

# Analyzing Sustainable Supply Chain Management Key Factors while Pandemic in Manufacture Industry in Indonesia

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## Abstract:

A pandemic situation that takes place in an affected area will directly impact an industry that involves as many resources as it does in a factory, especially if the epidemic is easily spread and or transmitted to others through its distribution media. This allows the imbalance of the production process and also the supply chain flow from the company, especially in the manufacturing sector, because the impact of this epidemic is very broad and allows the potential lockdown from the affected location if it takes a lot of victims, namely humans infected with the epidemic. Especially based on the classification of impacts ranging from those infected to the number of fatalities. The implementation of this pandemic-related policy is crucial for the supply chain order because it can create an imbalance in the global business economy in carrying out the production of their respective goods because the supply chain network is beginning to be disrupted due to the existence of this pandemic. Therefore we need a strategy to handle the impact of the pandemic on the supply chain so that later every company in the manufacturing industry can reduce the potential losses due to production failure due to the lack of supply of raw materials to produce goods.

**Keywords:** SSCM, Key Factors, Pandemic, Manufacture, AHP

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## I. INTRODUCTION

A pandemic is the spread event of a new disease that happen worldwide, across every oceans and continents, generally influencing individuals on an overall scale. Pandemics can likewise happen in significant agrarian living beings (domesticated animals, crop plants, fish, tree species) or in other organisms. A sickness or condition is anything but a pandemic just on the grounds that it is boundless or slaughters numerous individuals; it should likewise be irresistible. For example, malignant growth is liable for some passings however isn't viewed as a pandemic in light of the fact that the malady is neither irresistible nor infectious.

The World Health Organization (WHO) recently applied a six-arrange order to depict the procedure by which a novel flu infection moves from the first

barely any contaminations in quite a while to a pandemic. These beginnings with the infection for the most part tainting creatures, with a couple of situations where creatures contaminate individuals, at that point travels through the phase where the infection starts to spread straightforwardly among individuals and finishes with a pandemic when diseases from the new infection have spread around the world. In February 2020, a WHO representative explained that "there is no official class [for a pandemic]". In getting ready for a potential flu pandemic, the WHO distributed a report on pandemic readiness direction in 1999, reconsidered in 2005 and in February 2009, characterizing stages and fitting activities for each stage in an assistant mémoire titled WHO pandemic stage depictions and principle activities by stage.

Based on these fact manufacture groups battle to adapt to the worldwide pandemic, most have been

attempting to stay aware of the report about worldwide reaction gauges and have been working tenaciously to make sure about crude materials and parts and secure stock lines. Be that as it may, fundamental data is frequently not accessible or available over their worldwide groups. Therefore, their reaction to the disturbance has been responsive and ungraceful, and the effect of the emergency is hitting a large number of their organization's full power.

Interestingly, a little minority of organizations that put resources into mapping their inventory arranges before the pandemic developed better arranged. They have better perceivability into the structure of their stock chains. Rather than scrambling finally, they have a great deal of data readily available close to potential interruption. They know precisely which providers, locales, parts, and items are in danger, which permits them to place themselves preferred choice to make sure about compelled stock and limit at substitute destinations.

The necessary assets for supply arrange mapping are costly. Numerous organizations and pioneers talk about the need to do supply arrange mapping as a hazard alleviation procedure, yet they have not done so due to the apparent huge measure of work and time required. Officials of a Japanese semiconductor producer revealed to us that it took a group of 100 individuals over a year to delineate the organization's stockpile arranges profound into the sub-levels following the seismic tremor and torrent in 2011. This clarifies why most organizations resemble a significant South Korean purchaser merchandise organization, which as of late disclosed to us it had realized that it ought to have mapped its inventory arranges yet has not done so as a result of the troubles in question.

Subsequently, numerous organizations keep on depending on human insight from top-level and a chosen few lower-level providers. Yet, the data gathered by means of individual connections is ordinarily recounted and frequently unimportant guess, and when obtainment faculty leave, change jobs or resign, their insight leaves with them. It can take new workers years to become more acquainted

with quick providers, not to mention the providers and their worldwide impression.

Truly, supply arranges mapping can be asset escalated and troublesome. Be that as it may, it's absolutely impossible around it. Organizations will find the estimation of the guide is more prominent than the expense and time to create it. The most widely recognized methodology is to utilize the bill of materials and spotlight on key segments. It regularly begins with the best five items by income and goes down to their segment providers, and their providers, in a perfect world, right down to crude materials providers.

The objective ought to be to go down however many levels as could reasonably be expected, on the grounds that there might be shrouded basic providers the purchasing firm doesn't know about. The guide ought to likewise incorporate data about which exercises an essential site plays out, the substitute destinations the provider has that could play out a similar movement, and to what extent it would take the provider to start shipping from the substitute site.

## II. LITERATURE REVIEW

SSCM (Sustainable Supply Chain Management) might be seen as the best possible administration of related natural, social, and monetary effects in developing and keeping up powerful and productive worldwide inventory chains. SSCM supports administration rehearses at all degrees of lifecycles of merchandise and enterprises that decrease squander, guarantee long haul viability and financial estimation of the natural and social prosperity of all partners' enthusiasm for the creation and conveyance of items and administrations.

Despite the fact that it is an extremely troublesome undertaking to bring into the choice procedure of the rights and needs of every single intrigued partner with regards to the commercial center, it is to the long haul advantage of the appropriately overseen production network connections and corporate manageability activities that eventually advance expansive based maintainable improvement goals to benefit individuals, plant, and benefits.

Dyllick and Hockerts (2002), said that SSCM is appreciated as the coordination of practical improvement and store network the executives whereby feasible advancement is regularly depicted as containing three measurements – incorporating ecological, social and monetary issues for human improvement – which likewise influences the corporate methodology and activity. In spite of the fact that the field of SSCM is considered very new, enthusiasm for SSCM has been becoming quickly finished the years. Seuring and Martin (2008) distinguished and inspected 191 papers and found that the monetary and natural parts of the store network are by a long shot the measurements that are the most concentrated among the papers checked on (73.3%), and that papers coordinating economical measurements just began to show up from 2002 onwards.

Sikdar (2003), who takes a "full scale perspective", which incorporates the social, ecological, and financial angles, characterized manageability as "an astute parity among monetary advancement, natural stewardship, and social value". Surveys of various components identified with store network maintainability recommend that SSCM can be connected to green structure, stock administration, creation arranging and control for remanufacturing, item recuperation, invert coordinations, squander the executives, vitality use and emanations decrease (Ramudhin et al., 2009). Carter and Rogers (2008) characterized SSCM as the key, straightforward combination and accomplishment of an association's social, ecological, and financial objectives through the fundamental coordination of key between authoritative business forms for improving the long haul monetary execution of the individual organization and its inventory network.

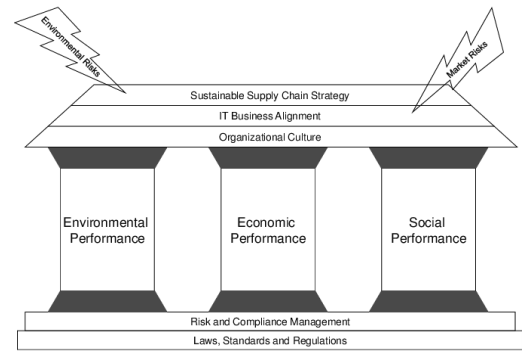


Figure 1. House of SSCM

Source: Teuteberg and Wittstruck, 2010.

Teuteberg and Wittstruck (2010) proposed the "House of Sustainable Supply Chain" (Figure. 1), based on the three elements of the Triple Bottom Line, which are seen as the key columns important to keep the structure in balance though hazard and consistence the executives structure the structure's establishment. SSCM likewise requires the foundation of qualities and morals all through the association, a proficient and adaptable "green" IT condition just as the arrangement of a corporate technique concentrating on practical improvement. By taking these measures, it will adequately ensure the system against ecological and social dangers and dangers.

### III. METHODOLOGY

This research methodology is based on a comparative study in the literature related to SSCM and also a survey of input from experts in the field of supply chain in Indonesia through interviews. The method of data collection in the form of interviews was conducted by random sampling of supply chain leaders in manufacturing companies in Indonesia, the questions raised were also about the existence of a pandemic regarding the supply chain strategy of their company and also questions related to the list of SSCM determinants and their priority weights which were the most influential to the company to run its business in the pandemic outbreak.

Then, the data obtained for analysis are in the form of lists which are the determining factors of SSCM in its role in supporting manufacturing companies when the pandemic takes place. Processing of these data is using Expert Choice

software, by including a list of factors mentioned by experts based on interviews and also factors mentioned based on literature sources. Then the weighting that was inputted was based on the results of the related interviews and also assisted from the results of the validation in the literature sources on the related SSCM topics.

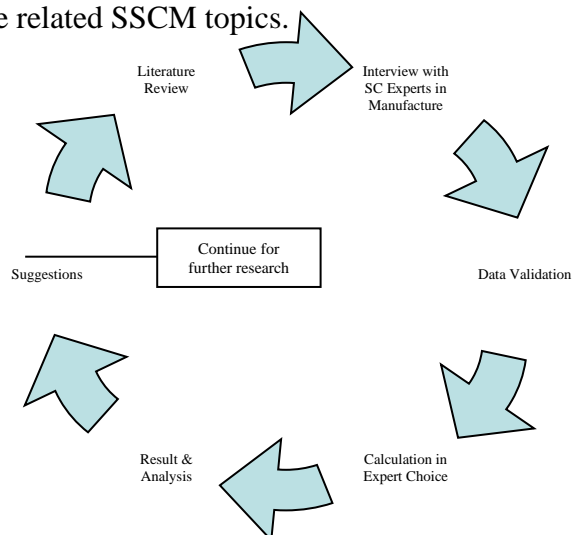


Figure 2. Research Framework

Based on the systematic approach from the research, the goal for this paper is to give a recommendation about what is the most affective and crucial SSCM key factors in order to achieve a sustainable production activities in manufacture industries.

## IV. RESULT

After inputting the data into the Expert Choice, then we get the results as following based on synthesize respect to our goals, to identify the most crucial SSCM key factors while pandemic outbreaks.

**Goals:** To Identify Most Crucial SSCM Key Factors while Pandemic Outbreaks

**Node:**

Nodes	Value
Urgency	<b>0.316</b>
Impact	<b>0.180</b>
Risk Consideration	<b>0.390</b>
Cost	<b>0.033</b>
Profitability	<b>0.082</b>

### Alternatives:

#### 1. Operational Performances

Considering the operational needs in production process of the manufacturing plant, about how it works, being developed, and also being affected by the Pandemic outbreaks.

#### 2. Environmental Performances

Considering the company performances that affect the lives of its surrounding plant, such as how the company manage waste, reduce the pollution, and the waste interaction with the affected area of plague due to pandemic issues.

#### 3. Economic Performances

Considering every direct and indirect cost from the company, from its business activities need until the additional cost which arises because of the increasing local citizen panic due to the newest government and company policies regarding the spread prevention from the pandemic issues.

#### 4. Social Performances

Considering the company activities to serve the social communities inside and/or outside the company due to the pandemic issue that happening in area near the manufacturing plant and also its offices.

#### 5. Company Certification

Considering the written qualification certificate which leads to how company facing the pandemic events with every standardization that already owned by the company.

#### 6. Risk Mitigation Action

Considering the fact about how the company prevent such a pandemic will happen into its country and also develop strategic solution if the pandemic are affecting the area near the company building area.

#### 7. Stakeholder Relationships

Considering how the company compose a relationship while the pandemic happens, such as the agreement of both parties to together



meet each of their needs.

## 8. Business Orientations

Considering about how the company will continuing the same core business or having a tendencies to change the business orientation into another different product based on what happening and customer needs while pandemic outbreaks happen.

## 9. Responsive Company Act

Considering how the company give an immediate decision regarding the quick spread of epidemic and how quick is the decision is being made by the company decision maker in order to keep up the company in the market competition while pandemic happen in these country where the manufacturing plant exist.

## Synthesize Results:

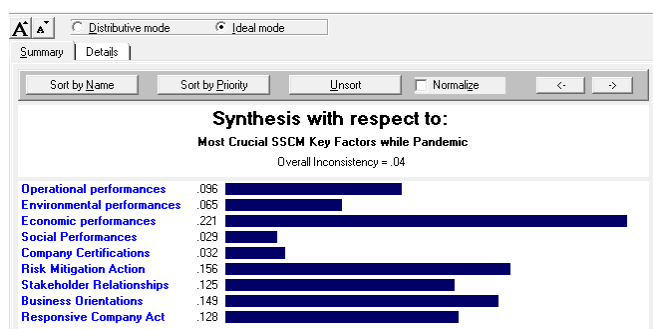


Figure 3. Results

With the 0.04 inconsistencies based on data gathered from literature and interviews, we've gain an insight from the data that there is a tendency for supply chain experts in Indonesia's manufacturing company to agree that the most crucial and contributive SSCM Key Factors is the economic performances of the manufacture. This result show us that the effect caused by the pandemic outbreaks (in company perspectives) are most impactful to make the manufacture company business are sustainable even the pandemic outbreaks happen in certain area where the manufacturing plant is exist.

## V. ANALYSIS

Based on the calculation result from AHP

(Analytical Hierarchical Process) method in Expert Choice software, now we need to know what should the company do after knowing the most impactful SSCM key factors for their company. In sum, first we need to develop the basic strategy for the manufacturing company in order to tackle every negative affect caused by the pandemic outbreaks.

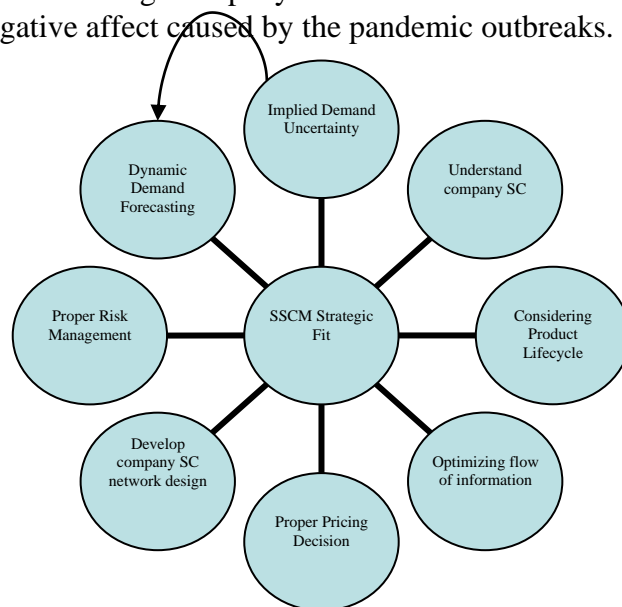


Figure 4. Basic Strategy to Achieve SSCM

For each of the aspects on figure 4, to achieve the SSCM while being disrupted by pandemic, each of them should be implemented in the manufacturing even only as a tacit knowledge of the decision maker. Because, if we want to achieve the best economic performance of our manufacturing company, we need to always develop our strategy based on three most valuable aspects, there are customer, company, and competitors.

## Customer

As a company, which have a final goals to fulfill customer demand, while in pandemic outbreak events we also need to give more valuable action for our customer. Because fulfilling our customer demands doesn't always being fulfilled by producing the best quality products for their daily activities. But, while in Pandemic season we as a company also need to give an empathy into our company. Company social responsibilities activities such as donating and giving a free products into our customer while in this situation is a good choice. Because if we're doing this, instead of being confused about how our company gain profit, we can

take this opportunity to gain more potential customer in the future by giving our attention and empathy to them as a human being. Then, psychologically it will make the potential customer aware about our company existence in the market and soon they will be our customer if we treat them well.

### Company

The company strategies are not even the most impactful way to solve every business problem, that's the reason why company also need to develop their company policies regarding every business activities to discipline the company internal team so it would make a good appearance from the outside of the company. The making of company policies are also effective to being considered while health issues such as pandemic spreads are coming into our country. This company decision from the policy such as the re-shifting of working hour, or maybe work from home regulation is also some kind of example that company may give to its employee due to the pandemic events happen. The right policy and right time to implement it will increasing the company level of confidence from its employee and also from the customers.

### Competitors

In this sectors, while pandemic begun, we also need to assess our competitors activities and their decision regarding this world health issues. At some moments, we can make an innovative strategy based on our evaluation from competitors act, or maybe we can use the same regulations or decisions from our competitors to keep up the tight market competition by act as if it's equal. So, we as a manufacturing company can build up and increasing our company lifetime because we have a good resistances in market competitions among our competitors.

## VI. CONCLUSION

Based on the research above, we may know that to achieve the SSCM while pandemic outbreak happen is we need to keep up with several SSCM key factors. But, mainly if we can develop our company economic performances, it will help the company a lot since it was the most contributive key factors to achieve the SSCM. Within the right and proper strategies, we can have a high confidence to make

our manufacturing company and its production process are being continued even the pandemic are happening into near of our company locations. Being supported to achieve strategic fit of SSCM by considering the 3C (Customer, Company and Competitors) aspect will help us to develop our company business activities while also being disrupted by pandemic health issues.

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