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博士論文の要約

博士の専攻分野の名称： 博士（農学）

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学位論文題名

Study on Safe Vegetable Supply Chain of Supermarkets in Vietnam
(ベトナムのスーパーマーケットによる安全野菜のサプライチェーンに関する研究)

Food quality and food safety issues are drawing considerable attention throughout the food supply chain in Vietnam, especially related to vegetables. Vietnamese government, therefore, has made an effort to improve the food safety through launching ‘safe vegetables’ program from 1998. In addition, the rapid expansion of supermarkets in Vietnam is a result of incentives from the government for food safety and modernization of food distribution. In order to enhance product quality and differentiate their products from those in traditional markets, supermarkets have found they need a tangible proof of good practice via certification system for safe vegetable. The emergence of supermarkets has created the changes through which safe vegetable move from producers to consumers and participating actors in the supply chain.

The aim of this study is to clarify the supply chain of safe vegetable by supermarkets in Vietnam, with special interest in the process of establishing procurement routes from production to distribution of safe vegetable.

The research applied a purposive and snowball sampling method to select participants. The primary data for the research were collected through the market survey using face-to-face interview with selected actors involved in safe vegetable supply chain of supermarkets, with special focusing on agribusiness farms, agricultural cooperatives, trade intermediaries, and supermarkets. The investigation was conducted mainly in Hanoi City. In addition, exploratory investigations were conducted in Son La Province, Bac Giang Province, Hai Duong Province to observe a number of farms and trading activities.

For achieving the general objective of the research, four chapters were originally established. The key findings drawn from this study based on those specific chapters are as follows:

First, the key voluntary standards and certification system for safe vegetable existing

in Vietnam include RAT (*Rau An Toàn* - in Vietnamese), VietGAP (Vietnamese Good Agricultural Practices) and organic. RAT was first implemented in 1998 under the 'safe vegetables' program, followed by the introduction of VietGAP and organic standards, which were introduced in 2008 and 2006, respectively. While RAT is certified by the Department of Agriculture and Rural Development and the certificate valid in three years. VietGAP certificate is verified by a third-party organization accredited by the government and the certificate is effective for two years. For organic vegetable, several kind of standards are appearing in Vietnam vegetable market and TCVN (*Tiêu Chuẩn Việt Nam* - in Vietnamese) that was established from 2006 can be seen as the National organic agriculture standard. Of these standards, RAT is minimum standard, organic stands on the highest position and VietGAP at present can be seen as the most popular and widely accepted standard for the safety and quality of vegetables in the Vietnamese market. Other private standards operating in Vietnam vegetable market include GlobalGAP, or other organic standards. However, these standards are costly for Vietnamese farmers, and not really suitable for farmers whose land holding are small and fragmented.

Second, the distribution route of safe vegetables differs greatly between the traditional and modern supply chain, where supermarkets stand on the leading position. The traditional markets deal mainly with RAT, the minimum standard for safe vegetable with the key route from farmers - collectors - wholesaler markets - traditional markets. In contrast, supermarket supply chain distributes not only RAT but also premium standards including VietGAP and organic. Safe vegetables move from producers to supermarket with three types of routes: (i) Direct marketing: Agribusiness farms - supermarkets; (ii) Collective action: Farmers in agricultural cooperatives - agricultural cooperatives - supermarkets; (iii) Indirect channel via trading companies: Farmers - collectors/cooperatives - trading companies - supermarkets.

In addition, the supply chain of safe vegetable differs between domestic supermarket chains and multinational supermarket chains. The domestic supermarket chains choose to engage in more direct procurement on account of its use of VietGAP standard, while the multinational supermarket chain engage in high levels of indirect purchases from trading companies using RAT. Specifically, half or more of the vegetables procured by the multinational supermarket chains are under RAT, the minimum standard for safe vegetable, while the two domestic supermarket chains rely strongly on the VietGAP standard, with over 70% of their procurements under this system. However, the multinational supermarket chains have achieved sufficient quality control levels regarding food quality and safety via their strict

quality control activities such as supplier inspection, visual checks or sample testing.

Third, this research highlights that although agricultural cooperatives play the important role in the safe vegetable supply chain, there is difference in the role of each type of agricultural cooperatives. The cooperatives operating under model of agricultural service cooperative with a large number of cooperative member mostly provide base service in stages for production such as input suppliers, irrigation services, or plant protection services. From the increasing of public certification standard and strong supported from the government, these cooperatives also tend to improve the operating structure by cutting out the number of member and focus more on distributing agricultural products. However, their efficiency in marketing of products is still low. They, therefore, still act the key role as the middlemen for transferring government supports to farmers. In contrast, the new type of cooperative model mostly established in recent years with small number of members in cooperative (an average of 20 members per cooperative). The major function of the agricultural cooperatives operating under the new type of cooperative model is the distribution of agricultural products. They, therefore, has become key actor in the distribution of safe vegetables and the building of strong links to the modern retailers.

Marketing structure for safe vegetable is different amongst organizations that have been certified as safe vegetable including agricultural cooperative, agribusiness farm and direct management farm of supermarket. The cooperatives under the model of agricultural service cooperative still engage in long supply chain through trade intermediaries for RAT vegetable. By contrast, cooperatives under new type of cooperative model tend to shorten their marketing system by distributing their RAT vegetable for organizational customers, both RAT and VietGAP directly to modern retailers that may get price of 25-50% higher, and VietGAP vegetable to direct management farm of supermarket that may get price of 50-67% higher.

In addition, direct management farm of supermarket and agribusiness farms strongly promote VietGAP and organic vegetable through short marketing channel that provide more guarantee about the quality and safety of vegetable. This indicated that the distribution channel for safe vegetable is different amongst certified organizations based on the standard adoption in their practices. While certified organizations that develop greatly RAT, the minimum standard for safe vegetable involve in long distribution channel, certified organizations that promote VietGAP and organic tend to adopt shorter distribution channel.

Regarding the evaluation toward certification system for safe vegetable, the

cooperatives under the agricultural service cooperative model held negative attitudes toward RAT and VietGAP certification since there are much cost regarding much time and huge effort (several months to completing the document necessary for RAT certification renewal), bureaucratic costs for renewing RAT certification (around US\$ 1.500), high certification fees (several thousand dollars for VietGAP certification), but less benefits regarding lack of stable markets, insignificant difference in the market, similar price with conventional vegetables. In contrast, the agribusiness farms and the cooperatives under new type of cooperative model were general satisfied with the costs and benefits of certifications due to the government support especially for the certification fee and benefits gained from better market access to supermarkets and better prices.

Fourth, in this research, trading company that primarily supply vegetable to supermarkets can be divided into two groups (i) group 1 covers companies that have their own farm under VietGAP production; (ii) group 2 includes companies that have their own farm but did not certified or only commercial activities.

The marketing channel for collected safe vegetable in trading companies is various and supermarkets stand out as an important client of trading companies. Specifically, supermarkets are the main buyers for companies in group 1 (more than 70% of their sale volume). In contrast, smaller percentage of collected safe vegetables from companies in group 2 are sold to supermarkets (maximum of 36% of their sale quantity). Trading companies in group 1 started as a VietGAP producer, it is, therefore, easy to them to establish the relationship with supermarkets that require more about standard and certification for vegetables.

Trading companies who involve in supermarket supply chain are high achievers with a sense that quality and safety of products are very important and differentiate supermarket with traditional market. The procurement structure of trading companies, therefore, become more transparency through purchasing from certain sources that can trace back the origin easily, majority from agricultural cooperatives and the own production of trading companies. Specifically, an average of 60% of safe vegetable come from the own production of trading companies in group 1. In contrast, agricultural cooperatives and collectors become the major source for safe vegetable of trading companies in group 2 (more than 70%).

The adoption level of VietGAP and RAT vegetable differs amongst two trading company groups. The percentage of safe vegetable adoption of company in group 1 is high (more than 50%), while this percentage in group 2 is smaller, only from 5% to 55%.

Regarding two certification standards VietGAP and RAT, companies in group 1 adopt high percentage of VietGAP vegetable in their business, whereas RAT vegetables are procured more by companies in group 2.

These results show that trading companies who distribute lower percentage of vegetable to supermarket chains source more from agricultural cooperatives and collectors with low level of certification adoption and higher percentage of RAT vegetable than VietGAP vegetable. The reason is that the source of VietGAP vegetable is still small and they can get cheap purchasing price of RAT vegetable but good selling price to supermarket. In contrast, trading companies who supply more in supermarket chains procure more from their own production with high level of VietGAP adoption, their supply chain, therefore, is similar as the chain of agribusiness farms in supermarket direct channel.

From the above results, the final conclusion for this study indicates that the development of safe vegetable in Vietnamese vegetable market with three key certification standards RAT, VietGAP, organic has created the changes in the vegetable supply chain structure from traditional channel to supermarket channel. Although supermarkets engage in both direct and indirect procurement system for safe vegetable, they, however, have achieved sufficient quality control levels regarding food quality and safety. While long distribution channel for safe vegetables especially for RAT via trade intermediaries was remained in cooperatives under the model of agricultural service cooperatives, shorter marketing channel was promoted for VietGAP and organic vegetable in direct management farm of supermarket, the new type of cooperative model and agribusiness farms. The procurement system of trading companies who involved low level of supermarket supply chain depends more on agricultural cooperatives and collectors with RAT vegetable, while trading companies who engaged in higher level of supermarket supply chain change to their direct management farm under VietGAP vegetable, suggested the better monitoring in quality and safety of their vegetable.

To sum up, the findings of this study illustrate that structure of safe vegetable supply chain of supermarket is shorter for adopting higher certification standard and longer for lower certification standard since shorter supply chain can have better monitoring and reduce risks related to the quality and safety of vegetable. Government efforts should impose direct enforcement in production under the basic standard (RAT) of safe vegetable for the safety of vegetable and attempt to improve the vertical coordination along the supply chain in order to improve food quality and safety in Vietnam.