Decision Support System for Determination of Decoration Service Employee Using Weighted Product Method (Case Study on Sanggar Puri Ethnic Decoration)

H Gunawan¹, MARamdhani¹, C Chazar² and Y WArthana²

¹Information Systems Study Program, STMIK IM, Jakarta 79, Bandung, West Java, Indonesian
²Informatics Study Program, STMIK IM, Jakarta 79, Bandung, West Java, Indonesian

*hendra@stmik-im.ac.id

Abstract. The amount of expertise needed to complete a decoration services project makes the leaders of the Puri Ethnic Decoration studio often have difficulty in making decisions to determine employees in accordance with the criteria of the project to be worked on. The method used in making the decision to determine the decoration service employee uses the Weighted Product (WP) method in the form of a Weighted Product (WP) calculation based on the amount of quota available in each project. The results of this study are in the form of a decision support system application that employee alternative solutions will be involved in the decoration service project.

1. Introduction

Employees are one of the important resources for every company. In running its business and achieving its goals, the company's success is largely determined by the quality of the employees in it. To get qualified employees and meet the required qualifications, companies must make a selection in determining the quality employees in accordance with the project will be implemented. Define recruitment as a process of gathering prospective holders of positions in accordance with the human resource plan to occupy a certain position [1]. "The recruitment is the development of a pool of job candidates in accordance with a human resource plan" [1]. The purpose of recruitment is to get as many prospective employees as possible so as to enable the management (recruiter) to select or select candidates according to the qualifications required by the company. The more candidates that are collected, the better it is because the possibility of getting the best candidate will be even greater.

Sanggar Puri Ethnic Decoration is a home industry scale company that was established in October 1984 and is engaged in wedding party decoration services and Javanese customs. With so much competition in the field of decoration services, especially in the city of Bandung, it is fitting that the Sanggar Puri Ethnic Decoration must be able to maintain the quality of decoration services optimally and be able to meet the interests of its customers, in order to fulfill this, the Puri Ethnic Decoration Studio must make a selection or sorting in determining the qualifications that meet the qualifications in accordance with the projects that will be carried out with several assessments including the ability to arrange interest, the ability to arrange mushrooms, logistics capabilities, flexibility, tidiness, speed, and other capabilities that support the work of decoration services.
In determining the order of employees who meet the qualifications, subjectivity often arises from
decision makers. To avoid this, the determination of employees in accordance with the project to be
implemented can be done using a model that can determine the ability of employees in accordance
with the criteria set by the company. One method that can be used is the Weighted Product (WP)
method. Weighted Product (WP) is one of the settlement methods offered to solve the Multi Attribute
Decision Making (MADM) problem.
The WP method has been successfully applied by several previous researchers such as the selection
of flat screen televisions [2], for the diagnosis of pneumonia [3], and the choice of residential houses
[4]. WP method is a method for decision making based on the magnitude of the preference value
calculated based on the value of the variable used which is raised by its weight. The greater the value
of the presence of an alternative solution, the alternative the solution is increasingly preferred. The
amount of the preference value is calculated by equation 1 as follows:$S_i = \prod_{j=1}^{n} w_j x_{ij}^w$ where $S_i$ is the i-
th alternative preference value, $i = 1, 2, 3, ... m$ is an alternative index of available solutions, $j = 1, 2, 3,$
... $n$ is the index of factors considered in the process of making decision or choice of alternative
solutions, $w$ is the weight for each factor used in the decision making process, $ij X$ is the value of the
alternative variable i-th solution for the jth variable. In the process of calculating the value of
preference, $w$ will be positive if the factor is a profit attribute but will be negative if it is a cost
attribute. Before use, the weight value must be normalized first so that $\sum w_j = 1$ by using equation 2 as
follows: $W_j = \frac{W_j}{\sum W_j}$. The final score of each alternative solution is then calculated as a normalized
value using equation 3 as follows:$V_j = \frac{S_j}{\sum S_i}$. With this $V$ is the final score of each alternative solution,
the higher the score the more preferred or the most optimal solution.
The purpose of this study is to create an effective and objective assessment system in determining
the assessment of the determination of decoration service employees according to the needs of the
decoration services at Sanggar Puri Ethnic Decoration.

2. Research Methodology
The method used in determining the decision system is the Weighted Product (WP) method, which is
part of the Multi Criteria Decision Making (MCDM) concept, which is a decision-making technique
from several alternative choices. This method requires the normalization process in its calculations [5],
and the method of system development using Waterfall, which is one of the methods in the Software
Development Life Cycle (SDLC) which has a characteristic characteristic of work that every phase in
the waterfall must be completed first before proceeding to the next phase. This means that the focus
on each phase can be done maximally because there is rarely a parallel work even though parallelism
can occur in the waterfall [6].

2.1. Determination of Criteria Aspects
In the calculation of the determination of decoration service employees in the Sanggar Puri Ethnic
Decoration company, there are several aspects of the assessment criteria that have been determined
based on the needs of the project to be worked on, which if grouped as follows:

| Arranging flowers | Information | Value Weight |
|-------------------|-------------|--------------|
| ≥ 90              | Very Well   | 95           |
| 80 - 89           | Well        | 85           |
| 70 - 79           | Enough      | 75           |
| 60 - 69           | Less        | 65           |
| ≤ 59              | Very little | 55           |
2. The ability to compose vegetables, aspects of abilities and skills possessed by employees in terms of the art of arranging vegetables. Here is a table that shows the weight of the assessment for the ability to compose vegetables.

| Arranging Janur Information | Value Weight |
|-----------------------------|--------------|
| ≥ 90                        | Very Well    |
| 80 - 89                     | Well         |
| 70 - 79                     | Enough       |
| 60 - 69                     | Less         |
| ≤ 59                        | Very little  |

3. Logistics capabilities, aspects of abilities and skills possessed by employees in terms of logistics. Here is a table that shows the weight of the assessment for logistics capabilities.

| Logistics Information | Value Weight |
|------------------------|--------------|
| ≥ 90                   | Very Well    |
| 80 - 89                | Well         |
| 70 - 79                | Enough       |
| 60 - 69                | Less         |
| ≤ 59                   | Very little  |

4. Flexibility, aspects of the capacity of employees to carry out various tasks in a job. The following table shows the assessment for flexibility.

| Flexibility Information | Value Weight |
|-------------------------|--------------|
| ≥ 90                    | Very Well    |
| 80 - 89                 | Well         |
| 70 - 79                 | Enough       |
| 60 - 69                 | Less         |
| ≤ 59                    | Very little  |

5. Neatness, aspects of the capacity of employees in terms of providing neat results in a job. The following table shows the rating for neatness.

| Neatness Information | Value Weight |
|----------------------|--------------|
| ≥ 90                 | Very Well    |
| 80 - 89              | Well         |
| 70 - 79              | Enough       |
| 60 - 69              | Less         |
| ≤ 59                 | Very little  |

6. Speed, aspects of the capacity owned by employees in terms of completing a job quickly. The following table shows the rating for speed.
Table 6. Weight Criteria Speed

| Speed | Information | Value Weight |
|-------|-------------|--------------|
| ≥ 90  | Very Well   | 95           |
| 80 - 89 | Well       | 85           |
| 70 - 79 | Enough     | 75           |
| 60 - 69 | Less       | 65           |
| ≤ 59  | Very little | 55           |

7. Communication, aspects of employee capacity in terms of communication such as cooperation, coordination, and grammar used in completing a job. The following table shows the assessment for communication.

Table 7. Weight of Communication Criteria

| Communication | Information | Value Weight |
|---------------|-------------|--------------|
| ≥ 90          | Very Well   | 95           |
| 80 - 89       | Well        | 85           |
| 70 - 79       | Enough      | 75           |
| 60 - 69       | Less        | 65           |
| ≤ 59          | Very little | 55           |

8. Responsibility, aspects of capacity owned by employees in matters relating to the completion and submission of work in a state of perfect and complete. The following table shows the assessment for responsibility.

Table 8. Weighting Criteria for Responsibility

| Responsible | Information | Value Weight |
|-------------|-------------|--------------|
| ≥ 90        | Very Well   | 95           |
| 80 - 89     | Well        | 85           |
| 70 - 79     | Enough      | 75           |
| 60 - 69     | Less        | 65           |
| ≤ 59        | Very little | 55           |

9. Discipline, aspects of employee attitudes and behavior that show compliance with company regulations. Here is a table that shows the assessment for discipline.

Table 9. Weighting Disciplinary Criteria

| Discipline | Information | Value Weight |
|------------|-------------|--------------|
| ≥ 90       | Very Well   | 95           |
| 80 - 89    | Well        | 85           |
| 70 - 79    | Enough      | 75           |
| 60 - 69    | Less        | 65           |
| ≤ 59       | Very little | 55           |

10. Creativity, aspects of employee capacity in terms of expressing ideas and thoughts to create something new at work. The following table shows the assessment for creativity.

Table 10. Creativity Weight Criteria

| Arranging flowers | Information | Value Weight |
|-------------------|-------------|--------------|
| ≥ 90              | Very Well   | 95           |
| 80 - 89           | Well        | 85           |
2.2. Context Diagram

Context diagram is a diagram that outlines the data flow in outline. The context diagram of the decision support system for determining service decoration employees can be seen in Figure 1.

Figure 1 above shows that the decision support system for determining service decoration employees interacts with 3 external entities, namely the leader, assistant leader, and the system admin. The assistant leader enters data in the form of employee data and project data, while the project criteria come from the leader as a reference in determining the decoration service employees. The Chairperson obtained a decree on determining employees (SKPP) as a result of the calculation of the weighted product method. While the system admin has the role of entering user data to give access rights to each user.

3. Results and Discussion

3.1. Weighted Product Implementation

Weighted Product Implementation for 10 employees with the following criteria:

Step (1) : Determine alternatives (employees) and criteria.

In the Weighted Product method there are weights and criteria needed to determine employees in accordance with the project that will be done by Sanggar Puri Ethnic Decoration. The criteria are:

| Criteria | Information      | Symbol | Criteria | Information |
|----------|------------------|--------|----------|-------------|
| X1       | Arranging flowers|        | X6       | Speed       |
| X2       | Arranging janur  |        | X7       | Communication|
| X3       | Logistics        |        | X8       | Responsible |
| X4       | Flexibility      |        | X9       | Discipline  |
| X5       | Neatness         |        | X10      | Creativity  |
Table 12. Alternative Data and Value of Employee Criteria

| Employee | X1  | X2  | X3  | X4  | X5  | X6  | X7  | X8  | X9  | X10 |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| A1       | 95  | 75  | 65  | 80  | 95  | 95  | 80  | 80  | 65  | 65  |
| A2       | 95  | 75  | 65  | 80  | 95  | 95  | 80  | 80  | 55  | 65  |
| A3       | 85  | 95  | 65  | 95  | 65  | 80  | 65  | 80  | 65  | 95  |
| A4       | 85  | 95  | 95  | 65  | 85  | 80  | 95  | 80  | 95  | 65  |
| A5       | 75  | 75  | 80  | 65  | 65  | 95  | 95  | 95  | 65  | 80  |
| A6       | 85  | 95  | 65  | 80  | 95  | 95  | 80  | 65  | 80  | 65  |
| A7       | 95  | 95  | 80  | 65  | 95  | 80  | 80  | 95  | 65  | 95  |
| A8       | 65  | 85  | 95  | 80  | 95  | 80  | 80  | 65  | 80  | 95  |
| A9       | 95  | 95  | 95  | 95  | 80  | 80  | 80  | 95  | 85  | 95  |
| A10      | 85  | 65  | 65  | 95  | 80  | 65  | 95  | 95  | 80  | 80  |

The level of importance that will be weighted in each criterion is as follows:

Table 13. Importance of Weight

| Weight | Information      |
|--------|------------------|
| X ≥ 90 | Very Well        |
| 80 ≤ X ≤ 89 | Well            |
| 70 ≤ X ≤ 79 | Enough           |
| 60 ≤ X ≤ 69 | Less             |
| X ≤ 59  | Very little      |

Step (2) : Determine the preference weights (W) on each criterion.
Then the decision maker gives preference weight or initial weight for each criteria as follows:

Table 14. Weight Preferences

| W   | X1  | X2  | X3  | X4  | X5  | X6  | X7  | X8  | X9  | X10 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| W   | 95  | 75  | 95  | 65  | 65  | 65  | 85  | 95  | 85  | 85  |
| ∑W  | 810 |

Step (3) : Repairing weights or normalizing weights.
Furthermore, weights are improved first so that ∑W = 1, the rank obtained from ∑W divided by each value of the criteria that have been determined by the formula: \( W_j = \frac{w_j}{\sum w_j} \) is W index to j.

\[
W_1 = \frac{95}{\frac{95 + 75 + 95 + 65 + 65 + 65 + 85 + 95 + 85 + 85}{75}} = \frac{95}{810} = 0.12
\]

\[
W_2 = \frac{95}{\frac{95 + 75 + 95 + 65 + 65 + 65 + 85 + 95 + 85 + 85}{95}} = \frac{95}{810} = 0.09
\]

\[
W_3 = \frac{95}{\frac{95 + 75 + 95 + 65 + 65 + 65 + 85 + 95 + 85 + 85}{65}} = \frac{95}{810} = 0.12
\]

\[
W_4 = \frac{95}{\frac{95 + 75 + 95 + 65 + 65 + 65 + 85 + 95 + 85 + 85}{65}} = \frac{95}{810} = 0.08
\]

\[
W_5 = \frac{95}{\frac{95 + 75 + 95 + 65 + 65 + 65 + 85 + 95 + 85 + 85}{65}} = \frac{95}{810} = 0.08
\]

\[
W_6 = \frac{95}{\frac{95 + 75 + 95 + 65 + 65 + 65 + 85 + 95 + 85 + 85}{65}} = \frac{95}{810} = 0.08
\]
Step (5) : Calculate vector (V) for ranking.

After weighting the next step, the vector (S) value is calculated.

\[
\begin{align*}
W_7 &= \frac{85}{95 + 75 + 95 + 65 + 65 + 65 + 95 + 85 + 85} = \frac{85}{810} = 0.10 \\
W_8 &= \frac{85}{95 + 75 + 95 + 65 + 65 + 65 + 85 + 95 + 85} = \frac{810}{85} = 0.12 \\
W_9 &= \frac{85}{95 + 75 + 95 + 65 + 65 + 65 + 85 + 95 + 85} = \frac{810}{85} = 0.10 \\
W_{10} &= \frac{85}{95 + 75 + 95 + 65 + 65 + 65 + 85 + 95 + 85} = \frac{810}{85} = 0.10 \\
\sum W &= 0.12 + 0.09 + 0.12 + 0.08 + 0.08 + 0.08 + 0.10 + 0.12 + 0.10 + 0.10 = 1
\end{align*}
\]

### Table 15. Weight Improvement

| Criteria | W1 | W2 | W3 | W4 | W5 | W6 | W7 | W8 | W9 | W10 |
|----------|----|----|----|----|----|----|----|----|----|------|
| \((X1/\Sigma W)\) | \((X2/\Sigma W)\) | \((X3/\Sigma W)\) | \((X4/\Sigma W)\) | \((X5/\Sigma W)\) | \((X6/\Sigma W)\) | \((X7/\Sigma W)\) | \((X8/\Sigma W)\) | \((X9/\Sigma W)\) | \((X10/\Sigma W)\) |
| New weight | 0.12 | 0.09 | 0.12 | 0.08 | 0.08 | 0.08 | 0.10 | 0.12 | 0.10 | 0.10 |
| \(\sum W\) | 1.00 |

Step (4): Calculate vector (S).

After weighting the next step, the vector (S) value is calculated.

\[
\begin{align*}
S_1 &= (95^{0.12})(75^{0.09})(65^{0.12})(80^{0.08})(95^{0.08})(75^{0.08})(80^{0.10})(65^{0.10})(65^{0.10}) = 78,10 \\
S_2 &= (95^{0.12})(75^{0.09})(65^{0.12})(80^{0.08})(95^{0.08})(75^{0.08})(80^{0.10})(65^{0.10})(95^{0.10}) = 79,15 \\
S_3 &= (85^{0.12})(95^{0.09})(65^{0.12})(80^{0.08})(95^{0.08})(75^{0.08})(80^{0.10})(55^{0.12})(80^{0.10})(65^{0.10}) = 73,55 \\
S_4 &= (85^{0.12})(85^{0.09})(80^{0.12})(85^{0.08})(80^{0.08})(95^{0.10})(80^{0.12})(95^{0.10})(65^{0.10}) = 80,78 \\
S_5 &= (75^{0.12})(75^{0.09})(80^{0.12})(65^{0.08})(65^{0.08})(95^{0.08})(80^{0.10})(80^{0.10})(80^{0.10}) = 76,21 \\
S_6 &= (85^{0.12})(65^{0.09})(95^{0.12})(95^{0.08})(95^{0.08})(95^{0.08})(95^{0.10})(65^{0.12})(80^{0.10})(80^{0.10}) = 80,37 \\
S_7 &= (95^{0.12})(75^{0.09})(65^{0.12})(95^{0.08})(95^{0.08})(80^{0.08})(80^{0.10})(65^{0.12})(95^{0.10})(95^{0.10}) = 82,23 \\
S_8 &= (65^{0.12})(95^{0.09})(80^{0.12})(95^{0.08})(80^{0.08})(80^{0.08})(80^{0.10})(65^{0.12})(65^{0.12})(65^{0.10}) = 73,99 \\
S_9 &= (75^{0.12})(85^{0.09})(95^{0.12})(80^{0.08})(65^{0.08})(80^{0.08})(95^{0.10})(95^{0.12})(65^{0.10})(65^{0.10}) = 79,81 \\
S_{10} &= (85^{0.12})(65^{0.09})(95^{0.12})(65^{0.08})(65^{0.08})(65^{0.08})(95^{0.10})(95^{0.12})(80^{0.10})(80^{0.10}) = 80,97 \\
\end{align*}
\]

### Table 16. Results of Calculation of S Vector in Each Alternative

| Alternative | Criteria |
|-------------|-----------|
| A1          | X1 95    |
|             | X2 75    |
|             | X3 65    |
|             | X4 80    |
|             | X5 95    |
|             | X6 80    |
|             | X7 95    |
|             | X8 80    |
|             | X9 65    |
|             | X10 65   |
| Vector S    | 78,10    |
| A2          | X1 95    |
|             | X2 75    |
|             | X3 65    |
|             | X4 80    |
|             | X5 95    |
|             | X6 80    |
|             | X7 95    |
|             | X8 80    |
|             | X9 65    |
|             | X10 65   |
| Vector S    | 79,15    |
| A3          | X1 85    |
|             | X2 95    |
|             | X3 65    |
|             | X4 80    |
|             | X5 95    |
|             | X6 80    |
|             | X7 95    |
|             | X8 80    |
|             | X9 65    |
|             | X10 65   |
| Vector S    | 73,55    |
| A4          | X1 85    |
|             | X2 85    |
|             | X3 80    |
|             | X4 65    |
|             | X5 80    |
|             | X6 95    |
|             | X7 80    |
|             | X8 95    |
|             | X9 65    |
|             | X10 65   |
| Vector S    | 80,78    |
| A5          | X1 75    |
|             | X2 75    |
|             | X3 80    |
|             | X4 65    |
|             | X5 95    |
|             | X6 80    |
|             | X7 80    |
|             | X8 95    |
|             | X9 85    |
|             | X10 65   |
| Vector S    | 76,21    |
| A6          | X1 85    |
|             | X2 65    |
|             | X3 95    |
|             | X4 95    |
|             | X5 65    |
|             | X6 80    |
|             | X7 80    |
|             | X8 95    |
|             | X9 65    |
|             | X10 65   |
| Vector S    | 80,37    |
| A7          | X1 95    |
|             | X2 75    |
|             | X3 65    |
|             | X4 95    |
|             | X5 80    |
|             | X6 80    |
|             | X7 95    |
|             | X8 80    |
|             | X9 95    |
|             | X10 80   |
| Vector S    | 82,23    |
| A8          | X1 65    |
|             | X2 95    |
|             | X3 80    |
|             | X4 65    |
|             | X5 80    |
|             | X6 80    |
|             | X7 85    |
|             | X8 95    |
|             | X9 65    |
|             | X10 65   |
| Vector S    | 73,99    |
| A9          | X1 75    |
|             | X2 85    |
|             | X3 65    |
|             | X4 95    |
|             | X5 95    |
|             | X6 65    |
|             | X7 80    |
|             | X8 80    |
|             | X9 65    |
|             | X10 65   |
| Vector S    | 79,81    |
| A10         | X1 85    |
|             | X2 65    |
|             | X3 95    |
|             | X4 65    |
|             | X5 80    |
|             | X6 95    |
|             | X7 80    |
|             | X8 95    |
|             | X9 80    |
|             | X10 80   |
| Vector S    | 80,97    |

\[
\sum \text{Vector } S = 785,16
\]

Step (5) : Calculate vector (V) for ranking.
After getting the value of Vector (S) the next step is determining the value of Vector (V), which is used for ranking.

$$V_1 = \frac{78,10 + 79,15 + 73,55 + 80,78 + 76,21 + 80,37 + 82,23 + 73,99 + 79,81 + 80,97}{78,10 + 79,15 + 73,55 + 80,78 + 76,21 + 80,37 + 82,23 + 73,99 + 79,81 + 80,97} = 0.099$$

$$V_2 = \frac{79,15}{78,10 + 79,15 + 73,55 + 80,78 + 76,21 + 80,37 + 82,23 + 73,99 + 79,81 + 80,97} = 0.101$$

$$V_3 = \frac{73,55}{78,10 + 79,15 + 73,55 + 80,78 + 76,21 + 80,37 + 82,23 + 73,99 + 79,81 + 80,97} = 0.094$$

$$V_4 = \frac{80,78}{78,10 + 79,15 + 73,55 + 80,78 + 76,21 + 80,37 + 82,23 + 73,99 + 79,81 + 80,97} = 0.103$$

$$V_5 = \frac{76,21}{78,10 + 79,15 + 73,55 + 80,78 + 76,21 + 80,37 + 82,23 + 73,99 + 79,81 + 80,97} = 0.097$$

$$V_6 = \frac{80,37}{78,10 + 79,15 + 73,55 + 80,78 + 76,21 + 80,37 + 82,23 + 73,99 + 79,81 + 80,97} = 0.102$$

$$V_7 = \frac{82,23}{78,10 + 79,15 + 73,55 + 80,78 + 76,21 + 80,37 + 82,23 + 73,99 + 79,81 + 80,97} = 0.105$$

$$V_8 = \frac{73,99}{78,10 + 79,15 + 73,55 + 80,78 + 76,21 + 80,37 + 82,23 + 73,99 + 79,81 + 80,97} = 0.094$$

$$V_9 = \frac{79,81}{78,10 + 79,15 + 73,55 + 80,78 + 76,21 + 80,37 + 82,23 + 73,99 + 79,81 + 80,97} = 0.102$$

$$V_{10} = \frac{80,97}{78,10 + 79,15 + 73,55 + 80,78 + 76,21 + 80,37 + 82,23 + 73,99 + 79,81 + 80,97} = 0.103$$

| No | X1 | X2 | X3 | X4 | X5 | X6 | X7 | X8 | X9 | X10 | Vector S | Vector V |
|----|----|----|----|----|----|----|----|----|----|----|---------|----------|
| A1 | 95 | 75 | 65 | 80 | 95 | 95 | 95 | 80 | 80 | 65 | 78,10   | 0.099    |
| A2 | 95 | 75 | 65 | 80 | 95 | 95 | 95 | 65 | 80 | 95 | 79,15   | 0.101    |
| A3 | 85 | 95 | 65 | 65 | 80 | 80 | 95 | 80 | 95 | 65 | 80,78   | 0.103    |
| A4 | 85 | 85 | 80 | 65 | 80 | 80 | 80 | 95 | 95 | 65 | 76,21   | 0.097    |
| A5 | 75 | 75 | 80 | 65 | 65 | 95 | 65 | 95 | 65 | 80 | 79,81   | 0.102    |
| A6 | 85 | 65 | 95 | 95 | 95 | 65 | 80 | 80 | 65 | 95 | 80,97   | 0.103    |
| A7 | 105| 105| 80 | 65 | 80 | 65 | 65 | 80 | 80 | 95 | 82,23   | 0.105    |
| A8 | 75 | 95 | 80 | 95 | 80 | 65 | 65 | 80 | 65 | 65 | 80,78   | 0.103    |
| A9 | 75 | 85 | 95 | 95 | 65 | 95 | 65 | 80 | 80 | 65 | 79,81   | 0.102    |
| A10| 85 | 65 | 95 | 65 | 65 | 80 | 95 | 95 | 65 | 80 | 80,97   | 0.103    |

$$\sum \text{Vector S} = 785.16$$

Step (6) : Ranking process.
The final step is the ranking process. So the calculation results above produce a rating for determining service decoration employees from the highest value to the lowest value. Where the highest value from
the top will be used as the determination of decoration service employees at Sanggar Puri Ethnic Decoration according to the needs of the project and the amount of available quota.

| Alternative | Result |
|-------------|--------|
| A7          | 0,105  |
| A4          | 0,103  |
| A10         | 0,103  |
| A6          | 0,102  |
| A9          | 0,102  |

3.2. System Implementation

In Figure 2 below it explains the project id_projects, the project quota and the criteria needed for a decoration project.

Figure 2. Display Quota and Select Criteria Input Page

In Figure 3 explains the input weights of preference criteria to determine the number of employees involved in the decoration project.
In Figure 4 explains the employee alternatives that can be involved in the decoration project based on the results of calculations using the weighted product method.

In Figure 5 explains the printout of employees who can be involved in the decoration project based on the results of calculations using the weighted product method.
3.3. Conclusion
1. This Decision Support System can assist leaders in making decisions to determine employees in accordance with the criteria needed in the execution of decoration projects.
2. This Decision Support System can process employee data and project schedule data to avoid mistakes in dividing employees with available projects in accordance with project criteria and quotas.
3. This Decision Support System makes it possible to prevent mistakes in the placement of employees who do not fit the criteria in the projects that will run.

References
[1] A.F.Stoner James, DKK, 1996, Manajemen, Edisi Indonesia, Penerbit PT. Prenhallindo, Jakarta
[2] W Y Ningrum, Decision Support System for Recommending Flat Screen TVs Using the Weighted Product (WP) Method, Thesis Informatics Engineering Study Program Satya Wacana Christian University, 2012.
[3] M Syaukani and HKusnanto, Modeling of Group Decision Support Systems with Fuzzy Weighted Product Methods for Diagnosis of Pneumonia, Journal of Technology Volume 5 No. 1, pp. 17-23, 2012.
[4] H Supriyono and C P Sari, Choosing Residential Houses using the Weighted Product Method, Journal of Computer Science and Informatics Volume 1 No. 1, pp. 23-28, 2015.
[5] F Sari, in the Method of Decision Making, Ed.I, Yogyakarta: Deepublish, 2018. P.2-59.
[6] Yurindra, "Software Engineering Development Process Process Model," in Software Engineering, Ed.I, Yogyakarta: Deepublish, 2017, P.43-47.
[7] A R Saulina, B Nurhadiyono andY Rahayu. (2015,  May). Implementation of Weighted Product (WP) Method in the Decision Support System for Selecting Poor Rice Recipients (Raskin). Journal of Information Technology. [on line]. 14 (2). Pg.109-114. Available at: https://publikasi.dinus.ac.id/index.php/technoc/article/view/884/655 (10 April 2018).
[8] N Rohmah, D Remawati and Andriani. (2016, July). Application of Weighted Product (WP) Method for Accepting New Employees at PT. Surakarta Independent Library. Sinus Scientific Journal. [on line]. 14 (2). P.41-58. Available at: https://p3m.sinus.ac.id/jurnal/index.php/e-jurnal_SINUS/article/view/251 (April 10, 2018).
[9] N Fartindyyah and Subiyanto. (2014, Nov). Decision Support System for High School Specialization Decision Using Weighted Product (WP) Method. Journal of Education. [on line]. 44 (2), pp.139-145. Available at: https://journal.uny.ac.id/index.php/jk/article/view/5224/4529 (April 10, 2018).