

Vendor Track Record Selection Using Best Worst Method

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Abstract— Every company will largely depend on other companies. This will help unite a large business process. Risks that arise from other companies will affect the business performance of a company. Because of this, the right choice for suppliers is crucial. Each vendor has different characteristics. Everything is not always suitable basically the selection process is quite complex and risky. This has led to a new case study which has been studied for years by researchers known as Supplier Selection Problems. Selection of vendors with multi-criteria decision making has been widely studied over years ago. The Best Worst Method is a new science in Multi-Criteria Decision Making (MCDM) determination. In this research, taking case study at XYZ company is in Indonesia which is engaged in mining and industry. The research utilized the transaction data that have been recorded by the XYZ company and analyzed vendor valuation. The weighting of Best Worst Method is calculated based on vendor assessment result. The results show that XYZ company still focuses on Price as its key criteria..

Keywords- *Supplier Selection, MCDM, Best Worst Method, Track Record.*

I. INTRODUCTION

Now information is rapidly spreading. Choosing an information is not arbitrary. It must be in accordance with needs. This is the basis of a company in choosing vendors and suppliers as partners. With a large enough information flow, companies can get information about vendors. This information can come from sources outside the company or from internal companies. Application of multiple criteria in assessing vendor performance in various aspects is a necessity [1].

This assessment is needed because there are many existing vendors with various characteristics. Each vendor has different characteristics, performance and capabilities. All the risks posed by the vendor become a company risk as well when become a partner. This becomes an external risk beyond the control of the company. [2]

The research was conducted at the XYZ company engaged in mining and mining industries. Where the business scope is wide enough that requires different item specifications. It becomes quite interesting where every scope of the business process requires different items and goods. Multiple criteria become mandatory to assess this to suit the needs of the

company. The complexity of the assessment criteria will be complex. Not only things that are tangible such as price and delivery time, but also things that are intangible such as attitude, vendor commitment and relationships between companies [3].

Vendor selection is an important activity in the procurement department. This can be related to the quality of production to the continuity of business processes. Risk mitigation is important in the procurement process. The right strategy in selecting vendors is the emphasis in this matter. There is no best strategy for vendor selection, but many approaches can be used. [4]. Most of the business processes in industry are raw material production, so vendor selection is vital. The costs incurred for the selection of raw materials can reach up to 70% of production costs. With this situation the division of employment is a key role in reducing costs and mitigating risks. This makes supplier selection one of the most important functions of purchasing management [5].

The key criteria on latest research on selection of vendors and suppliers that most picked are product quality, delivery, history and warranty policy [4]. This research was conducted at XYZ company located in Indonesia. It will concluded the key criteria of valuation from XYZ company. Criteria are the main focus in the vendors and suppliers selection.

The XYZ company has recorded the vendors that work together. The data is stored in the database as an archive used for financial reporting purposes. This data is an internal source of company information. This information is in the form of all transactions that have been carried out with vendors and how the vendors treated them during the same work as information on delivery dates, quality of goods and the prices. There is also data from the external source of the company. The data in the form of information can be obtained from the vendor's reputation and information from the company's partners. This information is processed internally to be used as a collection of information that is useful in selecting vendors.

II. LITERATURE REVIEW

A. Past Research

During the last few decades of research on supplier selection problem, the researcher produce considerable

literacy with various methods used. So that the process of selecting suppliers becomes a quite crucial factor. Especially in the era of globalization, where companies are required to continue to improve competence [6].

In the selection of vendors, the procurement division is taking an election strategy. Where this election is tailored to the needs and capabilities of the company. The selection of vendors in the procurement division will take on the role of Decision Maker. Selected vendors will influence the profitability of the company and customer satisfaction obtained [7].

For a long time, many studies have investigated techniques, models and methods for decision making for vendor selection [8]. There are no best models and techniques because each company has different treatment. Only suitable ones can be applied in the company. Several studies have introduced several methods. A slight change in the vendor selection process can have a significant effect on the supply chain [9]. Some research conduct to prove Multi Criteria Decision Making can use many method that fit with the context.

Research on supplier selection with lexicographic goal programming method and Analytic Hierarchy Process in vendor selection has been done by Cebi and Bayraktar [10]. Kwang et al chose to use scoring method and fuzzy logic in conducting vendor selection research [11]. Research conducted by Degraeve et al by analyzing the total cost of ownership information to evaluate strategy in decision making at European Metal Company [12]. Research about MCDM by developing web applications using Analytic Hierarchy Process method was done by Akarte et al [13].

The Ghodsipour and O'Brien studies used the Analytic Hierarchy Process method and Linear Programming methods to take into account tangible and intangible factors when selecting suppliers [14]. The use of Fuzzy Analytic Hierarchy Process in determining preferred vendors has also been done by Cengiz et al [15]. The incorporation of Taguchi's loss function method and Analytic Hierarchy Process in determining supplier selection has been introduced by Pi and Low [16]. Rao designed a method for vendor selection by combining Genetic Algorithm with Analytic Hierarchy Process [17]. Yadav and Sharma introduced three alternative selection of vendors based on Analytic Hierarchy Process [18]. Amid et al conducted the study by suggesting using a linear multi objective model [19].

B. Criteria of Selection

Supplier selection is quite complex where many criteria need to be considered. Not only tangible criteria but also intangible criteria. Weber et al stated that many studies with various approaches to vendor selection have also been conducted since the 1960's. There are 74 articles covering vendor selection from 1960 to 1991 [20].

The study by Dickson et al in 1966 has stated 23 attributes in the supplier selection criteria. The research conducted by Dickson by reviewing 273 questionnaires distributed to companies in the United States and Canada [21]. The results of the study can be seen in table 1. The criteria offered by

Dickson include the criteria for tangible and intangible. There are many factors influence the Supply Chain Environment. Weber et al examined the results of Dickson et al. of and from the 23 criteria examined, at least 1 key criterion from Dickson was mentioned from 74 articles interviewed by Weber et al.

TABLE I. DICKSON'S CRITERIA

No	Criteria	Mean
1	Quality	3,508
2	Delivery	3,417
3	Performance History	3,998
4	Warranties & Claims Policies	2,849
5	Production Facilities and Capacity	2,775
6	Price	2,758
7	Technical Capability	2,545
8	Financial Position	2,514
9	Procedural Compliance	2,426
10	Communication Systems	2,426
11	Reputation and Position in Industry	2,412
12	Desire for Business	2,256
13	Management and Organization	2,216
14	Operating Controls	2,211
15	Repair Service	2,187
16	Attitude	2,120
17	Impression	2,054
18	Packaging Ability	2,009
19	Labor Relations Record	2,003
20	Geographical Location	1,872
21	Amount of Past Business	1,597
22	Training Aids	1,537
23	Reciprocal Arrangement	0,610

As time goes by, the criteria proposed by Dickson began to experience a shift. Not all criteria proposed by Dickson are in line with current Supply Chain conditions. In Table II, Cheraghi, Dadashzadeh et al has conducted a study of Dickson's criteria correlation with research conducted from 1966 to 2001. Some of the criteria that Dickson proposed experienced a shift in values.

In the range of research conducted by Cheraghi et al [22] there were many significant changes. Packaging Ability criteria which after 1990 were no longer as criterion in the study. Because the rapid growth of geographic location transportation and communication technology now is less important. What remains consistent is the criteria are technical capability. Because the need for a company's ability to handle orders is important enough to reduce the risks that can be caused.

With the rapid development of information, customers increasingly understand the products provided by suppliers or vendors. The customer knows how the product specifications are provided, the terms and conditions of a product. After-sales service is one of the company's wishes in selecting suppliers or vendors. The trend of assessment criteria began to focus on customer satisfaction. By gaining greater emphasis, the criteria for sales repair service experienced a rapid increase [22].

C. Modified Criteria for Internal Business Company XYZ

Procurement Division faces a problem where the assessment is tangible and intangible. Criteria adopted for the study derive from the modification of research owned by Dickson et al [21] with consideration of stakeholders and shareholders of XYZ companies. Criteria taken based on

consideration of the company's business process for the procurement division. Business strategy XYZ company based on preference of shareholders will be criteria as well. From these criteria are divided into criteria and sub criteria that can be seen in table III.

Most of these assessments at XYZ company has been enclosed in internal applications. The data and information on vendor valuations are used directly extracted from there.

Reputation	History Transaction
	Current Position in Market
Quality Systems	Partner
	Management
	Assurance
	Waranty
Price	Production Quality
	Discount
	Delivery Cost
	Term of Payments

TABLE II. SUPPLIER CRITERIA BETWEEN THE PERIODS OF 1996 – 1990 AND 1990 – 2001 BY CGERAGHI, DADASHZADEH ET ALL

Criteria	1966 - 1990		1990 - 2001		Overall	
	Papers	%	Papers	%	Papers	%
Quality	40	54	31	79	71	63
Delivery	45	61	30	77	75	66
Performance History	7	9	4	10	11	10
Warranties & Claims Policies	1	1	0	0	1	1
Production Facilities and Capacity	25	34	10	26	35	31
Price	55	74	26	67	81	72
Technical Capability	19	26	11	28	30	27
Financial Position	8	11	7	18	15	13
Procedural Compliance	2	3	2	5	4	4
Communication Systems	3	4	4	10	7	6
Reputation and Position in Industry	9	12	1	3	10	9
Desire for Bussines	2	3	0	0	2	2
Managemen and Organization	10	14	7	18	17	15
Operating Controls	5	7	0	0	5	4
Repair Service	7	9	11	28	18	16
Attitude	9	12	5	13	14	12
Impression	4	5	2	5	6	5
Packaging Ability	5	7	0	0	5	4
Labor Relations Record	3	4	1	3	4	4
Geograpichal Location	15	20	2	5	17	15
Amount of Past Business	1	1	0	0	1	1
Training Aids	3	4	0	0	3	3
Reciprocal Arrangements	3	4	2	5	5	4

Furthermore, for the assessment of criteria, a joint discussion with shareholders and stakeholders will be carried out. The results of the discussion will be included in the Best Worst Method model to get weighting. From there, you can get the results of weighting for XYZ companies in the selection of vendors, as well as the key criteria.

TABLE III. MODIFIED CRITERIA FOR XYZ VENDOR SELECTION

Criteria	Sub Criteria
Performance	Shipment
	Delivery
	Service and Communication
Technical Capability	Technical Cooperation
	Employee Profile
	Equipment
	Manufacturing
	Organization Culture

III. METHODOLOGY

There have been many studies using Multi-criteria concept, in some previous studies using AHP and SAW methods to calculate Risk Analysis [23]. Research Risk Analysis, assessing each risk in one particular criterion. In the Multi Criteria study for semantic web service selection using many criteria in assessing websites, where these criteria are connected and have their own weight [24]. The selection of singers using the AHP and SAW approaches also uses criteria with different weights [25]. Many studies with multi criteria that have been described previously, so the selection of vendors using that concept is very possible.

From many methods used in various studies using MCDM [26], this research uses the Best Worst Method (BWM) developed by Rezaei [27]. This method compares the criterion

criteria that become references. The Best Worst Method uses a bit of data in its assessment, produces consistent data and does not require a full pairwise comparison matrix. This method has been used in water scarcity management research [28], research into measuring efficiency of university-industry projects [29], research in evaluation scientific output [30], research in RnD department evaluations [31] and various other studies.

Here is the steps of BWM.

The first step is to determine the criteria that will be weighed and compared.

The next step, these criteria are selected which are more desirable or we call Best, and which are less desirable, we call Worst. Then each criterion used is determined by using a scale of 9 (numbers between 1 and 9; 1: B is equally important to j; 9: B is extremely more important than j). The result is a best-to-others (BO) vector as follows.

$A_B = (a_{B1} \ a_{B2} \ a_{B3} \ \dots, \ a_{Bn})$, with a_{Bj} represent the preference of B over j and $a_{bb} = 1$.

After that, we also define the opposite of the worst criterion (W), using a 9-point scale (numbers between 1 and 9; 1: j is equally important to W; 9: j is extremely more important than W), which results in the others-to-worst (OW) vector as follows.

$A_W = (a_{1W}, \ a_{2W}, \ a_{3W}, \ \dots, \ a_{nW})^T$, with a_{jW} the preference of j over W and $a_{WW} = 1$.

This step needs to be input from an expert to determine the value of each criterion. During this research, the expert was a stakeholder and shareholder of the XYZ company. Determination of the Best and Worst criterion, the researchers conducted interviews and meetings. We did not explicitly mention it when in collecting data.

After getting the assessment, the next step is finding optimal weights ($w_1^*, w_2^*, \dots, w_n^*$). To get optimal weight need maximum absolute differences $\{|w_B - a_{Bj}w_j|, |w_j - a_{jW}w_W|\}$ for all j minimized.

$$\sum_j w_j = 1$$

$$w_j \geq 0, \text{ for all } j. \quad \dots(1)$$

Problem (2) is equal to the following linear problem: min ξ^L .

$$|w_B - a_{Bj}w_j| \leq \xi^L, \text{ for all } j$$

$$|w_j - a_{jW}w_W| \leq \xi^L, \text{ for all } j \quad \dots(2)$$

$$\sum_j w_j = 1$$

$$w_j \geq 0, \text{ for all } j. \quad \dots(3)$$

Solving problem (3), we will get optimal weights ($w_1^*, w_2^*, \dots, w_n^*$) and optimal value ξ^L , which is the consistency index. When the value is close to zero, it has a high level of

consistency of the pairwise comparisons provided by the decision-maker (s) / expert (s). For problems with more than one level, each level is calculated accordingly. After each level has its own weight, then to get global weight, multiplication is calculated from each level.

IV. ANALYSIS AND DISCUSION

We hold meetings with stakeholders and shareholders XYZ company for five times without discussing directly about vendor valuation. The criteria are adjusted to the needs of the company. Results of the next weighting will be processed to produce data as in table IV. In Figure I, Price is the top priority compared to the main criteria. Undeniably, the supply chain climate conditions in Indonesia still prioritize prices.

The next sequence is Quality Systems, which are criteria related to the quality of an item. The lowest is the vendor's reputation criteria according to the management in the procurement division. Reputation is important, but there are other important things such as vendor service performance and technical capability of the vendor. Even though reputation is important, if the service is bad the risk will be large. The historical data obtained in the XYZ company becomes a reference if it is going to make a transaction.

TABLE IV. WEIGHTED CRITERIA FOR XYZ VENDOR SELECTION

Criteria	Weight Criteria	Sub Criteria	Sub Weight Criteria	Global Weight Criteria
Performance	0.1898	Shipment	0.4579	0.0869
		Delivery	0.3850	0.0731
		Service and Communication	0.1576	0.0299
Technical Capability	0.1498	Technical Cooperation	0.2783	0.0417
		Employee Profile	0.1649	0.0247
		Equipment	0.1695	0.0254
		Manufacturing	0.1147	0.0172
		Organization Culture	0.2723	0.0408
Reputation	0.1049	History Transaction	0.3167	0.0332
		Current Position in Market	0.4874	0.0511
		Partner	0.1961	0.0206
Quality Systems	0.2553	Management	0.1362	0.0348
		Assurance	0.2314	0.0591
		Warranty	0.2996	0.0765
		Production Quality	0.3334	0.0851
Price	0.3002	Discount	0.4689	0.1407
		Delivery Cost	0.1743	0.0523
		Term of Payments	0.3568	0.1071

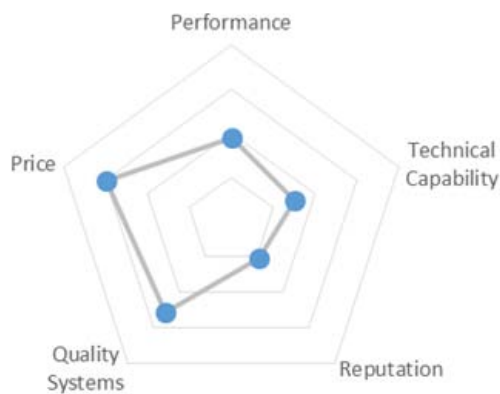


Fig. 1. Weight Criteria on company XYZ.

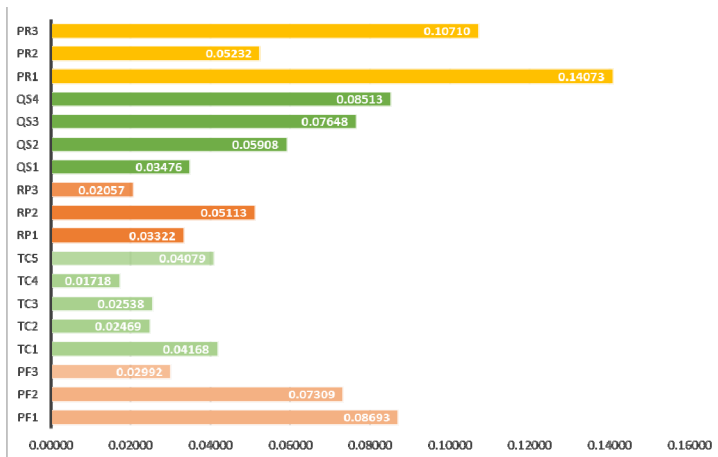


Figure 2. Weighted Sub Criteria from global weight.

- **Price perspective:** *pr1*: Discount, *pr2*: Term of Payment, *pr3*: Delivery Cost.

- **Quality Systems:** *qs1*: Management, *qs2*: Assurance, *qs3*: Warranty, *qs4*: Production Quality.

- **Reputation:** *rp1*: partner, *rp2*: history transaction, *rp3*: current position in market.

- **Technical Capability:** *tc1*: Organization culture, *tc2*: manufacturing, *tc3*: equipment, *tc4*: Employee profile, *tc5*: Technical Cooperation.

- **Performance:** *pf1*: Shipment, *pf2*: Delivery, *pf3*: Service and Communication.

Vendor data used is the result of transactions with vendors stored in the procurement application. To complete vendor data, general data collection is carried out. Researchers and procurement divisions collect for criteria that are not covered by the procurement application. Such data, such as vendor positions in the market, employee profile sub-criteria and others criteria can be obtained from the website of each vendor. If there is none can be found the procurement division provides an assessment. The assessment is directly ask a sample of employees from vendors who have interacted. The Organization culture is assessed from the data that was obtained when registering a vendor. The vendor registration business process must include data on the vision and mission of the vendor. For data management, it can be taken from the SOP pattern of the vendor, whether it is complicated or not. When making direct transactions with the vendor it can be assess by procurement team as data management. Shipment

and delivery data can be seen from historical data when making transactions. Service and communication sub criteria can be obtained from the experience of the procurement division in conducting transactions and communicating with vendors.

This is efficient because the procurement division is quite proficient in assessing vendors. In addition, the procurement division understands the field they are facing, understands vendor behavior that is problematic, and how to react. Assisted with the data that has been stored in the procurement application, vendor assessment can be fairly easy to do. The result can be view at table V.

Sub criteria can be seen in figure 2 where all sub criteria have become global weight. It can be seen that two sub-criteria of Price dominate, namely the discount sub-criteria and the Terms of Payment sub-criteria. Both of these criteria are still a weight for XYZ companies, which can help in increasing the price difference that helps in suppressing production costs and adding higher margins.

The vendor score data with the results of weighting can be seen in table V. There is no vendor that dominates. There must be something less than the perspective of the company. This can also be used in determining vendors in the future. This valuation is completely unknown to the vendor. This data is a confidential company. Except procurement team know about it.

From these results, the vendors with the lowest prices have poor quality. But there are vendors with the best quality and the prices are quite significant with qualified services. From the vendor's point of view, to increase the data on the quality of services and goods requires more costs at the expense of several aspects of the product.

In some vendors there are those whose value is quite low compared to other vendors. There is still a possibility that the vendor has several aspects that still need to be improved and are in an effort to develop it. Also the possibility that the vendor is still improving itself in providing its products and services. Does not close the possibility that the vendor is not focused on market segmentation for the mining industry. It can be the vendor is chosen as a supporting or complementary in the XYZ company business process.

The vendor rating for each criterion can be seen in Table V. Of the 374 vendors listed on the XYZ company system, only 70 samples are taken. The samples are drawn at random. Furthermore, the result of the valuation, multiplied by the weighting that has been obtained from table IV. The multiplication result by weighting the criteria of bias is seen in table VI, there also provided the rating.

TABLE V. VENDOR SCORING FROM COMPANY XYZ DATABASE

Firm No	Performance			Technical Capability					Reputation			Quality Systems				Price		
	pf1	pf2	pf3	tc1	tc2	tc3	tc4	tc5	rp1	rp2	rp3	qs1	qs2	qs3	qs4	pr1	pr2	pr3
1	8	6	8	7	7	6	5	9	9	7	8	6	8	7	8	5	6	6
2	7	7	8	8	6	5	4	8	9	4	8	9	6	7	7	8	7	8
3	6	5	7	6	8	7	9	4	7	7	9	6	5	6	8	7	6	7
4	7	7	6	8	4	7	7	7	7	5	5	6	8	4	7	8	6	7
5	6	5	7	7	6	5	6	8	9	8	7	8	7	7	7	8	7	8
6	6	6	6	5	7	4	7	6	6	7	7	6	5	7	5	1	6	3
7	7	7	7	7	7	8	7	9	7	9	7	7	4	7	6	7	5	6
8	8	6	6	8	6	6	6	6	6	8	7	5	4	7	8	7	6	8
9	8	6	7	7	6	9	6	6	6	8	8	6	7	5	8	5	5	6
10	9	7	7	4	7	7	8	7	5	6	4	7	8	7	9	7	6	8
11	7	7	6	9	5	5	7	8	7	7	4	9	8	7	8	5	8	7
12	7	4	6	7	6	8	9	5	8	9	6	5	7	5	8	6	7	8
13	7	8	6	8	5	6	7	7	7	7	7	7	6	6	6	8	5	8
14	6	6	6	8	6	6	6	6	6	6	7	9	6	8	7	9	6	7
15	5	7	7	7	6	7	7	8	7	8	8	7	9	7	6	5	7	6
16	8	6	8	8	9	7	6	6	8	8	8	7	4	6	8	8	7	5
17	5	7	6	8	8	6	7	6	6	9	8	6	7	6	6	6	7	8
18	4	9	6	5	6	7	8	6	5	5	7	6	7	7	7	4	6	7
19	6	7	4	8	5	8	6	7	8	9	6	7	6	7	6	6	8	6
20	8	9	6	9	6	6	6	8	7	6	8	7	6	8	7	8	6	7
21	4	3	5	7	5	4	7	6	4	7	5	5	6	6	8	6	8	7
22	5	5	6	6	5	4	5	4	6	5	6	4	3	7	3	8	6	9
23	6	5	4	5	6	5	6	6	6	8	5	6	7	9	5	4	6	2
24	4	5	7	6	6	5	4	5	6	4	6	5	6	4	6	6	4	7
25	4	2	5	5	5	5	2	4	7	8	5	6	5	5	6	5	4	9
26	8	8	6	5	3	4	5	2	6	6	4	5	9	6	7	4	8	5
27	8	8	8	9	8	7	6	8	7	8	6	7	8	8	7	7	9	9
28	7	9	7	8	7	8	9	7	7	8	6	7	8	8	7	9	8	6
29	7	8	8	8	5	8	9	8	8	9	9	7	8	7	8	6	7	8
30	8	6	7	9	7	8	8	7	7	7	8	8	6	8	8	5	8	9

TABLE VI. VENDOR SCORING WITH WEIGHTED CRITERIA

Firm No	Performance		Technical Capability		Reputation		Quality Systems		Price	
	Total	Rank	Total	Rank	Total	Rank	Total	Rank	Total	Rank
1	1.3733	17	1.0699	19	0.8214	13	1.8975	17	1.6602	60
2	1.3595	20	1.0036	29	0.6680	38	1.7985	23	2.3489	8
3	1.0964	46	0.9431	34	0.7755	19	1.6438	37	2.0488	33

4	1.2996	26	1.0157	26	0.5910	51	1.5830	42	2.1895	21
5	1.0964	47	0.9962	31	0.8519	6	1.8229	19	2.3489	6
6	1.1396	40	0.8478	39	0.7011	34	1.4649	50	0.7760	70
7	1.3295	24	1.1550	11	0.8366	11	1.5257	46	1.8893	45
8	1.3135	25	0.9817	32	0.7523	25	1.6265	38	2.1559	23
9	1.3434	22	1.0162	25	0.7728	20	1.6855	32	1.6079	63
10	1.5034	7	0.9402	35	0.5551	60	2.0174	4	2.1559	22
11	1.2996	27	1.0721	18	0.6727	36	2.0018	6	1.8719	48
12	1.0804	49	1.0016	30	0.8493	8	1.6508	34	2.0675	31
13	1.3727	19	1.0150	27	0.7344	30	1.5674	44	2.2443	17
14	1.1396	41	0.9817	33	0.6500	39	1.8750	18	2.3302	10
15	1.1557	37	1.0642	21	0.8060	14	1.8211	20	1.7125	57
16	1.3733	18	1.0812	17	0.8393	10	1.6195	39	2.0276	36
17	1.1258	42	1.0483	23	0.8240	12	1.5917	41	2.0675	32
18	1.1850	36	0.9164	36	0.5657	59	1.7533	27	1.6266	62
19	1.1529	39	1.0486	22	0.8493	7	1.6439	35	1.9056	44
20	1.5327	5	1.1050	16	0.7038	32	1.8055	21	2.1895	20
21	0.7166	69	0.8818	38	0.5936	49	1.6682	33	2.0127	38
22	0.9796	54	0.7241	55	0.5783	57	1.1070	68	2.4037	4
23	1.0067	52	0.8313	41	0.7111	31	1.7360	29	1.0911	69
24	0.9226	59	0.7978	44	0.5272	63	1.3449	59	1.8034	50
25	0.6435	70	0.6563	59	0.7443	27	1.3971	53	1.8769	47
26	1.4596	11	0.5515	69	0.5883	54	1.7603	26	1.5170	65
27	1.5195	6	1.1798	7	0.7649	22	1.9237	13	2.4199	3
28	1.4757	10	1.1495	12	0.7649	23	1.9237	14	2.3278	11
29	1.4326	14	1.1409	13	0.9110	1	1.9323	10	2.0675	30
30	1.3434	23	1.1740	8	0.7549	24	1.9254	12	2.0862	28

V. CONCLUSION

Study to measure weighting with multiple criteria has been done a few decades ago. The method of retrieving data from transaction history, survey data from various sources and process it with BWM is very handy in measuring vendor evaluation values. This value is a representative of the XYZ company with the assessment is entirely based on the angle of the company. And assessment held without notification to others party. Assessing this main point of view is enough to be a reference in weighting and evaluating vendors.

As the result from BWM, the criteria that are top priority for XYZ company are Price and discount as sub-criteria. Prices are a priority for XYZ companies and this can be a representative for others Indonesia company. For quality criteria in second priority after the price. The service quality criteria or products occupy the third position on the global weight criteria. Followed by shipping criteria. This is quite reasonable considering the geographical conditions in Indonesia which are quite challenging. Sometimes there are vendors with less shipping capabilities due to geographical conditions. This will hamper business processes from XYZ

companies if they experience delays in delivery. With assessments assisted by BWM it is very helpful in evaluating vendors with various criteria. The results were also received by stakeholders and shareholders when disclosing the results.

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