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**SUPPLY CHAIN STRATEGY TO OVERCOME THE LACK OF  
PRODUCTION CAPACITY**

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**Abstract**— *Rantai suplai merupakan salah satu aspek penting dalam suatu perusahaan karena berkaitan dengan proses bisnis mulai dari rantai paling awal hingga akhir rantai yaitu pelanggan. Menurut Lu (2011: 8), "rantai pasokan pada dasarnya adalah sekelompok organisasi independen yang terhubung bersama melalui produk dan layanan yang mereka berikan secara terpisah dan / atau bersama-sama untuk memberikan nilai pada konsumen akhir". Di Industri perikanan air tawar, manajemen rantai pasok diperlukan untuk memastikan proses produksi berjalan lancar dan bisa memasok barang sesuai kebutuhan pasar. Namun seringkali perusahaan yang bergerak di industri perikanan tidak dapat memasok barang sesuai dengan permintaan yang ada, salah satu faktor penghambatnya adalah karena minimnya kapasitas produksi yang menghambat pertumbuhan perusahaan. Penelitian ini akan dilakukan berdasarkan metode kualitatif dalam pengumpulan dan abstrak data. Temuan penelitian menunjukkan bahwa sebagian besar petani memiliki masalah yang sama yaitu mereka memiliki kekurangan kapasitas produksi sehingga tidak dapat memasok barang sesuai dengan permintaan yang ada. Penelitian lebih lanjut juga membuktikan bahwa prinsip integrasi adalah variabel yang paling mudah dipahami oleh petani antara variabel orientasi lainnya.*

**Keywords**—*Recruitment; Supply Chain Management, Production Capacity, and Fishing Industry*

**Introduction**

Fish farming basically conducted by the farmers to fulfill the need of fish consumption which is increasing every year. According to Direktorat Jenderal Perikanan Budidaya (2016), fish consumption per capita in the world will exceed 19,6 kg in 2021. However, the tradition of offshore fish hunting will create specific limitation in the fulfillment itself. According to Food and Agriculture Organization (2016), fish farming is expected to increase by 172 million tons in 2021; this was increase 15 percent from the average over the years 2009-2011. It is believed that fish farming is one of quick way to meet people's food needs especially in fish itself.

One of Indonesian favorites is catfish, according to Gufran, (2010: 2) "catfish is one of commodity that has opportunity to develop because catfish is the important aquaculture commodity and it is the third most widely cultivated after carp and tilapia". Catfish commodity is easy to cultivate but have a complicated supply chain arrangement. Supply chain can be defined as "the process of effectively managing the flow of materials and finished goods from retailers to customers using the manufacturing facilities and warehouses as potential intermediate steps" (Sengupta and turnbull, 1996). Nowadays, the demand of

catfish in Indonesia is increasing significantly since the market is widening by the time. The consequence of this condition is that farmers are required to increase their production capacity in order to meet the existing demand.

Unfortunately, for small aquaculture company cases, fulfilling the huge demand in the market is not that easy since there is a difficulty in production capacity, one of them is supply chain arrangement inability. Sangkuriang Situ Mukti as one of the aquaculture company in Bandung is facing similar problem. Their production capacity in 2016 is 3 tonnes per month with effective production time over the year only ten months. It is supposed to be much higher since the market demand for 2016 can reach 10 tons per month. Those demand come from traditional market and restaurant which located in Jatinangor and Sumedang area.

This is a dazzling opportunity for Sangkuriang Situ Mukti to penetrate the market in catfish cultivation industry. Management of information and goods ranging from earliest suppliers to the end customers are predicted to take a big part in the production succession. A small company also requires more knowledge about supply chain management to anticipate the lack of production capacity. According to council of Supply Chain Management Professional, Supply chain management consists of the planning and management of all activities until delivering the product.

In addition, it also requires coordination and collaboration among channel partners, which can be suppliers, distributors, and customers. In essence, supply chain management integrates supply and demand management occurs in the companies. By using an integrated system approach with the same purpose according to basic principle of Supply Chain Management, it would not be difficult for Sangkuriang Situ Mukti in meeting the existing demand.

## Conceptual framework

### A. Definition of Supply Chain

Supply chain is one of the important aspects in a company since it is relates to business process ranging from earliest chain up to the end of chain which is customer. According to Jacoby (2009:32), *“a supply chain is the set of activities involved in moving a product (such as machine tool) and its ancillary service (such as installation, maintenance, or repair) from the ultimate supplier to the ultimate customer”*. Similar to Jacoby’s opinion, Sanders state that *“Supply chain is the network of all entities involved producing and delivering a finished product to the final customer”* (Sanders, 2012:3). A supply chain is important to point out some common terminology used to describe the relationships of supply chain stages to one another. Each company in a supply chain has its suppliers and customers. Relate to Sanders (2012:5) theory that is *“the stages of the supply chain that comprise the inbound direction toward the company, or the “focal firm,” are called the “upstream” part of the supply chain”*. The stages of supply chain away from the “focal firm” are termed “downstream”.



Figure 1 Basic Supply Chain

### *B. Aquaculture Industry*

Aquaculture can be viewed as a type of agriculture. Aquaculture is the process of cultivation and harvest of plant and animal. According to Food and Agriculture Organization (FAO) (2016), define that “aquaculture is understood to mean the farming of aquatic organisms including fish, mollusks, crustaceans and aquatic plants”. In addition, Gegner (2006) explain that “aquaculture is the cultivation of fish and aquatic animal and plants”. In essence, aquaculture and agriculture are both farming. Aquaculture consists of 3 types the aquatic environments, such as warm water aquaculture, coldwater aquaculture, and mariculture. Basically aquaculture is the farming Carried out in water using the knowledge, technology, and skill.

### *C. Basic Principles of Supply Chain Management*

Currently, the business world continues to compete to create a variety of customer needs increasingly high and more intelligent in choosing their needs. Each company is required to maximize productivity, efficiency, fast service, easy, and create new information to stay ahead in the market. So that all parties should work together to create superior products that fit consumer needs. Therefore, supply chain management is needed to form an integrated network. According to Said *et all* (2006:6), “supply chain management is the management of information, goods and services from suppliers earliest until the end consumer using an integrated systems approach with a common purpose”. In addition, Supply Chain Management should include the following five principles, that is integration, networking, Interdependence, Communication, and from end to end.

### *D. Supply Chain Strategy*

A company must have a long-range business strategy to define the competitive position in the market. Sanders (2012:35), “a business strategy is a plan for the company that clearly defines the company’s long-term goals, how it plans to achieve these goals, and the way the company plans to differentiate itself from its competitors”. In addition she states that “Supply chain strategy is a long-range plan for the design and ongoing management of all supply chain decisions that support the business strategy”. To maintain the competitiveness, a company must design their supply chain to suitable with business strategy. According to Said opinion about new strategy in supply chain management has to adjust with business strategy, customer needs and power position to SCM with power to buy bigger. Moreover SCM must be adaptive to market condition because if a new competitor entry, so condition will be change (Said *et all*, 2006:34). Related to Sanders (2012:40) theory of strategic SCM involves “designing a supply chain

*that is uniquely configured to meet the company's overall business strategy*". In addition, there are four building blocks of supply chain strategy that is operation strategy, distribution strategy, sourcing strategy, and customer service strategy.

## Methodology

This section explains how this research is conducted. Methodology will cover the research design, sampling, data collection, and data analysis. Enayet and Supinit in International Journal of Social Science and Humanities Research (2016: 464) cited Burn and Grove (2003:195) definition about research design, it is *"a blueprint for conducting a study with maximum control over factors that may interface with the validity of the findings"*. In addition, Paraho (1997:142) also define that *"research design is a plan that describe how, when, and where data are to be collected and analysed"*. Research design consists of problem identification, determine the research question, literature review, data collection, data analysis, and then conclusion and recommendation.

To collect the data, author developed interview based on previous studies. Research informants interviewed by semi-structured interview method. *"In semi-structured interviews the researcher will have a list of themes and questions to be covered, although these may vary from interview to interview"* (Saunders, M.; Lewis, P.; Thornhill, A., 2007: 320). This means that researchers will ask some questions to some of the respondents based on the themes that have been prepared in a structured and organized. But the question can be adapted to the conditions at the time of the interview by the flow of conversation. In addition to the list of questions can adjust to the condition of the respondents, additional questions may be needed to supplement the information that would be obtained. There will be three types of informants for this research. The population will be the farmer groups in Bandung, supplier catfish seeds, and wholesaler in traditional market that related with Sangkuriang Situ Mukti. Sampling technique shows how this study took samples. This study use purposive sampling, where author sample with purpose in mind accordance with the requirement of the sample is predetermined. According to Palys (2008), *"Purposive sampling is virtually synonymous with qualitative research. However, because there are many objectives that qualitative research might have, the list of purposive strategies that may be followed is virtually endless, and any given list will reflect only the range of situations the author of that list has considered"*.

After data collected, interview result input to Microsoft Word. Then the study combined the matic coding and reconstruction techniques to analyse the data using dedicated qualitative data analysis software which is NVivo 8, a product line of Qualitative Research International (QSR) which was launched on 2018. It was selected as the software tool used because it is a qualitative processing software that is commonly used today. More than that Nvivo8 also has a relatively high ability, since data retrieval, compilation, and the preparation of theory.

### **Discussion**

The research purpose is to find out the factor which influences the supply chain management, therefore supply chain strategy can be designed effectively. In collecting the data, there are three farming group, two supplier, and four retailer sample are interviewed by semi structure interview. The qualitative research method is used in conducting the data collection and the analysis itself. Semi structured interview has been conducted among farming groups who have result in their understanding of the basic principle of supply chain management. In general, the data obtained almost equally between industries generally with aquaculture industry. The difference might be found in the process and details. Information about structure of supply chain also found during the research. Related to our research design, the main research is developing supply chain strategy to overcome the lack of production capacity. In order to do a quick check about the production problem existence as explained before among informants, through semi-structured interview the researcher tried to identify its similarities. By using query tools especially word frequency menu in Nvivo8, we find the most convincing pattern during the interview.

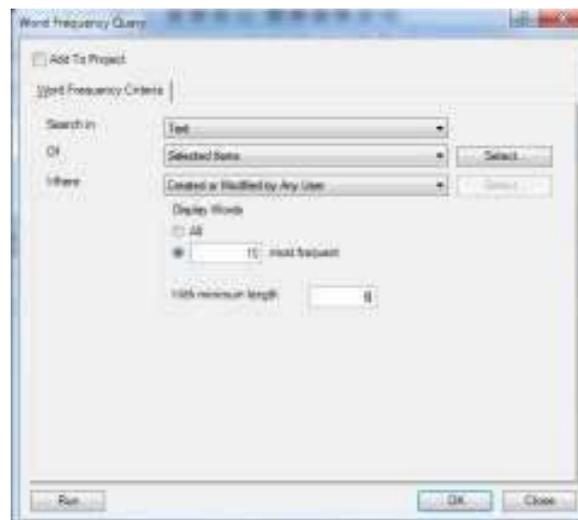


Figure 2 Finding Frequent Word Using Query Function in Nvivo8

After running the word frequency query function, we had found the top ten frequent words about production problem similarities which are:

Table 1 Top 10 Most Frequent Words in Principles of SCM

Word Items	English Version	Frequency Percentage
pembesaran	Enlargement	0,82
produksi	Production	0,77
masalah	Problem	0,71
kelompok	Group	0,68
anggota	Member	0,49
pendederan	Nursery	0,44
tahapan	Step	0,38
komunikasi	Communication	0,33
Budidaya	Cultivation	0,27
memiliki	Have	0,27

The table above seems difficult to understand without any additional research interpretation since Nvivo 8 will only help us to count the most frequent word appear in a specific question about principles of supply chain management. To make 8 words it understandable, researcher arranges this words base on experience when conducting the interview.

Those are:

**Production problem** especially in **enlargement** process

Lack of **production** capacity

Relationship between **members** of **farming group**.

That's indicator use to define that farming group has a main problem about supply chain management. Interview which conducted by semi-structured method run successfully so that researcher can knowing the factors most understood by informant in supply chain. The interview result was transcript into NVivo8 software by coding them into five parent nodes; Integration, Networking, Interdependence, End-To-End, and Communication node. Then, we conducted the calculation of coding coverage for every single node depending on the type of source. The coverage calculating will be based on percentage of the characters code at the node. The coverage percentage defines how much of the source content is coded at the specific node.

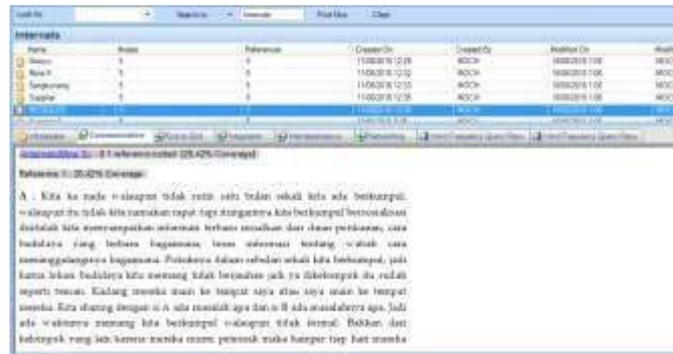


Figure 3 Coverage Calculation

After getting the result from coverage calculation, we sum all the percentage numbers using Microsoft Excel and the result is the **integration** factor has the highest score from the other factors which is networking, interdependence, end-to-end, and communication. The percentage scores are shown on this following table:

Table 2 Score of Coverage Calculation

Indicator	Coverage
Integration	290,53
Networking	192,91
Interdependent	184,78
End-to-End	152,34
Communication	149,24

This result will be used as a base of deciding the supply chain strategy. According to the result of coverage score, **integration** is a basic principle of supply chain management that most understandable by all element in supply chain in catfish industry. Besides that, we also obtain the insight from several informants that key success for catfish industry is all elements in this industry in to one entity and mutually combined so that all of step in production process can be coordinated so as to form a flow of an integrated supply chain.

Said, *et all* (2006) also has the same opinion that is principle of integration related with all of element in supply chain which in an unity that is compact and all elements mutually be aware and mutually interdependence. In addition, Sanders (2012) also state if “SCM require participation and coordination of activities between different organizational function”. It is means all of organizational function (operations, marketing, logistics, and sourcing) need to have relationship because it is particularly important. Moreover, all of the organizational function must have internal coordination and must share information and conduct coordinate activities.

### **Conclusion**

To overcome the lack of production capacity, the farmers can focus developing their strategy on the principle of integration as one of supply chain strategy. Integration should be developed to unleash the process of distribution ranging from downstream to upstream.

### **Recommendation**

The effective business alternative suggestion which can be developed by Sangkuriang Situ Mukti based on the research findings are:

Cooperative farmer, Cooperatives are considered as a perfect solution because it can embrace all farmers in Bandung to jointly establish an organization of mutually beneficial

Outsourcing, made by hired other farmers which have smaller production scale to produce in their place. The cooperation is farmers which have smaller production scale required supplying catfish to farming group, so that the farming group has additional supply from other farmers.

Farmer's affiliation, is an association of farming group in cooperated because inner relationship. The relationship owned is not binding but have the same needs so that interaction arise which inform each others.

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