

## Assessing West Java Supply Chain Financing System (SCFS) Using SWOT Analysis

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### ABSTRACT

Supply chain system implementation consists of two necessary elements, the network design and the information technology (IT). In West Java, Supply Chain Center (SCC) implementation notion is based on the province's current SMEs circumstances, including low financial performance, decentralized data, and no roadmap between actors. This research analyzes West Java Supply Chain Financing System (SCFS) using strengths, weaknesses, opportunities, and threats (SWOT) analysis. Qualitative methodology was employed for this research. First, the primary data was collected from focus group discussion (FGD) and the secondary data was obtained from West Java government documents. Second, this research used SWOT analysis from collected data which generate nine alternative strategies to build effective SCFS to cope with identified issues and its implications to expand rural financial services, supply chains, and overall sustainable development.

### KEYWORDS

Supply chain  
West java  
SWOT analysis  
Supply chain financing  
system

## INTRODUCTION

Supply chain integration is the alignment, linkage, and coordination of people, processes, information, and strategies across the supply chain to facilitate the efficient and effective flows of material, money, and information in response to customer needs (Stevens and Johnson, 2016). Two key factors support this strategy. The first is network design, which includes physical structures and business processes. The second is information technology (IT) design, which enables data sharing, communication, and synchronization. Without IT, communication, coordination, and decision-making process cannot be done throughout the supply chain (Sanders, 2018). Researchers have also claimed that technology has a major impact and constrains human action to a great extent (Gosain, 2004).

The integration of supply chains necessitates coordinating internal and external organizational resources (Chang et al., 2016). The supply chain is a collaboration of multiple parties creating an effective and efficient process as well as quality products. This goal is achievable if the internal conditions of the focal organization foster efficiency, quality, speed, flexibility, and the ability to innovate (Hui et al., 2015). Internal integration is concerned with intra-organizational issues while

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external integration involves relationships with business partners from upstream to downstream (Foerstl et al., 2013).

To achieve the goal of gaining profits, financial activities in the supply chain become a crucial factor in improving business efficiency as it has its own business process and technology. Financial arrangements in the form of debt, equities, or financial contracts are jointly used by at least two supply chain partners and supported by focus companies to improve overall financial performance (Steeman M., 2014). Close cooperation between finance and SCM is needed in order to address supply and demand in volatile markets (Dooley et al., 2010; Olson, 2010). Supply chain finance should be understood as applying three different tools: supply chain collaboration, supply chain technology, and supply chain finance (financial and financing aspects) (Templar, Findlay, and Hofmann, 2016).

West Java is among the regions to do digital transformation with the implementation of Supply Chain Center (SCC) technology based on current problem circumstances; the province has no reliable financial data (decentralized) and no standardized business flows on current transportation, logistics, demands, supply, and goods movement. Besides, the region has no proper information flows and roadmap from upstream to downstream. West Java supply chains' products, especially poultry and palm oil, have suffered from significant losses during the Covid-19 pandemic. Thus, SCC aims to accelerate West Java's economic recovery while systematizing its supply chain (LAPI ITB, 2020).

Before companies consider investing in new technologies, they need to identify and procure data requirements and complete technology requirements. They need features and appropriate workflows to support and enable future states. The biggest mistake companies make is to buy technology before process and workflow activities are documented, evaluated, and formalized (Chase, 2016).

A number of previous scientific research has addressed this issue. According to previous studies, the supply chain financial system is still in its infancy (Ye, 2021), owing to a lack of adequate financial support, making it difficult and expensive for agricultural SMEs and farmers to obtain funding (Zhu et. al., 2016). Commercial banks, rural credit cooperatives, and other financial institutions are frequently reluctant to credit agricultural enterprises and farmers due to their low credit scores, high demand for finances, long manufacturing cycles, and high credit risks (Zhu et. al., 2016). Whereas, financial support for agricultural development is critical to the modern economy because it can lead to the expansion of rural financial services, the extension of supply chains, and overall sustainable development (Wang et. al., 2013).

Some literature has implemented a SWOT analysis to evaluate the supply chain financing system (SCFS). There are recommended strategies for improving the supply chain, but no studies have reported the extrinsic security threats and the risk of disruption to the entire supply chain using SWOT analysis in developing country standards. This research fills this gap using the West Java case study described below.

This research elaborates on the strengths, weaknesses, opportunities, and threats of the West Java supply chain in more detail in order to develop a resilient supply chain strategy for the province. Therefore, the main purpose of this research is to strengthen the resilience of the West Java supply chain. The importance is to minimize all risks related to technical, environmental, economic, and political aspects. The West Java supply chain is chosen as a case study to achieve the objectives of designing efficient and effective SCFS for West Java SMEs by eliminating unnecessary middlemen and collaborating with financial institutions as strategic partners.

This study is designed to benefit academia and supply chain managers of poultry products (slaughterhouses and hatching eggs) in ASEAN countries whose conditions are similar to West Java'. The findings propose nine alternative strategies for effective SCFS to deal with identified poultry and

palm oil product supply chain issues. The findings should help managers determine how their internal processes relate to financial improvement and collaboration with financial institutions for future supply chain financing systems.

## LITERATURE REVIEW

### Supply Chain Management

The supply chain is a network of organizations that engage in various processes and activities that create value in the form of products and services in the hands of end users through upstream and downstream links. It involves some important flows, including (1) physical material flow, (2) information flow that provides information to the supply chain, and (3) resources (especially finances and other related things like people and equipment). Meanwhile, supply chain management (SCM) is defined as the management of material, information, and resource relationships and flows across and within a network of upstream and downstream organizations. The purpose of SCM is to create value, increase efficiency, and satisfy customers (Lalwani and Mangan, 2016).

According to Wieland et al. (2016), trust-related issues continue to stymie interfirm cooperation and integration efforts. Supply chain process design and related technologies may assist businesses in overcoming the vulnerable nature of trust and even building trust. Setting performance goals and measuring success are critical components of SCM's digital transformation (Gezgin et al. 2017). The ease with which companies can now conduct deeper and more insightful performance evaluations is a noticeable difference compared to previous years.

Collaboration in the supply chain is essential for making it sustainable. Partners involved in the supply chain must collaborate to manage a product's information, people, processes, and decisions throughout its entire life cycle (Marshall et al. 2016). To do so, supply chain partners must be able to manage all the above-mentioned points through collaboration across the entire supply chain (Bove and Swartz 2016).

### West Java Supply Chain Center

The West Java Supply Chain Center uses the Penta-helix model to prepare the supply chain information system. The virtual supply chain technology covers the point of sales, blockchain, tracking, radio-frequency identification (RFID), global positioning system (GPS), sensor, robotics, and e-procurement while optimizing the model, analysis, control, and learning (LAPI ITB, 2020).

The West Java Supply Chain Center consists of three sub-systems: food hub, trading house, and supply chain financing system. The paradigm shift in the West Java Future Food Supply Chain includes (Perdana, 2021):

1. farmers/stakeholders move from preventing damage to mitigating damage;
2. farmers will include carbon tax as a new component of production costs;
3. farmers and Stakeholders work in a limited-resource environment;
4. product delivery will become more local, direct, and faster;
5. food is focused on productivity, technology-based innovation, food waste, food safety, traceability, food service; and
6. government assistance will move towards building producers' resilience in overcoming climate change.

Meanwhile, the West Java Supply Chain Center principal designs consist of (SBM ITB and KPED

Jabar, 2021):

1. Ecosystem-Based, involving all stakeholders in the poultry supply chain with the motto "leave no one behind".
2. Start Small, the implementation of SCC will be carried out in phases by prioritizing the feasibility of the development, starting from downstream to upstream. SCC will add more channels for expanding market accessibility.
3. Value-based incentives, every stakeholder contributes to system implementation, the incentives developed will be based on social value and market value.

The West Java Supply Chain Center transformations consist of (SBM ITB and KPED Jabar, 2021):

1. Product Transformation; Carcass products are converted into more value-added forms.
2. Institutional Transformation; The need for a new institution to become an orchestrator in the system supply chain (food hub and trading house).
3. Information Systems and Technology Transformation; The creation of information systems that regulate the flow of information demand, delivery, finance, cage revitalization, and IoT technology.
4. Social Transformation; Changing people's views from "seeing is believing" to "reporting is believing".
5. Policy Transformation; The need for policies that support the creation of a reasonable competitive business climate.

### State of the Art

Some of the previous studies have observed the "supply chain finance" topic, but the authors have discovered the gaps through a SWOT analysis of the West Java supply chain. The details are elaborated on in the following paragraphs.

Supply chain finance is seamlessly integrated with the physical industry and finance, bringing great benefits to SMEs. Therefore, integrating components and features into various supply chain finance application links can effectively solve the SME financing issues in supply chain finance. According to TianLing Zhang et al. (2021), China's blockchain is proposing innovations for the trust and security of traditional transactions. One of the key features of blockchain technology is to solve the accuracy, transparency, and security of information and apply blockchain technology to supply chain finance. In Nigeria, Olaniyi et al. (2014) proposed the WaqfMuzara'ah Supply Chain Model (WMSCM). This solves the collateral and high-interest rates that constrain farmers' financial capacity and agricultural production, and that is similar to West Java's supply chain flow. Therefore, the Literary Foundation called for the proposed research to perform a SWOT analysis on the flow of financing in the West Java supply chain.

According to Tsai & Peng (2016) and Wang (2016), 55% of Chinese SMEs cannot get a loan from a bank. They can borrow money from banks, but they often get high-interest rates along with collateral loans. Supply chain finance, which leverages information technology, reflects some financial intermediation and shadow banking concepts. In addition, it is a kind of emerging FinTech market (online merchants) that is different from traditional banks. Therefore, using normative analysis, if the jurisdiction aims to support the FinTech industry, a "more principles-based" financial regulation is needed to respond quickly to the development of new FinTech and to give a sketch map of the supply chain model and supply chain finance. It then reveals the evolution paths of supply chain finance. The literature issue has similarities with the West Java supply chain financial flows but with different subject perspectives.

A more recent study was conducted in the same environment as Indonesia and has the characteristics of a developing country, Da Nang's city in Vietnam. Hang & Tung (2019) and

Malaysia, Ahmadet. Al. (2018) maintained that the city shows the significant benefits expected of implementing SCFS for all parties involved, including buyers, suppliers, financial services providers (FSPs), and technology service providers. The implementation of SCFS is essential for employment and wealth creation. Nevertheless, the results also point to some existing problems. Local businesses face some difficulties in accessing funding sources from banks and building long-term relationships within the supply chain. In addition, they still have limited knowledge of SCFS and its benefits. There is no doubt that the information infrastructure in Da Nang is not well developed and local businesses still rely on sources of funding from banks. This literature addressed a similar issue to West Java supply chain financial flows; thus, this present research aims to extend the findings with SWOT analysis research in the context of West Java.

Based on the literature review, the initial conceptual framework generating ideas of concept in identifying the West Java supply chain is enclosed in Figure 1.

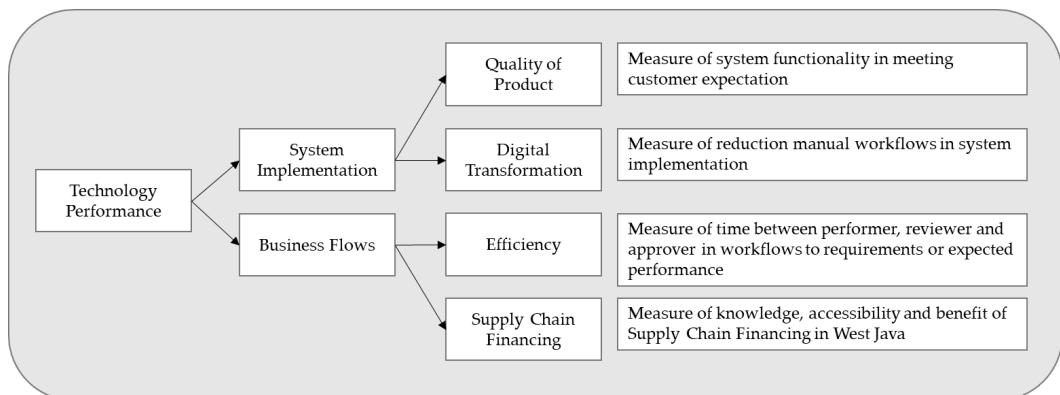


Figure 1. Conceptual framework

## RESEARCH METHOD

This research employed a SWOT analysis to determine the strengths, weaknesses, opportunities, and threats of the West Java supply chain. The approach used was the focus group discussion (FGD). The collected data from FGD was accustomed to building the theoretical framework for future data processing. Most of the information gathered from FGD transcripts comprehensively described the West Java supply chain financial system, the network of main actors (SMEs, financial institutions, and government), market categorization, and technological awareness. With these materials, the authors identified, categorized, elaborated, and predicted the changes in the West Java supply chain. The collected data were then formulated to propose strategies on how to strengthen the resilience of the West Java supply chain.

Focus group discussions are an advanced form of interview method and are more specific group interviews with discussions. The selected topic is investigated in a structured and organized way with the help of the facilitator. The goal is to provide useful insights on the topic (Collins and O'Brien, 2003). Pre-planning and designing discussions and their settings play an important role in conducting focus group sessions. Focus groups are "a series of carefully planned discussions aimed at gaining awareness of defined areas of interest in a tolerant and threat-free environment" (Krueger and Casey, 2000). Different authors have different suggestions and tips regarding the number and size of focus groups. According to Krueger, focus group surveys should include a minimum of 3 to a maximum of 12 participants (Krueger, 1998). Stewart and Shamdasani suggested that there are no

general rules for the optimal number of focus group discussions (Stewart & Shamdasani, 1990).

In this research, the initial primary data (FGD Transcripts) were analyzed using content analysis, which is usually applied to a set of texts, such as documents, related books, and interview transcripts. The results were then examined to identify common themes, topics, ideas, and patterns of meaning that come up repeatedly. It followed a six-step process (Clarke and Braun, 2021).

1. Familiarization; Fully immersed and actively engaged in the data by transcribing the interactions and then reading or listening to the transcripts or recordings.
2. Coding; Once we've become acquainted with the data, begin identifying preliminary codes, which are data features that appear interesting and meaningful.
3. Generating themes; The interpretive analysis of the collected codes begins. Relevant data extracts are sorted (combined or split) based on broad themes.
4. Reviewing themes; Following a deeper examination of the identified themes, the author must decide whether to combine, refine, separate, or discard the initial themes.
5. Defining and naming themes; Involves 'refining and defining' the data's themes and potential subthemes. Continuous analysis is required to improve the identified themes.
6. Writing up; Using vivid and compelling extract examples related to the research objectives, transform the analysis into an interpretable piece of writing.

Data analysis was performed using SWOT analysis. When applying SWOT analysis to the West Java supply chain, internal and external factors were first collected and analyzed through reports, literature, dissertations, laws, and data. The SWOT analysis used in this research consisted of three phases: (i) Data collection; (ii) SWOT analysis; (iii) Policy recommendations. The data collection phase aimed to collect all relevant data and materials related to the research topic. The SWOT analysis phase was conducted to discuss, examine, and develop all aspects of strengths, weaknesses, opportunities, and threats based on the collected data. Alternative strategies were recognized for the whole of the focus group discussion based on strengths, weaknesses, opportunities, and threats to optimize the utilization of strengths and opportunities while reducing weaknesses and threats, as illustrated in Figure 2. The SWOT matrix was then broken down into four different strategies: Strengths-Opportunities (SO), Weaknesses-Opportunities (WO), Strengths-Threats (ST), and Weaknesses-Threats (WT). SO strategies were developed by combining internal strengths with external opportunities and using those strengths to harness the opportunities. Internal weaknesses and external opportunities were combined to develop the ability to address the weaknesses. To prevent threats, ST strategies combined internal strengths and external risks. Internal weaknesses were combined with external threats from the WT strategy to mitigate weaknesses and avoid threats. Identifying strengths, weaknesses, opportunities, and threats was expected to help develop a resilient supply chain in West Java. Recommended strategies can also mitigate potential associated risks while leveraging existing opportunities and strengths.

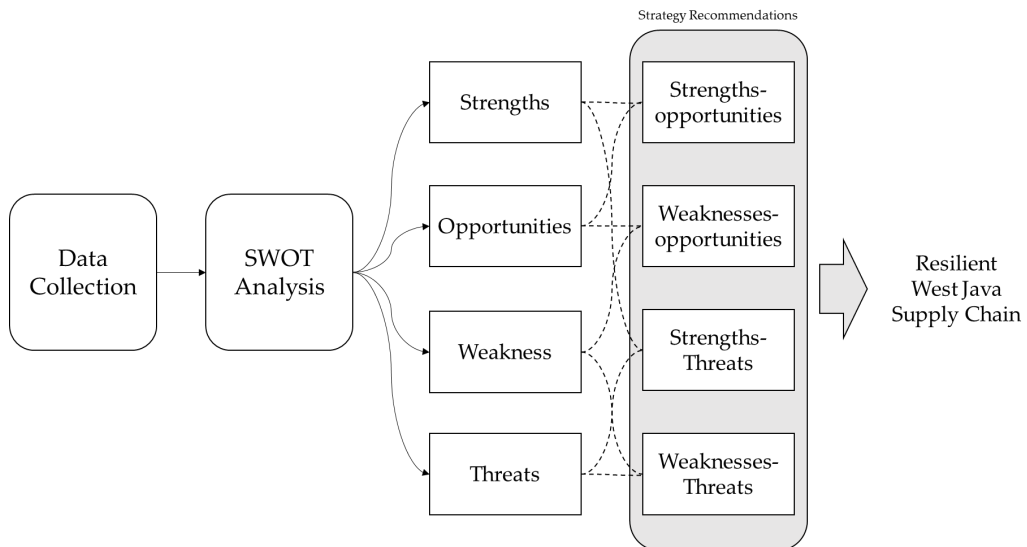


Figure 2. A flowchart of the research methodology for the West Java supply chain using SWOT analysis

## RESULTS & DISCUSSION

The next section describes the main issues encountered by the West Java supply chain, followed by the experiences mentioned by actors in the West Java supply chain during FGD. These experiences fall into four categories: government regulations, issues of security and safety, market challenges, and the necessity of technology. The following presents the summary of the SWOT analysis results, explaining the West Java supply chain's strengths, weaknesses, opportunities, and threats. Then, the recommended strategies are elaborated based on the SWOT matrix. An illustration of the current West Java supply chain can be seen in Figure 3.

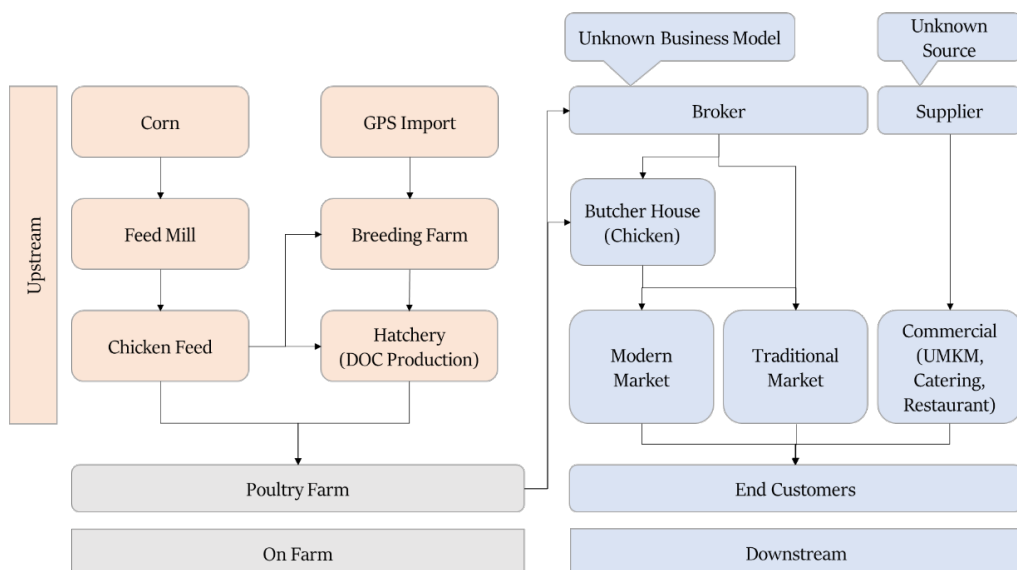


Figure 3. An illustration of the existing West Java supply chain (SBM ITB, 2021)



## Issues in the West Java Supply Chain Financial Flows

Several significant issues have occurred in the West Java supply chain financial flows. One of the substantial issues is the existence of middlemen and less useful actors who contributed to the West Java supply chain. This problem results in high market end prices which suffocate end consumers in buying poultry products. These middlemen request a payoff for their less effort in distributing poultry products from breeding farms, making the base price received by the distributors more expensive (KPED Jabar, 2021). From palm oil products, scarcity occurs as West Java's Crude Palm Oil (CPO) production decreases while energy commodities price increases (INDAG Jabar, 2022).

Opinions and risk lessons from actors may oblige businesses and governments in responding to West Java's digital transformation. These lessons relate to all characteristics of a business, including evaluating technological innovations using the appropriate tools, managing uninformed public perceptions of the supply chain financing system (SCFS), and assessing SCFS implementation. Although the financial risks operate on all actors, experience in each upstream and downstream is distinctive due to the different landscape of the West Java supply chain business activities. Thus, the West Java supply chain's gathered lessons are classified into four categories: (i) government regulations; (ii) issues regarding security and safety; (iii) market challenges; and (iv) the necessity of technology.

### i. Government regulations

Regulatory concerns exist throughout the supply chain process from upstream to downstream, including numerous private butcher houses. These butcher houses definitely increase the competition between poultry products as they usually offer lower prices to customers due to their private incorporation. Regulation changes or governmental requirements may affect operations and, in the end, the profitability of overall West Java. The regulatory rules may ban private butcher houses, but there are always challenges to executing such regulations due to preferable consumers' choices. In the case of palm oil, the government did not anticipate the implementation of Permendag Nomor 6 Tahun 2022, which resulted in palm oil scarcity and hoarding/diversion (Primiana, 2022). Thus, the best way to cope with such an issue is to restructure the overall West Java supply chain (KPED Jabar, 2020).

### ii. Issues regarding Security and Safety

Business actors and experts argue that safety and security in the West Java supply chain are critical for profitability and the decision of the end price for customers. They conclude that middlemen play a significant incremental margin in ending the base price for poultry products to be sold to end customers as no butcher house could store a large amount quantity of poultry products because of its distance and capacity consideration (KPED Jabar, 2021).

### iii. Market Challenges

According to the association of poultry farmers in West Java (2021), about 30% of chicken farms are operated by independent smallholder farms while the rest (70%) are operated by large companies. The profits always side with large companies as they have organized and integrated the supply chain from upstream to downstream while independent smallholders will only gain their profits when there are no stocks left in the market.



In the context of palm oil products, the CPO Export market has reached 69%, but it does not provide any contribution to West Java's profitability. This problem remains unsolved as the market data is completely untraceable (Primiana, 2022).

Regarding these market challenges, KPED should consider solving these following crises with modern methods so producers can reach healthy market competition.

- a. The selling price (LB) is lower than the production cost (HPP) while the carcass price is relatively stable.
- b. There is a very sharp feed and doc price fluctuation (corn availability and GPS import).
- c. Early finishing policy and price government reference are not working well.
- d. Community demand decreases due to the pandemic (cutting in RPA decrease).
- e. The traditional market (DN) is dominated by global industrial products.
- f. The partnership pattern is not transparent.

This is an important future plan for expanding the supply chain in West Java, but the procedure needs to be evaluated and restructured (KPED Jabar, 2021).

#### iv. The Necessity of Technology

As competition in the West Java market intensifies, companies prioritize state-of-the-art processes and equipment to save costs and improve flexibility, security, and protection instead of proven true priorities. Technological advances can lead to higher training costs and unexpected problems, increasing reliability uncertainty and making it unacceptable to many operators. The most important thing for the "future" reliability of new technologies is the knowledge of actors regarding the supply chain finance system itself. The actors are now running their businesses in traditional ways, so they need to take digital literacy on the supply chain financing system. The more knowledge they have about SCFS, the more trust and collaboration they can gain from financial institutions which may improve their businesses (KPED Jabar, 2020).

### SWOT Analysis

This section elaborates on the West Java supply chain's strengths, weaknesses, opportunities, and threats based on the SWOT analysis. The analysis's gathered internal and external factors are demonstrated in Figure 4.

#### 1. Strengths

This section refers to the areas where the West Java supply chain succeeds. The strengths include the center for poultry products and the large population.

##### 1.1. The center for poultry products

Being the largest national poultry meat production center, in 2020 West Java contributed 838,148.94 tons of meat per year, or 57.77% of the national demand of 1,450,715 tons of meat per year with a value of not less than Rp. 4 trillion per year. If calculated with all the supporting facilities, the value provides no small contribution to the development of rural communities in West Java (BPS, 2020). During the last three years, the issue that has occurred nationally is regarding the strength of the integrator poultry industry businesses compared to independent smallholder farmers. This is due to the government's attempt in carrying out a dichotomy between the two. This condition is the result of introducing the agribusiness system in the national poultry industry 20 years prior. This system will be strong if the integration between upstream and

downstream is carried out vertically. Unfortunately, independent smallholder farmers have not been able to meet these demands while the state, also, cannot provide protection and services for the availability of production facilities for them. As a consequence, their products become uncompetitive or unable to compete with the industry (KPED Jabar, 2020).

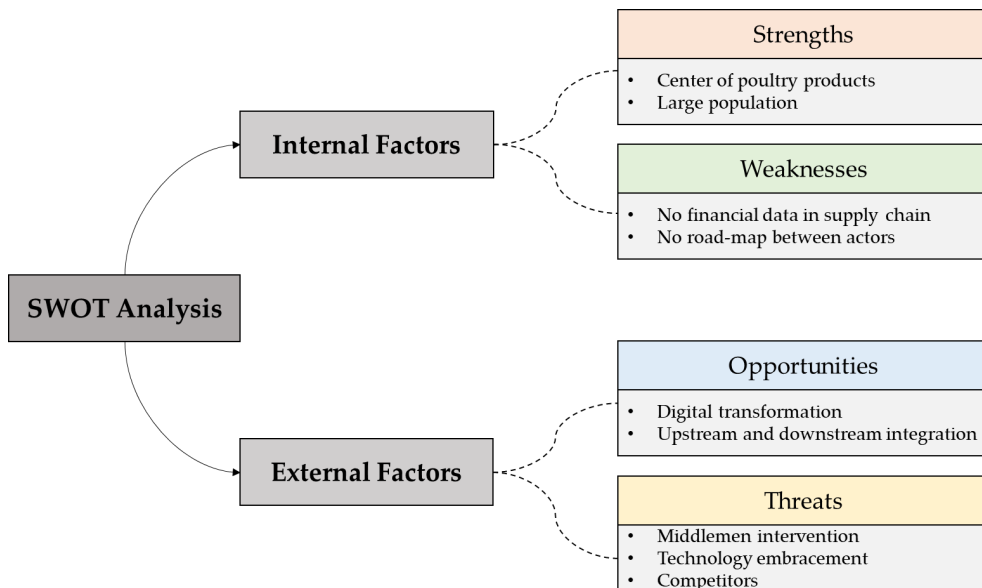


Figure 4. A summary of findings (internal and external factors) from SWOT analysis for the West Java supply chain

### 1.2. Large population

West Java has a population of around 50 million people (20% of the total population of 250 million Indonesian), which becomes a potential market share for commodities and products from the outside territory. Based on research conducted by the Technical Team for Animal Husbandry Department, Division of Agriculture and Food Security KPED Jabar, the poultry business ecosystem in West Java is carried out by independent breeders (20-30%) and integrator breeders (70-80%) (BPS, 2021). The essence of farmers' losses actually lies in an unhealthy "business competition" between independent smallholder farmers and industrial-scale farmers (who have been integrated from upstream to downstream). Smallholder farmer businesses are not integrated; their activities are only carried out in the cultivation sub-system using simple technology (open house cages). Consequently, the cost of production (HPP) of independent farmers is certainly above that of the industry. The difference may reach Rp. 5,000.00 per kg (Live Bird) per quantity. Moreover, no supervision for partnership and fostering independent smallholder farmers can inevitably cost them significant losses. Thus, the government needs to provide more solutions that equally benefit all sectors in West Java as this province has the advantage of its large population that could be the key to healthy or unhealthy business competition (KPED Jabar, 2021).

## 2. Weaknesses

Weaknesses prevent an organization from operating at full capacity. These are areas where the company can improve in order to remain competitive. The weaknesses of the West Java supply chain include no financial data in the supply chain and no roadmap between actors.

### 2.1. No financial data in the supply chain

The existing conventional intervention pattern for upstream SMEs has not been able to provide a comprehensive and sustainable solution. It is necessary to build a financing and logistics system that is able to support the socio-economic conditions of SME business actors, from the early stage to the harvest stage in the West Java supply chain. Business actors need to be supported by a sustainable financing system and insurance in case of crop failure/failure to catch fish. Anggadinata (2010) affirmed that the Supply Chain Financing System notion is initiated with the above-mentioned issues.

### 2.2. No roadmap between the actors

In resolving the poultry crisis, it is necessary to restructure the existing poultry roadmap system from the upstream to the downstream process. The reason is, at this time, independent smallholder farms work without guaranteed availability of production facilities and markets. The opposite condition happens for the industrial integrator businesses that have been guaranteed the availability of production facilities and markets from their core companies. For this reason, in order to increase the competitiveness of independent smallholder farms, the involvement of the West Java government is needed. Like the poultry business pattern carried out by integrators, state-owned enterprises/local-owned enterprises must provide production facilities and markets for small/independent breeders. Thus, their products can be competitive like those from the integrator poultry farmers (Anggadinata, 2010). As for palm oil products, in 2021, the government engaged 70 cooking oil industries to provide affordable cooking oil for end consumers. The government and industry market operation program was planned to last 6 months. however, this effort turned out to be less effective because the price of cooking oil remained constant soar. Therefore, the supply chain needs to be restructured (Simatupang, 2022).

## 3. Opportunities

Opportunities are external circumstances that benefit a company and provide a competitive advantage. Digital transformation and upstream-to-downstream integration are examples of opportunities.

### 3.1. Digital transformation

There has been a change in the business paradigm in today's digital era. There is a change in production patterns from "mass products" to "high-quality and ready-to-eat" products. The offline (conventional) market shifts into the online (virtual) market. In addition, the payment pattern that originally uses a payment grace period (terms of payment) in the conventional market becomes cash before delivery in virtual businesses. Those changes can be realized using the supply chain financing system.

Smart farming or smart poultry farming business is a business that uses a special platform connected by digital devices to various activities related to the poultry business, starting from pre-production and cultivation to post-production subsystems. This system connects all actors involved in the supply chain, including the government ministries and agencies. Government policies are also included.

It is hoped that the transformation of the poultry ecosystem towards digitalization of IoT-based poultry industrialization (Internet of Things) can be a solution to the problems

and constraints of the chaotic poultry business that has occurred so far (KPED Jabar, 2021; Opara, 2004). As for palm oil products, blockchain technology (block for chain) ensures that the cooking oil quota is given to the right partners which have a factory and a good business history, and make records for tracing and tracking (Simatupang, 2022).

### 3.2. Upstream-to-downstream integration

Supply chain growth potential and various structural changes in the agricultural supply chain offer opportunities for farmers in developing countries. Small farmers have the opportunity to increase their profits by participating in the proposed supply chain financing system. There ought to be sturdy vertical linkages between farmers and different supply chain actors. However, in a few cases, farmers have failed to meet unpredictable demands. The history and nature of those demanding situations need to be absolutely understood throughout the production and distribution process of the agri-food industry in order to expand and enforce suitable answers for the development of the supply chain (Badar, 2015).

## 4. Threats

Threats are factors, events, or circumstances that have the potential to cause harm to an organization. Middlemen intervention, technology embracement, and competitors are those threats faced by the West Java Supply Chain.

### 4.1. Middlemen intervention

The failure of West Java's existing supply chain model begins from a post-harvest problem. Products first pass middlemen before reaching end consumers. Previous studies conducted by Olaitan (2006), USAID, Eyo, (2008), Iganiga et al., (2008), Ukeje, (2004) have highlighted similar supply chain issues. They concluded several problems, including collateral for farmers, high-interest rate farmers must bear which also reduces their profits, high end-price of agricultural products due to the presence of middlemen, lack of technology, the creditor-debtor relationship between farmers and financial institutions, and low-quality human resources of farmers. To cope with these issues, a collaboration between farmers and governments is needed in order to eliminate the exploitation of the middlemen because it is very common for rural farmers to rely on middlemen and wealthy neighbors to supply surplus grain. These middlemen take advantage of weak farmers who are in desperate need of money by buying their products at exploitative prices (Olaniyi et. al., 2014).

### 4.2. Technology embracement

West Java supply chain actors still run their daily business activities with no standard operational procedure. This case was also found in other previous studies (Hodges et al., 2011; Mulyani and Sarwani, 2013; Handayati et al., 2015), by stating that there is an unintegrated relationship among supply chain actors. It implies that business activities are still run traditionally as how the ancestors did. It raises big issues in the current poultry crisis in West Java, especially during the Covid-19 pandemic. Therefore, a solution must be carried out using contemporary, comprehensive, and structured methods with the support of conducive policies. It is compulsory to improve roadmaps, data accuracy, business structure, harmonization of policies, availability of production facilities, supply chains, partnership patterns, and market segmentation in a business ecosystem. The steps to be taken need to be digital-based in order to complement industry 4.0. The technology adoption must also be balanced with the knowledge of the technology itself from all supply chain actors.

#### 4.3. Competitors

The markets for poultry farming products are usually segmented into meat processing industry markets, institutional markets (supermarkets), and traditional markets. Traditional markets can absorb around 80% of live chicken products that are processed directly at the location of the markets, known as the live bird supply chain. Meanwhile, the institutional markets and the chicken meat processing industries only absorb the remaining 20%. The products are processed in the poultry slaughterhouse with its supply chain known as the cold chain system. The production and marketing system is adjusted based on the needs of consumers in order to increase the competitiveness and value of products (Barham et al., 2012).

However, in the case of palm oil products, it is suspected that the products are irresponsibly hoarded on the market resulting in an indication of scarcity. These irresponsible parties can sell the products to consumers at a desirable price that could profit them more, with no awareness of this unhealthy business competition (Simatupang, 2022).

### SWOT Matrix

The SWOT matrix for the West Java supply chain financial flows is presented in Table 1.

Table 1. The SWOT matrix for the West Java supply chain financing system

	Strengths (S)	Weaknesses (W)
Opportunities (O)	Strengths–Opportunities (SO) Strategies (S1O1) SCFS Implementation Plan (S2O2) Restructuring the Poultry Chain (S3O3) Supply Chain Control Tower	Weaknesses–Opportunities (WO) Strategies (W1O1) Government Regulations (W2O2) Technological Literacy
	Strengths–Threats (ST) Strategies (S1T1) Trading House (S2T2) Food Hub (S3T3) Smart Farming	Weaknesses–Threats (WT) Strategies (W1T1) Collaboration with Financial Institutions

The strategic portfolio was constructed by combining internal factors, including "strengths" and "weaknesses," and external factors, including "opportunities" and "threats," in a SWOT analysis of the West Java supply chain financial flows. As a result, nine strategies were developed, as shown in Figure 7.

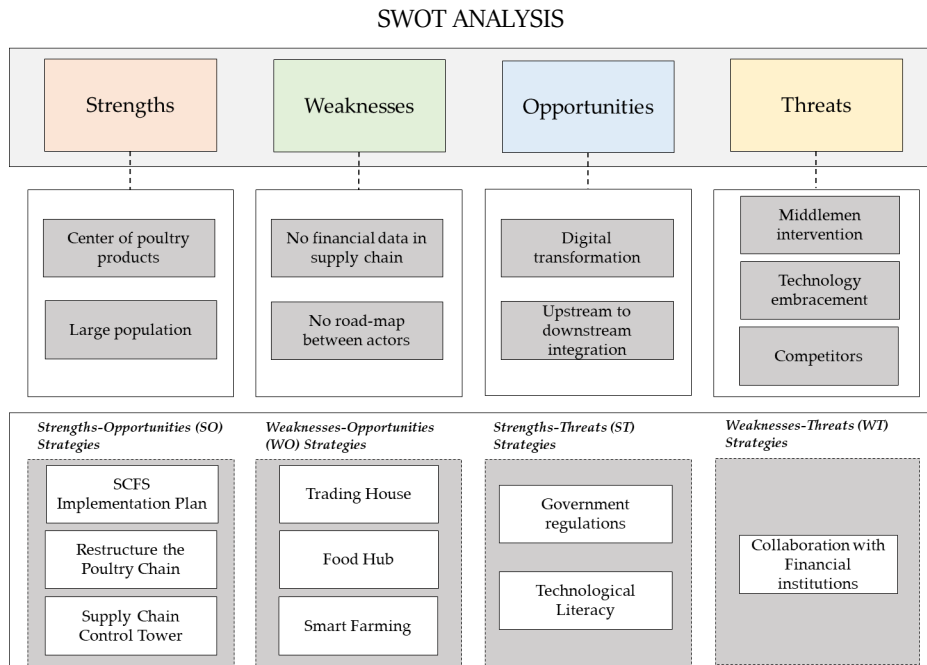


Figure 7. A summary of strategies formulated from SWOT analysis findings for the West Java supply chain

#### 1. Strengths-Opportunities (SO) Strategies

**S1O1:** SCFS implementation; supply chain financial system implementation plan can increase West Java's production capacity to meet the demands. Noting that the existing process flows in the West Java supply chain do not provide any reliable financial data, SCFS will help every actor improve their business, starting from the financial activities that are recorded, traced, and transparent (Anggadinata, 2010) because the SCFS core function is to support the transaction activities of MSEs, from the upstream side (social needs and production needs) and the Intermediary side (consolidation and distribution center (B2B)) to the Downstream side (a front end, B2C and C2C transaction).

**S2O2:** Restructuring the poultry chain; Poultry business restructuring is not enough to immediately change the business structure. In zootechnics, a business must always be adapted to the current situation. Farmers must be able to "grade", they must change the pattern of the cage which is currently an "open house" to become a "closed house". By changing the technology of the cage, productivity will also increase (Tawaf, 2021).

Internal and external integration is the integration of dimensions. Integrating a focal organization with its customers and suppliers is classified into external integration. Customer integration focuses on demand and the organization's efforts to meet customer needs. Meanwhile, supplier integration functions to plan and forecast activities more effectively and efficiently, design products and processes, and manage transactions (Ataseven and Nair, 2017). According to Delke (2015), vertical integration is a strategy to reduce supply uncertainty. It is a type of resource purchasing decision or make-or-buy. The make-or-buy decision is made based on three assumptions. First, if resources are critical to organizational action and there are few suppliers available, the organization must create resources. Second, in order to function

properly, the organization needs to acquire unimportant activities or resources, and many of these resource suppliers can be obtained from the outside. The third assumption refers to non-critical organizational resources, but they are only available from a few suppliers. Based on these assumptions, the organization can form supplier alliances to ensure supply security.

S3O3: Supply chain control tower; iPaaS: “Integration Platform as a Service” becomes an effective implementing monitoring and control mechanism in the supply chain of palm oil products. iPaaS is a set of cloud-based services used to connect software applications that can be applied in different environments. It allows faster integration and sharing of data, removes bottlenecks when new applications are added, and enables integration between cloud applications and on-premises applications when coupled with application programming interface solutions.

This solution is based on integrated governance from upstream to downstream which complies with the principles of information exchange, coordination, commitment, incentive, inspection, monitoring, enforcement, and evaluation (Simatupang, 2022). An illustration of how a supply chain control tower can help with distribution issues in palm oil products in West Java can be seen in Figure 5.

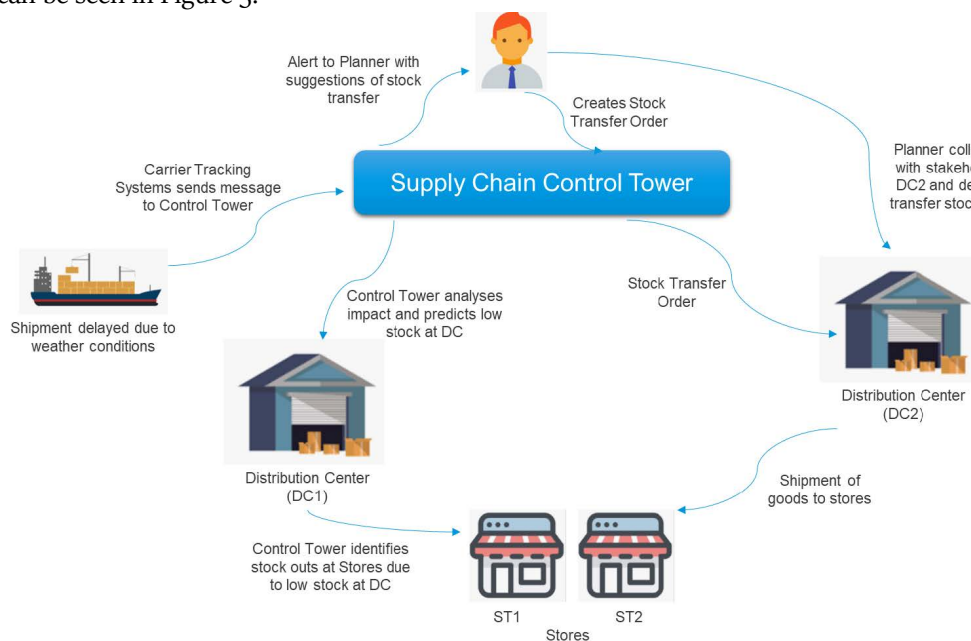


Figure 5. An illustration of the implementation of a supply chain control tower (Simatupang, 2022)

## 2. Weaknesses–Opportunities (WO) Strategies

W1O1: Trading house; The trading house development is in line with the suggestion of Cheng et al. (2014) regarding the cloud-based auction tower for perishable supply chain trading. A digital trading house is proposed to manage the flow of products, information, and finance, from upstream to downstream.

The trading house manages product flow digitally by providing GPS in-house and importing feed raw materials that poultry farms and feed mills can then purchase. In addition, the trading house functions as a place to accommodate feedstocks and live chickens when demand is low, to then be buffered when demand is high. It is expected that the trading house can increase transaction capacity, market efficiency, and product flow (Cheng et al., 2014).



As a center or intermediary between upstream and downstream actors, the trading house will facilitate information and finance flow in the supply chain. Eliminating middlemen by trading house replacement is expected to advantage the condensed business process to a more robust and seamless end-to-end supply chain integration. Besides, it can manage information regarding product stock, price, capacity, needs, and location. This information will then facilitate scanning environments, problem identification, decision-making, and policy-making. The trading house also involves in financial flows because of its role as a buyer and seller of products. The information collected can be used to apply for and distribute credit needed by actors in the supply chain (SBM ITB and KPED Jabar, 2021). An illustration of the trading house and its role in the financial flow and products of the poultry supply chain can be seen in Figure 6.

W2O2: Food hub; Food hub acts as a regulator of product flow in the poultry supply chain. Food hub is positioned as a centralized distribution center that bridges producers and consumers and can facilitate the coordination mechanism for product distribution. In contrast to Central Distribution Center (CDC) in general, food hub has mission-oriented values and financial goals that can affect its function and the way it operates in order to have a positive impact on the environment and surrounding communities (Sgroi & Marino, 2022).

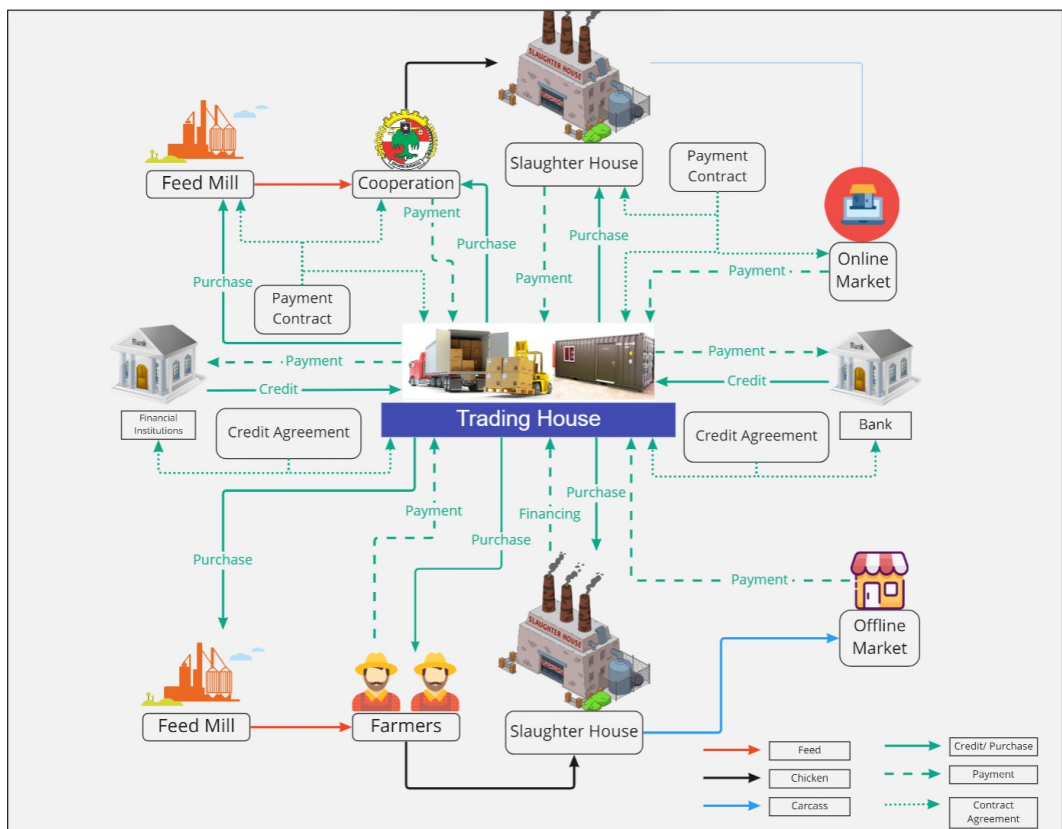


Figure 6. An illustration of Trading House (SBM ITB, 2021)

Food hub/CDC directly manages the inventory and product distribution processes to consumers. It also collects information related to data on demand, capacity, and location from downstream parties and stock and price data from upstream parties. In this case, the two food hub entities are responsible for managing the distribution of products separately to market players in the upstream and downstream parts. However, both are connected and managed directly by the Trading House,

which acts as an intermediary between the upstream and downstream sectors. The impact of this proposal can be felt in all products, information, and financial flows of the supply chain.

In product flow, the Food hub/CDC is tasked with storing and sending supplies of feed mill raw materials and Grand Parent Stock (GPS) production to upstream farmers. Besides, it stores and delivers chicken carcass products that poultry slaughterhouses have managed to various types of downstream consumers. This serves to stabilize the supply of needs for production when there is an increase in the price of raw materials. Plus, the Food hub/CDC presence can help independent farmers who have limitations to store raw materials or feed mills. The downstream Food hub/CDC also plays a role as a buffer when supply is high and demand is low, which can impact the market price and the supply of live chicken and carcass products in a more stable market (SBM ITB and KPED Jabar, 2021). An illustration of the Food hub and its role in the financial flow and products of the poultry supply chain can be seen in Figure 7.

W3O3: Smart farming; Smart farming works digitally. When a business fraud or a false report is identified or one of the sub-systems is not working properly, the decision can be executed immediately (real-time). For example, it will automatically detect the situation in which the feed quality standard provided by the farmer is different from what is stated in the partnership contract. Reports on imports of corn or GPS that are not in accordance with the realization will be immediately discovered because all agencies and institutions involved are connected to this business. That way enables the government to make decisions quickly (KPED Jabar, 2020).

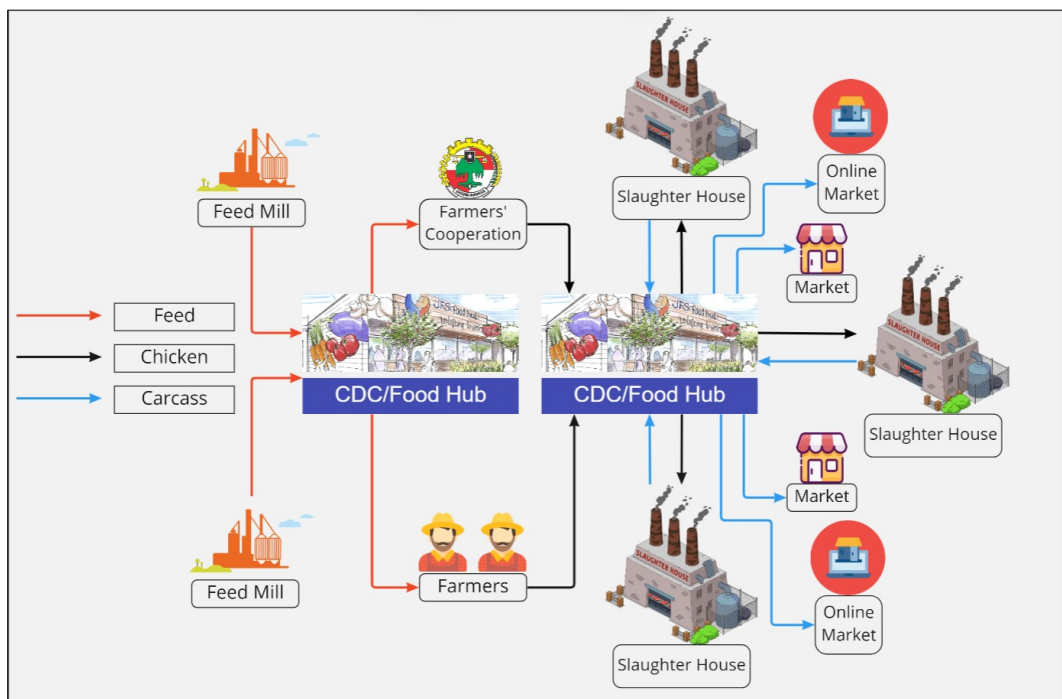


Figure 7. An illustration of Food hub (SBM ITB, 2021)

### 3. Strengths-Threats (ST) Strategies

SiTi: Setting environmental regulations and supporting environmental programs; As the West Java government rules every activity in the supply chain, it plays a significant role in coping with the issues. Middlemen elimination is among specific strategies that will only succeed with the regulations made by the government.

In an effort to resolve the poultry crisis, the government has issued several policies, for instance, to overcome price fluctuations through the policy of setting a reference price (Permendag No.7/2020), to indicate a cartel in the marketing of poultry products (the Cartel Problems trial at Commission for the Supervision of Business Competition (*Komisi Pengawas Persaingan Usaha (KKPU)*), regarding the availability of raw materials for corn (Ministry of Trade Regulation No. 21/2018 concerning Provisions for Corn Imports); partnership pattern (Ministry of Agriculture No. 13/2017 concerning Livestock Business Partnership), the import of GPS (Ministry of Agriculture Regulation No. 32/2017 concerning Provision, Distribution, and Supervision of Broiler Chicken and Consumption Eggs), cutting Hatched Egg (HE) (SE Director General of PKH No. 18029/2020 and No. 19037/2020) and early rejection (Ministry of Agriculture No. 26/2016). However, all these policies have only touched on a phenomenon and have not yet reached the root of the problem, namely the dichotomy in the poultry industry. In this case, the government should be able to eliminate this dichotomy by building a strong poultry industry (KPED Jabar, 2021).

As for strategies to cope with palm oil products issues, improved supervision and strong coordination through enforcement between the ministries, city government, police officers, and NGOs such as Consumer Association are needed in order to prevent the problem of scarcity of cooking oil in local markets (Simatupang, 2022; Primiana, 2022).

S3T2: Digital literacy; Digital literacy plays a crucial role in embracing technological awareness. As current supply chain actors in West Java live in a rural, they literally have minimum knowledge of the supply chain financing system and its supporting components, such as digital banking, RFID, etc. Digital literacy refers to an individual's awareness, attitude, and ability to use digital tools and equipment to properly identify, access, manage, integrate, evaluate, analyze, build new knowledge, create media representations, develop constructive social behavior, and in the context of specific life situations, to enable constructive social action (Martin, 2006). Strategies to enrich actors' literacy in technology can begin with basic delivery, such as conducting a routine workshop to expand knowledge in the supply chain financing system and other technology for farmers and other actors.

#### 4. Weaknesses-Threats (WT) Strategies

W1T1: Collaboration with financial institutions; As the West Java supply chain has never collaborated with any financial institutions, which is the main cause of the current business sufferings (especially during Covid-19), the government should initiate the involvement of financial institutions to recover West Java supply chain business. With the notion of the aforementioned Trading House and Food Hub which centralized every business activity, financial institutions need no worries about the risks since every financial information and product flow is recorded in seamlessly real-time information. Therefore, for the next couple of years, West Java supply chain actors are projected to be able to improve business by collaborating with financial institutions instead of just getting loans from them.

The above strategies recommended by SWOT analysis can support the development of resilience in the financial flow of the West Java supply chain. The strengths of West Java, including the center of poultry products and large population, can advantage the smoothness of the province's supply chain financial flows. Furthermore, West Java poultry products will be more resilient when they are driven by collaboration with financial institutions. The increased competition that can exacerbate West Java supply chain vulnerability can be eliminated by collaboration with the West Java government. Furthermore, the opportunities, in the forms of digital transformation and upstream-to-downstream integration, are those that can enhance West Java's supply chain resilience.

The following depicts the parameters of the resilience of the West Java supply chain that could efficiently and reliably support more informed decision-making to accommodate customers' needs.

- a. Support for the internal operations of cooperatives, monitoring & evaluation of upstream and downstream business networks of MSEs (farmers, planters, breeders, farmers, fishermen, and small industries) in cooperatives.
- b. Creation of supply chain and value chain networks; between cooperatives, between regions, between cities, and between islands.
- c. Provision of financing & payment systems in the upstream, intermediary, and downstream segments.
- d. Help provided for cooperatives to operate like modern corporations.
- e. Transformation of non-bankable business actors into bankable

## CONCLUSION

The research begins by outlining key issues that have arisen in the West Java supply chain financial flows. Such issues possibly lead to financial, technical, and environmental losses, but they provide significant insights that can be researched in order to avoid such losses in the future. In addition, the findings of this research can mitigate potential risks by examining the experiences and lessons learned from the West Java supply chain. Therefore, policymakers need to consider these historical lessons when assessing the West Java supply chain. The research has collected risk factors from the West Java supply chain and grouped them into four categories: government regulations, issues of security and safety, market challenges, and the necessity of technology. These reviews can support decision-makers in building a resilient supply chain in West Java. However, the proposed method has the limitation of being subjective at times. Also, SWOT analysis is a one-measurement evaluation.

The SWOT analysis method was used to assess the status of the West Java supply chain. It identified the strengths, weaknesses, opportunities, and threats within the West Java supply chain. The strengths include the fact that West Java as the center of poultry products and the large population of this province. The main weaknesses include the lack of financial data in the supply chain and the lack of a roadmap between stakeholders. The main opportunities cover digital transformation and upstream-to-downstream integration. Meanwhile, the biggest threats lie in middlemen intervention, technology acquisitions, and competitor interventions. Next, this SWOT analysis created alternative strategies by combining internal factors that cover strengths and weaknesses with external factors that cover opportunities and threats.

This research proposed an efficient and effective SCFS for West Java SMEs by removing unnecessary middlemen and implementing supply chain tower, trading house, and CDC, as well as collaborating with financial institutions and government as strategic partners based on nine alternative strategies in SWOT analysis in order to address identified issues for the future West Java supply chain financing system. The findings support previous studies to expand rural financial services, supply chains, and overall sustainable development (Bove and Swartz 2016; Marshall et al. 2016; Wang et. al., 2013; Ye, 2021; Zhu et. al., 2016). Suggestions to improve the resilience of the West Java supply chain are listed below:

- a. Support the internal operations of cooperatives, monitor & evaluate upstream and downstream business networks of MSEs (farmers, planters, breeders, farmers, fishermen, and small industries) in cooperatives.
- b. Create supply chain and value chain networks; between cooperatives, between regions, between cities, between islands.

- c. Provide financing & payment systems in the upstream, intermediary, and downstream segments.
- d. Help cooperatives operate like modern corporations.
- e. Transform non-bankable business actors into bankable ones.

## MANAGERIAL IMPLICATION

Cumulative results provide a deeper understanding of the identified strengths, weaknesses, opportunities, and threats of the West Java supply chain. The most important contribution for practitioners is to know how to deal with the current problems of the West Java supply chain finance system. In fact, digital transformation is among the opportunities that could benefit the West Java supply chain financing system to compete in industry 4.0.

A second considerable insight for practitioners is that the absence of middlemen in the supply chain has a significant positive impact on cost savings. The impact is strong on the end user's base pricing. This is a crucial contribution as many practitioners are pursuing compressed business process flows as a cost-cutting strategy. Our results give reliability to this strategy. The fact that cost savings can be achieved in any cultural environment is beneficial to the financial flow of the West Java supply chain as it can achieve maximum value.

The final contribution to practitioners is observing the West Java supply chain offers useful operational value in today's era of globalization. West Java needs to rebuild its operations. Supply chain financing system implementations are designed to drive operational improvements. Our results suggest that West Java can realize the full value of SCFS without fear of conflict of interest with financial institutions. Our research proposed "Trading House" to centralize all actors' business activities and iPaaS to effectively monitor and control mechanisms in the supply chain of palm oil products. Taken together, the results improve practitioners' readiness to get the most out of SCFS to reach their business and operational goals.

## LIMITATIONS AND FUTURE RESEARCH

Our research provided important new insights into SWOT analysis in supply chain financing systems, but it is not without limitations. One caveat is that this study did not evaluate the product and information flow in the supply chain. These are also important factors in distributing products to end customers. Next researchers can address the above limitations for further research.

The second possible limitation is that this study used West Java as the research object, which clearly could be defined as a region in a developing country and its specific business activities related to poultry and palm oil products. Next researchers can analyze other business activities under different circumstances.

A third limitation is that this study employed SWOT analysis and FGD as well as secondary data collection to analyze the issues of the aforementioned research. Next researchers may conduct the analysis using different methodologies to identify more detailed problems.

In addition, there are opportunities to expand and advance current research. One idea is to evaluate the post-implementation of the supply chain financing system. This represents an interesting research opportunity to better understand the funding system. For example, does this system help West Java and other regions deal with financial problems? Or is it technically reliable and safe? Another idea worth investigating is whether government regulations can help make future supply chains more competitive in Industry 4.0. The final idea of future research is to determine how

difficult it is to implement SCFS and the best way to overcome it. The development of financial systems can be particularly difficult or easy to implement. Knowing how to implement it effectively and efficiently is valuable to practitioners.

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