Analysis of Jig Supplier Selection with Analytical Hierarchy Process Method: Case Study at Purchasing Department at PT Patlite Indonesia

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Abstract: PT Patlite Indonesia is a manufacturing industry that produces Warning Signal Lamp. The increasing number and types of products affect the raw materials and equipment used, due to limited production capacity, labor, and other production facilities, causing PT Patlite Indonesia to rely heavily on suppliers. The most widely used equipment in the production process at PT Patlite Indonesia is the Jig. This jig supports the entire production process. The purpose of this study is to find the criteria that are considered important in the selection of jig suppliers and the order of priority for the best jig suppliers at PT Patlite Indonesia. The research method used is the Analytical Hierarchy Process (AHP) method with qualitative descriptive analysis tools and data processing using Ms. Excel. The results of this study indicate several criteria that are considered important, namely Quality, Price, Delivery, Supplier Profile, Service, and Supplier The best Jig with the highest weight being the order of top priority is PT Media Sarana Sukses with a total weight of 0.681 or 68.1%, the second priority is PT Ingram Indonesia Jaya with a total alternative weight of 0.226 or 22.6% and the last priority with the lowest weight is PT Buana Batam Mandiri with a total alternative weight of 0.093 or 9.3%.

1 INTRODUCTION

Jigs are work tools commonly used in the production process. Jigs come in different types depending on their intended use. Jigs can also be defined as a special tool that is useful for holding, holding, and maintaining the position of the workpiece during the production process so that the quality of the resulting product is uniform. Apart from being a work tool, several other types of jigs are also useful as function test tools for finished goods. Jigs have many benefits for manufacturing companies that produce large quantities of products every day, including time efficiency and maintaining the quality of the products produced.

In the growing world of the manufacturing industry in Batam, every industry is required to compete with each other. To win the competition, the company must be able to maximize every process that is carried out, starting from the procurement process and then producing to delivery of goods. In addition, companies must also be able to meet increasing market demand, to satisfy consumer needs, companies must be able to produce products with the best quality and increase production rates to meet consumer needs. Good product quality is certainly the result of a good and precise production process. The production process is very dependent on the procurement of raw materials.

The procurement of raw materials is the first step before the production process. The procurement of raw materials plays an important role in facilitating the production process. The procurement of raw materials also has several very important functions, including being responsible for ensuring the efficiency of all raw materials and services and having to find and maintain good relationships with suppliers. To meet the availability of quality raw materials and as needed, companies must find and find the right supplier. The right supplier will provide many advantages, such as obtaining raw materials at a more affordable price, the availability of products with raw materials delivered on time, being able to meet needs in certain circumstances with short lead times, as well as good quality and according to standards. To determine the supplier, you must go through a selection or decision-making process because, in addition to being a supplier of raw

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materials, suppliers will also be partners who work together for the progress of the company.

Supplier selection becomes very important because it will affect the company's production. The selection is made to get the expected supplier and by the criteria desired by the company. Problems that often occur so far regarding the selection of suppliers are wrong in making decisions or alternative suppliers that do not meet all the required criteria. Companies must know what criteria they need and be a priority so that they are right in making decisions to choose the best supplier.

PT Patlite Indonesia is part of the Japanese Patlite Corporation. PT Patlite Indonesia is a manufacturing industry that produces Warning Signal Lamps and has grown rapidly since its inception due to huge consumer needs. The increasing number and types of products will certainly affect the raw materials and equipment used, due to limited internal capacity and production equipment, it is impossible to produce all the raw materials needed, this causes PT Patlite Indonesia to rely heavily on suppliers. If you choose the wrong supplier, it can have a bad impact on production. The selection of suppliers for each raw material at PT Patlite Indonesia is handled by the purchasing department.

The Purchasing Department at PT Patlite Indonesia handles purchases for two types of raw material needs, namely main raw materials and factory supply. Factory Supply is an internal need for each section that supports the production process which consists of several parts, namely tooling, parts, repair, calibration, and other needs that are commonly used every month such as safety tools and equipment, labels for finished products, and also tools. . The need for tooling is one that must be considered because tooling is a requirement that includes work tools, one of which is a jig and also tool repair. This jig supports the entire production process. PT Patlite Indonesia has three types of jigs used, namely function jigs which are useful for viewing and ensuring the accuracy of finished goods functions, jigs which are useful as work aids such as holding and holding objects during the production process so that they remain stable, and Firmware which is a master code or software used to create a jig work system according to standards and needs.

Based on a preliminary interview conducted with the Assistant Purchasing Manager of PT Patlite Indonesia, there is an explanation of the criteria used in the selection of jig suppliers consisting of price, quality, and delivery (lead time). The price standard only focuses on the lowest price offered by the supplier and the lead time standard is evaluated according to the timeliness of delivery with the specified schedule and quality is evaluated according to the drawings and specifications provided by the Engineering department. The selection of jig suppliers at PT Patlite Indonesia requires other criteria that suppliers should have and not only based on 3 criteria so that they can be taken into consideration to make it even better and this criterion also still follows the criteria for other products and has not been standardized for factory supply products. Therefore, this research was conducted to look at other criteria that might be needed and be taken into consideration for choosing the priority suppliers needed. In general, by using the AHP method, the resulting priorities will be theoretically consistent, logical, transparent, and participatory. Based on this background, it is hoped that "Analysis of Jig Supplier Selection with the Analytic Hierarchy Process (AHP) Case Study Method at the Purchasing Department at PT Patlite Indonesia." This can help companies, especially the purchasing department, in determining the right supplier for jig products.

2 LITERATURE REVIEW

2.1 Supplier Selection

Supplier selection is a multi-criteria problem where each criterion used has different interests and information about it is not known precisely (Noviandri et al., 2015). The selection of suppliers must be adjusted to the criteria most needed by the company. This supplier selection certainly has a major impact on the company's sustainability, this is evidenced by the company's financial condition. The right supplier can reduce the cost of spending or purchasing. However, the selection of this supplier cannot only be assessed in terms of price but must also pay attention to other criteria such as product quality, accuracy in delivery, supplier response, and others. The more criteria the company wants to choose suppliers make the problem more complicated, therefore a decision-making technique is needed in supplier selection (Rimantho et al., 2017).

2.2 AHP (Analytical Hierarchy Process)

The Analytic Hierarchy Process method or commonly referred to as AHP was first developed by Dr. Thomas L. Saaty in 1970. The AHP method is a mathematical decision-making system. AHP uses input centered on the perception of experts. Experts

are people who understand the problem or have an interest in the problem. According to Saaty and Vargas (2012), AHP is a form of decision selection that allows users to form opinions and provide boundaries to problems through estimates or conjectures and produce the desired problem resolution. The AHP method can be used to solve various problems, analyze benefit and cost decisions, rank available alternatives, forecast, and set development priorities for business units and other complex problems.

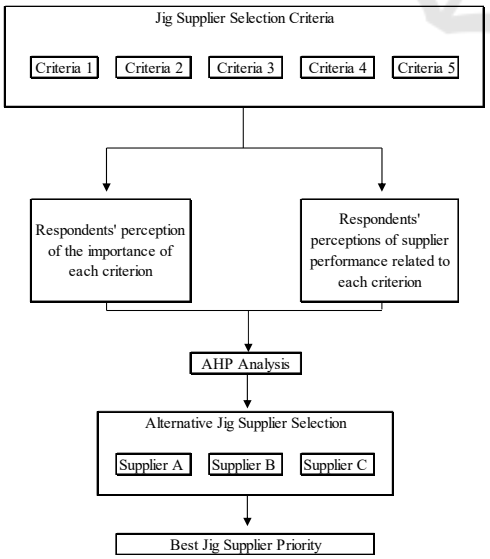
2.3 AHP Method Principle

The AHP method is built on three main principles (Saaty, 1980), including:

a. Principles of hierarchical structure
   The Hierarchical arrangement is done to obtain detailed knowledge.
b. The principle of setting priorities
   Priorities are determined based on the opinion of experts and related parties who are competent in making decisions.
c. Principle of logical consistency
   The application of the principle of logical consistency covers both qualitative and quantitative aspects of the human brain.

2.4 Framework

The framework of thought contained in this research is as follows:



(source: data processing, 2021)

Figure 1: Framework.

3 RESEARCH METHOD

3.1 Design, Focus, and Subject

The research conducted is a type of qualitative research with the focus of research is the implementation of the policy of determining the most important criteria and according to the needs of PT Patlite Indonesia in choosing the best jig supplier priority that meets these criteria. The research subjects were 4 people, namely Assistant Manager for Purchasing, Supervisor for Purchasing, Operator for Purchasing, Assistant Supervisor for Equipment Engineering.

3.2 Data Type

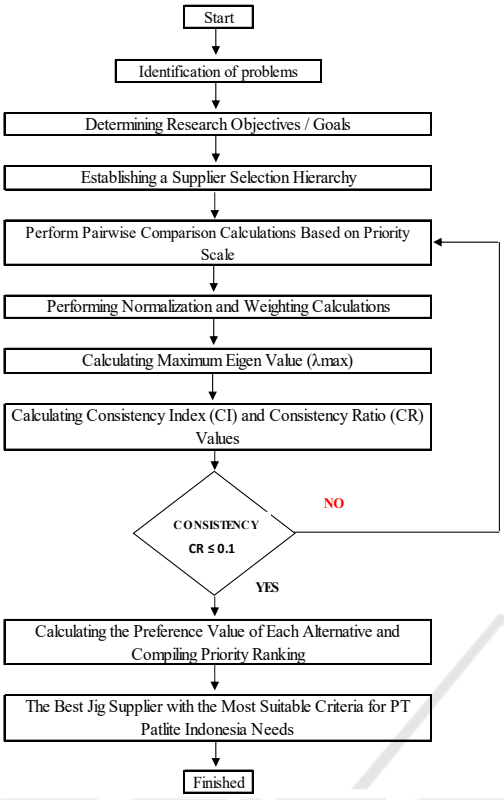
The primary data in this study are the results of in-depth interviews with resource persons in the purchasing and equipment engineering department regarding the assessment of jig suppliers. Secondary data in the form of company profiles, supplier data, and documents related to jigs.

3.3 Data Collection Technique

Data collection techniques in this study using in-depth interviews or can also be called in-depth interviews are interactions/conversations that occur between one interviewer and one informant (Manzilati, 2017).

3.4 Stages of Data Processing

The stages of data processing in this study are as follows:



(source: data processing, 2021)

Figure 2: Stages of Data Processing.

Based on Figure 2 above, the following is an explanation of the stages of data processing in this study:

1. Identify the problem

The purpose of this stage is to find out the cause of a problem and what the right solution is to solve it

2. Setting Goals

Goal setting is useful for determining problem boundaries so that research becomes clear and directed

3. Develop a supplier selection hierarchy
4. Do pairwise comparisons

Pairwise comparisons are made based on (judgment) by assessing the importance of one element compared to other elements. The following is the priority scale in the pairwise comparison assessment:

Table 1: Pairwise Comparison Rating Scale.

Intensity of interest	Definisi	Keterangan
1	Equal Importance	Both elements are equally important
3	Moderate Importance	One element is slightly more important than the other
5	Strong Importance	One element is more important than the other elements
7	Very Strong Importance	One element is very important than the other elements
9	Extreme Importance	One element is absolutely more important than the other elements
2, 4, 6, 8	Equally to moderate Importance	Values between two adjacent considerations
Opposite	If for activity i gets 1 point compared to activity j, then j has the opposite value compared to i	

(source: Saaty, 1994)

The assessment of criteria and alternatives is carried out by several experts, while the use of the AHP method only requires data obtained from the assessment of one expert. According to research conducted by Hati and Fitri (2017) that the assessments made by respondents, then the results will be averaged using the Geometric Mean average. This is done because AHP only requires one answer for the pairwise comparison matrix. The formula used to find the geometric mean value is as follows:

$$G = \sqrt[n]{x_1 . x_2 . x_3 \ldots x_n} \quad (1)$$

Where: G : *Geometric Mean*
X1: Participant Assessment 1
X2: Participant Assessment 2
X3: Participant Assessment 3
n : Many Criteria

5. Melakukan perhitungan normalisasi dan pembobotan

$$\text{Normalized matrix element values} = \frac{\text{Matrix element values per column}}{\text{Total matrix values in one column}} \quad (2)$$

After calculating the value of the normalized matrix elements, a calculation will be carried out to get the weight or priority value

$$\text{Weight / Priority} = \frac{\text{The sum of each line}}{\text{many criteria}} \quad (3)$$

6. Calculating the Maximum Eigen Value

a. Multiply each value in the first column by the priority of the first element and the value in the second column by the second priority, and so on.

b. Adding each row of multiplication results.

c. The result of the sum of each row is then divided by the priority element concerned

d. Calculating the number of quotients above then divided by the number of elements, it will get λmax.

7. Calculating the value of consistency index and consistency ratio

$$CI = \frac{(\lambda_{max} - n)}{(n-1)} \quad (4)$$

Where: CI: Consistency Index
n: Many Criteria

$$CR = \frac{CI}{RI} \quad (5)$$

Where: CR: *Consistency Ratio*
RI: *Random Consistency Index*

Table 2: Random Consistency Index.

n	1	2	3	4	5	6	7	8	9	10
RI	0	0	0.58	0.9	1.12	1.24	1.32	1.41	1.45	1.49

(source: Saaty, 1994)

8. Arrange Priority Ranking
Determining the priority weight value obtained by adding the weight value of the comparison between criteria multiplied by the weight value of the comparison of alternative answers (Hati and Nelmi, 2017).
9. Determine the best jig supplier
After finding the calculation results between the criteria and alternatives, the best jig supplier is determined which has the highest weight as a priority and the order after that.

4 RESULTS AND DISCUSSION

4.1 Supplier Selection Criteria and Alternative Supplier Jig

PT Patlite previously had 3 basic criteria that had been used in supplier selection, namely price, quality, and delivery (lead time), and through the interview process that had been carried out previously, other criteria that were considered important were obtained, namely supplier and service profiles. These criteria become a reference in choosing the right jig supplier. The criteria for selecting a jig supplier are as follows:

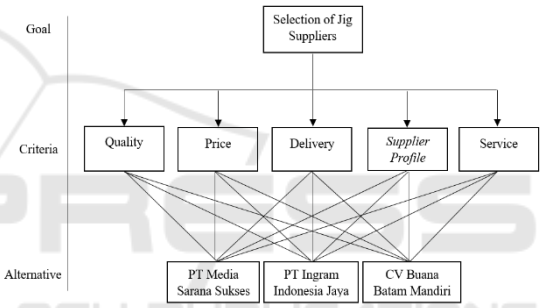
a. Quality
The supplier can provide quality by the company's wishes and produce jigs according to the agreed drawings.
b. Price
Suppliers can offer the best and affordable prices.
c. Delivery
The supplier can deliver the jig on time according to the agreed schedule.
d. Supplier Profile
A Supplier with a good reputation, history, capacity, and adequate production facilities
e. Service
The supplier can respond to every complaint and request properly and responsively

The alternatives contained in this study are several suppliers who have collaborated with PT Patlite Indonesia. The alternatives include PT Media Sarana Sukses (MSS), PT Ingram Indonesia Jaya (INGRAM), CV Buana Batam Mandiri (BBM).

After the criteria and alternatives are obtained, the first step in the data processing stage is compiling a jig supplier selection hierarchy. The results of the initial data processing before conducting the consistency test in this study are as follows:

1. Preparation of the Jig Supplier Selection Hierarchy

After the criteria and alternatives are obtained, the next step is to develop a jig supplier selection hierarchy. This jig supplier selection hierarchy is structured to see in detail the objectives, criteria, and alternatives to be evaluated



(Source: Data Processing, 2021)

Figure 3: Jig Supplier Selection Hierarchical Structure.

2. Pairwise Comparison Matrix

A pairwise comparison matrix is made based on an assessment of the importance of one element compared to other elements. As for several pairwise comparison matrices between criteria and alternatives, each geometric mean value has been obtained as follows:

$$G = \sqrt[n]{x_1 . x_2 . x_3 \ldots x_n} \quad (6)$$

If element $a_{12} = \sqrt[5]{x_1 . x_2 . x_3 . x_n}$ (7)

Then $a_{21} = \frac{1}{a_{12}}$ (8)

For $a_{11} = a_{22} = a_{33} = a_{44} = a_{55} = 1$

Table 3: Geometric Mean Overall Criteria Paired Comparison Matrix.

	Quality	Price	Delivery	Supplier Profile	Service
Quality	1,00	7,00	6,26	5,13	4,22
Price	0,14	1,00	2,03	0,28	0,33
Delivery	0,16	0,49	1,00	0,36	0,84
Supplier Profile	0,19	3,56	2,76	1,00	1,71
Service	0,24	3,00	1,19	0,58	1,00
Σ	1,73	15,05	13,23	7,36	8,10

(source: data processing, 2021)

The Geometric Mean calculation process is also carried out for pairwise comparison matrices between alternative jig suppliers with the same steps.

4.2 Weighting and Consistency Test

The consistency test is to calculate the consistency ratio of the weights of each criterion and alternative. This is done to determine whether the weighting is consistent. Before performing the consistency test, the results of pairwise comparisons will be normalized first. The data normalization calculations in Table 3 are as follows:

1. Calculation of Consistency Test for Jig Supplier Selection Criteria

Table 4: Results of Normalization of Criteria Matrix.

	Quality	Price	Delivery	Supplier Profile	Service	Total	Weight / Priority
Quality	0,58	0,47	0,47	0,70	0,52	2,73	0,546
Price	0,08	0,07	0,15	0,04	0,04	0,38	0,076
Delivery	0,09	0,03	0,08	0,05	0,10	0,35	0,071
Supplier Profile	0,11	0,24	0,21	0,14	0,21	0,90	0,181
Service	0,14	0,20	0,09	0,08	0,12	0,63	0,126

(source: data processing, 2021)

The quality weight value in the first row with a total of 2.73 is divided by many criteria, namely 5, it becomes 0.546, and so on for each row, the weight/priority is obtained as can be seen in Table 4.

The next step is to calculate the Maximum Eigen Value (λmax) by multiplying the pairwise comparison matrix in Table 3 with the weight/priority concerned and then adding up each row as follows:

Matrix						Priority		Sum
1,00	7,00	6,26	5,13	4,22		0,55		2,98
0,14	1,00	2,03	0,28	0,33		0,08		0,39
0,16	0,49	1,00	0,36	0,84	x	0,07	=	0,37
0,19	3,56	2,76	1,00	1,71		0,18		0,97
0,24	3,00	1,19	0,58	1,00		0,13		0,67

Based on the above calculation, the number is obtained from the multiplication of the pairwise comparison matrix with the weights/priorities. The way to get the total value for quality is (1.00*0.55) + (7.00*0.08) + (6.26*0.07) + (5.13*0.18) + (4.22*0.13) = 2.98, the sum for the price is obtained from the calculation (0.14*0.55) + (1.00*0.08) + (2.03*0.07) + (0.28*0.18) + (0.33*0.13) = 0.39, the amount for shipping is obtained from the calculation (0.16*0.55) + (0.49*0.08) + (1.00*0.07) + (0.36*0.18) + (0.84*0.13) = 0.37, the number for supplier profile is obtained from the calculation (0.19*0.55) + (3.56*0.08) + (2.76*0.07) + (1.00*0.18) + (1.71*0.13) = 0.97, the number for services is obtained from the calculation (0.24*0.55) + (3.00*0.08) + (1.19*0.07) + (0.58*0.18) + (1.00*0.13) = 0.67. Then the sum of each row is divided by the corresponding weight/priority as follows:

Total		Priority		Results
2,98		0,55		5,46
0,39		0,08		5,12
0,37	:	0,07	=	5,19
0,97		0,18		5,36
0,67		0,13		5,36

Based on the above calculations, the results are obtained from the calculation of the number divided by the weight/priority. The total quality is 2.98 divided by the weight of 0.55, then the result is 5.46. The total price of 0.39 is divided by a weight of 0.08, so the result is 5.12. The number of shipments is 0.37 divided by a weight of 0.07, so the result is 5.19. The number of supplier profiles is 0.97 divided by a weight of 0.18, so the result is 5.36. The number of services is 0.67 divided by a weight of 0.13, then the result is 5.56. After that, calculate all the total results and divide the number of elements, it will get max as follows:

$$\lambda_{max} = \frac{5,46+5,12+5,19+5,36+5,36}{5} = \frac{26,48}{5} = 5,30 \quad (9)$$

If you have obtained the maximum eigen value, the next step is to calculate the consistency index (CI) value. The CI value is calculated to ensure the consistency level of decision makers when filling out pairwise comparison values between criteria. The way to calculate the CI value is as follows:

$$CI = \frac{(\lambda max\text{-}n)}{(n\text{-}1)} = \frac{(5,30-5)}{(5\text{ - }1)} = 0,07 \quad (10)$$

To get the consistency ratio (CR) value, the next step is to divide the consistency index (CI) value with the Random Index value. A pairwise comparison matrix is declared consistent if the CR value is not more than or equal to 0.1 or 10%. If not, then the assessment that has been made may be done randomly and needs to be corrected or data retrieval is carried out. The value of n = 5 then the value of RI

is 1.12. The RI value was obtained from the random consistency index table with the number of n as many as 5. The calculation of the CR value was as follows:

$$CR = \frac{CI}{RI} = \frac{0,07}{1,12} = 0,07 \quad (11)$$

If the consistency value of CR <0.1 then it is declared consistent and the assessment given by the participants is considered appropriate. Based on the calculation of the consistency ratio above, it can be seen that the results of the calculation of the criteria are declared consistent because the CR value is <0.1 where the CR value of 0.07 is not greater than 0.1 and the assessment given by the participants is considered appropriate.

The process of calculating the consistency test between these criteria is also carried out on the consistency test between alternative jig suppliers against each criterion with the same steps.

Table 5: Weight and Order of Ranking Criteria.

Criteria	Weight/ Priority	Ranking
Quality	0,546	1
Price	0,076	4
Delivery	0,071	5
Supplier Profile	0,181	2
Service	0,126	3

(source: data processing, 2021)

Based on Table 4 above, it is clear that the criteria that are considered the most important and must be owned by jig suppliers are quality with a weight of 0.546 or 54.6%, the second most important criterion is the supplier profile with a weight of 0.181 or 18.1%, criteria with the next position is service with a weight of 0.126 or 12.6%, then followed by price criteria with a weight of 0.076 or 7.6% and in the last position is delivery with a weight of 0.071 or 7.1%.

2. Calculation of the Consistency Test for Alternative Jig Suppliers against the Criteria

Table 6: Consistency Test for Alternative Jig Suppliers against Quality Criteria.

	MSS	INGRAM	BBM	Weight/Priority	*Ranking*
MSS	0,70	0,74	0,57	0,67	1
INGRAM	0,20	0,21	0,35	0,25	2
BBM	0,10	0,05	0,08	0,08	3
λmaks				3,07	
CI				0,03	
RI				0,58	
CR				0,06	

(source: data processing, 2021)

The value of CR consistency <0.1 is 0.06, then it is declared consistent.

Table 7: Consistency Test for Alternative Jig Suppliers against Price Criteria.

	MSS	INGRAM	BBM	Weight/Priority	*Ranking*
MSS	0,73	0,76	0,64	0,71	1
INGRAM	0,17	0,18	0,27	0,21	2
BBM	0,10	0,06	0,09	0,08	3
λmaks				3,04	
CI				0,02	
RI				0,58	
CR				0,04	

(source: data processing, 2021)

The value of CR consistency <0.1 is 0.04, then it is declared consistent.

Table 8: Consistency Test for Alternative Jig Suppliers against Delivery Criteria.

	MSS	INGRAM	BBM	Weight/Priority	*Ranking*
MSS	0,58	0,59	0,53	0,56	1
INGRAM	0,34	0,34	0,40	0,36	2
BBM	0,09	0,07	0,08	0,08	3
λmaks				3,01	
CI				0,004	
RI				0,58	
CR				0,01	

(source: data processing, 2021)

The value of CR consistency <0.1 is 0.01, then it is declared consistent.

Table 9: Consistency Test for Alternative Supplier Jig against Supplier Profile Criteria.

	MSS	INGRAM	BBM	Weight/Priority	*Ranking*
MSS	0,76	0,68	0,81	0,75	1
INGRAM	0,12	0,11	0,07	0,10	3
BBM	0,12	0,21	0,13	0,15	2
λmaks				3,05	
CI				0,03	
RI				0,58	
CR				0,04	

(source: data processing, 2021)

The value of CR consistency <0.1 is 0.04, then it is declared consistent.

Table 10: Consistency Test for Alternative Jig Suppliers against Service Criteria.

	MSS	INGRAM	BBM	Weight/Priority	*Ranking*
MSS	0,69	0,74	0,58	0,67	1
INGRAM	0,20	0,21	0,33	0,24	2
BBM	0,11	0,06	0,09	0,09	3
λmaks				3,06	
CI				0,03	
RI				0,58	
CR				0,05	

(source: data processing, 2021)

The value of CR consistency <0.1 is 0.05, then it is declared consistent.

4.3 Rank Calculation and Determination of the Best Jig Supplier

Table 11: Overall Weights/Priorities for each criterion and alternative.

Kriteria	Weight/Priority	Alternative		
		MSS	INGRAM	BBM
Quality	0,546	0,67	0,25	0,08
%	54,6%	67%	25%	8%
Ranking		1	2	3
Price	0,076	0,71	0,21	0,08
%	7,6%	71%	21%	8%
Ranking		1	2	3
Delivery	0,071	0,56	0,36	0,08
%	7,1%	56%	36%	8%
Ranking		1	2	3
Supplier Profile	0,181	0,75	0,10	0,15
%	18,1%	75%	10%	15%
Ranking		1	3	2
Service	0,126	0,67	0,24	0,09
%	12,6%	67%	24%	9%
Ranking		1	2	3
Total Alternative Weight		0,681	0,226	0,093
Priority		I	II	III

(source: data processing, 2021)

Based on Table 11 the calculation results for the weights/priorities on the criteria and alternatives are carried out by multiplying the weights of each criterion with the weights of each alternative and then calculating the number, then the total weight of the alternatives is obtained. The highest total alternative weight is the MSS supplier (PT Media Sarana Sukses) with a total weight of 0.681 or 68.1%. This is supported by the weight of each criterion that most MSS can dominate with the highest weight of each criterion and are in the first rank. In line with the participant's opinion that the MSS Supplier provides better quality jigs than other suppliers, not only quality but other criteria such as relatively lower prices, timely delivery, supplier profile as evidenced by adequate production capacity, and facilities such as complete equipment. compared to other suppliers as well as good service in responding to jig work problems and updates. Based on the results of this weight/priority calculation, MSS becomes the most priority in choosing a jig supplier.

The INGRAM supplier (PT Ingram Indonesia Jaya) has a total alternative weight of 0.226 or 22.6% and this means that the INGRAM supplier also meets all the criteria quite well and is in the second priority position after the MSS supplier, but the INGRAM supplier still has to add experience in focus on jig work because for the supplier profile criteria INGRAM is ranked third after the fuel supplier with a weight of 0.10 or 10% and only 5% difference with the fuel supplier. In line with the participant's opinion that the INGRAM supplier also provides quality jigs that are by the requests or drawings provided and have never caused problems while being a PT Patlite Indonesia jig supplier, the prices offered are quite affordable, deliveries that have never passed the due date and adequate service. both in terms of communication-related to jig work problems and providing support if there is a request for a direct visit by PT Patlite Indonesia.

The alternative Jig Supplier who is in the last priority order is the BBM supplier (CV. Buana Batam Mandiri) with a total alternative weight of 0.093 or 9.3%. The BBM supplier is a new supplier collaborating with PT Patlite Indonesia for special jig products, so for each criterion, the BBM supplier has not been able to be superior to other suppliers. However, BBM suppliers still meet every criterion for selecting PT Patlite Indonesia suppliers and BBM suppliers are also companies that focus on making machines such as jigs and goods for other industrial production so that BBM suppliers are superior to INGRAM suppliers with a weight of 0.15 or 15% against the Supplier Profile criteria.

Determination of the best jig supplier can be determined based on the results of the calculation of the ranking and weight/priority of each criterion and alternative. The best supplier with the highest total weight is PT Media Sarana Sukses and this shows that in the selection of suppliers for jig products the main priority is PT Media Sarana Sukses and the second priority is PT Ingram Indonesia Jaya, the last priority with the lowest weight is PT Buana Batam Mandiri.

5 CONCLUSIONS

Based on the results of research regarding the selection of jig suppliers using the AHP (Analytical Hierarchy Process) case study at the Purchasing Department at PT Patlite Indonesia, the following conclusions were obtained:

1. Important criteria in selecting a jig supplier at PT Patlite Indonesia are quality criteria, supplier profile, service, price, and delivery
2. The criterion that has the highest weight and is in the first rank order based on the results of the pairwise comparison matrix calculation is the quality criterion with a weight of 0.546, followed

by the second rank, namely the supplier profile criterion of 0.181, the third rank of the service criterion of 0.126, the fourth rank of the price criterion of 0.076, and the final ranking of the delivery criteria with the lowest weight of 0.076.

3. The order of priority for the best jig supplier based on the total alternative weights is PT Media Sarana Sukses, followed by the second priority by PT Ingram Indonesia Jaya, and the last priority by PT Buana Batam Mandiri

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