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# LINKING BETWEEN MEMBERS OF THE VEGETABLE SUPPLY CHAIN IN HANOI

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**Abstract**

Research objective on the relationship between supply chain links and the development of the fruit and vegetable production industry. The study has two intermediate variables: strategic direction and competing capability. The study uses the PLS-SEM method to test the proposed hypotheses. The research results offer solutions for developing vegetable supply chain links in Hanoi.

***Keywords***: *Flowers supply chain, linking members, Hanoi.*

## I. INTRODUCTION

Production and consumption along the supply chain for agricultural products, in general, and vegetable products, in particular, are inevitable requirements that must be fulfilled in globalization and increasingly deep economic integration. The supply chain has helped improve production quality to meet consumer needs best and increase the value of agricultural products, thereby increasing income for producing households. However, reality shows that the supply chain of clean vegetables still exists in many supply chain stages, from production to product consumption. Production is fragmented, individual, and spontaneous; many vegetable-growing households cannot consume it, while production enterprises need raw materials. Processing enterprises cannot control the source of raw materials, so product quality is unstable and must go through many intermediaries before reaching consumers. The main reason for the problems is that the connection between members in the supply chain needs to be tighter. Thus, the situation for clean vegetables in Hanoi is: How can we increase the level of relationship between members in the supply chain? What factors influence and how much do they influence the connection status between members in the supply chain of clean vegetable products? Stemming from these reasons, we have researched factors affecting the contact status between pure vegetable supply chain members.

The connection of members in the commodity supply chain is a form of economic association. This link is a connection between two or more parties in the operation process, bringing mutual benefits to the participating parties, regardless of size or type of ownership. The goal of linkage is that the parties seek to make up for their shortages through coordinating activities with partners. In connection with you, we will connect and combine members in the chain's stages during operations so that they fit together. Members who join can help each other choose input materials to serve the production and business process and support each other with capital and technology—linking together in product consumption to avoid price pressure to increase competitive advantage.

According to Mark Barratt (2004), two primary forms of linking members in the supply chain are vertical and horizontal. Vertical links include links with customers, internal links, and links with suppliers. Links between members play a central role with customers and

suppliers. Internal links of businesses in the chain are links between departments, functions, or parts within the company during the process of sourcing, manufacturing, and distributing products. Horizontal integration is an association between competitors, within members of the supply chain, and with other organizations that are not competitors to share production resources.

Through the concept of links in the supply chain, the research scope of this article will focus on vertical links between members of the chain. Vertical integration streamlines processes, integrates value-added activities, and speeds up the movement of material flows within the chain to increase product competitiveness and supply chain efficiency. Specifically, it is the link of basic members of the chain, including suppliers, manufacturing enterprises, distributors, and customers.

According to the authors Li and colleagues (1996), Boyaci and Gallego (2002), Piplani and Fu (2005), and Zou et al. (2004) believe that to link members in a chain, there are indispensable key and decisive factors that chain members need to pay attention to and prioritize investment, which is signing contracts, sharing information and joint decision making. Stock et al. (2000) say that linking geographically dispersed members is accomplished through contracts, information technology, and shared decision-making. According to Goyal and Deshmukh (1992) and Munson and Rosenblatt (2001), the connection between supply chain members in terms of combination in purchasing and production is by contract and joint decision-making.

There are many different views on the factors that affect the level of connection between members of the chain. Still, the views generally focus on three factors: Contract signing, information sharing, and decision-making.

Contracts are tools that supply chain members use to manage suppliers, buyers, and risk better. Contracting aims to reduce costs, increase profits, and share risks among supply chain members.

Information sharing: Information sharing allows supply chain stakeholders to react to market information and deliver more in line with consumer needs. Additionally, information sharing will increase trust between supply chain parties.

Joint decision-making: Joint decision-making activities in the chain will help maintain the flow of information, rationally use members' resources in supplying, producing, and distributing goods, and solving problems. Address issues during implementation, organize strategic decision-making, and prepare plans.

## II. LITERATURE REVIEW

### *2.1. Supply chain links*

A global value chain integrates an individual company into a global value chain that can facilitate its rapid growth. Global value chains involve production that takes place in multiple locations. Although it may be challenging for companies in developing countries to enter international markets independently, participation in Global Value Chains can assist them in exporting (Schmitz, 2006). Additionally, supplying larger global buyers can create steady demand and cash flow for local manufacturers. Several case studies have provided empirical evidence that individual producers benefit less from integration into a chain when dominant firms exercise power and discriminate against other producers. Other chain members.

### *2.2. Competing capability*

Competitiveness refers to an organization's ability to innovate its capabilities in the changing business environment (Teece et al. (1997)). It involves adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional capabilities to match the requirements of a changing environment. According to Teece et al. (1997) and Teece (2007), three key capabilities - coordination/integration, learning, and restructuring - are the essential elements of dynamic competitiveness. Also, according to Teece (2007), dynamic capabilities are divided into externally oriented capabilities (capacity to identify and collect information and knowledge outside the organization) and internally oriented capabilities (restructuring capabilities). Structure and reallocate company resources to take advantage of business opportunities). The third layer of fundamental capabilities, called "threat management and realignment," involves the business continually evolving in ways that depend on its direction.

### *2.3. Strategic direction*

The strategic direction of a business is often a key driver of its overall performance and ability to compete effectively in the marketplace. Two of the most widely studied strategic orientations are Entrepreneurial and Collaborative orientations. Entrepreneurial orientation refers to a company's focus on innovation and risk-taking and its tendency to pursue opportunities and engage in proactive behaviors that help it achieve growth and success. On the other hand, Collaborative Orientation refers to a company's focus on developing partnerships and collaborations with other companies and its willingness to seek and participate in strategic alliances. And joint venture.

The study by Wu et al. (2017) shows that Entrepreneurial Orientation positively impacts company growth by influencing the company's dynamic capabilities, including the ability to sense, capture, and convert opportunities. Firms with a high cooperative orientation tend to engage in more partnerships and alliances, which can provide access to new markets, enhance competitiveness, and increase coping capacity. with environmental changes (Child, 1997; Hitt et al., 1998).

### *2.4. Industry growth*

The resource-based theory posits that there are countless sources of opportunity in the market, and it is essential to manage the transition process by deploying the firm's resources to identify and exploit opportunities for further growth. Organizations must differentiate based on capabilities and competencies to sustain in today's market and meet customer needs. They need to compete on different aspects such as product design and development, production, costs, distribution, communication, and innovative ways of marketing. These challenges require reorienting small and medium-sized enterprises to meet the need for high dynamism, flexibility, and innovation.

Growth is an essential indicator of a growing business. These businesses make a significant contribution, accounting for only about one-third of the companies expanding their scale but creating more than half of the jobs.

2.5. Hypothesis

Business Orientation and Collaborative Orientation have the potential to enhance dynamic competitiveness while creating competitive advantage (Karami & Tang, 2019; Teece, 2014). This is because Entrepreneurial Orientation involves engaging in activities with high levels of uncertainty and risk. At the same time, collaborative orientation helps minimize these

risks and address limitations—resource constraints (Ferreira et al., 2020; Karami et al., 2020). Furthermore, Collaborative Orientation can provide a favorable platform for transferring complementary knowledge, contributing to improved organizational learning in Entrepreneurial Orientation (Jiang et al., 2016; Wales et al., 2013). The resource-based view proposes that the interaction between resources and the alignment between Entrepreneurial Orientation and Collaborative Orientation provide the resource foundation for developing dynamic competitiveness in medium and large enterprises. Small, especially during their growth (Barney et al., 2001; Teece et al., 1997).

***Hypothesis 1: Supply chain links have a positive relationship with Strategic direction***

Businesses often rely on their strategic direction when entering into alliances, significantly affecting the quality and depth of interfirm relationships. The key concept in this relationship is "interoperability." These capabilities include many elements essential to creating strong relationships with external partners. This includes identifying suitable partners, initiating and developing partnerships, managing the terms and conditions of these alliances, and acquiring knowledge effectively through these interactions. This work. Companies that establish strong collaboration and integration capabilities with a strategic orientation to effectively create and manage associations tend to develop more muscular and effective partnerships. This leads to increased competitiveness, access to valuable resources, and greater flexibility in a constantly changing business environment.

***Hypothesis 2: Supply chain links positively relate to the Competing capability.***

Lall (1992) introduced the concept of "linkage capacity" in the literature on technological capacity building. Lall emphasized that joint capabilities are essential to a company's productivity. However, Lall's framework does not provide detailed insight into the powers that firms need when forming and using such linkages. Mathews (2002a, 2006, 2017) has provided a comprehensive account of links to learning. He distinguishes between three elements in the process of learning from external partners: alignment (i.e., establishing contractual forms of cooperation), leverage (shaping events in the partnership to facilitate knowledge transfer), and learning (repeated application of linkages and power).

***Hypothesis 3: Supply chain links have a positive relationship with the Industry growth***

Strategic orientation is considered the leading resource for opportunity discovery based on the perspective of dynamic capabilities, including vocational orientation and cooperative orientation. Collaborative orientation is defined as a firm's behavior in seeking and coordinating partnerships and learning from them (Kandemir et al., 2006). It includes three skills: coalition scanning, coordination, and learning (Amaya Rivas et al., 2020). Collaborative orientation allows businesses to monitor markets and obtain reliable information from partners (Bouncken & Fredrich, 2016), providing unique resources to explore market opportunities and maintain competitive advantage (Sakhdari et al., 2020). The dynamic capabilities perspective appreciates the importance of dynamic capabilities, the ability to adapt to changing environments (Teece, 2007; Zollo & Winter, 2002). Dynamic capabilities convert the benefits of complementary resources into performance (Lee et al., 2021; Lew et al., 2013). Dynamic capabilities enable businesses to explore and develop opportunities and effectively combine internal and external resources (Teece, 2007). Complementary resources can motivate firms to create dynamic capabilities to explore and exploit market opportunities.

***Hypothesis 4: Strategic direction has a positive relationship with Industry growth***

Businesses must continuously learn and integrate knowledge to build, optimize, and reconfigure their resources and capabilities to compete with large companies in international markets (Khan & Lew, 2018; Oura et al., 2016). The dynamic competitiveness perspective argues that a company's competitive advantage depends on its ability to generate and innovate resources and capabilities that are valuable, rare, and cannot be copied or replaced (Lado et al., 1992). A firm is viewed as a set of unique resources and capabilities that are not easily copied (Wernerfelt, 1995) and the ability to leverage these resources to create distinctive capabilities and processes. It helps a company maintain a competitive advantage (Hart, 1995; Teece, 2012). Resources do not yet create value, but real value is only seen through the company's unique dynamic capabilities (e.g., Newbert, 2007; Teece, 2007). Dynamic capabilities include the subset of resources that optimize the performance of all remaining firm resources (Kozlenkova et al., 2014). It is a skill and ability developed and implemented that allows SMEs to leverage their specific resources to meet market needs (Teece, 2012). By combining this dynamic capability with the firm's resources, SMEs can achieve superior performance in the market by identifying opportunities and pooling resources (Newbert, 2007; Teece, 2007).

***Hypothesis 5: Competing capability has a positive relationship with Industry growth***

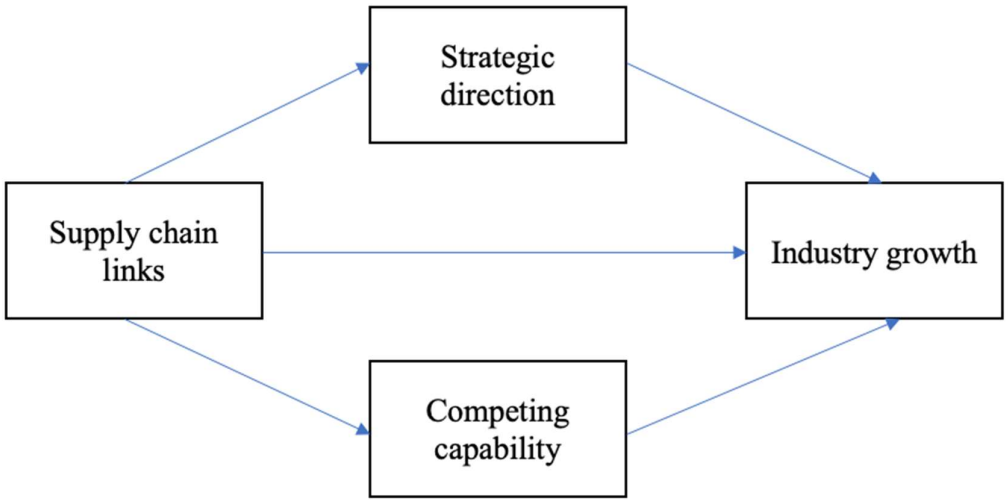


**Figure 1. Model research**

## III. METHODOLOGY

The study uses Smart PLS software to test the hypotheses using the PLS-SEM analytic approach. According to Hair et al. (2017), PLS-SEM provides more benefits than CB-SEM in strategic management, organizational behavior, and marketing research on consumer behavior analysis. The following circumstances enable estimating complicated research models with several intermediate, latent, and observable variables, notably structural modeling, while avoiding issues associated with small sample sizes and non-normally distributed data (Henseler et al., 2009).

## IV. RESULTS

The evaluation of the resultant measurement model considers average extracted variance (AVE) to determine convergent value, individual reliability of each scale/variable, and aggregate reliability to gauge internal consistency. Additionally, HTMT rate data is used to assess the discriminant validity.

First, the measurement model's dependability and convergence value have been assessed. The factors of load factor, total reliability, and average extracted variance (AVE) are used to assess this. The scale's reliability and convergence study findings are shown in Table 1.

Table 1. Results of the reliability and convergence analysis of the scale

| Code | Variables | Cronbach's Alpha | CR | AVE |
|---|---|---|---|---|
| SCL | Supply chain links | ***0,833*** | ***0,882*** | ***0,600*** |
| SD | Strategic direction | ***0,871*** | ***0,911*** | ***0,720*** |
| CC | Competing capability | ***0,852*** | ***0,894*** | ***0,628*** |
| IG | Industry growth | ***0,841*** | ***0,893*** | ***0,676*** |

*Source: Analysis results, 2023*

The scales in Table 1 are used in the study model because they have factor loading coefficients more significant than 0.4, demonstrating their dependability. The scales exhibit internally consistent reliability with composite reliability and Cronbach's Alpha values above 0.7 (Hair et al., 2017). The scales reached a convergence value when the average extracted variance value is more significant than 0.5 (Hair et al., 2017). According to Henseler et al. (2012), the study uses data on the HTMT rate to assess the scale's discriminant value. The scales' discriminating values may be shown by the fact that all of the HTMT ratios in Table 2 are less than 0.9.

**Table 2. Results of discriminant validity**

| | SCL | SD | CC | IG |
|---|---|---|---|---|
| **SCL** | 0,853 | | | |
| **SD** | 0,849 | 0,790 | | |
| **CC** | 0,741 | 0,774 | 0,797 | |
| **IG** | 0,806 | 0,784 | 0,795 | 0,822 |

*Source: Analysis results, 2023*

The study used a Bootstrapping sample size of N=5,000 to evaluate the structural model (Henseler et al., 2012). The offered hypotheses are deemed statistically significant at a 95% confidence level with p = 5%.

According to Table 3's findings, there is a link between brand trust and loyalty, and both have a 95% confidence level with a p-value of 0.000 and 0.002, respectively. This demonstrates the theoretical applicability of the principles in the study model. The PLS-SEM analysis's theoretical model estimation findings demonstrate that the hypotheses H1, H2, H3, H4, and H5 are accepted with 95% confidence (Table 3).

**Table 3. Hypothesis test results**

| Hypothesis | | Original sample (O) | Standard deviation (STDEV) | T statistics (\|O/STDEV\|) | P values |
|---|---|---|---|---|---|
| ***H1*** | ***SCL -> SD*** | 0,313 | 0,040 | 7,802 | 0,000 |
| ***H2*** | ***SCL -> CC*** | 0,853 | 0,014 | 61,607 | 0,000 |
| ***H3*** | ***SCL -> IG*** | 0,518 | 0,035 | 14,912 | 0,000 |
| ***H4*** | ***SD -> IG*** | 0,790 | 0,020 | 38,771 | 0,000 |
| ***H5*** | ***CC -> IG*** | 0,164 | 0,032 | 5,158 | 0,000 |

*Source: Analysis results, 2023*

According to Table 4 findings, the dependent variables brand equity, customer trust, and usage decisions have modified R2 values of 27.3, 37,7, and 12,5%, respectively. The robustness of the model is explained more thoroughly by R2 values that are greater. Determining how much R2 is acceptable can be difficult because it relies on the model's complexity and the study situation. R2 = 0.2 is regarded as strong in consumer behavior research, according to Hair et al. (2011). The Q2 value provided by Geisser (1974) was another hypothesis put forth by the researchers. When the dependent variable's Q2 value in the structural model is more significant than 0, it shows that the research model predicts the dependent variable. There is a predictive link between the model and the dependent variables, as shown in Table 4, where the results of the blindfolding operation for the Q2 values of the variables are all larger than 0.

**Table 4. Coefficients R2 and Q2 of the dependent variable**

| Variables | R2 | R2 adjust | Q2 |
|---|---|---|---|
| ***SD*** | 0,728 | 0,727 | 0,725 |
| ***CC*** | 0,624 | 0,623 | 0,620 |
| ***IG*** | 0,876 | 0,875 | 0,779 |

*Source: Analysis results, 2023*

## V. CONCLUSION

The above research results show that the factors of signing a contract, the level of information sharing, the number of joint decisions, and the level of association have a dependent relationship. These three factors create a sustainable basis to help strengthen the connection between Hanoi's vegetable supply chain members. To increase the level of contact between members, it is necessary to have solutions focusing on these three factors.

Strengthen contract signing between processing enterprises and vegetable producers in the supply chain. Promote the role of businesses in signing contracts. Vegetable processing enterprises must find ways to expand consumption markets and ensure stable benefits from consumption to ensure the connection between raw material producers and processors, ensuring raw materials for production. Manufacturing enterprises mainly implement this solution. Use diversity and flexibility in output-processing contracts: Production-processing linkages in each enterprise and each production area have specific characteristics due to the type of enterprise and production concentration. They are Produced in raw material areas. Therefore, it is necessary to have diversity and flexibility in production contracts, avoiding the application of machinery and imposing different conditions. Improving the beneficial relationship between the parties in the agreement is crucial in determining the substantial and long-term attachment between the parties. The direction of adjustment is that the final benefits generated from production and processing must be guaranteed to make information public and shared more fairly with raw material producers to develop sustainable raw material areas and avoid disputes over raw materials with other enterprises in the enterprise's investment area.

Promote information sharing among supply chain members. Chain members need to be fully aware of the benefits of information sharing for producing, processing, and consuming clean vegetables for supply chain members. When participating in the supply chain, members must commit to providing basic information about vegetable production, processing, and

consumption. In particular, processing enterprises must be transparent in providing market information and customer product quality requirements to producers to produce products that meet market and market requirements. Customers ensure Hanoi's clean vegetable supply chain develops stably and sustainably. Develop sanctions to deal with members who do not provide or provide missing information or provide inaccurate and untruthful information.

Promote joint decision-making activities among supply chain members, specifically: First, members need to identify decision-making issues during transactions with each other. For example, Between manufacturers, collectors, and processing enterprises, it is necessary to identify the problems that must be jointly decided, such as type, quantity, quality of raw materials, and technical procedures for growing, caring for, and harvesting, price, delivery time, shipping method, payment method...; Between the processing enterprise and the distributor, it is necessary to identify common decision-making issues such as type of vegetable, quantity, quality, price, time, delivery method, transportation, payment,...; Second, select and agree on criteria for evaluating issues that need to be decided. To avoid conflicts in the general decision-making process, it is necessary to have standards for assessing decision-making issues. For example, quantity assessment standards are based on weighing and measuring criteria, deduction rates, etc. Complying with quality standards approved by competent agencies and organizations announced rights is possible. Third, information related to joint decision-making needs to be fully provided. Everyday decision-making activities must be a compromise and negotiation that harmonizes the parties' interests. The parties need to commit to support and receive future support to implement the everyday decisions reached.

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