International Journal of Psychosocial Rehabilitation, Vol. 24, Issue 02, 2020
ISSN: 1475-7192

Using AHP for Supplier Performance Assessment: A Case Study of SME in West Java

[1]Oktora Yogi Sari, [2]Demas A. Kosasih

Abstract*---*Supplier is a source of fulfillment of production goods which can directly affect the continuity of production, because without a supplier, the fulfillment of raw materials for production cannot be done and causes the cessation of production activities. Therefore, to meet the requirement of raw material a company requires supplier relationships that include involvement from the beginning in the decision, seriousness in cooperation and mutual trust. With these, a good relationship will be established between the supplier and the company. Supplier selection is a difficult decision because various criteria must be considered in the decision making process. The criteria used in this study are quality, price, delivery and quality.

Keywords: *AHP, Supplier selection*

I. INTRODUCTION

Suppliers selection and assessment is one of the important decision of a company, because selecting the right supplier can reduce costs and improve the competitiveness of cpompany (Ceby and Bayraktar, 2003).In making a decision to choose a supplieris not easy, many things must be considered, so the *decision maker* (*decision maker)* needs analytical tools that allow the company to solve complex problems so that the decisions taken in the selection of suppliers *are* more appropriate. The selection of suppliersmust be done carefully because the wrong supplierselection will affect the production and operational processes of the company .

The problem that arises in this research is chocolate raw material . This chocolate raw material is needed in every production activity. Continual needs, along with raw material specifications that must be in accordance with the order, and there are prices that affect purchases and on time delivery. Problems faced by these 3 related supplierssometimes cannot meet the specifications of chocolate in accordance with the wishes of the company, lack of availability of raw materials and late delivery. Which is felt to be a problem in the company and felt very disturbing in the production process.

PT. X is a company engaged in the field of processed chocolate in Garut Regency. PT. X has given birth to innovative products, one of which is chocodot. As a company that processes chocolate PT. X requires chocolate raw materials that can meet the needs of the company . PT. X does not have a permanent supplierfor the purchase of raw materials . The supply of raw materials is a major factor in the running of the chocolate processing production process, because if the raw material is not available, it will hamper the company in issuing *output*, which is the result of the processed chocolate. The number of chocolate suppliersregistered from 2015 - 2017 is 3 suppliers. Obtained from the data of 3 years terkhir that each suppliercontributes to the company with a *rate* that is different because every year there is increase in the performance of the resulting supplier, the following tables illustrate that any contribution that suppliersvary each year is obtained based on the results interview with the company.

Table 1:*Average Supply of Chocolate Raw Materials in PT. X of 2015-2017*

Suppliername	Fulfillment (%)			Average
	2015	2016	2017	
PT. DAP	40%	42%	29%	37%
PT. KM	40%	35%	50%	41%
PT. G.	20%	23%	21%	21%

Source: PT. X

[1] ***oktora.yogisari@widyatama.ac.id***

[2] ***demaskosasih@gmail.com***

DOI: 10.37200/IJPR/V24I2/PR200681
Received: 02 Jan 2020 | Revised: 15 Jan 2020 | Accepted: 28 Jan 2020

The data above shows that the company does not have a permanent supplierin meeting the needs of processed chocolate raw materials, where each year the amount of raw material supply from each supplier is inconsistent, and the decision of PT. X in selecting supplierswho have not paid much attention to the criteria in selecting suppliers, causing losses experienced by the company including disrupted production, difficulty in calculating production costs due to changing raw material prices and difficulty determining product prices (HPP).

II. RESEARCH PURPOSES

The purpose of this study is to examine the use of the *Analytic Hierarchy Process* method in evaluating supplierperformance at PT. X

III. LITERATURE

Supplierselection is a difficult decision because various criteria must be considered in the decision making process (Saudi, 2018). Analysis of criteria for selecting and measuring supplierperformance has been the focus of attention of many scientists and procurement practitioners since the 1960s. Supplierselection aims to get a source of material with the quality, quantity, time, price and desired service and technical assistance needed. Supplierselection is one of the important factors in the *supply chain* because it is one of the company's strategies to compete with other companies in terms of customer satisfaction and also to improve or maintain *the* company's *service level* in meeting consumer demand (Dobler et al, 1990) .

Choy and Hartley (1996), stated that the criteria for evaluating suppliersare as follows:

a. *Finance: financial condition,* supplier *profitability, disclosure of financial records, performance awards* .
b. *Consistency: quality conformity, consistency, delivery, quality philosophy, fast response* .
c. *Relationship: long-term relationship, close relations, openness of communication, reputation for integrity* .
d. *Flexibility: changes in product volume, short set up time, short delivery time, conflict resolution* .
e. *Technological capability: design ability* .
f. *Service: support after sales, sales competence* .
g. *Reliability: incremental improvement, product reliability* .
h. *Price: official low price* .

Furthermore, W Eber *et al.* (1991)presents a classification of all articles published since 1966 based on the attention of the criteria. Based on 74 *papers, the* criteria for price, delivery, quality, production capacity and location are the most mentioned criteria in the literature. In selecting suppliers, it is very important to determine the criteria needed to assess the capability and performance of the supplierin producing the desired unit / *item* . The term supplierselection criteria in the industry today is better known as the *Vendor Performance Indicators* (VIP). Here are some frameworks from VIP, among others:

Table 2:*Supplier Selection Criteria (Dickson, 1966)*

Rank	Factor	Rank	Factor
1	*Quality*	**13**	*Management Organization*
2	*Delivery*	**14**	*Oprating Control*
3	*Performance History*	**15**	*Repair Service*
4	*Warranties & Claim Policies*	**16**	*Attitude*
5	*Production Facilities ang Capalicities*	**17**	*Impression*
6	*Price*	**18**	*Packaging Ability*
7	*Technical Capability*	**19**	*Labor Relations Record*
8	*Financial Position*	**20**	*Gegraphical Location*
9	*Procedural Compliance*	**21**	*Amount of Pas Business*
10	*Communication System*	**22**	*Aids Training*
11	*Reputation and System*	**23**	*Reciprocal Arrangement*
12	*Desire for Business*		

DOI: 10.37200/IJPR/V24I2/PR200681
Received: 02 Jan 2020 | Revised: 15 Jan 2020 | Accepted: 28 Jan 2020

In principle, the criteria used in the evaluation of suppliersis dependent upon the condition of a c tual company associated with management's focus on the relationship supplier.

III.I.Relationship Management with Suppliers

In the supply chain, coordination between manufacturing companies and suppliersis usually a difficult and important relationship in the distribution network. Because suppliersare an external part of manufacturing companies, coordination is not easy, unless cooperation and information exchange between the two are integrated. Failure to coordinate can cause excessive delays, and ultimately have an impact on poor customer service. As a result, inventory of goods imported from suppliersor products in manufacturing companies and distributors becomes accumulated. Eventually, the total cost of the entire supply will increase **(Lee et al. 2001)**.

Most successful manufacturing companies have developed supply management strategies with their suppliers to generate mutual profit opportunities. Formal strategic alliances with common goals, investments, bonds and mutual trust are built together **(Gullen, 2007)** . In the SCM perspective, supplierrelationship management needs to be integrated with two other supply chain macro processes : internal supply chain management and customer relationship management. The dimensions of the decision in the frame of relations with suppliersis closely related to the procurement function carried out by the company. Procurement refers to the whole set of business processes needed to obtain goods (*material*) or services. The procurement process includes the selection *of* suppliers, contract design, collaborative product design, procurement of goods or services and the evaluation of the performance of suppliers, as indicated by Figure 2.1 **(C hopra and Meindl, 2001)** .

Figure 1:*Processes in Procurement*

Sources : Chopra and Meindl, **2001**

The selection of material suppliersor raw materials is done so that the production process that runs in the company is not interrupted, where the selected suppliersare able to provide goods on time, good quality and competitive prices. And to choose the right suppliercan be chosen alternati f supplierswho have been cooperating with companies **)** . Choosing the right suppliermust pay attention to suppliercertification . In this case there are company evaluation criteria for suppliers. The company needs to establish suppliercriteria so that the collaboration can lead to a win-win situation for both parties. The selection of supplierscan be done by giving weight to the criteria set by the company in choosing the right supplier. In general, companies have more than one supplierfor one type of need. One reason is to overcome the problem if there are supplierswho are not able to meet the needs. Another reason is the consideration of advantages and disadvantages of the existing suppliers. .

III.II.Analytic Hierarchy Process (AHP)

Analytic Hierarchy Process (AHP) is a functional hierarchy to help better decision-making afar to help decision-making on problems that have many objectives **(Suci and Hilman, 2015)** . AHP is very suitable and *flexible* to be used to determine decisions that help a *decision maker* to make efficient and effective decisions based on all aspects owned. According to Bound in Setiawan (2009: 4) mentions the types of AHP including the following:

1. *Single-criteria* is to choose one alternative with one criterion.
2. *Multi-criteria* is a decision making that involves several alternatives with more than one criterion and chooses one alternative with many criteria.
3.

AHP is a problem solving tool to simplify a complex issue with a weighting of criteria which have certain interests. AHP allows users to give the value of the relative weight of a compound criteria intuitively, namely by making comparisons **(Marimin, 2004).** Then determine the consistent way to convert pairwise comparisons into a unit of numbers that represents the relative priority of each criterion and alternative.

III.III AHP Stages in Selecting a Supplier

Choosing suppliersis a strategic activity, especially when the supplierthat will supply the critical item and will cooperate in the long term as a supplier. The criteria in choosing suppliersis one of the important things. If the

DOI: 10.37200/IJPR/V24I2/PR200681
Received: 02 Jan 2020 | Revised: 15 Jan 2020 | Accepted: 28 Jan 2020

company has established suppliercriteria and several suppliercandidates have been obtained, one selection of alternatives will be held. In this process the company must do perangkingan to determine the supplierwhich one will serve as a major supplier in the enterprise by using pendeketan AHP. To get a rational decision by using AHP, need to do several stages. Broadly speaking, the stages in AHP are modeled by the figure below.

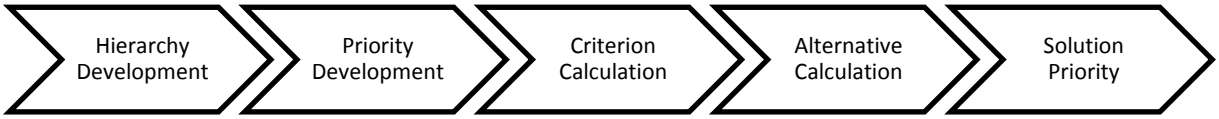

Figure 3:*Stages of Analytic Hierarchy Process (AHP)*

.

III.IV.Basic Principles of Analytical Hierarchy Process (AHP)

The following are the basic principles of AHP according to Marimin (2004) as follows:

1. Arrangement of Hierarchy

The problem to be solved is broken down into its elements, namely criteria and alternatives, then arranged into a hierarchical structure.

2. Assessment Criteria and Alternatives

Criteria and alternatives are assessed through pairwise comparisons. According to Saaty (1983), for various problems, the scale of 1 to 9 is the best scale in expressing opinions. The values and definitions of qualitative opinions from the Saaty comparison scale can be seen as follows:

Table 3:*Level of Importance*

Score	Interpretation
1	O_i and $O_{i\ are}$ just as important
3	$O_{i\ is}$ slightly more important than O_j
5	O_i stronger level of importance than O_j
7	O_i is stronger in importance than O_j
9	$O_{i\ is}$ absolutely more important than O_j
2,4,6,8	Intermediate value

Source: Kusumadewi, et al. 2006

3. Priority Development

For each criterion and alternative, a pairwise comparison is needed. The relative pairwise comparison values are then processed to determine the relative ranking of all alternatives. Both qualitative and quantitative criteria can be compared according to predetermined *judgments* to produce priority weights. Weights or priorities are calculated by matrix manipulation or through the completion of mathematical equations.

4. Logical Consistency

All elements are logically grouped and ranked consistently with a logical criterion.

Compilation of the problem hierarchy structure

Complex systems can be easily understood if the system is broken down into various basic elements and then the elements are arranged in a hierarchy. Each element contained in the hierarchy must have known relative weights to each other. The aim is to determine the level of interest of the parties concerned in the issue of the criteria and structure of the hierarchy or the system as a whole.

IV. DISCUSSION

At this stage the weighting is done in pairwise comparisons between supplierssto each sub criteria. To check whether the pairing comparison has been done consequently or not, that is, using *Incon / Consistency Ratio* , in checking the consistency of this data, the degree of error is 10% which is considered good if the CR value is ≤ 0.1.

DOI: 10.37200/IJPR/V24I2/PR200681
Received: 02 Jan 2020 | Revised: 15 Jan 2020 | Accepted: 28 Jan 2020

Quality-Delivery (QD), Quality-Flexibility (QF), Price-Shipping (CD), Price-Flexibility (CF), Shipping-Flexibility (DF). So we get the following table :

Table 4:*The Average Questionnaire Results Between Criteria*

Criteria Weighting	Respondent 1	Respondent 2	Respondent 3	Respondent 4	Value Weighting	Value Weighting (rounded)
QC	5	1	7	1/5	1,627	2
QD	3	2	3	5	3,080	3
QF	7	3	3	5	4.213	4
CD	4	1	3	8	3.130	3
CF	5	1	0	1/5	0.760	1
DF	4	1/3	6	1/5	1,124	1

IV.I.TheWeighting factor Hierarcy for Each Criterion on Level1

The results of a joint prefence analysis of 4 respondents indicate that: quality criteria have a value 2 times more important than price criteria and quality criteria Have a value of 3 which is more important with the accuracy of delivery criteria and quality criteria have a value 4 times more important than the criteria of flexibility. While the price criteria have a value 3 times more important than the shipping criteria and also the price criteria have a value of 1 which is as important as the flexibility criteria. While the shipping criteria have a value of 1 which is as important as the flexibility criteria.

Table 5:*Matrix Weighting Factors Hierarchy for All Criteria D inormalkan*

Criteria	Strength	Price	Delivery	Flexibility	Priority Vector
Quality	0.480	0.462	0.375	0.571	0.472
Price	0.240	0.231	0.375	0.143	0.247
Delivery	0.160	0.077	0.125	0.143	0.126
Flexibility	0.120	0.231	0.125	0.143	0.155

IV.II.Priority Vector

To get the priority vector, each element in the table is multiplied by each row and then the root rank is drawn. the results of each row are then divided by the sum of the results of all rows.

Table 6:*Priority Vector Matrix*

Criteria	Quality	Price	Delivery	Flexibility	amount
Quality	0.513	0.476	0.417	0.571	1,977
Price	0.256	0.238	0.417	0.143	1,054
Delivery	0.103	0.048	0.083	0.143	0.377
Flexibility	0.128	0.238	0.083	0.143	0.592

The weighting factor calculation Hierarchy for all sub-criteria of S ach K riteria- P No L evel 2
Interest Priority Table (Weight) Sub-criteria in the Quality Criteria in Supplier Selection

Sub Criteria	Weight	Priority
Chocolate flavor / raw material taste (Q1)	0,800	I
Safety and cleanliness of raw materials	0,200	II

DOI: 10.37200/IJPR/V24I2/PR200681
Received: 02 Jan 2020 | Revised: 15 Jan 2020 | Accepted: 28 Jan 2020

Interest Priority Table (Weight) Sub-criteria on Price Criteria in Supplier Selection

Sub Criteria	Weight	Priority
Discount (C1)	0.548	I
Minimum Purchase (C2)	0.211	III
Payment Process (C3)	0.241	II

Interest Priority Table (Weight) Sub-criteria in Shipping Criteria in Supplier Selection

Sub Criteria	Weight	Priority
Accuracy of Goods Specifications (D1)	0.500	I = II
On Time Delivery (D2)	0.500	II = I

Interest Priority Table (Weight) Sub-criteria in the Flexibility Criteria in Supplier Selection

Sub Criteria	Weight	Priority
Addition / Reduction of Purchase Amount	0.333	I = II = III
Change of Delivery Time	0.333	II = III = I
Guarantee	0.333	III = II = I

Pairwise Comparison Matrix between Suppliersto Each Sub Criteria

At this stage the weighting is done in pairwise comparisons between supplierstо each sub criteria. To check whether the pairing comparison has been done consequently or not, that is, using *Incon / Consistency Ratio* , in checking the consistency of this data, the degree of error is 10% which is considered good if the CR value is ≤ 0.1. Calculation of Hierarchy Weighting Factor for Criteria Elements in SupplierSelection at Level 3

Chocolate Taste Factor Matrix / Raw Material Taste for normalized Quality Criteria

Supplier	PT. DAP	PT. KM	PT. G.	Priority Vector
PT. DAP	0.333	0.400	0.250	0.328
PT. KM	0.333	0.400	0.500	0.411
PT. G.	0.333	0.200	0.250	0.261

Table Matrix Factor Security and Cleaning Materials Bak u for the Quality Criteria D inormalkan

Supplier	PT. DAP	PT. KM	PT. G.	Priority Vector
PT. DAP	0.333	0.400	0.250	0.328
PT. KM	0.333	0.400	0.500	0.411
PT. G.	0.333	0.200	0.250	0.261

Matrix Factor In scones for the price criterion D inormalkan

Supplier	PT. DAP	PT. KM	PT. G.	Priority Vector
PT. DAP	0.333	0.400	0.250	0.328
PT. KM	0.333	0.400	0.500	0.411
PT. G.	0.333	0.200	0.250	0.261

DOI: 10.37200/IJPR/V24I2/PR200681
Received: 02 Jan 2020 | Revised: 15 Jan 2020 | Accepted: 28 Jan 2020

Minimum Purchase Factor Matrix Table for Price Criteria

Supplier	PT. DAP	PT. KM	PT. G.
PT. DAP	1	2	1
PT. KM	½	1	1
PT. G.	1	1	1

Table Matrix Purchase Factor Min imum for the price criterion D isederhanakan

Supplier	PT. DAP	PT. KM	PT. G.
PT. DAP	1,000	2,000	1,000
PT. KM	0.500	1,000	1,000
PT. G.	1,000	1,000	1,000
amount	2,500	3,000	3,000

Table Matrix Factor Minimum Purchase Criteria price for the D inormalkan

Supplier	PT. DAP	PT. KM	PT. G.	Priority Vector
PT. DAP	0.400	0.667	0.333	0.467
PT. KM	0.200	0.333	0.333	0.289
PT. G.	0.400	0.333	0.333	0.356

Table 4.27 Payment Process Factor Matrix for Price Criteria

Supplier	PT. DAP	PT. KM	PT. G.
PT. DAP	1	1	2
PT. KM	1	1	3
PT. G.	1/2	1/3	1

Table Matrix Factors Pembay process aran for the price criterion D isederhanakan

Supplier	PT. DAP	PT. KM	PT. G.
PT. DAP	1,000	1,000	2,000
PT. KM	1,000	1,000	3,000
PT. G.	0.500	0.333	1,000
amount	2,500	2,333	6,000

Table Matrix Factors Pembay process aran for the price criterion D inormalkan

Supplier	PT. DAP	PT. KM	PT. G.	Priority Vector
PT. DAP	0.400	0.429	0.333	0.387
PT. KM	0.400	0.429	0.500	0.443
PT. G.	0.200	0.143	0.167	0.170

Accuracy Factor Matrix Table Specifications for Delivery Criteria

Supplier	PT. DAP	PT. KM	PT. G.
PT. DAP	1	1	2
PT. KM	1	1	1
PT. G.	1/5	1	1

Accuracy Factor Matrix Table Specifications For Simplified Shipping Criteria

Supplier	PT. DAP	PT. KM	PT. G.
PT. DAP	1,000	1,000	2,000
PT. KM	1,000	1,000	1,000
PT. G.	0.500	1,000	1,000
amount	2,500	3,000	4,000

DOI: 10.37200/IJPR/V24I2/PR200681
Received: 02 Jan 2020 | Revised: 15 Jan 2020 | Accepted: 28 Jan 2020

Accuracy Factor Matrix Table Specifications for Normalized Shipping Criteria

Supplier	PT. DAP	PT. KM	PT. G.	Priority Vector
PT. DAP	0.400	0.333	0.500	0.411
PT. KM	0.400	0.333	0.250	0.328
PT. G.	0.200	0.333	0.250	0.261

Table Matrix Factor Criteria Timeliness to Delivery

Supplier	PT. DAP	PT. KM	PT. G.
PT. DAP	1	1	1
PT. KM	1	1	2
PT. G.	1	1/5	1

Table Matrix Factors Criteria Delivery Punctuality for the D isederhanakan

Supplier	PT. DAP	PT. KM	PT. G.
PT. DAP	1,000	1,000	1,000
PT. KM	1,000	1,000	2,000
PT. G.	1,000	0.500	1,000
amount	3,000	2,500	4,000

Table Matrix Factors Criteria Delivery Punctuality for the D inormalkan

Supplier	PT. DAP	PT. KM	PT. G.	Priority Vector
PT. DAP	0.333	0.400	0.250	0.328
PT. KM	0.333	0.400	0.500	0.411
PT. G.	0.333	0.200	0.250	0.261

Matrix Factor Table for Adding or Subtracting Order Amounts for Flexibility Criteria

Supplier	PT. DAP	PT. KM	PT. G.
PT. DAP	1	1	2
PT. KM	1	1	1
PT. G.	1/2	1	1

Table Matrix Addition or Reduction Factor Number Booking unt uk Criteria Flexibility D isederhanakan

Supplier	PT. DAP	PT. KM	PT. G.
PT. DAP	1,000	1,000	2,000
PT. KM	1,000	1,000	1,000
PT. G.	0.500	1,000	1,000
amount	2,500	3,000	4,000

Table Matrix Addition or Reduction Amount Factor Booking for Criteria Flexibility D inormalkan

Supplier	PT. DAP	PT. KM	PT. G.	Priority Vector
PT. DAP	0.400	0.333	0.500	0.411
PT. KM	0.400	0.333	0.250	0.328
PT. G.	0.200	0.333	0.250	0.261

Matrix Factor Table for Delivery Time Change for Flexibility Criteria

Supplier	PT. DAP	PT. KM	PT. G.
PT. DAP	1	1	2
PT. KM	1	1	2
PT. G.	½	½	1

DOI: 10.37200/IJPR/V24I2/PR200681
Received: 02 Jan 2020 | Revised: 15 Jan 2020 | Accepted: 28 Jan 2020

M atriks Factor Delivery Time Changes to criteria Flexibility D isederhanakan

Supplier	PT. DAP	PT. KM	PT. G.
PT. DAP	1,000	1,000	2,000
PT. KM	1,000	1,000	2,000
PT. G.	0.500	0.500	1,000
amount	2,500	2,500	5,000

Table Matrix Factor Delivery Time Changes to criteria Flexibility D inormalkan

Supplier	PT. DAP	PT. KM	PT. G.	Priority Vector
PT. DAP	0.400	0.400	0.400	0.400
PT. KM	0.400	0.400	0.400	0.400
PT. G.	0.200	0.200	0.200	0.200

Guarantee Factor Table for Flexibility Criteria

Supplier	PT. DAP	PT. KM	PT. G.
PT. DAP	1	1	2
PT. KM	1	1	3
PT. G.	1/3	½	1

Table Matrix Security Factor unt uk Criteria Flexibility D isederhanakan

Supplier	PT. DAP	PT. KM	PT. G.
PT. DAP	1,000	1,000	2,000
PT. KM	1,000	1,000	3,000
PT. G.	0.333	0.500	1,000
amount	2,333	2,500	5,000

Table Matrix Factor Criteria Security for flexibility D inormalkan

Supplier	PT. DAP	PT. KM	PT. G.	Priority Vector
PT. DAP	0.429	0.400	0.400	0.410
PT. KM	0.429	0.400	0600	0.476
PT. G.	0.143	0.200	0.200	0.181

IV. CALCULATION OF TOTAL RANKING / GLOBAL PRIORITY

V.I Total Ranking

After all results are obtained from level 0 (*best* supplier*)* , level 1 (criteria), level 2 (sub criteria) and alternative (supplier) then input the calculation results obtained in the percentage (priority vector) of each level level such as a table on the following page :

DOI: 10.37200/IJPR/V24I2/PR200681
Received: 02 Jan 2020 | Revised: 15 Jan 2020 | Accepted: 28 Jan 2020

Table 4.44: *Overall Percentage Results (Criteria, Sub Criteria, Alternatives)*

Level 0 (Purpose)	Level 1 (Criteria	Level 2 (Sub Criteria)	Weight	Alternative	Weight
Choosing an Optimal Supplier(*Best* Supplier) (100%)	Quality (49.4%)	Q1	80%	PT. DAP	32.8%
				PT. KM	**41.1%**
				PT. G.	26.1%
		Q2	20%	PT. DAP	32.8%
				PT. KM	**41.1%**
				PT. G.	26.1%
	Price (26.4%)	C1	13.5%	PT. DAP	32.8%
				PT. KM	**41.1%**
				PT. G.	26.1%
		C2	5.2%	PT. DAP	**46.7%**
				PT. KM	28.9%
				PT. G.	35.6%
		C3	24.1%	PT. DAP	38.7%
				PT. KM	**44.3%**
				PT. G.	17.0%
	Delivery (14.8%)	D1	6.3%	PT. DAP	**41.1%**
				PT. KM	32.8%
				PT. G.	26.1%
		D2	6.3%	PT. DAP	32.8%
				PT. KM	**41.1%**
				PT. G.	26.1%
	Flexibility (9.4%)	F1	5.2%	PT. DAP	**41.1%**
				PT. KM	32.8%
				PT. G.	26.1%
		F2	5.2%	PT. DAP	**40.0%**
				PT. KM	**40.0%**
				PT. G.	20.0%
		F3	4.2%	PT. DAP	41.0%
				PT. KM	**47.6%**
				PT. G.	18.1%

DOI: 10.37200/IJPR/V24I2/PR200681
Received: 02 Jan 2020 | Revised: 15 Jan 2020 | Accepted: 28 Jan 2020

Table 4.45: *Global Priority (Global Priority)*

Level 0 (Purpose)	Level 1 (Criteria	Level 2 (Sub Criteria)	Weight	Alternative	Weight
Choosing an Optimal Supplier(*Best* Supplier) (1,000)	Quality (0.494)	Q1	0.394	PT. DAP	0.130
				PT. KM	0.162
				PT. G.	0.103
		Q2	0.099	PT. DAP	0.032
				PT. KM	0.041
				PT. G.	0.026
	Price (0.264)	C1	0.145	PT. DAP	0.047
				PT. KM	0.059
				PT. G.	0.038
		C2	0.056	PT. DAP	0.026
				PT. KM	0.016
				PT. G.	0.020
		C3	0.064	PT. DAP	0.025
				PT. KM	0.028
				PT. G.	0.011
	Delivery (0.148)	D1	0.047	PT. DAP	0.019
				PT. KM	0.015
				PT. G.	0.012
		D2	0.074	PT. DAP	0.024
				PT. KM	0.024
				PT. G.	0.019
	Flexibility (0.094)	F1	0.049	PT. DAP	0.020
				PT. KM	0.016
				PT. G.	0.013
		F2	0.049	PT. DAP	0.020
				PT. KM	0.020
				PT. G.	0.010
		F3	0.049	PT. DAP	0.020
				PT. KM	0.023
				PT. G.	0.009

Source: AHP processing results

After obtaining *global priority* , the weight of each alternative as a whole can be calculated by adding up the overall weight (*global priority)* for each supplier, the results are shown in the next page :

Table 4.46: *Priority of Interest (Weight) Alternative to the Amount Accuracy Criteria*

Alternative	Weight	Priority
PT. DAP	0.344	II
PT. KM	0.422	I
PT. G.	0.234	III

V. CONCLUSION

By using the AHP method, the criteria needed in the selection of chocolate supplierPT. X is a quality criterion with sub-criteria Chocolate Taste / Raw Material Taste and Safety and Cleanliness of Raw Materials. Then the Price criteria with the Discount, Minimum Purchase and Payment Process sub-criteria. Furthermore, the shipping criteria with subcritical accuracy of goods specifications and on time delivery. Then the flexibility criteria with the subcritical Addition or Reduction of Orders, Changes in Delivery Times and Guarantees.

From the results of the study can be known the final value (*total ranking*) of each supplierand based on the total *ranking* can be made an assessment sequence that can be used by the company as a material consideration for the purchase of raw materials for the next period.

DOI: 10.37200/IJPR/V24I2/PR200681
Received: 02 Jan 2020 | Revised: 15 Jan 2020 | Accepted: 28 Jan 2020

Table 5.1: *Priority Order*

Priority Order	A	B	C	D	E	F	G.	H	I	J
I	PT.KM (0.411)	PT.KM (0.411)	PT.KM (0.411)	PT.DAP (0.465)	PT.KM (0.443)	PT.DAP (0.411)	PT.KM (0.411)	PT.DAP (0.411)	PT.DAP (0,400) & PT.KM (0,400)	PT.KM (0.476)
II	PT.DAP (0.328)	PT.DAP (0.328)	PT.DAP (0.328)	PT.KM (0.289)	PT.DAP (0.387)	PT.KM (0.328)	PT.DAP (0.328)	PT.KM (0.328)	_	PT.DAP (0.413)
III	Gpr (0.261)	Gpr (0.261)	Gpr (0.261)	Gpr (0.356)	Gpr (0.170)	Gpr (0.261)	Gpr (0.261)	Gpr (0.261)	Gpr (0.200)	Gpr (0.181)

REFERENCE

[1] Ceby, F., and Bayraktar, D. 2003. An Integrated Approach for Supplier Selection Journal of Logistics Information System.
[2] Chopra, S., and Meindl, P. 2001. Supply Chain Management Strategy, Planning, and Operations. Prentice Hall .
[3] Choy, TY & JJ Hartley. 1996. An Exploration of Supplier Selection Practice Across the Supply Chain. Journal of Operations Management, Vol. 14, 333.
[4] Dobler, DWet.al. 1990. Purchasing, and Material Management - Test and Cases, 5th ed. Singapore, Mc. Graw Hill, Inc.
[5] Fernandez, R. 1995. Integrated Quality in Purchasing and Supplier Management. PT. Pustaka Binaman Pressindo, Jakarta.
[6] Saaty, Thomas L. 1988. Fundamentals of Decision Making and Priority with the Analytic Hierarchy Process, RWS Publications, Pittsburg, USA.
[7] Saaty, Thomas L. 1988. Multi Criteria Decision Method: Analytic Hierarchy Process, University of Pittsburg, USA.
[8] Saudi, M.H.M., Sinaga, O. & Rospinoedji, D., The role of tax education in supply chain management: A case of Indonesian supply chain companies, Polish Journal of Management Studies 18(2):304-319, December 2018.

DOI: 10.37200/IJPR/V24I2/PR200681
Received: 02 Jan 2020 | Revised: 15 Jan 2020 | Accepted: 28 Jan 2020