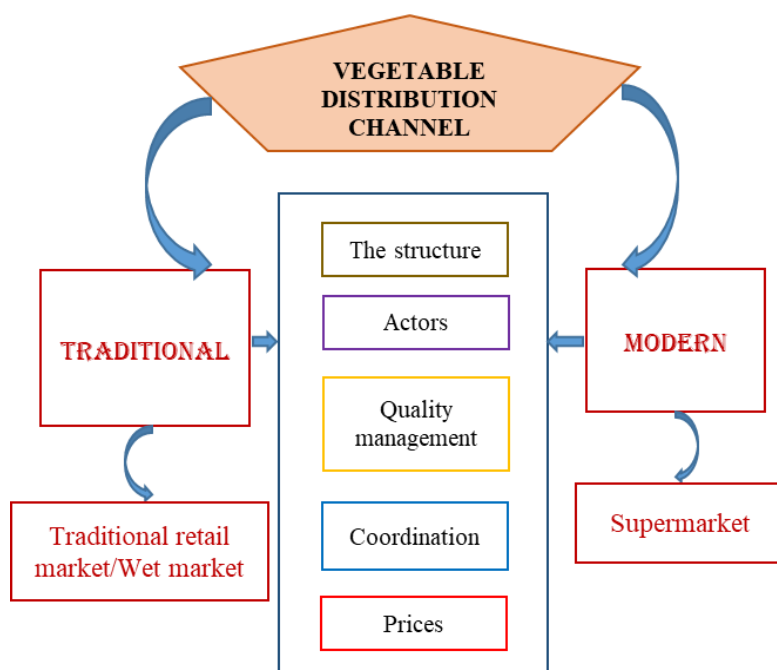
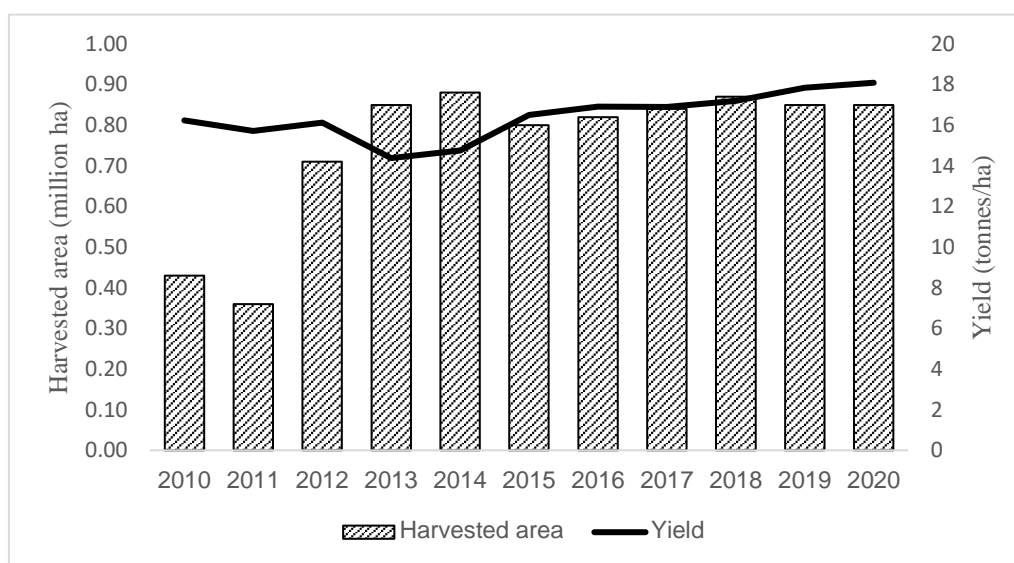


Figure 1. Research Framework



Note: Vegetable data is for fresh vegetables and does not include roots/tubers, maize, or soybeans.

Figure 2. Trends in vegetable harvest area and yield, 2010-2020

Source: FAOSTAT (2020)

Table 1. Vegetable production in Hanoi city from 2015 to 2020

| No. | Criteria | Year | | | |
|-----|--------------------|---------|---------|---------|---------|
| | | 2015 | 2018 | 2019 | 2020 |
| 1 | Areas (ha) | 31,727 | 33,160 | 32,805 | 34,000 |
| 2 | Yield (quintal/ha) | 205.0 | 208.9 | 217.2 | 211.8 |
| 3 | Production (tons) | 650,434 | 692,797 | 712,646 | 720,000 |

Source: Hanoi Department of Agriculture and Rural Development (2020)

In recent years, Hanoi has focused on expanding safe vegetable production to provide fresh vegetable sources with high quality for the city's inhabitants. According to Hanoi People's Committee on the development and expansion of safe vegetable production and consumption in Hanoi city in the period from 2021 to 2025, the total cropland dedicated to safe vegetable production will increase from 3,000 to 4,000ha and the areas certified for growing safe vegetables will remain at 5,044ha and production value is expected to increase to 500 million VND per ha per year (Hanoi People's Committee, 2020).

Data collection and analysis

Data were collected from the following main sources. First, secondary data on production and vegetable areas were collected from the General Statistics Office of Vietnam (GSO), the Statistical Yearbook of Hanoi city from 2015 to 2020, and reports from the Hanoi Department of Agriculture and Rural Development.

In addition, primary data was collected from August 2019 to October 2019. The method of data collection was in-depth interviews (semi-structured interview) with vegetable distribution system stakeholders, including the leaders of agribusiness farms, agricultural cooperatives, trade intermediaries (collectors, wholesalers, and trading companies), and supermarkets. A survey of 60 Hanoi's farmers (27 safe vegetable farmers and 33 conventional vegetable farmers) was also carried out in order to obtain information about vegetable production and distribution practices.

Data collection was divided into three stages. First, we began by interviewing retailers (supermarkets in Hanoi city) to understand the vegetable distribution system and trace the produce back to their suppliers. Three supermarkets were chosen for the analysis, namely Aeon (Japan), BigC (Thailand), and Vinmart. We focused on the Vinmart channel as a case study to have a better understanding of their supply sources and retail prices in modern retailers. Based on the information obtained from the supermarket respondents, actors participating in the supermarket distribution channel were identified. Thus, the second step of the research

consisted of interviewing two agribusiness farms (located in Hanoi city and Moc Chau district, Son La province), and four agricultural cooperatives (two in Hanoi city and two in Moc Chau district, Son La province) based on their importance in supplying vegetables to supermarkets. In addition, we randomly selected 30 farmers located in Thanh Tri district and 30 farmers located in Gia Lam district in Hanoi from the list provided by the cooperative manager in the local commune. The questionnaire focused on farm-household characteristics, production conditions, marketing structure, and selling price. For the third stage, three trading companies (located in Hanoi city) that are involved in the supermarket supply chain were identified and chosen to be interviewed. In addition, a sample of five collectors and three wholesalers were also chosen to be included in the interview.

In this study, we mainly used descriptive and comparative statistics to reflect the current situation of production, fluctuations in yields, distribution system of vegetables, and the differences between traditional and supermarket distribution channels. To map the distribution system of vegetables in Hanoi city, we calculated the proportion of vegetables distributed at each actor, which were self-reported focusing on the distribution described above.

Results and Discussion

The major differences between traditional and supermarket distribution systems are detailed in **Table 2**.

Structure of distribution channels

Figure 3 shows the traditional and supermarket distribution channels of vegetables operating in Hanoi city. In traditional distribution channels, individual farmers sold their vegetables directly at local traditional retail markets or to collectors supplying wholesaler markets. Most conventional vegetables and part of safe vegetables were distributed through this channel.

There were various patterns of flow from a producer to a consumer in the traditional distribution channel as follows:

Table 2. Comparison of traditional and supermarket distribution systems

| Aspects | Traditional distribution channel | Supermarket distribution channel |
|-----------------------------|---|---|
| <i>Structure and actors</i> | | |
| Pattern | Relatively longer | Relatively shorter |
| Farm level | Individual farmers | Farmers in cooperative agribusiness farms |
| Collecting level | Collectors Wholesalers | Collectors Agricultural cooperatives or Trading companies |
| Retail level | Retailers and street vendors in traditional markets | Supermarkets |
| <i>Quality management</i> | | |
| Standard | Arbitrary and informal Conventional vegetables; RAT vegetables | Imposition of standard and formal RAT vegetables; VietGAP vegetables; Organic vegetables |
| Certification | Not required | Required |
| Quality and monitoring | No/low Based on physical attributes | High/strict Standards determined by supermarkets or sample tests, supplier audits |
| <i>Coordination</i> | Less structured Based on their trust and personal relationships Verbal agreements | Formal contracts |
| <i>Price</i> | Low/unstable Price setting on the spot | Hight/stable Price setting under contract |

Source: Authors

Note: RAT means safe vegetable, which stands for Rau An Toàn (in Vietnamese) and was regulated in Circular No.59/2012/TT-BNNPTNT.

Pattern 1: Farmers → Retailers at traditional markets

Around 35% of conventional vegetables volume from farmers was sold directly at local traditional retail markets. In this distribution route, farmers transported their vegetables by bicycle or motorbike directly to local traditional markets. In this case, they could get higher selling prices compared with other distribution channels, such as wholesaler markets or through collectors. These farmers owned small areas of cropland for vegetables (called “Sào” in Vietnamese with a size of over 360 m²/sào) which located near traditional markets (around several kilometers). The vegetable volume was small, several dozen kilograms per market day.

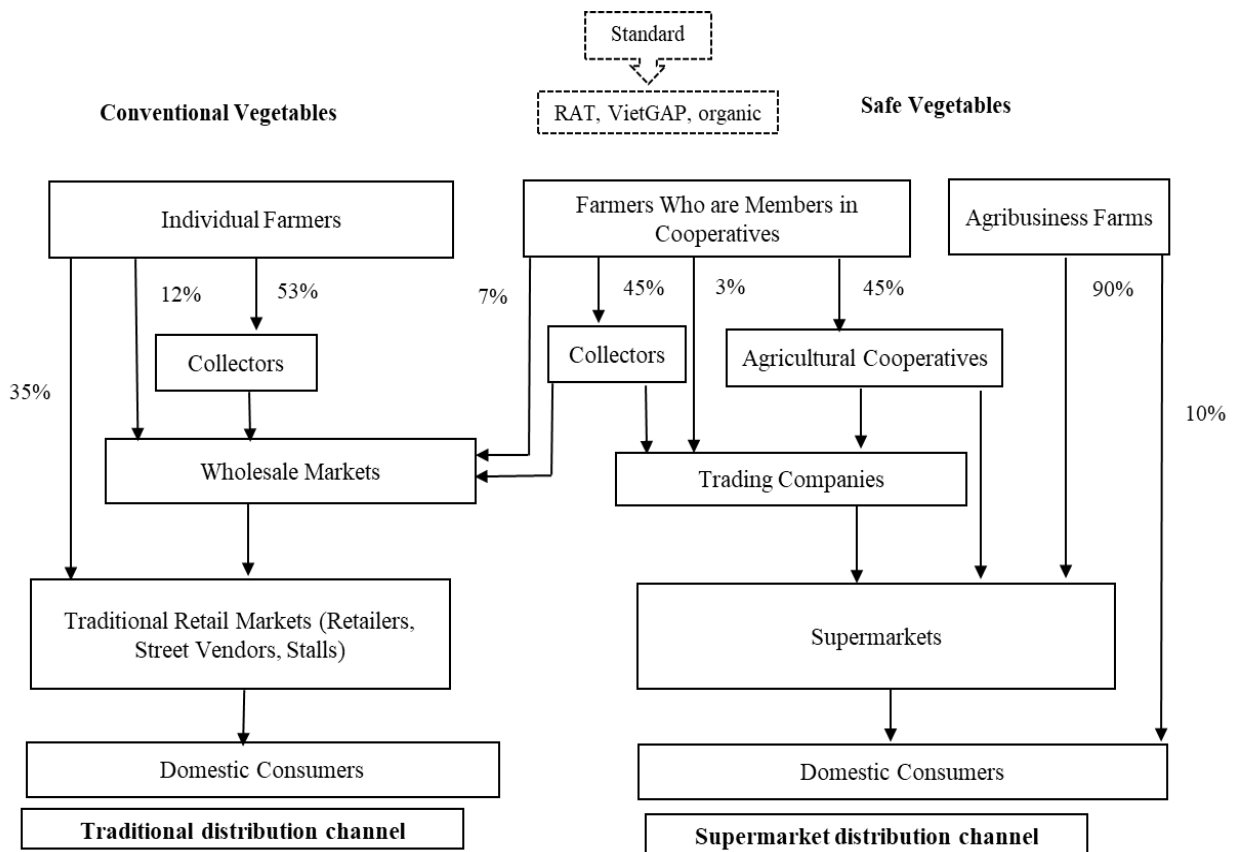
Pattern 2: Farmers → Wholesalers (primary/ secondary wholesalers) at wholesaler markets → Retailers at traditional markets (local

district, provincial capital, neighboring provinces)

Around 12% of conventional vegetables from farmers was sold at wholesaler markets where small retailers and street vendors bought vegetables to resell to the end consumers. In this case, farmers located near the wholesaler markets. Besides their own vegetables, farmers sometimes played the role of small collectors by collecting vegetables from other farmers and then transporting them to wholesaler markets.

Pattern 3: Farmers → Collectors → Wholesalers at wholesaler markets (primary/secondary wholesalers) → Retailers at traditional markets (local district, provincial capital, and neighboring provinces)

A majority of conventional vegetables (~ 53%) produced by farmers were sold through



Note: % based on quantity proportion
 We estimate the proportion of vegetables distributed that were self-reported by each actor.

Figure 3. Distribution systems of vegetables operating in Hanoi city
 Source: Field survey (2019)

collectors who brought the products to wholesaler markets. In the case of large-scale production or when farms were far from markets and there was no own transportation, farmers chose collectors to distribute their vegetables. Although the selling price was lower than in other distribution channels, farmers could save transportation costs and sell large quantities of vegetables to collectors.

In modern vegetable distribution channels, there were several ways that safe vegetables could travel from farm gates to supermarkets (Figure 3).

Pattern 4: Agribusiness farms → Supermarkets (Direct marketing from farm to supermarket)

In this case, direct marketing in modern distribution channels could be seen as the sale of products from farms straight to supermarkets.

Approximately 90% of safe vegetables produced by agribusiness farms was distributed directly to supermarkets. Agribusiness farms preferred working with modern retailers because of the stable quantities and the higher prices that supermarkets offer. Moreover, building relationships with supermarkets might help agribusiness farms achieve a strong reputation in the market.

Pattern 5: Farmers in Agricultural cooperatives → Agricultural cooperatives → Supermarkets (Collective action: Agricultural cooperatives → supermarkets)

In this route, around 45% of safe vegetables after harvesting sold to agricultural cooperatives was distributed in supermarkets or via trading companies to supply supermarkets. Agricultural cooperatives became important actors in supplying safe vegetables to modern distribution systems.

Pattern 6: Indirect channel via trading company: Trading companies → Supermarkets
(Farmers → Trading companies → Supermarkets)
(Farmers → Collectors → Trading companies → Supermarkets)
(Farmers → Agricultural Cooperatives → Trading companies → Supermarkets)

Like agricultural cooperatives, trading companies also played an important role as intermediaries connecting farmers to supermarkets.

First, around 3% of safe vegetables from farmers was sold directly to trading companies to distribute in supermarkets. Second, up to 45% of safe vegetables was sold to collectors to be distributed to trading companies before appearing on the shelves of supermarkets. In this case, collectors had both production activity and trading activity. Third, about 45% of safe vegetables was distributed via agricultural cooperatives to be sold to trading companies, which then was supplied to supermarkets. In addition, about 7% of safe vegetables was sold through wholesaler markets to be distributed in the traditional retail market.

Although the structure of the supermarket distribution channels included several actors, they tended to be shorter than traditional distribution channels. Agricultural cooperatives represented key actors in supermarket channel. Although trading companies appeared in this chain too, they tended to have both production activities, via developing their farm under safe vegetable production and trading activities.

Case study: Vinmart

Vinmart was one of the biggest supermarket chains that had spread across the whole country. They had been in business since 2014 and had more than 100 stores in 2019 (Bich Ngoc, 2020).

There were three major channels for vegetables entering the Vinmart chain (**Figure 4**).

Channel 1: VinEco → Vinmart

Channel 2: Farmers → Agricultural Cooperatives → Vinmart

Channel 3: Agribusiness farms → Vinmart

The Vinmart chain distinguished itself from its competitors by selling VinEco vegetables that were only distributed in the Vinmart chain and Vinmart+ stores. In this way, about 80% of the vegetables in Vinmart came from VinEco. It meant 20% of its vegetables came from agricultural cooperatives and agribusiness farms. The eco-agricultural branded VinEco was a member of the Vingroup, entered the Vietnamese market in 2015, and focused on producing safe and high-quality agricultural products. VinEco's vegetables came from two main sources: 40% from the 14 VinEco farms located throughout Vietnam and 60% from contract farmers.

Moreover, Vinmart tended to work directly with farmers via agricultural cooperatives in order to ensure the quality of the vegetables, which guaranteed vegetable traceability. Specifically, agricultural cooperatives provided geographical information about their products, and, thus, supermarkets promoted safe vegetables more easily through the cooperative's brand.

Vinmart chains also bought vegetables directly from agribusiness farms which concentrated on specific vegetables in production. The quality of vegetables from agribusiness farms was guaranteed because they standardized produce quality and invested in technologies to cut down the effects of seasonality. In addition, they ensured the proper quality control in their fields and their production process mostly followed VietGAP production standards.

To sum up, the traditional distribution system included various actors. Collector played a crucial role in traditional channels, since more than 50% of the vegetables from farmers was sold through collectors. The existence of various collectors made the length of the traditional chain relatively longer. Meanwhile, the length of the supermarket chain was relatively shorter since supermarket chains tended to work directly with producers or through agricultural cooperatives that replaced middlemen. The agricultural cooperatives became the key actors in supermarket distribution channels since 45% of safe vegetables after being harvested was sold to

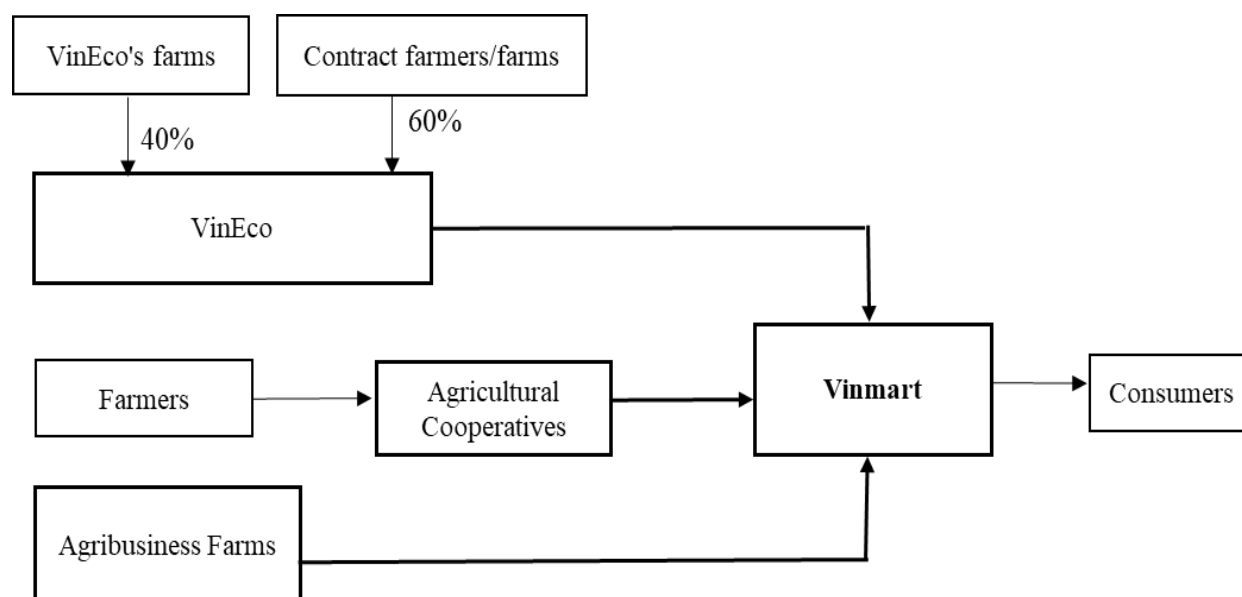


Figure 4. Supplying source of vegetable in Vinmart chain
Source: Field survey (2019)

agricultural cooperatives to be distributed in supermarkets. This helped farmers increase their bargaining power to buyers, especially when making trade agreements. Although trading companies appeared in this chain, they tended to have both production activities via developing their farms under safe vegetable production practices and trading activities.

Important channel actors

Traditional channels involved three main actors, namely individual farmers, collectors, and wholesalers.

(i) *Individual farmers:* There were two types of small farmers, conventional farmers and safe vegetable farmers. Conventional farmers did not follow any standards and their production methods were mainly based on their experience. They generally lacked market information, especially on demand, since there was very weak communication between farmers and buyers in the market.

As for safe vegetable farmers, they transferred from traditional production under the agricultural cooperatives' orientation. They were trained in plant protection methods against diseases and obtained technical training for safe and VietGAP production. Safe vegetable farmers, therefore, improved their knowledge and skills on safe vegetable production,

especially in the use of safe and correct pesticides or proper use of fertilizers. **Table 3** shows some of the main characteristics of the surveyed small vegetable farmers. In general, the land size of the farmers was small and fragmented, with an average of 0.17ha. On average, the surveyed farmers were 45 years old, had practiced growing vegetables for 13.4 years, and had low education with an average of 10.8 years. **Table 4** shows that safe vegetable farmers had higher education but less experience in vegetable production than traditional farmers.

(ii) *Collectors:* Local collectors played a key role in the traditional distribution system. They bought vegetables from farmers in their commune and then transported these collected vegetables to the wholesaler market. Generally, collectors came to the farmgate to purchase vegetables or from a collection place near the farmgate. In some cases, farmers delivered their vegetables directly to the collectors' home for sale. Collectors chose wholesaler markets for selling based on the distance from the markets to their home and based on their relationship with the buyers. They transported vegetables by motorbike (for small collectors) or by truck (for large collectors) to the famous wholesaler markets in the region.

(iii) *Wholesalers:* Wholesalers also played an important role in traditional vegetable

Table 3. Surveyed small farmer's characteristics

| Criteria | Age | Land size for vegetable production (sào) | Years of Education (years) | Experience in vegetable production (years) |
|----------|-----|--|----------------------------|--|
| Min | 38 | 1 | 5 | 5 |
| Max | 62 | 12 | 12 | 32 |
| Average | 45 | 4.8 | 10.8 | 13.4 |

Source: Field survey (2019)

Table 4. Some characteristics of conventional and safe vegetable farmers

| Items | Age | Land size for vegetable production (ha) | Years of Education (years) | Experience in vegetable production (years) |
|------------------------|------|---|----------------------------|--|
| Traditional farmers | 52.2 | 0.15 | 10.0 | 16.8 |
| Safe vegetable farmers | 37.8 | 0.18 | 11.6 | 9.4 |

Source: Field survey (2019)

marketing systems. They were the major buyers of vegetables from collectors and then sold these vegetables directly to retailers at wholesaler markets. Some wholesalers purchased vegetables from other wholesalers. Wholesalers bought various kinds of vegetables in bulk quantities and they had a small stall in a wholesaler market. Wholesaler markets in Hanoi city were often active at night and the range of vegetables on sale was extensive. The key wholesale markets in Hanoi city included the Long Bien wholesaler market, Southern wholesaler market, Van Tri wholesaler market, Cau Giay wholesaler market, and Minh Khai wholesaler market.

The supermarket channel involved several key actors, namely producers, agricultural cooperatives, and trading companies.

(i) *Producers:* There were two types of producers in the supermarket channels, namely safe vegetable farmers (small scale) and agribusiness farms (large scale). *Safe vegetable farmers* who were members of agricultural cooperatives often applied VietGAP standard in production under the agricultural cooperatives' direction. By participating in agricultural cooperatives activities, farmers had better plans for their production. *Agribusiness farms* were those established as an enterprise and grew safe vegetables (VietGAP or organic vegetables).

Their production area for vegetables was large and was not fragmented. The average vegetable production area of two interviewed agribusiness farms reached 5.85ha. These companies only focused on several special products such as tomatoes and cabbages, etc., and mainly distributed their products to modern retailers, especially supermarkets.

(ii) *Agricultural Cooperatives:* After the Vietnamese Cooperative Law 2012 had been enacted, some cooperatives operated under the model of agricultural service cooperatives that mainly provided base services for production. Some cooperatives operated as a new type of cooperative that focused on marketing activities for agricultural products.

Two interviewed cooperatives located in Hanoi had developed over a relatively long period (around 2 decades) and played a key role in transferring government funding to farmers, and connecting farmers to modern retailers via formal contracts with supermarkets. However, in this case, the volume of safe vegetables sold via agricultural cooperatives to modern retailers was still low (15-20% of the total volume of safe vegetables produced by the cooperatives' members). In contrast, two interviewed cooperatives in Moc Chau operated under a new type of cooperative model whose major function

was the distribution of agricultural products. Up to 70% of the safe vegetables collected from farmers were sold through the agricultural cooperatives via formal contracts with supermarkets in Hanoi city. This showed that cooperatives in Moc Chau became the key actors in supplying safe vegetables to the Hanoi market.

(iii) *Trading companies*: Trading companies played a role of intermediary in the distribution of safe vegetables. Trading companies could be categorized into two types: (i) the ones only conducted trading business; and (ii) the ones with a mix of both trading and production activities. Since supermarkets tended to buy goods from producers, trading companies, therefore, tended to produce vegetables under VietGAP standards and obtain certification in addition to commercial activities in order to provide guarantees about the quality and safety of their vegetables. Generally, they bought many types of vegetables, from individual collectors or contact safe vegetable farmers via agriculture cooperatives, which they then sold to supermarkets.

Quality management

In traditional distribution channels, there were no requirements for the quality standards of the vegetables. All vegetables distributed in traditional markets were considered as conventional vegetables although other safe vegetables may be distributed under this chain. The actors participating in this chain paid less attention to the production standards or vegetable certifications, and they were not concerned about the difference between conventional and safe vegetables.

In contrast, safe vegetables were distributed in supermarket channels. Supermarkets became an alternative important distribution chain for vegetables, especially for safe vegetables, such as VietGAP vegetables and organic vegetables. The supermarket distribution channel differentiated from the traditional channels by the requirements of certification standards for vegetables. Actors involved in the supermarket channel were more concerned about the high quality of products. In supermarket distribution channels, farmers had good knowledge about the production of safe vegetables and they paid more

attention to the quality and safety of vegetables that met the requirements of supermarkets. In addition, supermarkets chose their suppliers strictly. First, suppliers of supermarkets had to show the quality certifications of their vegetables including a certificate of compliance with regard to food safety regulations for safe vegetables, a VietGAP certificate for VietGAP standards, and an organic certificate for organic standards. Next, sample test results of vegetables were also provided to supermarkets. Other documents that the suppliers had to show included business registration, tax code registration, invoice, bank account, product origin, and list of members in the cooperative, among others. When asked about the most important factors for choosing suppliers, supermarkets ranked quality as the most important in making procurement decisions. Price competitiveness, product availability, stability, and variety or the supplier ability to provide large volumes were also deemed as very important factors.

Coordination

The coordination in the traditional channel was less structured because farmers and other traders could participate in the chain easily. Coordination among actors in traditional distribution channels was very low, and was based mainly on the spot transactions. The relationships among actors in the traditional channels were based on trust and personal relationships that had built up over time. Oral agreements were used in the traditional vegetable distribution channels, based on trust among actors.

Supermarket channels involved a high level of coordination among the actors. Generally, in supermarket distribution channel, formal contracts bound actors to guarantee their commitment. Supermarkets that had much power provide detailed requirements about the products in terms of freshness, color of leafy vegetables, or size and shape of fruits and root vegetables. Suppliers had to guarantee the quality commitment while supermarkets made the payment commitment. In addition, contractual relationships between supermarkets and their suppliers potentially helped to reduce uncertainty and build trust.

Price

Table 5 shows the price data of cabbage and Malabar spinach at different stages which may enable an assessment of the benefits of actors in the traditional marketing chain and Vinmart (supermarket) chain. However, collecting accurate price data in a highly volatile market context has proved very difficult; and, thus, the prices reported in **Table 5** should be seen as indicative only.

In traditional marketing channels, there was a changing level of price through actors within this chain. The change in price was about 32% from the farmgate to collectors, 20% from the collectors to wholesalers, and around 17% at the retail level. In the Vinmart direct channel, the price increased by 62% between the farmgate and retailer.

It is clear that because of direct supply without middlemen, farmers in the supermarket distribution channels got prices of 33% to 50% higher than traditional channels. However, in order to join the supermarket channel, farmers had to pay some extra costs regarding the processing and packaging, marketing, or transport costs that farmers in the traditional chain do not incur.

Other stakeholders that were interviewed reported that while prices of vegetables in the traditional chain varied with the season, the prices in the supermarket distribution channel were not only higher but more stable than those in the traditional channel. For example, in the winter crop, vegetable prices were very low, while in the summer crop, the prices of several temperate vegetables such as cabbage and tomato

were very high in the traditional market. In contrast, the prices of vegetables in supermarket chains did not fall sharply in the winter season and were not too high in the summer season.

Discussion

In Vietnam, several studies have focused on the spread of supermarkets in general (Masayoshi & Le, 2007), or safe vegetable procurement via supermarkets (Nguyen & Sakazume, 2020). Some other studies have explained vegetable production (Pham *et al.*, 2013) or the distribution of safe vegetables (Nguyen *et al.*, 2008; Dao, 2010) and show that Vietnam’s vegetable market was dominated by traditional distribution channels with the increasing development of supermarket distribution channels (Nguyen & Do, 2015). From the producer aspect, income from vegetable production was unstable because of product commercialization risks, especially vegetable distribution, the seasonality of production, and price fluctuations. Based on the price stability, flexibility in response to customer orders, delivery times, and quality management, Cadilhon *et al.* (2006) concluded that modern marketing channels were generally more efficient than traditional ones and focus exclusively on quality.

This research was one of the first to comprehensively assess the traditional and modern distribution channels of vegetables in Hanoi city in terms of channel structure, actors, quality management, coordination, and price. Similar to the report by Freddy (2019), our results revealed that supermarket distribution channels were generally shorter than traditional

Table 5. Price information in cabbage and Malabar spinach supply chains to supermarkets and traditional outlets in Hanoi city

Unit: VND/kg

| Distribution channel | Cabbage | | Malabar spinach | |
|----------------------|-----------------------------|--------------------------|-----------------------------|--------------------------|
| | Traditional marketing chain | Vinmart direct from farm | Traditional marketing chain | Vinmart direct from farm |
| Farm gate price | 12.000 | 16.000 | 10.000 | 15.000 |
| Collector price | 15.500 | - | 13.500 | - |
| Wholesale price | 18.500 | - | 16.500 | - |
| Retail price | 21.000 | 25.000 | 20.000 | 25.000 |

Source: Field survey and observation at supermarket (2019)

Note: The price is for Cabbage and Malabar spinach in September, 2019

ones by working directly with producers or moving to direct procurement via agricultural cooperatives. This implied that farmers might get a higher profit compared to the traditional channels by working with supermarkets from the grading of good quality vegetables as suggested by previous scholars (Paule *et al.*, 2010; Cadilhon *et al.*, 2006).

Producers involved in supermarket distribution channels paid more attention to the quality and safety of vegetables. In contrast, farmers in traditional channels paid less attention to standards or to the supply of high-quality vegetables due to the fact that there was no attention nor requirements in those channels. This explained how supermarket distribution channels differentiated from the traditional channels in terms of vegetable quality and safety.

Collectors played a crucial role in traditional distribution channels, while agricultural cooperatives became the key actors and direct suppliers in supermarket distribution channels (Paule *et al.*, 2010). Agriculture cooperatives, therefore, became more important in collecting farmers and supplying supermarkets with high-quality vegetables.

Supermarket distribution channels could be seen as altering the traditional structure of distribution channels in both positive and negative ways. The emergence of supermarket channels might be beneficial to farmers because it provided an assured market for quality products, reduce price risks, and reduce price margins between retailers and producers at a lower level compared to traditional channels (Paule *et al.*, 2010; Cadilhon *et al.*, 2006). However, it was difficult for farmers to deal with supermarkets because of the required high-quality standards, low volume of procurement, and strict control from supermarkets.

Conclusions and Policy Implications

Although traditional marketing channels still predominated in Vietnam, supermarket channels had been emerging as alternative channels for vegetables, especially for safe vegetables. The structure of traditional distribution channels implied that numerous intermediaries and collectors represented key actors in this chain

since up to 50% of the vegetables from farmers were distributed through collectors. Meanwhile, supermarket distribution channels contained fewer participants and tended to be shorter by shifting to direct producer-buyer relationships. Agricultural cooperatives played an important role in supermarket distribution channels, as 45% of safe vegetables were sold to agricultural cooperatives to be distributed in supermarkets. This implied that it was practically impossible for small farmers to establish a direct marketing relationship with a supermarket due to the volume required and frequency. Hence, government policies should focus on supporting the development of agricultural cooperatives such by connecting cooperatives and the market, promoting marketing activities of agricultural products, supporting the procedures of certification for agricultural product standards, and supporting the adoption of new technology and capacity building for cooperatives' managers.

While traditional distribution channels mainly dealt with conventional vegetables, supermarket distribution channels offered higher quality, and focused on safe vegetables, especially for VietGAP and organic vegetables. In supermarket distribution channels, farmers gained around 33% to 50% higher prices than in traditional channels. However, producers were required to complete the strict requirements of supermarkets, typically for the quality and safety of products. The quality and safety of vegetables strongly depended on the producers' awareness. Thus, improving farmers' awareness related to good farming practices is recommended in order to ensure the quality and safety of vegetables up to the consumption stage, meet the modern retailer's requirements, and have potential benefits for the farmers. The government should encourage and provide farmers supports to apply VietGAP or organic practices. Besides developing the quality standards of vegetables, the government should pay more attention to improving vertical integration and strengthening their control in the distribution and trading of vegetables, especially safe vegetable trading. Moreover, developing sustainability cooperation among stakeholders in the supply

chain is also important in order to strengthen the sustainability of the vegetable distribution system. Actors in the vegetable distribution channel should build contracts to ensure the quality of products and set sanctions to punish infringement. In addition, it is necessary to clearly express information transparency and benefit-sharing among the actors in the vegetable distribution system. Specifically, the vertical coordination between farmers and supermarkets should be improved to ensure the quality of products and ensure a better price for farmers compared to traditional channels.

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