

Article

The Weighted Product Method in the DSS for Employee rewards at the Cosmetics Warehouse

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Abstract:

The Cosmetic Warehouse in this research is located in Purwokerto, a one-effort trade that provides beauty products. Cosmetic Warehouse Purwokerto had stood up since 2013 when Navissatul Darojah Gusmiati was founded with ten employees. The study aimed to apply the weighted product method as a decision support system for determining employee bonuses in the Purwokerto cosmetic warehouse and giving less salary and bonuses following performance employees. The Weighted Product method is a decision-making method with specific criteria. The weighted Product method is used to decide with multiplication for link attribute rating. Rating each attribute must be promoted, especially formerly with weight attribute in question; in a study, this is the data used, i.e., result data interview in the form of a later questionnaire processed by Weighted method product (WP). This research can produce results in the form of calculations with the used algorithm WP company with clear and detailed about giving employee bonuses with existing criteria. Moreover, score preference was obtained by an employee named Indri with a value equal to 0.105670687. for the score, 2nd preference was obtained by Princess with a value equal to 0.10356631, and for 3rd, obtained by Gio with a value equal to 0.101039953.

Keywords: decision support system, weighted product method, bonus, employees, cosmetic Warehouse



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1. INTRODUCTION

Accordingly, Giving salaries and bonuses to employees in each company, agency, organization, or business entity is compensation for the results performance employees; rewards are gift wages extras given and received by outside employees from wages fixed. The companies provide various types of bonuses to agencies, organizations, or business entities. Annual bonuses can be given based on employee performance levels and contributions at the end of each year. Moreover, the achievement bonuses offered are obtained from sales bonuses (turnover) from sales that meet the target; received bonuses employees be one method used by a company to increase the motivation of its employees.

Furthermore, Cosmetic Warehouse Purwokerto is one effort trade that provides product beauty from care hair to skin. Cosmetic Warehouse Purwokerto stand up since 2013, founded by Navissatul Darojah Gusmiati.

From the first Cosmetic Warehouse, Purwokerto, in 2013 to the moment, this 2022 has three branches, one of which is in Purokerto, now located on Prof Dr. HR Boenyamin street No 41 Bancarkembar North Purwokerto. Cosmetic Warehouse, located in Purwokerto, is one of 3 branches owned by Navissatul moment with 12 employees. The system works into two shifts, the morning shift and the afternoon shift. However, the employees often work overtime to exceed the set working hours because there is other work to do resolved. Employees who work over working hours are given a bonus at the end of the month together salary.

Giving gifts to employees of the Purwokerto Cosmetics Warehouse is done unevenly and does not follow performance; meaning that only employees close to the company owner will get more bonuses. By implementing the weighted product method in a decision support system, giving employee bonuses at the Purwokerto cosmetics warehouse will be fairer and more equitable based on employee performance. The Weighted Product method is used to make decisions by multiplying the attribute ratings; for that, the rating of each attribute must be increased first by increasing the weight of the attribute in question. In this study, the data used came from interviewing employees by creating a questionnaire which would be processed using the Weighted Product (WP) method.

2. LITERATURE REVIEW

Several studies could be referenced in a study applying the Weighted Product Method. Such as the study Application weighted product method on the DSS for evaluating teacher performance in giving lessons at SMK Negeri 1 Setia Janji [1], as well study Application of the Weighted Product Method for Selection of the Best Personal Quality Control at PT. Pacific Equinox Surabaya [2], then research the Decision Support System for Determining the Location of Gorontalo Bank Indonesia Offices using the Weighted Product Method [3]. Application Culinary Decision Support System in the city of Kudus with the Weighted Product [4] method and Developing a Decision Support System with the Weighted Product method for the election house [5].

Furthermore, Weighted Product research and its application for measuring performance Employee [6], and weighted product research for election Seed Superior Clarias Catfish Gariepinus (Sangkuriang) [7]. research application weighted product method for determining child intelligence double [8], as well Election Decision Support System research Student Achievers Using the Simple Additive Weighting (SAW) and Weighted Product (WP) Methods [9]. As for research application of the weighted product in system supporters decision election receiving salary bonuses employee in CV. Karya Jaya Furniture [10]. System design research supporters the decision to determine brown sugar quality with the weighted product [11] method. as well as Support system research decision for receiver help social elderly displaced use Weighted Product [12] method, support system research decision election varieties paddy use product weighted, [13] Election Decision Support System Public health center

best use Simple Additive Weighting (SAW) and Weighted Product (WP) [9] methods, then Decision Support System research for Recruitment Employee Using El Chinix Traduisant La Realite (Electre) and Weighted Product (WP) [14]. Studies about system supporters' decisions such as an election Decision Support System cottage boarding school in Purwokerto [15], Research Decision Support System selection scholarship education use simple additive weighting [16]method, Decision Support System (DSS) concept essential and its application & data mining[17]

3. METHOD

A. Data Collection Methods

In collecting data, this study applies three methods. First, the Interview method was conducted with the ask-to-one employee method from Warehouse Cosmetics Purwokerto straight away. The second method to study with observation is to do the observation direction of the research object and to do recording to moderate incidents conducted in research. The third method is studies References. The technique looks for references in journals or previously researched studies related to proper analysis.

B. Data analysis method

The data analysis method performed is analyzing calculations by applying the weighted product method to the destination so that the processed data could be applied to a company in the future.

C. Stages Study

The general research steps (18), seen in Figure 1, start from data collection, analysis, and processing, and finally, Research Results can be produced.

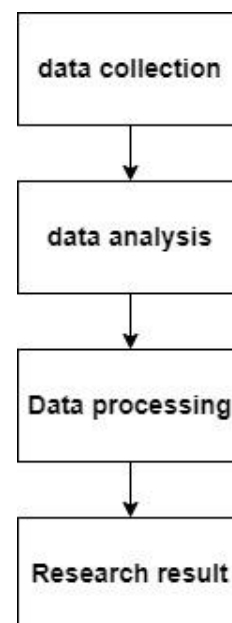


Figure 1. Research Stages

The description of each of these parameters is explained in the following description:

1. *Data Collection*

Data collection was carried out using techniques such as interviews as well as in the form of questions to collect factual data about needs and choices.

2. *Data analysis*

In research, this data analysis is carried out activities to collect the required data for completing all ingredient study with through interviews, observation, and studies library.

3. *Data Processing*

At this stage, the stages of processing the results of the data study become new information that can be used in the conclusions of the data that have been obtained, and then it will be calculated using an algorithm-weighted product for more accurate calculations. The data used in this research is from interview results, so sufficient data can be examined.

4. *Research Result*

The research results referred to in this study using the Weighted Product Method in the case study of Employee Bonuses at the Cosmetics Warehouse. The analysis results are from data represented in tables and graphs.

Furthermore, table 1 is the Assessment Criteria which consists of several parameters that are calculated based on weight; based on the highest importance, Cooperation occupies the first position, followed by Parameter Attendance.

Table 1 Assessment Criteria

Criteria Study	Weight
Attendance	4
Professionality	3
Cooperation	5
Not quite enough answer	3
Manners	3
Appearance	2

4. RESULT AND DISCUSSION

Steps taken in a study this uses the Weighted product method Application is repair weight, especially formerly so earned rank _ from the sum of W divided by each value from criteria already determined, and the results are:

$$W_1 = \frac{4}{4+3+5+3+3+2} = 0.2$$

$$W_2 = \frac{3}{4+3+5+3+3+2} = 0.12$$

$$W_3 = \frac{5}{4+3+5+3+3+2} = 0.25$$

$$W_4 = \frac{3}{4+3+5+3+3+2} = 0.15$$

$$W_5 = \frac{3}{4+3+5+3+3+2} = 0.15$$

$$W_6 = \frac{2}{4+3+5+3+3+2} = 0.1$$

$$\sum w = 0.2 + 0.12 + 0.25 + 0.15 + 0.15 + 0.1 = 0.97$$

Table 2. Criterion value repair weight

Criteria name	Weight	Repair Weight
Attendance	4	0.2
Professionality	3	0.15
Cooperation	5	0.25
Not quite enough answer	3	0.15
Manners	3	0.15
Appearance	2	0.1

Information about parameters:

1) *Attendance*

Attendance criteria with a weight value of 4 and the results of the improved weight of 0.2

2) *Professionality*

Professionalism criteria with a weight value of 3 and the result of improving the weight are 0.15

3) *Cooperation*

Cooperation criteria with a weight value of 5 and the results of the improvement in the weight of 0.25

4) *Responsibility*

Responsibility criteria with a weight value of 3 and the results of the weight improvement are 0.15

5) *Manners*

The etiquette criteria with a weight value of 3 and the results of the weight improvement are 0.15

6) *Appearance*

Appearance criteria with a weight value of 2 and the result of improving the weight of 0.1

Moreover, in Giving weight Alternative Under, this writer explains gift weight to every employee for each criterion:

Table 2. Repair weight alternative

Employee Name	AT	PR	CO	NT	MA	AP
Silvi	85	70	65	75	80	75
Gio	80	75	70	75	80	75
Indri	80	80	70	85	80	85
Great	70	80	65	80	75	80
Risda	75	70	80	85	80	80
Princess	90	75	75	70	85	75
Lita	85	65	75	70	85	70
Mila	70	70	80	65	80	75
Come on	75	75	80	80	85	80
Jihan	80	75	75	80	85	85

Furthermore, the Next step is to calculate the vector S; the data will be multiplied, but previously conducted rank especially formerly as follows:

1. Silvi = $(85^{0.2}) (70^{0.15}) (65^{0.25}) (75^{0.15}) (80^{0.15}) (75^{0.1})$
 $= 2.43 \times 1.65 \times 2.83 \times 1.90 \times 1.93 \times 1.54$
 $= 64.078$
2. Gio = $(80^{0.2}) (75^{0.15}) (70^{0.25}) (75^{0.15}) (80^{0.15}) (75^{0.1})$
 $= 2.40 \times 1.68 \times 2.94 \times 1.90 \times 1.93 \times 1.54$
 $= 66.942$
3. Indri = $(80^{0.2}) (80^{0.15}) (70^{0.25}) (85^{0.15}) (80^{0.15}) (85^{0.1})$
 $= 2.40 \times 1.69 \times 2.94 \times 1.95 \times 1.93 \times 1.56$
 $= 70.010$
4. Supreme = $(70^{0.2}) (80^{0.15}) (65^{0.25}) (80^{0.15}) (75^{0.15}) (80^{0.1})$
 $= 2.33 \times 1.69 \times 2.83 \times 1.93 \times 1.91 \times 1.55$
 $= 63.672$
5. Risda = $(75^{0.2}) (70^{0.15}) (80^{0.25}) (85^{0.15}) (80^{0.15}) (80^{0.1})$
 $= 2.37 \times 1.66 \times 2.99 \times 1.95 \times 1.93 \times 1.55$
 $= 63.672$

6. Daughter = $(90^{0.2}) (75^{0.15}) (75^{0.25}) (70^{0.15}) (85^{0.15}) (75^{0.1})$
 $= 2.46 \times 1.68 \times 2.94 \times 1.90 \times 1.93 \times 1.54$
 $= 68.616$
7. Lita = $(85^{0.2}) (65^{0.15}) (75^{0.25}) (70^{0.15}) (85^{0.15}) (70^{0.1})$
 $= 2.43 \times 1.65 \times 2.94 \times 1.90 \times 1.95 \times 1.52$
 $= 66,385$
8. Milla = $(70^{0.2}) (70^{0.15}) (80^{0.25}) (65^{0.15}) (80^{0.15}) (75^{0.1})$
 $= 2.33 \times 1.66 \times 2.99 \times 1.87 \times 1.93 \times 1.54$
 $= 66,385$
9. Ayu = $(75^{0.2}) (75^{0.15}) (80^{0.25}) (80^{0.15}) (85^{0.15}) (80^{0.1})$
 $= 2.37 \times 1.68 \times 2.99 \times 1.93 \times 1.93 \times 1.55$
 $= 66,385$
10. Jihan = $(80^{0.2}) (75^{0.15}) (75^{0.25}) (80^{0.15}) (85^{0.15}) (85^{0.1})$
 $= 2.40 \times 1.68 \times 2.94 \times 1.93 \times 1.95 \times 1.56$
 $= 66,385$

After the vector value gets so, sum up the entire vector S to calculate the vector V. The calculation is as follows: $V_i = 64,078 + 66,942 + 70,010 + 63,672 + 63,672 + 68,616 + 66,385 + 66,385 + 66,385 + 66,385 + 66,385$

$V_i = 662.53$

Table 3. Vector Calculation

No	Name	Calculation result
1	Silvi $= \frac{64,078}{662,53}$	0.0967171289
2	Gio $= \frac{64,078}{662,53}$	0.101039953
3	Indri $= \frac{64,078}{662,53}$	0.105670687
4	Great $= \frac{64,078}{662,53}$	0.096043274
5	Risda $= \frac{64,078}{662,53}$	0.096043274
6	Princess $= \frac{64,078}{662,53}$	0.103566631
7	Lita $= \frac{64,078}{662,53}$	0.100199236
8	Mila $= \frac{64,078}{662,53}$	0.100199236
9	Ayu $= \frac{64,078}{662,53}$	0.100199236
10	Jihan $= \frac{64,078}{662,53}$	0.100199236

An employee (*Silvi*) gets the final grade result score of 0.0967171289. An employee (*Gio*) gets the final grade result score of 0.101039953. An employee (*Indri*) gets the final grade score of 0.105670687. Employees (*Agung*) get the final value result score of 0.0961043274. An employee (*Risda*) gets the final grade score of 0.0961043274. Employees (*Putri*) get the final value result score of 0.103566631. An employee (*Lita*) gets the final grade 0.100199236. An employee (*Mila*) gets the final grade 0.100199236. An employee (*Ayu*) gets the final score of 0.100199236. And finally, the employee (*Jihan*) gets the final score of 0.100199236.

5. CONCLUSIONS

From the calculation results using this algorithm, the company could determine clearly and in detail about the employee bonus with the current criteria. With score preference obtained by an employee named Indri with value = 0.105670687. Princess received a 2nd preference score with a value = 0.103566631, and for the third order, obtained by Gio with a value = 0.1101039953. See from the results of this calculation using the Weighted Product method makes it easy for companies to determine whether eligible employees get a bonus precisely and accurately.

Based on the results and conclusions about the implementation of the weighted product method, the suggestions that can be given to increase the quality are for the next developer to make an application system support decision to calculate what could be done automatically and precisely.

AUTHOR CONTRIBUTIONS

Conceptualization; Laela Jati Satriani [L.J.S], Hendita Ayu Wulandari [H.A.W], Pujana Nisya Arifa [P.N.A], Imam Tahyudin [I.T], methodology; [L.J.S],[H.A.W],[P.N.A],[I.T], validation; [L.J.S],[H.A.W],[P.N.A],[I.T], formal analysis; [L.J.S],[H.A.W],[P.N.A],[I.T], investigation; [L.J.S],[H.A.W],[P.N.A],[I.T], data curation; writing—original draft preparation; [L.J.S],[H.A.W],[P.N.A],[I.T], writing—review and editing; [L.J.S],[H.A.W],[P.N.A],[I.T] visualization; supervision; [L.J.S],[H.A.W],[P.N.A],[I.T] project administration; [L.J.S],[H.A.W],[P.N.A],[I.T] funding acquisition; [L.J.S],[H.A.W],[P.N.A],[I.T] have read and agreed to the published version of the manuscript.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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