



OPTIMIZATION OF IMPORTED SOYBEAN SUPPLIER SELECTION USING AHP AND SWOT METHODS

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ABSTRACT

PT. Winata Jaya Trans is a company engaged in the field of expedition services and distributors of imported soybeans from abroad such as the USA, Brazil and Argentina which will later be distributed again to local soybean craftsmen, especially in the Pasuruan area and its surroundings, this study was conducted to determine which suppliers are truly effective and suitable according to the characteristics of the company, and are able to provide the best benefits for the company, this study is also intended to help companies determine strategies in facing increasingly competitive market competition. The selection of this supplier uses the AHP (Analytical Hierarchy Process) and SWOT (Strengths Weakness Opportunity Threats) methods. SWOT analysis is a systematic identification of various factors to formulate a company's strategy. While AHP is a multi-criteria decision-making technique, where quantitative and qualitative factors are combined, so that quality, position, and evaluation can be sorted against variations (Saaty, 1994) The results of the study in the form of supplier data that is most suitable according to company criteria related to price, quality, distribution and consistency as well as company strategies to optimize marketing strategies in the midst of a global crisis caused by a pandemic, obtained by the USA as an alternative main supplier.



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1. Introduction

In today's sophisticated era of globalization, market competition is getting tighter and more competitive, so that companies are competing to provide the best products for consumers at low prices, but in the midst of the current world pandemic hit by the Corona Virus Disease (COVID19) outbreak, it has caused problems, this disease outbreak has almost spread to all parts of the world, causing the world economy to decline and many have stopped, resulting in soaring prices for products or goods, on the other hand it also has an impact on the supply of products from abroad which are increasingly difficult to obtain. The difficulty in obtaining products from abroad itself occurs due to restrictions on access for large ships at various ports from abroad that want to enter Indonesia, so that the distribution

of soybeans which should have been able to arrive within 1 month has experienced a schedule delay of up to 1.5 to 2 months. Consumers are also looking for many alternatives and are faced with many choices regarding the products they will choose, products with the best quality at the lowest price and with a shorter delivery time that can trigger consumer interest itself, so that competitive business competitions occur which cause companies not to be able to sell and enjoy profits, competition itself does not recognize what is a friend, relative or others, competition comes from English, namely (competition) which means competition, fight, According to Andini and Aditiya (2002), the definition of competition is an effort to pay attention to each other's advantages carried out by individuals or legal entities in the fields of trade, production, and defense.

Management issues in a company are a very important part that requires special attention to win this market competition, because with a good strategy and the selection of the right product supplier, this will be the way for the company to be able to dominate the market.

PT. Winata Jaya Trans is a soybean distributor that is able to distribute +/- 100 tons of soybeans to Pasuruan, Malang, Sidoarjo and Mojokerto every week, the soybeans themselves are imported from abroad such as the USA, Brazil and Argentina. which are also affected by the world pandemic so that the price of soybeans has increased drastically and soybean imports are increasingly difficult, several countries have different criteria and capabilities so that it is difficult to choose one of them. this certainly causes companies to have to think extra hard to be able to get out of this problem, but finding stock is no longer an easy matter considering that countries that are usually suppliers also experience the same problems, so there needs to be a really right decision to handle it.

The benefits of this research are : The company can choose with the right supplier needed and appropriate with characteristics company . And company can guard internal and external stability For optimize the market.

2. Review Literature

Limansantoso (2013) conducted study with title Product Supplier Selection with the Analytical Hierarchy Process (AHP) method. research This aiming For know how AHP software becomes base supplier selection at PT. Buana Tirta Utama. Research This used For know How method selection of material suppliers standard that has been done by the company these , weaknesses and strengths from suppliers implemented by the company the .

Arminsyurita (2014) did SWOT analysis on the indicators that become strengths , weaknesses , opportunities , as well as threat to prove results identification factor factor internal environment of company , namely capable produce seed mushrooms , large land , good facilities , competent employees , good quality , location strategic company and price affordable mushrooms . Capacity production Still Not yet Can fulfil request customer .

Characteristics Soya bean

Soybeans are plants that are included in the type of grains, are the main ingredient for making tofu, tempeh and soy sauce, in Indonesia there are 2 types of soybeans, namely local and imported soybeans, to make tofu, tempeh, and soy sauce, Indonesian people generally use more imported soybeans because imported soybeans have better quality and cheaper prices, but it is not uncommon for tofu and tempeh and soy sauce craftsmen to prefer using local types of soybeans, the amount of national soybean needs in Indonesia in 2012 was 2.5 million tons. This figure can be met by importing 70% (1.3 million) while the rest relies on domestic production itself, which is 779,800 tons of soybeans. Import itself is a process or action that brings in goods/services from abroad to meet domestic needs, According to Marolop Tandjung (2011:379), the definition of import is an activity that includes trade by bringing goods from abroad into Indonesia in accordance with the provisions of

applicable regulations and laws. It is very clear that in our country, imported soybeans from abroad are in great demand. However, the quality of imported soybeans is very different from local soybeans. Both have their own advantages and disadvantages. Local soybeans are superior to imported soybeans in terms of raw materials for making tofu. The taste of tofu will be better, the level of yield is higher, and the level of risk to human health is also quite low because it is not included in transgenic seeds. While for imported soybeans it is the opposite. Although superior as a raw material for tofu, local soybeans have weaknesses as raw materials for making tempeh. The cause is that the size is smaller or not the same and less clean / dirtier, the skin of soybeans is more difficult to peel off during the washing process, the fermentation process is also longer. The steaming process also takes longer to soften. It can even be said to be less tender. So each soybean has advantages and disadvantages that greatly affect what products will be produced from the processing of the soybeans themselves.

Supply Chain

Supply Chain is an organizational system that includes or has roles that can perform various activities, including information, finance and other resources that are interrelated with each other in the movement of products or services from suppliers to customers. Another name for supply chain is supply chain or also called supply chain. According to Levi, et.al (2000) the definition of Supply Chain Management is an approach used to achieve efficient integration/relationships of suppliers, manufacturers, distributors, retailers, and customers. This means that goods are produced in accurate quantities, at the right time, and in the right place with the aim of achieving minimal overall system costs and also achieving the expected service level.

Quality

Quality is a benchmark value that is usually used to measure the level of perfection of a product or service, quality is one of the things that is so important and needs special attention so that it can always be maintained in the best condition, according to Juran (1962), quality is a purposeful conformity and its benefits. Meanwhile, according to Goetch and Davis (1995) quality is a dynamic condition related to products, services, employees, processes, and the environment that meet what is expected. Several levels of quality that can be used as a benchmark for the perfection of a product or service are:

Original/Genuine

Original is the highest level which also means authentic, in other words this is truly the best level when compared to the other levels.

KW Grade Ori or also known as KW Super Premium

This Super Premium KW is a level that is one level below the original item. Usually this product comes from rejected goods or goods that do not meet standards and cannot pass the quality control stage. "The company usually has a regulation that goods that do not meet the standard must be destroyed, so that they are not sold again.

However, not all Super Premium KW goods are rejected goods. Indeed, there are some companies that have successfully copied goods very well or even to the point that some have original certificates, serial numbers, and original holograms, and have details, accessories, and brand prints that are almost exactly the same as the original product. For example, sandals and shoes usually have very neat stitching details and use genuine leather as the base material for those made of leather. Very comfortable when worn and the color is also not easy to fade. Items of this level are usually sold at a fairly expensive price, but still below the price level of the original item.

Super AAA Quality

KW Super AAA, the level is still below Super Premium. It's just that in terms of appearance it is successful in imitating, or even said to be similar. However, the manufacturing materials used are definitely cheaper, for example, the original goods use sheepskin, then Super AAA goods use goatskin.

Super KW

This level of goods usually only copies the outside/exterior, not the inside/interior. For example, the inside of the original shoe is made of animal skin, the super KW shoe is only made of ordinary canvas. "For soccer jerseys, usually the difference is in the manufacturing material. The material used is usually rougher.

KW 1

Although it can be said to be quite neat, but the product with KW 1 quality has a quality below KW Semi Super. KW 1 focuses more on the shape of the product that is made to look as similar as possible but does not pay attention to the quality of the material. "For example, a mountain bag, the level of durability is clearly different even though the shape is almost exactly the same. If the original can last for years, the KW 1 product can only last for a few months.

KW 2

KW 2 goods are indeed made from very cheap materials. The product materials are deliberately chosen with the intention of reducing the level of production costs. The quality is also at the lowest level, usually very quickly damaged. The level of similarity is also very small, and can be said to be not similar. If we pay attention, we can tell if the item is fake, so it is not surprising that the price is also very cheap.

Quantity

Quantity is mark the benchmark used For measure amount from how much Lots product or service that . According to Wungu and Brotoharsojo (2003:56) state that " Quantity is ... all form from unit size that covers with amount from results work and stated into the size value / number or which can called also with numbers ". The reason why it is so difficult For Can prioritize as well as emphasize quality from product compared to quantity is simple . For example , a business that is built intended For make money with fast and on the part profit as high as maybe . Make product with high quality will tend more expensive and time consuming more Lots time . Because customer notice level price and production process time , then product the Can it is said not enough interesting For customer .

However product with quality yanhg normal only , produced with fast time in companies that have commitment minimum time per product (deadtime).

Price

The price is levels used For to obtain a goods and services , every products and services own levels different prices , depending from levels quality products and services That myself . According to Tjiptono (2005), Price is unit monetary or other sizes included goods or other services that can exchanged For get right from ownership or use a goods or service .

Based on a number of the above understanding can concluded that price is all over mark a goods or services provided in form of money. Price divided into two types :

Fixed price

Fixed price is the selling value of a product or service that is fixed or cannot be changed, so the amount that must be paid to obtain ownership rights to the product or service must be in accordance with the nominal offered by the seller.

Price is not fixed

Meanwhile, a non-fixed price is a price whose value can still be changed through negotiation, of course with the approval of the original owner or seller.

Supplier Relationship With Company

Supplier/ supplier play a role as supplier products in the company , role from suppliers/ suppliers to the company is very important , because suppliers/ suppliers own influence big to sustainability company , besides can influence market price and quality from products , good suppliers can also play a role big to sustainability from life company .

error in determine the supplier can cause the defeat company in game market price that can trigger bankruptcy company , so that The role of suppliers in a company is very vital.

Suppliers are organizations that provide inputs to a company such as raw materials, services, and labor/employees. Supplier bargaining power is a description of the ability of suppliers to increase input prices and increase the company's production prices by distributing supplies of poor quality raw materials.

3. Methodology

The research method used is a survey method, a sampling survey conducted by conducting interviews and observations of companies using questionnaires as a medium for data collection.

Framework

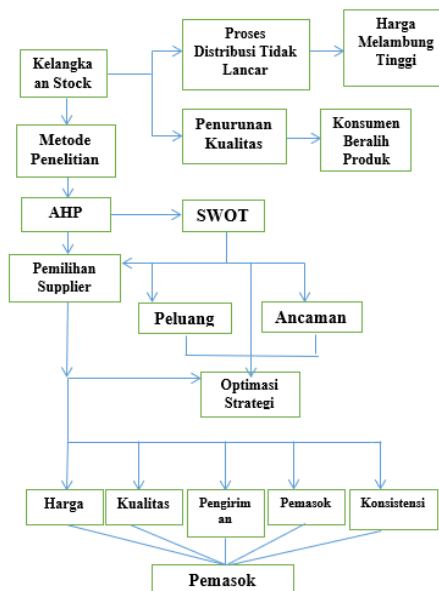


Figure 1. Framework Thinking

4. Results and Discussion

Table 1. Characteristics of Soybean Suppliers before being Impacted by Covid-19

No	Negara pemasok	Waktu pengiriman	Harga/Kg	Kemampuan pasokan
1	USA	1 bulan	6075	1000 ton
2	Brazil	1 bulan	6000	1000 ton
3	Argentina	1 bulan	6100	1000 ton

(Source: Company Data 2019)

Table 2. Characteristics of Soybean Suppliers after being Impacted by Covid-19

No	Negara pemasok	Waktu pengiriman	Harga/Kg	Kuantitas pasokan
1	USA	2 bulan	6200	800 ton
2	Brazil	1,5 bulan	6250	600 ton
3	Argentina	1,5 bulan	6300	700 ton

(Source: Company Data 2019)

Table 3. Supply Soya bean before Caught Impact Covid-19 pandemic .

No	Bulan	Pasokan Kedelai
1	Agustus	400 Ton
2	September	400 Ton
3	Oktober	400 Ton
4	November	400 Ton
5	Desember	400 Ton

(Source : Company Data 2019)

From the table above we can see the differences that occurred before and after the impact of the Covid-19 pandemic starting from delivery time, price and quantity all experienced significant changes. In general, Suppliers are "individuals/companies" who sell or supply resources in the form of raw materials to other parties "individuals/companies" to be processed into certain goods or services, while according to Kotler & Armstrong (2012; 32), Suppliers are one of the main elements in the modern marketing system. Suppliers form important relationships in the overall value delivery system of the company. The existence of suppliers is one of the keys to the sustainability of a business if you want to increase the value of the business. PT. Winata Jaya Trans does not yet have the right strategy in dealing with this problem, the soaring price of soybeans and the difficulty of finding stock to distribute require the company to develop a good strategy for the company, mistakes in the company's strategy

will have an impact on customer disappointment and provide opportunities for competitors to dominate the market.

Therefore That company need notice with Good every step steps and decisions to be made made , don't until Because error choosing a supplier to be trigger main thing that can cause company roll mat , thing This of course it is very necessary be aware of .

Criteria Supplier Selection :

Required supplier criteria company There are 4 types :

1. Own competitive and lowest prices .
2. Own best quality compared to other suppliers .
3. Own the greatest quantity / amount so that the supply process product walk without stop
4. Consistent in determine price as well as stable and non- changing quality too often changed change .

Supplier Selection

Supplier selection is carried out use The Analytical Hierarchy Process (AHP) method is a decision-making method that is carried out by conducting paired comparisons of the selection criteria and also paired comparisons of the available choices, to further strengthen the consideration of determining the supplier/supplier, the SWOT method is added, which is a strategic planning method and is used to evaluate the strengths, weaknesses, opportunities, and threats in a company or also a business speculation, these four factors form the acronym SWOT.

Advantages of AHP

1. Well- organized structure neat , with use our AHP method can calculate with good and very accurate with the deepest criteria .
2. Can take into account to the limits of tolerance and inconsistency with various criteria .
3. Find the most appropriate decision with the character we want .

Disadvantages of AHP

1. Own dependence to the main input so that For reach the real result in accordance We No may until wrong in give levels mark .
2. AHP is too much nature mathematical so that in method This all depends with statistics without existence other considerations .

SWOT

SWOT is method taking decision with consider factors :

1. Strengths : Strength is things positive that is beneficial company and can become weapon For to win competition .
2. Weakness : Weakness is negative things from both internal and external external (external) company harm .
3. Opportunities: opportunity is things that can to be positive when utilized with good .
4. Threats : Threat is all form negative things that are bad and not can controlled .

SWOT Advantages

1. Give description as well as the clearest view about advantages and disadvantages of a company .
2. Give spotlight on weaknesses and possibilities for turn it over to be a opportunity .
3. Able to provide company analysis to the threat that lies ahead .

- Showing opportunity possible opportunities For utilized by the company as much as possible Possible .

SWOT Disadvantages

- Give trend For press strength as well as ignore threat .
- Analysis sometimes nature relative and not pure 100% true .
- All element material consideration depends on the research conducted , so that research /survey conducted must as accurate as possible Possible .

For do analysis with AHP you can use help device Expert Choice 11 AHP software is do approach taking designed decision For help We choose solution from various type problem complex multicriteria in various realm application (Saaty, 1993) Steps method AHP :

- Determine objective main with base existing problems .
- Determine desired criteria as reference the results that become objective main .
- Determine alternative alternatives that will be will We give mark comparison so that capable help We determine level priority in accordance desire We .
- Each alternative will be compared using the expert choice 11 application.



Figure 2. Criteria

These criteria will later become a comparative benchmark for determining alternatives. Before filling in the criteria, it is necessary to first consider what kind of supplier character the company needs and from what side of the assessment the company will give to the supplier.



Figure 3. Alternative

The next step is to determine the alternatives that will be the target of permanent imported soybean suppliers for the company. This is a list of targets that are the dilemma of the company having to choose which supplier will be the main alternative.

Kualitas	Pengiriman	Reputasi	Harga	Sistem Kom	Konsistensi	Sikap Supp	Lokasi Geogr
	1,0	1,0	3,0	5,0	4,0	4,0	4,0
		2,0	1,0	2,0	1,0	2,0	3,0
			4,0	1,0	4,0	1,0	1,0
				4,0	1,0	4,0	4,0
					4,0	1,0	1,0
						3,0	4,0
							1,0
Incon: 0,08							

Figure 4. Comparison Numeric

The next step is to determine the numerical comparison, after all are filled in we can see the inconsistency value as an indicator of our consistency in determining choices, the indicator for

assessing the inconsistency of choices is 0.1 while the indicator above shows 0.08 which means our answers are still relatively consistent.

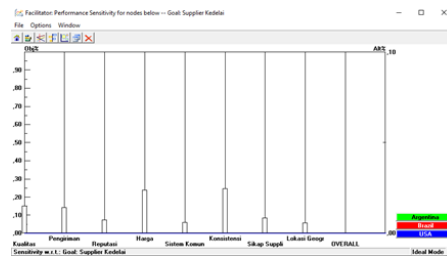


Figure 5. Performance

After all filled will appear chart performance from from choice choice We previously . From the graph on Can We Look order priority character company :

1. Consistency .
2. Price.
3. Quality .
4. Delivery .
5. attitude .
6. Reputation .
7. System communication .
8. Geographic Location .

Measure Consistency

After get weight criteria from each criteria , then will done checking data consistency for count ratio consistency (CR).

Maximum Eigenvalue and Index Needed Consistency (CI)

1. Determine maximum eigenvalue obtained from add up all over results multiplication between weight criteria with amount pairwise comparison matrix :

$$0.145+0.135+0.066+0.232+0.053+0.240+0.079+0.051 = 1.001$$

2. Count index consistency (CI) = 0.08
3. Count ratio consistency (CR)

CR = CI/IR, the IR value for n=8 is 1.001

CR = 0.01 => 0.01 (Consistent).

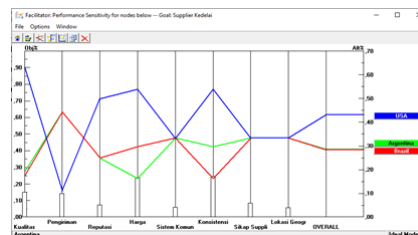


Figure 6. Results

From the picture above and in accordance with criteria criteria that have been filled based on the data that has been collected , can seen that the USA has highest value as well as become alternative main as the most suitable soybean supplier with characteristics companies , followed by Argentina in the alternative second and Brazil as alternative third .

This result Already accurate Because results taken from all the decision that has been through consideration and 1:1 comparison of each alternative .

SWOT Analysis

SWOT analysis was conducted For know strength as well as internal and external weaknesses from company For optimizing marketing strategy with suppliers who have determined namely the USA.

A strategic planning is description activity or work program company or businessman forward . Through the programs that have been determined as effort For reach objective together . For reach objective naturally needed strategic and capable planning accommodate the way business in accordance with situations and conditions . For That without a good strategy , then planning That No will influential nothing in implementation work in the field . And it is needed the right formulation as a stimulus for the way strategic planning that has been arranged . Like as it is PT. Winata Jaya Trans, a company must capable strategize accordingly with situation and conditions environment around efforts to be able to achieved advanced and more successful business Good .

Strategies that can applied to position grow and develop is growth and build . For reach growth , good in sales , assets and profit appropriate strategy For applied is namely intensive strategies (market penetration , market development , and product development). product) where this strategy done For increase position competition as well as in reach A growing business requires a strategy that is differentiation .

5. Conclusion

Based on data processing and analysis carried out by the author , then can taken conclusion as following :

1. Analysis results with AHP (Analytical Hierarchy Process) method was obtained the selected and most appropriate alternative For company is a USA supplier in the position First followed with Argentina and Brazil as alternative second and third.
2. The most prioritized main factor in supplier selection is consistency supply with weight ,240 and then price with weight ,232.
3. The AHP method can help company specifically in supplier selection with help from Expert Choice tools 11.
4. Result of SWOT analysis Based on internal factors and external factors external known to be factor strength business at PT. Winata Jaya Trans , namely own good relationship with suppliers so that company get price supply and quality good supply , increase amount the population that will impact to consumption Soybeans are increasing so that request will soybeans will also increased , . As well as factors strategic weakness that is if suddenly price soya bean experience decline drastic so that result in loss because of income results sale not balanced with the expenditure to take the supply of soybeans. The existence of products with other brands that can later become substitutes for soybeans so that consumers switch products. For this reason, companies need to conduct further market analysis in order to better read economic movements.

6. SUGGESTIONS

1. The company should guard still try guard connection Good with all existing suppliers , and not referring to only on 1 priority supplier , but companies must also take advantage of option suppliers second and third For cover the first supplier , with so stock shortages can avoided and company Can more free in market the product because of No will out of stock.
2. The company must more brave take risk For buy more vehicles large for delivery can more faster and more Lots capacity , so that customer No lack or even out of stock supply soya bean .

3. The company must more anticipate change economy and more Lots do market analysis , things This aims for the company capable predict change economy so that No experience loss because of decline price too much soybeans significant .

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