

CHAPTER 7

CONCLUSION AND RECOMMENDATION

The conclusion and recommendation is generated as the end of the research to check if the research problem were answered and the objective was met along with the suggestion implied from this research.

7.1. Conclusion

Based on the analysis and observation conducted in developing the conceptual framework for improvement project in the basis of customer satisfaction on service industry, the conclusion is described below.

- a. The customer satisfaction is the basis for the improvement project on the service industry and it can be analyzed by observing and recording the number of events or complaints that related to customer dissatisfaction which then utilized to define the improvement project.
- b. There are many factors which can affect the customer satisfaction on the service industry, thus the number of possible improvement project in the organization tends to be more than one.
- c. In the project selection, Analytical Hierarchy Process (AHP) is chosen as the appropriate selection techniques to generate the priority of each alternative of improvement project which can represent the most suitable project to be implemented and managed first along with the sequence of alternatives.
- d. The project initiation is conducted after the improvement project selection conduct a deep insight toward the project which done in three steps. The steps on project initiation are developing the business case, defining the project and build the term of references.
- e. The project planning in for the selected improvement project is created based on the project definition stated on the project initiation. The project planning divided into five steps which are the project plan, resource plan, financial plan, quality plan and risk plan.
- f. The PERT method is chosen to evaluate the risk because of its ability to tolerate with the uncertainty of the project which is the risk with highest priority in the risk identification.

7.2. Recommendation

After conducting the research, the author has several recommendations which are:

- a. The research in the selection and management of improvement project in the small and medium enterprises is still limited. It is important for the future research to give various contributions in the selection and management of the improvement project for the SME so the SMEs as the main contributors in the development of the country can understand and familiar with the improvement to support the sustainability of their organization.
- b. The research in the improvement project on service industry with the customer satisfaction as the basis is still limited. It is recommended for the future research to contribute in the improvement project on service industry to present the various aspect that might lead to the customer satisfaction, thus the research will regenerate the common perception that the customer satisfaction always related to customer service while there are still many aspects on customer satisfaction besides the customer service.

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Appendix 1: Statement Letter

STATEMENT LETTER

The undersigned below:

Name : Lince
Position : Owner of Dragon Family Karaoke Makassar



Hereby declare for certain that:

Name : Rosalia Wihal
Student Number : 13 14 07448

Has conducted the research at Dragon Family Karaoke which addressed in JL Lanto Daeng Pasewang, No. 20, Mangkura, Makassar, Sulawesi Selatan. The research is carried out to support the thesis as a requirement to achieve the Bachelor's Degree of Industrial Engineering at International Class of Industrial Engineering Program, Faculty of Industrial Technology Universitas Atma Jaya Yogyakarta.

This statement is real and made as a supporting document of the final project.

Makassar, December 26th, 2016
Owner of Dragon Family Karaoke

( )

Appendix 2: Questionnaire

QUESTIONNAIRE

Weighting the Criteria and Alternatives for Improvement Project Selection in Dragon Family Karaoke

I. Introduction

This questionnaire is acquired from the result of the interview with the owner of Dragon Family Karaoke about the improvement project selection. Based on the interview, the criteria for the selection of improvement project are acquired. The purpose of this questionnaire is to obtain the eigen value of the comparison matrix between criteria and the alternatives of the improvement project selection in Dragon Family Karaoke.

II. Instructions

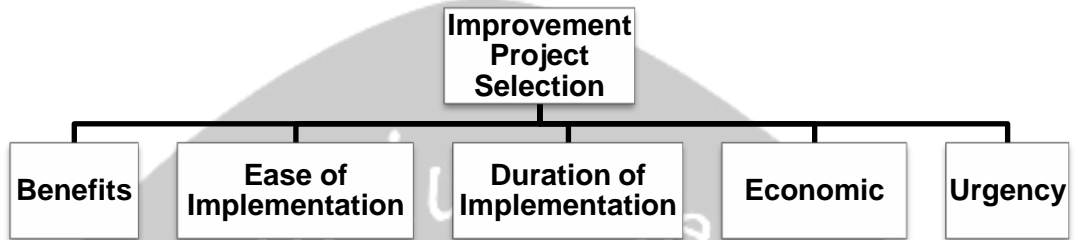
1. The questionnaire is filled by highlighting the box of the chosen number.
2. The judgment is performed by comparing the element on the left side with the element on the right side.
3. In the judgment, the scale is based on the evaluation scale which shown in the table 1.

Table 1. Evaluation Scale for Pairwise Comparison

Intensity of importance	Definition	Explanation
1	Equal importance	Two activities contribute equally to the objective
3	Moderate importance	Experience and judgement slightly favour activity over another
5	Strong Importance	Experience and judgement strongly favour activity over another
7	Very strong importance	An activity is favoured very strongly over another; its dominance demonstrated in practice
9	Extreme importance	The evidence favouring one activity over another is of the highest possible order of affirmation
2,4,6,8	For compromise between the above values	Sometimes one needs to interpolate a compromise judgement numerically because there is no good word to describe it
Reciprocals of above	If activity i has one of the above nonzero numbers assigned to it when compared with activity j , then j has the reciprocal value when compared with i	A comparison mandated by choosing the smaller element as the unit to estimate the larger one as a multiple of that unit
Rationals	Ratios arising from the scale	If consistency were to be forced by obtaining n numerical values to span the matrix
1.1–1.9	For tied activities	When elements are close and nearly indistinguishable; moderate is 1.3 and extreme is 1.9

III. Pairwise Comparison

1. Pairwise Comparison between criteria of improvement project selection in Dragon Family Karaoke.



Description :

CA : Benefits

CB : Ease of Implementation

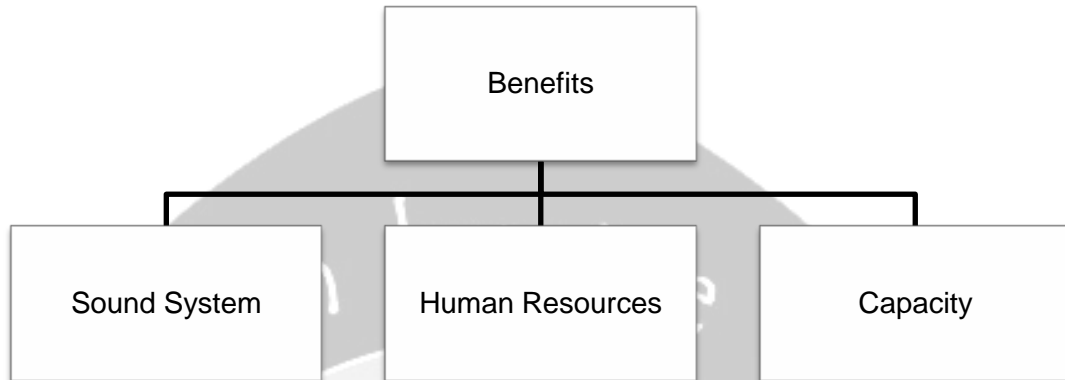
CC : Duration of Implementation

CD : Economic

CE : Urgency

CA	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	CB
CA	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	CC
CA	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	CD
CA	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	CE
CB	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	CC
CB	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	CD
CB	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	CE
CC	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	CD
CC	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	CE
CD	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	CE

2. Pairwise Comparison between alternatives of improvement project selection based on the benefits.

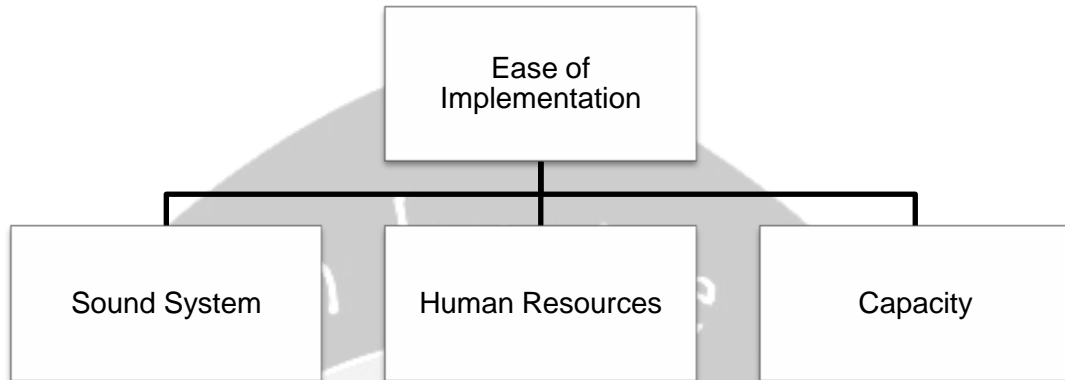


Description :

- AA : Sound System
 AB : Human Resource
 AC : Capacity

AA	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	AB
AA	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	AC
AB	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	AC

3. Pairwise Comparison between alternatives of improvement project selection based on the ease of implementation.

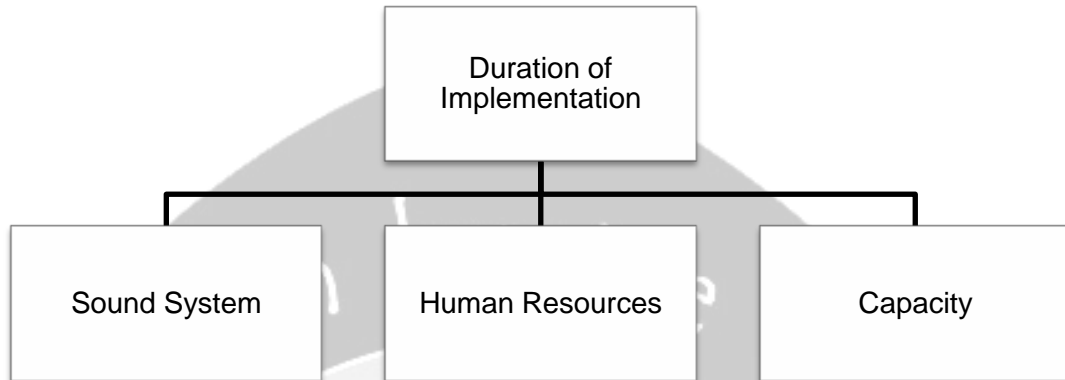


Description :

- AA : Sound System
 AB : Human Resource
 AC : Capacity

AA	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	AB
AA	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	AC
AB	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	AC

4. Pairwise Comparison between alternatives of improvement project selection based on the duration of implementation.

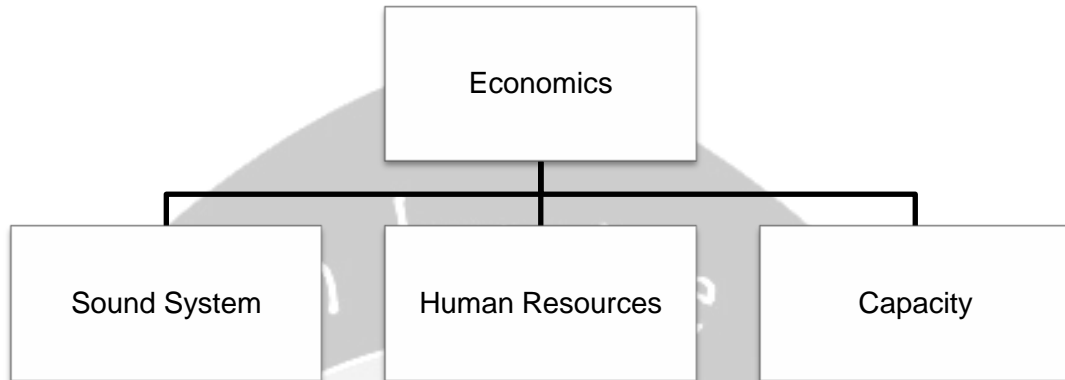


Description :

- AA : Sound System
- AB : Human Resource
- AC : Capacity

AA	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	AB
AA	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	AC
AB	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	AC

5. Pairwise Comparison between alternatives of improvement project selection based on the economics.

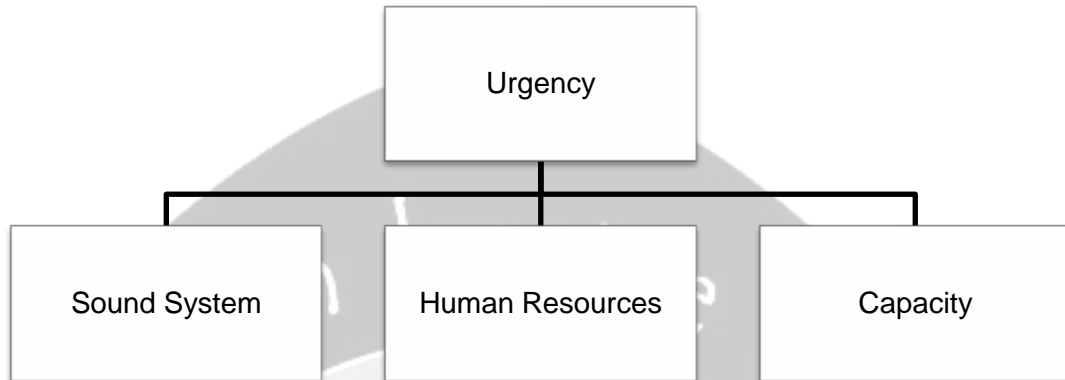


Description :

- AA : Sound System
 AB : Human Resource
 AC : Capacity

AA	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	AB
AA	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	AC
AB	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	AC

6. Pairwise Comparison between alternatives of improvement project selection based on the urgency.



Description :

- AA : Sound System
- AB : Human Resource
- AC : Capacity

AA	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	AB
AA	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	AC
AB	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	AC

Appendix 3: Sum of Pairwise Comparison

1. Criteria

Criteria	C1	C2	C3	C4	C5
C1	1.0000	5.0000	7.0000	9.0000	3.0000
C2	0.2000	1.0000	3.0000	5.0000	0.3333
C3	0.1429	0.3333	1.0000	3.0000	0.2000
C4	0.1111	0.2000	0.3333	1.0000	0.1429
C5	0.3333	3.0000	5.0000	7.0000	1.0000

TOTAL 1.7873 9.5333 16.3333 25.0000 4.6762

Decription :

C1: Benefits

C2: Ease of Implementation

C3: Duration of Implementation

C4: Economics

C5: Urgency

2. Benefits

Benefits	A1	A2	A3
A1	1.0000	5.0000	9.0000
A2	0.2000	1.0000	4.0000
A3	0.1111	0.2500	1.0000

TOTAL 1.3111 6.2500 14.0000

3. Ease of Implementation

Ease of Implementation	A1	A2	A3
A1	1.0000	0.1111	0.5000
A2	9.0000	1.0000	9.0000
A3	2.0000	0.1111	1.0000
TOTAL	12.0000	1.2222	10.5000

4. Duration of Implementation

Duration of Implementation	A1	A2	A3
A1	1.0000	0.2500	2.0000
A2	4.0000	1.0000	6.0000
A3	0.5000	0.1667	1.0000

TOTAL 5.5000 1.4167 9.0000

5. Economics

Economics	A1	A2	A3
A1	1.0000	0.5000	2.0000
A2	2.0000	1.0000	7.0000
A3	0.5000	0.1429	1.0000

TOTAL 3.5000 1.6429 10.0000

6. Urgency

Urgency	A1	A2	A3
A1	1.0000	0.2500	3.0000
A2	4.0000	1.0000	8.0000
A3	0.3333	0.1250	1.0000
TOTAL	5.3333	1.3750	12.0000



Appendix 4: Sum of row in Aw matrices

1. Criteria

Criteria	C1	C2	C3	C4	C5	Sum
C1	0.5028	0.6718	0.4744	0.3134	0.7807	2.7431
C2	0.1006	0.1344	0.2033	0.1741	0.0867	0.6991
C3	0.0718	0.0448	0.0678	0.1045	0.0520	0.3409
C4	0.0559	0.0269	0.0226	0.0348	0.0372	0.1773
C5	0.1676	0.4031	0.3389	0.2437	0.2602	1.4135

2. Benefits

Benefits	A1	A2	A3	Sum
A1	0.7352	0.9971	0.5885	2.3208
A2	0.1470	0.1994	0.2616	0.6080
A3	0.0817	0.0499	0.0654	0.1969

3. Ease of Implementation

Ease of Implementation	A1	A2	A3	Sum
A1	0.0740	0.0898	0.0588	0.2226
A2	0.6656	0.8084	1.0584	2.5325
A3	0.1479	0.0898	0.1176	0.3553

4. Duration of Implementation

Duration of Implementation	A1	A2	A3	Sum
A1	0.1935	0.1750	0.2131	0.5816
A2	0.7740	0.6999	0.6393	2.1133
A3	0.0968	0.1167	0.1066	0.3200

5. Economics

Economics	A1	A2	A3	Sum
A1	0.2634	0.3134	0.2199	0.7966
A2	0.5267	0.6267	0.7696	1.9230
A3	0.1317	0.0895	0.1099	0.3311

6. Urgency

Urgency	A1	A2	A3	Sum
A1	0.2064	0.1787	0.2367	0.6218
A2	0.8258	0.7146	0.6313	2.1717
A3	0.0688	0.0893	0.0789	0.2371

Appendix 5: [a_{ij}^α] matrices

1. For $\alpha=0.5$

1.1. Criteria

Criteria	C1	C2	C3	C4	C5
C1	1.0000	2.2361	2.6458	3.0000	1.7321
C2	0.4472	1.0000	1.7321	2.2361	0.5774
C3	0.3780	0.5774	1.0000	1.7321	0.4472
C4	0.3333	0.4472	0.5774	1.0000	0.3780
C5	0.5774	1.7321	2.2361	2.6458	1.0000

1.2. Benefits

Benefits	A1	A2	A3
A1	1.0000	2.2361	3.0000
A2	0.4472	1.0000	2.0000
A3	0.3333	0.5000	1.0000

1.3. Ease of Implementation

Ease of Implementation	A1	A2	A3
A1	1.0000	0.3333	0.7071
A2	3.0000	1.0000	3.0000
A3	1.4142	0.3333	1.0000

1.4. Duration of Implementation

Duration of Implementation	A1	A2	A3
A1	1.0000	0.5000	1.4142
A2	2.0000	1.0000	2.4495
A3	0.7071	0.4082	1.0000

1.5. Economics

Economics	A1	A2	A3
A1	1.0000	0.7071	1.4142
A2	1.4142	1.0000	2.6458
A3	0.7071	0.3780	1.0000

1.6. Urgency

Urgency	A1	A2	A3
A1	1.0000	0.5000	1.7321
A2	2.0000	1.0000	2.8284
A3	0.5774	0.3536	1.0000

2. For $\alpha=0.7$

1.1. Criteria

Criteria	C1	C2	C3	C4	C5
C1	1.0000	3.0852	3.9045	4.6555	2.1577
C2	0.3241	1.0000	2.1577	3.0852	0.4635
C3	0.2561	0.4635	1.0000	2.1577	0.3241
C4	0.2148	0.3241	0.4635	1.0000	0.2561
C5	0.4635	2.1577	3.0852	3.9045	1.0000

1.2. Benefits

Benefits	A1	A2	A3
A1	1.0000	3.0852	4.6555
A2	0.3241	1.0000	2.6390
A3	0.2148	0.3789	1.0000

1.3. Ease of Implementation

Ease of Implementation	A1	A2	A3
A1	1.0000	0.2148	0.6156
A2	4.6555	1.0000	4.6555
A3	1.6245	0.2148	1.0000

1.4. Duration of Implementation

Duration of Implementation	A1	A2	A3
A1	1.0000	0.3789	1.6245
A2	2.6390	1.0000	3.5051
A3	0.6156	0.2853	1.0000

1.5. Economics

Economics	A1	A2	A3
A1	1.0000	0.6156	1.6245
A2	1.6245	1.0000	3.9045
A3	0.6156	0.2561	1.0000

1.6. Urgency

Urgency	A1	A2	A3
A1	1.0000	0.3789	2.1577
A2	2.6390	1.0000	4.2871
A3	0.4635	0.2333	1.0000

3. For $\alpha=0.9$

1.1. Criteria

Criteria	C1	C2	C3	C4	C5
C1	1.0000	4.2567	5.7622	7.2247	2.6879
C2	0.2349	1.0000	2.6879	4.2567	0.3720
C3	0.1735	0.3720	1.0000	2.6879	0.2349
C4	0.1384	0.2349	0.3720	1.0000	0.1735
C5	0.3720	2.6879	4.2567	5.7622	1.0000

1.2. Benefits

Benefits	A1	A2	A3
A1	1.0000	4.2567	7.2247
A2	0.2349	1.0000	3.4822
A3	0.1384	0.2872	1.0000

1.3. Ease of Implementation

Ease of Implementation	A1	A2	A3
A1	1.0000	0.1384	0.5359
A2	7.2247	1.0000	7.2247
A3	1.8661	0.1384	1.0000

1.4. Duration of Implementation

Duration of Implementation	A1	A2	A3
A1	1.0000	0.2872	1.8661
A2	3.4822	1.0000	5.0158
A3	0.5359	0.1994	1.0000

1.5. Economics

Economics	A1	A2	A3
A1	1.0000	0.5359	1.8661
A2	1.8661	1.0000	5.7622
A3	0.5359	0.1735	1.0000

1.6. Urgency

Urgency	A1	A2	A3
A1	1.0000	0.2872	2.6879
A2	3.4822	1.0000	6.4980
A3	0.3720	0.1539	1.0000

4. For $\alpha=1.0$

1.1. Criteria

Criteria	C1	C2	C3	C4	C5
C1	1.0000	5.0000	7.0000	9.0000	3.0000
C2	0.2000	1.0000	3.0000	5.0000	0.3333
C3	0.1429	0.3333	1.0000	3.0000	0.2000
C4	0.1111	0.2000	0.3333	1.0000	0.1429
C5	0.3333	3.0000	5.0000	7.0000	1.0000

1.2. Benefits

Benefits	A1	A2	A3
A1	1.0000	5.0000	9.0000
A2	0.2000	1.0000	4.0000
A3	0.1111	0.2500	1.0000

1.3. Ease of Implementation

Ease of Implementation	A1	A2	A3
A1	1.0000	0.1111	0.5000
A2	9.0000	1.0000	9.0000
A3	2.0000	0.1111	1.0000

1.4. Duration of Implementation

Duration of Implementation	A1	A2	A3
A1	1.0000	0.2500	2.0000
A2	4.0000	1.0000	6.0000
A3	0.5000	0.1667	1.0000

1.5. Economics

Economics	A1	A2	A3
A1	1.0000	0.5000	2.0000
A2	2.0000	1.0000	7.0000
A3	0.5000	0.1429	1.0000

1.6. Urgency

Urgency	A1	A2	A3
A1	1.0000	0.2500	3.0000
A2	4.0000	1.0000	8.0000
A3	0.3333	0.1250	1.0000

5. For $\alpha=1.1$

1.1. Criteria

Criteria	C1	C2	C3	C4	C5
C1	1.0000	5.8731	8.5037	11.2116	3.3484
C2	0.1703	1.0000	3.3484	5.8731	0.2987
C3	0.1176	0.2987	1.0000	3.3484	0.1703
C4	0.0892	0.1703	0.2987	1.0000	0.1176
C5	0.2987	3.3484	5.8731	8.5037	1.0000

1.2. Benefits

Benefits	A1	A2	A3
A1	1.0000	5.8731	11.2116
A2	0.1703	1.0000	4.5948
A3	0.0892	0.2176	1.0000

1.3. Ease of Implementation

Ease of Implementation	A1	A2	A3
A1	1.0000	0.0892	0.4665
A2	11.2116	1.0000	11.2116
A3	2.1435	0.0892	1.0000

1.4. Duration of Implementation

Duration of Implementation	A1	A2	A3
A1	1.0000	0.2176	2.1435
A2	4.5948	1.0000	7.1774
A3	0.4665	0.1393	1.0000

1.5. Economics

Economics	A1	A2	A3
A1	1.0000	0.4665	2.1435
A2	2.1435	1.0000	8.5037
A3	0.4665	0.1176	1.0000

1.6. Urgency

Urgency	A1	A2	A3
A1	1.0000	0.2176	3.3484
A2	4.5948	1.0000	9.8492
A3	0.2987	0.1015	1.0000

6. For $\alpha=1.3$

1.1. Criteria

Criteria	C1	C2	C3	C4	C5
C1	1.0000	8.1033	12.5495	17.3986	4.1712
C2	0.1234	1.0000	4.1712	8.1033	0.2397
C3	0.0797	0.2397	1.0000	4.1712	0.1234
C4	0.0575	0.1234	0.2397	1.0000	0.0797
C5	0.2397	4.1712	8.1033	12.5495	1.0000

1.2. Benefits

Benefits	A1	A2	A3
A1	1.0000	8.1033	17.3986
A2	0.1234	1.0000	6.0629
A3	0.0575	0.1649	1.0000

1.3. Ease of Implementation

Ease of Implementation	A1	A2	A3
A1	1.0000	0.0575	0.4061
A2	17.3986	1.0000	17.3986
A3	2.4623	0.0575	1.0000

1.4. Duration of Implementation

Duration of Implementation	A1	A2	A3
A1	1.0000	0.1649	2.4623
A2	6.0629	1.0000	10.2706
A3	0.4061	0.0974	1.0000

1.5. Economics

Economics	A1	A2	A3
A1	1.0000	0.4061	2.4623
A2	2.4623	1.0000	12.5495
A3	0.4061	0.0797	1.0000

1.6. Urgency

Urgency	A1	A2	A3
A1	1.0000	0.1649	4.1712
A2	6.0629	1.0000	14.9285
A3	0.2397	0.0670	1.0000

7. For $\alpha=1.5$

1.1. Criteria

Criteria	C1	C2	C3	C4	C5
C1	1.0000	11.1803	18.5203	27.0000	5.1962
C2	0.0894	1.0000	5.1962	11.1803	0.1925
C3	0.0540	0.1925	1.0000	5.1962	0.0894
C4	0.0370	0.0894	0.1925	1.0000	0.0540
C5	0.1925	5.1962	11.1803	18.5203	1.0000

1.2. Benefits

Benefits	A1	A2	A3
A1	1.0000	11.1803	27.0000
A2	0.0894	1.0000	8.0000
A3	0.0370	0.1250	1.0000

1.3. Ease of Implementation

Ease of Implementation	A1	A2	A3
A1	1.0000	0.0370	0.3536
A2	27.0000	1.0000	27.0000
A3	2.8284	0.0370	1.0000

1.4. Duration of Implementation

Duration of Implementation	A1	A2	A3
A1	1.0000	0.1250	2.8284
A2	8.0000	1.0000	14.6969
A3	0.3536	0.0680	1.0000

1.5. Economics

Economics	A1	A2	A3
A1	1.0000	0.3536	2.8284
A2	2.8284	1.0000	18.5203
A3	0.3536	0.0540	1.0000

1.6. Urgency

Urgency	A1	A2	A3
A1	1.0000	0.1250	5.1962
A2	8.0000	1.0000	22.6274
A3	0.1925	0.0442	1.0000