

DECISION SUPPORT SYSTEM FOR SUPPLIER SELECTION BY USING ANALYTIC NETWORK PROCESS (ANP) METHOD FOR THE PROCUREMENT DEPARTMENT

Alexander Setiawan⁽¹⁾, Leo Willyanto Santoso⁽²⁾, Margaretha Juan⁽³⁾

Informatics Engineering Department – Petra Christian University

Siwalankerto 121 – 131 Surabaya 60236 Indonesia

Telp. (031) – 2983455, Fax (031) – 8417658

Email : alexander@peter.petra.ac.id⁽¹⁾, leow@peter.petra.ac.id⁽²⁾, m26405011@john.petra.ac.id⁽³⁾

ABSTRACT

In this life, every each person has to make decision in every moment. Making Decision is not an easy task to do. There are always some consequences in making decision. Most of us don't know what the best decision is until we make it. In business life, company as an organization also has to make decisions. One of the most important is making decision for employee recruitment. The company's performance depends on the human resource's performances. Development team has some problems in this case. There are a lot of subjectivities when the team wants to make decision in supplier selection.

Based on that fact, the company realizes that they need an support computer application in making decision especially for the employee recruitment. Development team needs supporting application using Analytic Network Process. The application will be developed to provide suggestions to the manager.

Keywords :

Decision Support System, Analytical Network Process, Supplier, Criteria.

1. INTRODUCTION

The procurement department was the unit that was under the Unit Perencanaan Fisik Kampus Unit (UPFK) "PT X" that was assigned in handling the tender for the thing or the service. The procurement part acted as the organizer of the tender in satisfying the requirement for "PT X" in large quantities. In holding the tender, the procurement department will carry out the selection of the candidate supplier to be invited. All the candidates supplier that was invited to have the appearance of his company that was good and in accordance with the standard. The procurement department was assigned in inviting the candidate supplier, held the tender and broke supplier that won. The candidate's selection supplier was carried out was based on bargaining compatibility towards the available requirement, the experience from the past, the available recommendation, the experience from the candidate's client supplier previous, as well as the price that was offered.

In the process of the selection of the candidate supplier, the decision that was taken often was influenced subjectivity from the decision-makers. This was also caused by

the assessment of the candidate supplier until now was not done objectively because of the nonexistence of the standard in the assessment. Subjectivity could happen because of not having the standard method that was systematic to consider the appropriateness of the candidate supplier. One of the decision making methods that could be used in the process of the selection of the candidate supplier was the Analytic Network Process method (ANP). ANP was chosen as the method in this research because of could overcome relations between sub the criterion.

Specially the formulation of the problem in this research was:

- How made the database plan that could keep the thing data, the candidate supplier, the criterion, the sub-criterion, and the value of the relations that happen.
- How made an application that could help take the decision in helping determined the candidate supplier for each thing.

The aim of this research was the based application web to support the process of decision making in chose supplier each thing by making use of the Analytic Network System method (ANP), so as to be received by the alternative to the decision of the election supplier the thing objectively as well as in accordance with the criterion that was needed.

2. FOUNDATION OF THEORY

2.1 Analytical Network Process (ANP)

The Analytic Process method (ANP) was the development of the Analytical Hierarchy Process method (AHP). The ANP method of could improve the AHP weakness took the form of the capacity the connection between the criterion or the alternative (Saaty, 2004). The connection in the ANP method of having 2 kinds that is the connection in one set of the element (inner dependence) and the connection between the different element (outer dependence). The existence of this connection caused the ANP method more complex compared to the AHP method.

The step in using ANP was began decisively the criterion and all of his weights afterwards ANP began counted after all the criteria had the weight. Super the matrix weighted and cluster the matrix was received from input the criterion weight whereas weighted was received with multiplied weighted with

cluster and limiting the matrix was received with weighted the matrix to the value each one of his lines became same.

Table 1. The comparison matrix

A	B₁	B₂	B₃	---	B_n
B₁	b ₁₁	b ₁₂	b ₁₃	---	b _{1n}
B₂	b ₂₁	b ₂₂	b ₂₃	---	b _{2n}
B₃	b ₃₁	b ₃₂	b ₃₃	---	b _{3n}
---	---	---	---	---	---
B_n	b _{n1}	b _{n2}	b _{n3}	---	b _{nn}

Thought b_{ij} was the B_i value of the element comparison against B_j that stated relations:

- As far the level of the B_i interests when compared with B_j , or
- It was as big that the B_i contribution towards the A criterion compared with B_j , or
- As far the B_i domination compared with B_j , or
- How many characteristics of the A criterion were received to B_i compared with B_j .

When being known by the value b_{ij} then theoretically thought $b_{ji} = 1/b_{ij}$, whereas b_{ij} in the situation $i = j$ was absolute 1.

The numeric value that was used for the comparison above was received from the scale of the comparison that was made by Saaty (2004). The table 2 determined the scale of the comparison between the elements in the process of decision making.

Table 2. The assessment of pair wise comparisons

Priority	Definition	Note
1	As Important	The two elements had the same influence
2	Weak or Slight	
3	Slightly more Important	Eperience and judgement slightly favor one activity over another
4	Moderate Plus	
5	More Important	Eperience and judgement strongly favor one activity over another
6	Strong Plus	
7	Very Important	An activity is favored very strongly over another
8	Very, Very Strong	
9	Absolutely Important	One element was proven to be absolute more was liked compared with his couple

2.2 The Calculation Process of ANP

Weighted with ANP needed the model that mutual connections between the criterion and the sub-criterion that were owned by him. There were 2 controls that must pay attention to inside the system that will be known by his weight. The first control was the control of the hierarchy that showed the criterion connection and sub his criterion. In this control did not need the structure of the hierarchy like in the method of AHP. Control other was the control of the connection that showed the existence of mutual connections between the criterion or cluster (Saaty, 2004). The influence from one set of the element in some cluster in the element that was other in a system could trough the priority vector on a scale the ratio that was taken from the teamed comparison. The network in this method of having the complexity that was high compared with the other kind, because of the existence of the phenomenon feedback from cluster one to cluster other, in fact with cluster him himself. The criterion of the official's candidate was stated as cluster whereas the element and sub his element was the objective strategy. To the Figure 1., showed the network model with feedback and dependence cluster one with cluster other.

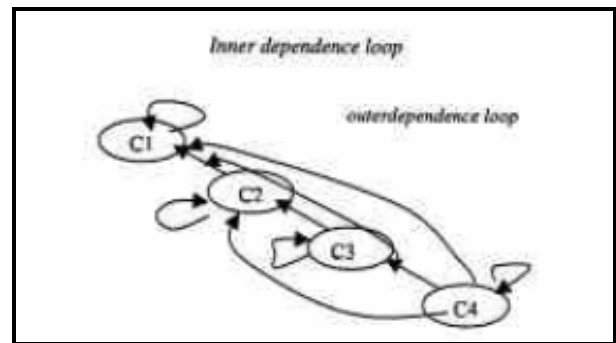


Figure 1. Feedback Model and Dependence Cluster (Saaty, 2004)

After the model was made, then was carried out from results of the data pair wise comparison by using the super-matrix table. To the Figure 2 were shown by the format of the foundation of the super-matrix table.

		C_1	C_2	...	C_N
		$e_{11} \dots e_{1n_1}$	$e_{21} \dots e_{2n_2}$...	$e_{N1} \dots e_{Nn_N}$
$W =$	C_1	W_{11}	W_{12}	...	W_{1N}
	...				
	C_2	W_{21}	W_{22}	...	W_{2N}
	...				
	C_N	W_{N1}	W_{N2}	...	W_{NN}

Figure 2. The format of the Foundation Table the Super-Matrix (Saaty, 2004)

Where the bloc i and j from this matrix was:

$$W = \begin{bmatrix} W_{i1}^{(j)} & W_{i1}^{(j)} & \dots & W_{i1}^{(j)} \\ W_{i2}^{(j)} & W_{i2}^{(j)} & \dots & W_{i2}^{(j)} \\ \dots & \dots & \dots & \dots \\ W_{in_i}^{(j)} & W_{in_i}^{(j)} & \dots & W_{in_i}^{(j)} \end{bmatrix}$$

Figure 3. Matrix Blok i dan j (Saaty, 2004)

After did the process above, afterwards will be carried out by the process weighted to every time cluster that was determined was based on the criterion of the official's candidate. The calculation algorithm weighted like in the Equality 2.1. that was carried out was begun from the data with the form pair wise comparison to was produced by the weight of each indicator of his achievement. The criterion was made be based on the requirement and the aim of the election.

To show results of the end of the calculation of the comparison then the super-matrix will be promoted continually to the figure of each column in one equal line.

$$\lim_{M \rightarrow \infty} \frac{1}{M} \sum_{k=1}^M \frac{\sum_{j=1}^n a_{ij}^{(k)}}{\sum_{i=1}^n \sum_{j=1}^n a_{ij}^{(k)}} \dots\dots\dots (2.1)$$

3. DISCUSSION AND ANALYSIS

3.1 The Analysis and Design System

Steps that were carried out in this research were as follows :

- A Literature Review
This step was carried out by studying theories that were used in the production of this thesis.
- Analysis and Design System
In this stage was carried out by the identification and the evaluation of the problem that happened, as well as looked for the solution from this problem. After the analysis stage was finished was carried out, was made by design planning of the system on the whole.
- Create the Software
Implement the design of the system that has been made in software. The production of this software covered the whole form input and output, the production of the interface website that was good, as well as the connection with the database.
- Test the Software
The testing was carried out with put the data inside form. This data was afterwards processed by the system

to produce output that in accordance with the requirement. Compared results of the calculation of the manual with results of the calculation of the program.

- Decision Making
This step was carried out by means of compared whether the production of this software could answer the requirement for the selection of the election supplier the thing .

Was based on observation that was carried out towards the selection system of the candidate supplier the procurement department of "PT X", the available problem that is for the selection supplier did not yet be fully in accordance with the criterion that was determined, the assessment was more often carried out was based on the experience so as the assessment that was made be subjective. Moreover was not yet available data collection that was good for recorded the data of the candidate's criterion supplier because the data that was owned at this time was still taking the form of the document was not written

From the problem that emerged, then several matters along with this was needed by the procurement department in the production of the supporting system of decision making, in part:

- was needed a system with the database concerning the candidate's data supplier. So as if the tender company could make use of the data that was owned beforehand.
- Explained classification of his database
- Was needed a system that could support decision making objectively in the selection of the candidate supplier by means of putting forward the value of the comparison between the candidate as well as compatibility towards the criterion that was needed.

Context Diagram to the Figure 4 will give the explanation about the data current globally in the system. The available data whole will head to one big process that is the process system mining. Entity Relationship Diagram (Conceptual Data Model) to the Figure 5.

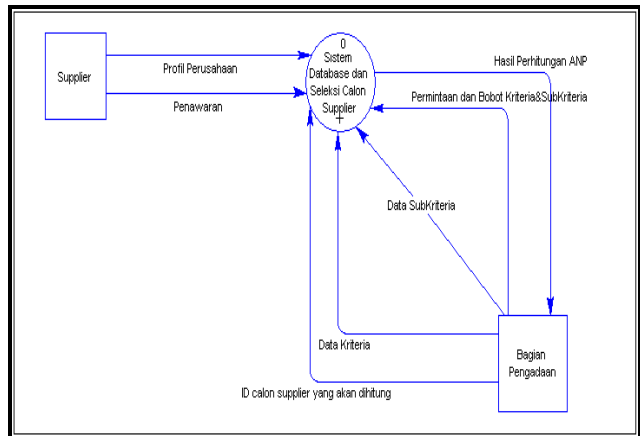


Figure 4. Context Diagram

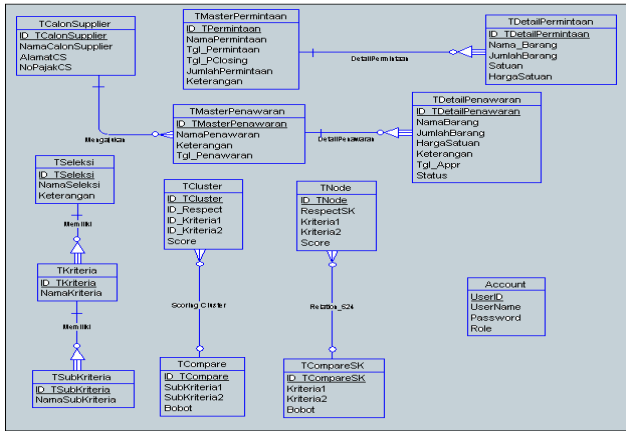


Figure 5. ERD Conceptual Data Model

3.2 The Implementation System

The testing of this system was begun from the page of early that will be used to enter the page of the menu. The user who was registered must put the user id and password to this page to be able to access the following page. The page of the system and the menu of the beginning main could be seen in the Figure 6.

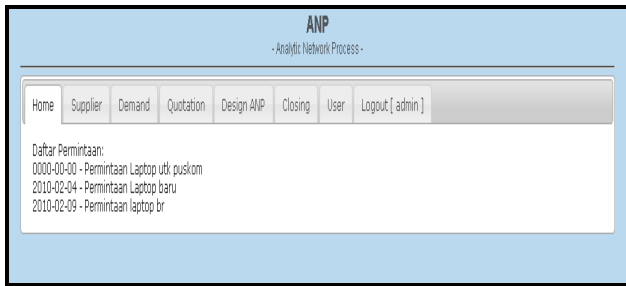


Figure 6. Main Menu

To this page the user could put the list of the request that will be tendered by filling up each available column completely. The request could be seen in the Figure 7. The page of the candidate supplier Bargaining can be seen at Figure 8.

EDIT DEMAND

ID: 9
 Demand Name: laptop br
 Explanation:
 Quantity: 2

Comodity Name	Amount	UOM	Unit Price	Information
dell a840	2	piece	6000000	dualcore, 14
acer aspire2930	1	piece	7000000	core2duo, 12

Picture 7. Form Request Input Page

Home - Quotation

QUOTATION ADMIN

Demand: 9 | laptop br
 Demand ID: 9
 Quotation Name: laptop br oleh PT Y untuk UKP
 Supplier Name: PT Y

Comodity Name	Amount	UOM	Unit Price	Information	Subtot
acer aspire 2930	1	piece	100	core2duo 2GHZ, 12	100
dell a840	2	piece	6500000	dualcore 1.6 GHZ, 14	13000000
Total					13000100 Rupiah

Quotation Name: laptop br
 Supplier Name: PT Z

Comodity Name	Amount	UOM	Unit Price	Information	Subtot
acer aspire 4736	1	piece	6800000	core2duo 2.0GHZ, 14	6800000
dell a840	2	piece	6000000	dualcore 1,6GHZ, 14	12000000
Total					18800000 Rupiah

Figure 8. The page of the Candidate's Supplier Bargaining

This page put forward the appearance as well as bargaining that had been done by supplier that was registered. The user could put the criterion and the sub-criterion of the selection election in accordance with the requirement. The criterion and the sub-criterion could be seen in the Figure 9. and the Figure 10.

ADD CRITERIA ANP

ID: 5
 Design Name: Pemilihan Kontraktor

Criteria Name 1: Kualitas

Criteria Name 2: Harga

Criteria Name 3: Resiko

Criteria Name 4: Respon

Criteria Name 5: Time management

Criteria Name:

Figure 9. Criteria input Page

ADD SUB CRITERIA ANP

ID: 5
 Design Name: Pemilihan Kontraktor

Criteria Name: Kualitas

Sub Criteria Name 1: pengalaman project manager

Sub Criteria Name 2: kemampuan PM mengatur waktu

Sub Criteria Name 3: pengalaman staff pendukung

Sub Criteria Name 4: hasil kerja project sebelumnya

Sub Criteria Name:

Picture 10. Sub criteria input page

The user could do connected between the sub-criterion so as to mutual dependences between the sub-criterion happen as well as did weighted towards the criterion and the sub-criterion that had relations of mutual dependences. The page of the connection could be seen in the Figure 11. and the criteria value page could be seen in the Figure 12. and the alternative criteria page could be seen in the Figure 13.

NODE CONNECTION	
ID	5
Design Name	Pemilihan Kontraktor
List	Connection To List
pengalaman project manager Connect to kemampuan PM mengatur waktu	Delete
pengalaman project manager Connect to respon thd resiko	Delete
pengalaman project manager Connect to penyelesaian resiko	Delete
pengalaman project manager Connect to kontraktor dulu mundur	Delete
pengalaman project manager Connect to kapasitas kontraktor saat ini	Delete
kemampuan PM mengatur waktu Connect to molor	Delete
kemampuan PM mengatur waktu Connect to keterlambatan projek dulu	Delete
kemampuan PM mengatur waktu Connect to kapasitas kontraktor saat ini	Delete
pengalaman staff pendukung Connect to hasil kerja project sebelumnya	Delete
pengalaman staff pendukung Connect to ongkos kerja	Delete
pengalaman staff pendukung Connect to standar keamanan	Delete
hasil kerja project sebelumnya Connect to after works	Delete
hasil kerja project sebelumnya Connect to penyelesaian resiko	Delete
hasil kerja project sebelumnya Connect to kontraktor dulu mundur	Delete
kemampuan PM mengatur waktu Connect to kontraktor dulu mundur	Delete
<input type="button" value="Back"/> <input type="button" value="Next"/>	

Figure 11. Connection between sub criteria page

SCORING CRITERIA	
ID	5
Design Name	Pemilihan Kontraktor
With respect to cluster Kualitas	
Kualitas	- <input type="radio"/> NoComp - Harga
<input type="radio"/> 9 <input type="radio"/> 8 <input type="radio"/> 7 <input type="radio"/> 6 <input type="radio"/> 5 <input type="radio"/> 4 <input type="radio"/> 3 <input type="radio"/> 2 <input type="radio"/> 1 <input checked="" type="radio"/> 0 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9	
Kualitas	- <input type="radio"/> NoComp - Resiko
<input type="radio"/> 9 <input type="radio"/> 8 <input type="radio"/> 7 <input type="radio"/> 6 <input type="radio"/> 5 <input type="radio"/> 4 <input type="radio"/> 3 <input checked="" type="radio"/> 2 <input type="radio"/> 1 <input type="radio"/> 0 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9	
Kualitas	- <input type="radio"/> NoComp - Respon
<input type="radio"/> 9 <input type="radio"/> 8 <input type="radio"/> 7 <input type="radio"/> 6 <input type="radio"/> 5 <input type="radio"/> 4 <input type="radio"/> 3 <input type="radio"/> 2 <input type="radio"/> 1 <input type="radio"/> 0 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9	
Kualitas	- <input type="radio"/> NoComp - Time management
<input type="radio"/> 9 <input type="radio"/> 8 <input type="radio"/> 7 <input type="radio"/> 6 <input type="radio"/> 5 <input type="radio"/> 4 <input checked="" type="radio"/> 3 <input type="radio"/> 2 <input type="radio"/> 1 <input type="radio"/> 0 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9	
Harga	- <input type="radio"/> NoComp - Resiko
<input type="radio"/> 9 <input type="radio"/> 8 <input type="radio"/> 7 <input type="radio"/> 6 <input type="radio"/> 5 <input type="radio"/> 4 <input type="radio"/> 3 <input checked="" type="radio"/> 2 <input type="radio"/> 1 <input type="radio"/> 0 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9	
Harga	- <input type="radio"/> NoComp - Respon
<input type="radio"/> 9 <input type="radio"/> 8 <input type="radio"/> 7 <input type="radio"/> 6 <input type="radio"/> 5 <input type="radio"/> 4 <input type="radio"/> 3 <input checked="" type="radio"/> 2 <input type="radio"/> 1 <input type="radio"/> 0 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9	
Harga	- <input type="radio"/> NoComp - Time management
<input type="radio"/> 9 <input type="radio"/> 8 <input type="radio"/> 7 <input type="radio"/> 6 <input type="radio"/> 5 <input type="radio"/> 4 <input type="radio"/> 3 <input type="radio"/> 2 <input type="radio"/> 1 <input type="radio"/> 0 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input checked="" type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9	
Resiko	- <input type="radio"/> NoComp - Respon
<input type="radio"/> 9 <input type="radio"/> 8 <input type="radio"/> 7 <input type="radio"/> 6 <input type="radio"/> 5 <input type="radio"/> 4 <input type="radio"/> 3 <input type="radio"/> 2 <input type="radio"/> 1 <input type="radio"/> 0 <input type="radio"/> 2 <input type="radio"/> 3 <input checked="" type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9	
Resiko	- <input type="radio"/> NoComp - Time management
<input type="radio"/> 9 <input type="radio"/> 8 <input type="radio"/> 7 <input type="radio"/> 6 <input type="radio"/> 5 <input type="radio"/> 4 <input type="radio"/> 3 <input type="radio"/> 2 <input type="radio"/> 1 <input type="radio"/> 0 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9	

Figure 12. Criteria valuing page

SCORING ALTERNATIVE	
ID	5
Design Name	Pemilihan Kontraktor
With respect to node pengalaman project manager	
PT Y	- <input type="radio"/> NoComp - PT X
<input type="radio"/> 9 <input type="radio"/> 8 <input type="radio"/> 7 <input type="radio"/> 6 <input type="radio"/> 5 <input type="radio"/> 4 <input type="radio"/> 3 <input type="radio"/> 2 <input type="radio"/> 1 <input checked="" type="radio"/> 0 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9	
PT Y	- <input type="radio"/> NoComp - PT Z
<input type="radio"/> 9 <input type="radio"/> 8 <input type="radio"/> 7 <input type="radio"/> 6 <input type="radio"/> 5 <input type="radio"/> 4 <input type="radio"/> 3 <input type="radio"/> 2 <input type="radio"/> 1 <input type="radio"/> 0 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9	
PT X	- <input type="radio"/> NoComp - PT Z
<input type="radio"/> 9 <input type="radio"/> 8 <input type="radio"/> 7 <input type="radio"/> 6 <input type="radio"/> 5 <input type="radio"/> 4 <input type="radio"/> 3 <input type="radio"/> 2 <input type="radio"/> 1 <input type="radio"/> 0 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9	
With respect to node kemampuan PM mengatur waktu	
PT Y	- <input type="radio"/> NoComp - PT X
<input type="radio"/> 9 <input type="radio"/> 8 <input type="radio"/> 7 <input type="radio"/> 6 <input type="radio"/> 5 <input type="radio"/> 4 <input type="radio"/> 3 <input type="radio"/> 2 <input type="radio"/> 1 <input type="radio"/> 0 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9	
PT Y	- <input type="radio"/> NoComp - PT Z
<input type="radio"/> 9 <input type="radio"/> 8 <input type="radio"/> 7 <input type="radio"/> 6 <input type="radio"/> 5 <input type="radio"/> 4 <input type="radio"/> 3 <input type="radio"/> 2 <input type="radio"/> 1 <input type="radio"/> 0 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9	
PT X	- <input type="radio"/> NoComp - PT Z
<input type="radio"/> 9 <input type="radio"/> 8 <input type="radio"/> 7 <input type="radio"/> 6 <input type="radio"/> 5 <input type="radio"/> 4 <input type="radio"/> 3 <input type="radio"/> 2 <input type="radio"/> 1 <input type="radio"/> 0 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9	
With respect to node pengalaman staff pendukung	
PT Y	- <input checked="" type="radio"/> NoComp - PT X
<input type="radio"/> 9 <input type="radio"/> 8 <input type="radio"/> 7 <input type="radio"/> 6 <input type="radio"/> 5 <input type="radio"/> 4 <input type="radio"/> 3 <input type="radio"/> 2 <input type="radio"/> 1 <input type="radio"/> 0 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9	
PT Y	- <input checked="" type="radio"/> NoComp - PT Z
<input type="radio"/> 9 <input type="radio"/> 8 <input type="radio"/> 7 <input type="radio"/> 6 <input type="radio"/> 5 <input type="radio"/> 4 <input type="radio"/> 3 <input type="radio"/> 2 <input type="radio"/> 1 <input type="radio"/> 0 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9	
PT X	- <input checked="" type="radio"/> NoComp - PT Z
<input type="radio"/> 9 <input type="radio"/> 8 <input type="radio"/> 7 <input type="radio"/> 6 <input type="radio"/> 5 <input type="radio"/> 4 <input type="radio"/> 3 <input type="radio"/> 2 <input type="radio"/> 1 <input type="radio"/> 0 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9	
With respect to node hasil kerja project sebelumnya	
PT Y	- <input type="radio"/> NoComp - PT X

Figure 13. Alternative valuing Page

Results of the calculation weighted the super-matrix manually with the system showed same results so as the calculation of the system could be stated valid but the calculation In A Super Manner Decision 1,6,0 had several differences that could be caused by the difference each result of the calculation that happened. The page of weighted super matrix could be seen in the Figure 14.

Weighted matrix	PT Y	PT X	PT Z	pengalaman project manager	kemampuan PM mengatur waktu	pengalaman staff pendukung	hasil kerja project sebelumnya	harga material	ongkos kerja	standar keamanan
PT Y	0	0	0	0.1428	0.3541	0.3333	0.5889	0.6	0.3699	0.3333
PT X	0	0	0	0.4286	0.3331	0.3333	0.1593	0.2	0.2979	0.3333
PT Z	0	0	0	0.4286	0.3129	0.3333	0.2518	0.2	0.3323	0.3333
pengalaman project manager	0.2333	0.1356	0.1357	0	0	0	0	0	0	0
kemampuan PM mengatur waktu	0.2156	0.3333	0.3753	1	0	0	0	0	0	0
pengalaman staff pendukung	0.2923	0.2317	0.258	0	0	0	0	0	0	0
hasil kerja project sebelumnya	0.2588	0.2994	0.231	0	0	1	0	0	0	0
harga material	0.5	0.25	0.5	0	0	0	0	0	0	0
ongkos kerja	0.5	0.75	0.5	0	0	1	0	0	0	0
standar keamanan	0.1977	0.2934	0.2507	0	0	1	0	0	0	0
after works	0.232	0.1283	0.183	0	0	0	1	0	0	0
molor	0.2117	0.2621	0.1637	0	1	0	0	0	0	0
pembengkakan biaya	0.1703	0.1671	0.2129	0	0	0	0	0	0	0
perubahan	0.1882	0.149	0.1898	0	0	0	0	0	0	0
respon thd resiko	0.5	0.3333	0.875	0.75	0	0	0	0	0	0
penyelesaian resiko	0.5	0.6667	0.125	0.25	0	0	1	0	0	0
keterlambatan projek dulu	0.1638	0.2	0.6901	0	0.3338	0	0	0	0	0
kontraktor dulu mundur	0.2972	0.4	0.2447	0.2	0.1416	0	1	0	0	0
kapasitas kontraktor saat ini	0.539	0.4	0.0653	0.8	0.5247	0	0	0	0	0

Figure 14. Weighted Super matrix

Cluster matrix will be used to give weighted in weighted the super-matrix so that to weighted super matrix. Cluster matrix was compiled from eigen vector of the influence comparison cluster could be seen in the Figure 15.

	Alternative	Kualitas	Harga	Resiko	Respon	Time management
Alternative	0	0.1667	1	1	1	1
Kualitas	0.1499	0.1587	0	0	0	0
Harga	0.2071	0.0433	0	0	0	0
Resiko	0.2408	0.2335	0	0	0	0
Respon	0.1808	0.1992	0	0	0	0
Time management	0.2215	0.1986	0	0	0	0

Figure 15. Calculate Eigen Vector Cluster matrix

Weighted super matrix will be counted to weighted the super-matrix by means of carrying out multiplication between the contents weighted the super-matrix and cluster matrix. To the Figure 16 and the Figure 17 will be shown limiting Super- Matrix that was produced by Super Decision 1,6,0.

PT X	PT YV	PT Z	harga n	ongkos	hasil k	kenampu	pengala	pengala	after w
0.14918	0.14918	0.14918	0.14918	0.14918	0.14918	0.14918	0.14918	0.14918	0.14918
0.15373	0.15373	0.15373	0.15373	0.15373	0.15373	0.15373	0.15373	0.15373	0.15373
0.13827	0.13827	0.13827	0.13827	0.13827	0.13827	0.13827	0.13827	0.13827	0.13827
0.02470	0.02470	0.02470	0.02470	0.02470	0.02470	0.02470	0.02470	0.02470	0.02470
0.06068	0.06068	0.06068	0.06068	0.06068	0.06068	0.06068	0.06068	0.06068	0.06068
0.03258	0.03258	0.03258	0.03258	0.03258	0.03258	0.03258	0.03258	0.03258	0.03258
0.03577	0.03577	0.03577	0.03577	0.03577	0.03577	0.03577	0.03577	0.03577	0.03577
0.02223	0.02223	0.02223	0.02223	0.02223	0.02223	0.02223	0.02223	0.02223	0.02223
0.02707	0.02707	0.02707	0.02707	0.02707	0.02707	0.02707	0.02707	0.02707	0.02707
0.02160	0.02160	0.02160	0.02160	0.02160	0.02160	0.02160	0.02160	0.02160	0.02160
0.01570	0.01570	0.01570	0.01570	0.01570	0.01570	0.01570	0.01570	0.01570	0.01570
0.01332	0.01332	0.01332	0.01332	0.01332	0.01332	0.01332	0.01332	0.01332	0.01332
0.01300	0.01300	0.01300	0.01300	0.01300	0.01300	0.01300	0.01300	0.01300	0.01300
0.02768	0.02768	0.02768	0.02768	0.02768	0.02768	0.02768	0.02768	0.02768	0.02768
0.09312	0.09312	0.09312	0.09312	0.09312	0.09312	0.09312	0.09312	0.09312	0.09312
0.03746	0.03746	0.03746	0.03746	0.03746	0.03746	0.03746	0.03746	0.03746	0.03746
0.04493	0.04493	0.04493	0.04493	0.04493	0.04493	0.04493	0.04493	0.04493	0.04493
0.04547	0.04547	0.04547	0.04547	0.04547	0.04547	0.04547	0.04547	0.04547	0.04547
0.04354	0.04354	0.04354	0.04354	0.04354	0.04354	0.04354	0.04354	0.04354	0.04354

Figure 16. Limiting Super Matrix Super Decision 1

no1or	penbeng	perubah	standar	penyele	respon	kapasit	Keterla	kontrak
0.14918	0.14918	0.14918	0.14918	0.14918	0.14918	0.14918	0.14918	0.14918
0.15373	0.15373	0.15373	0.15373	0.15373	0.15373	0.15373	0.15373	0.15373
0.13827	0.13827	0.13827	0.13827	0.13827	0.13827	0.13827	0.13827	0.13827
0.02470	0.02470	0.02470	0.02470	0.02470	0.02470	0.02470	0.02470	0.02470
0.06068	0.06068	0.06068	0.06068	0.06068	0.06068	0.06068	0.06068	0.06068
0.03258	0.03258	0.03258	0.03258	0.03258	0.03258	0.03258	0.03258	0.03258
0.03577	0.03577	0.03577	0.03577	0.03577	0.03577	0.03577	0.03577	0.03577
0.02223	0.02223	0.02223	0.02223	0.02223	0.02223	0.02223	0.02223	0.02223
0.02707	0.02707	0.02707	0.02707	0.02707	0.02707	0.02707	0.02707	0.02707
0.02160	0.02160	0.02160	0.02160	0.02160	0.02160	0.02160	0.02160	0.02160
0.01570	0.01570	0.01570	0.01570	0.01570	0.01570	0.01570	0.01570	0.01570
0.01332	0.01332	0.01332	0.01332	0.01332	0.01332	0.01332	0.01332	0.01332
0.01300	0.01300	0.01300	0.01300	0.01300	0.01300	0.01300	0.01300	0.01300
0.02768	0.02768	0.02768	0.02768	0.02768	0.02768	0.02768	0.02768	0.02768
0.09312	0.09312	0.09312	0.09312	0.09312	0.09312	0.09312	0.09312	0.09312
0.03746	0.03746	0.03746	0.03746	0.03746	0.03746	0.03746	0.03746	0.03746
0.04493	0.04493	0.04493	0.04493	0.04493	0.04493	0.04493	0.04493	0.04493
0.04547	0.04547	0.04547	0.04547	0.04547	0.04547	0.04547	0.04547	0.04547
0.04354	0.04354	0.04354	0.04354	0.04354	0.04354	0.04354	0.04354	0.04354

Figure 17. Limiting Super matrix Super Decision 2

4. CONCLUSION

The purpose of this research of the supporting system of the based decision web in the procurement department of "PT X" in the process of the selection supplier by using the Analytical Network Process method, could be concluded that:

- Results of the ANP calculation that was carried out in this application in accordance with results of the ANP calculation theory.
- The application system that was developed could help the administrative the procurement department of "PT X" in did data collection in a manner so as to support the balanced and objective assessment.
- This research could help the candidate's data collection supplier the procurement department of "PT X" because of being supported with the database arrangement that structured.

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