Decision Making in Complex Environments

The Future of Andhra Pradesh, India

ANP/BOCR model – Final Report

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The following report describes and outlines our approach to make a decision about the future of Andhra Pradesh, a state belonging to the Republic of India. With regard to the historical and current situation in this particular state, we built and designed our model to make the best possible decision. We generally built a BOCR model that considers and evaluates a certain set of alternatives for the future of the state.

This report mainly serves as a write up illustrating our assumptions, consideration and development of the final model. It consists of the following parts:

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1. Introduction

1.1 Background

Andhra Pradesh is one of the 28 states of India with Hyderabad as its capital city. The formation of this state is significantly different from the others. The basis of Andhra Pradesh was a 10-point "Gentlemen's Agreement" between the then chief ministers of Andhra and Hyderabad (which then included the Telangana Region).The demand for Telangana is one of the oldest concerns for a separate state in independent India. It has seen its share of talks and violence since the early 1960s. (Wikipedia - The Free Encyclopedia, 2011)

A brief historical review of the region will provide insight into the current agitation. Telangana is a region comprising ten of Andhra Pradesh's 23 districts. Originally, the region was part of the former Nizam's Kingdom state of Hyderabad. In 1948, India put an end to the rule of the Nizam and a Hyderabad state was formed. In 1956, the Telangana part was merged with the Andhra state. (Vepachedu) However, the people from Telangana were against merger with Andhra as they feared job losses as education levels and development in Andhra were better than in Telangana. In addition to this were the cultural differences between the two regions that were merged. (Telangana Interactive Inc., 2004)

However, there has been a strong assertion of a distinct Telangana identity through two major agitations in 1969 and in 2000. These sharpened the Telangana people's sense of discrimination and highlighted the region's educational backwardness and "developmental backlog".
Statehood's proponents rightly argue that Telangana has not received state development assistance proportional to its size. (Biswas, 2010)

At the heart of the dispute is the status of Hyderabad, geographically within the proposed new state, but claimed by both sides. Opponents of Telangana say the city was built into an economic powerhouse by investments from entrepreneurs from other regions of the state. Some investors are concerned business would not be at the top of the new state's priorities, making Hyderabad a less attractive destination for multinational firms. They also fret about what sort of labor and tax laws the new state would adopt. The changed political equations could hit businesses such as real estate and infrastructure firms, many of whom have relied on political ties for their growth. But Telangana, with few resources of its own, would necessarily have to open up to investors if it is to remain viable and not run on federal aid. (BBC, 2010)

Violent protests for and against carving a new state called Telangana out of India's Andhra Pradesh have been disrupting life in the State. The central government postponed a decision to bifurcate the southern state following protests by political parties. As protests continue, the central government seems to have backpedalled, saying no decision would be taken in haste and it would try to work out a consensus. The final decision to create states lies with the central government although a resolution approving the formation of Telangana by the state legislature, which is sharply divided on the issue, would make the process less problematic. (Deccan Chronicle, 2011)

1.2 Alternatives

The following are the alternatives that have been formulated in order to get a consensus on the issue being faced by both the state government of Andhra Pradesh as well as Central government of India.

1) Do not split the State (Status Quo)

2) Do not split the State, but create a Development Committee for the betterment of the Telangana Region

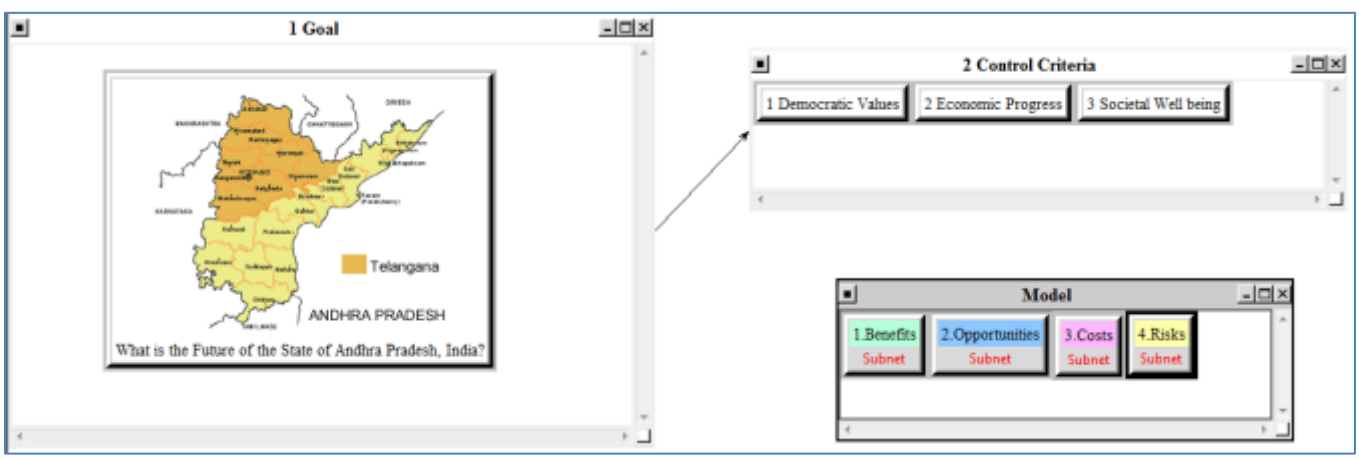
3) Split the State, keeping Hyderabad as the capital of Telangana and develop a new capital for Andhra

4) Spilt the State and convert Hyderabad into a Union Territory

2. The Model

To ensure that we arrive at the best possible decision considering all relevant as well as significant influencing factors, we divided the overall decision about the future of Andhra Pradesh into two major parts each one requiring a certain type of model. We first designed and developed a BOCR model, which evaluated the benefits, opportunities, costs and risks of each alternative and by combining those outcomes providing us with the best decision with regard to each of the above mentioned aspects. Additionally, we developed a ratings model that combined the best decisions for each area of the BOCS model by weighting them against more superior and universally control criteria, then resulting in the overall best decision.

Below, we show an illustration of the very surface of the model giving an impression of the overall structure and the link between the BOCR and the Rating part of the model:



The following part focuses on the development, structure and underlying assumptions of the BOCR model, we used as the base for our decision.

a. The BOCR model

To begin, we started with a brainstorming session in order to identify the overall structure of the BOCR model establishing relevant criteria as well as subcriteria for the benefits, the opportunities, the costs and the risks. Those criteria and subcriteria are shown and briefly explained in the respective tables below:

i. Benefits Cluster/Nodes

For benefits, we developed the following criteria and subcriteria:

Control Criteria	*Subcriteria*	*Description*
1 Political	**1.1 Increase in security**	Benefits from an increased state of security in the state, such as less crime/violence due to equality and higher education for example
	1.2 Decrease in corruption	Decreased corruption leading to higher degree of equality and fairness in the society, economy etc.
	1.3 Improvement in public works	The idea of having a better operating administrative and public works system being beneficial for the community
	1.4 Increase in Taxes	Higher tax income due to more people/businesses earning more money is beneficial as it enables administration to invest more efficient
2 Economic	**2.1 Employment**	More and better employment leading to higher wealth of the overall society in that state, also increasing the willingness of foreign companies to invest into Andhra Pradesh
	2.2 Infrastructure	A better infrastructure is beneficial for all parts of the society. A well-established infrastructure also attracts investors
	2.3 Higher real estate value	Increasing Real Estate Values through a better and more stable situation
	2.4 Increased labor quality	Higher supply of qualified and well educated labor leads to increased wealth in the region
3 Culture	**3.1 Social classes**	Different social classes with different values and aspirations clearly largley influence the decision-making towards more equality
	3.2 Reputation	Establishing a good reputation of the state and its citizens will certainly benficial
	3.3 Social Systems	The improvement of social systems such as Healthcare, Education etc. is a vital benefit to be considered in the process of decision making
	3.4 Historical significance	With regard to the distinct history of the region, the influence is clear, so this aspect must not be underestimated in the decision making

ii. Opportunities Cluster/Nodes

Below, the criteria and subcriteria for the opportunities are illustrated:

Control Criteria	*Subcriteria*	*Description*
1 Political	**1.1 Long-term security**	Long-term opportunities from an increased state of security in the state, such as less crime/violence due to equality and higher education for example on a long-term bases
	1.2 Anti-corruption	Decreased corruption leading to higher degree of equality and fairness in the society, economy etc. Not only in the short, but also in the long run, therefore, it clearly is a huge opportunity for the state to be considered when making a decision
	1.3 Public works enhancement	Then enhancement of public works should always be a long term goal for every administration since it allows them to be more efficient being a huge advantage in the long run
	1.4 Taxnet increase	The taxnet increase offers an opportunity to be more flexible in the future in terms of general investments and spending patterns being surely beneficial for the society
2 Economic	**2.1 Support to Local Business**	Making a decision for the longer term, its impact on local businesses has to be considered. Some decisions offer a huge oppoertunity especially for local businesses.
	2.2 Foreign direct investment increase	Besides the opportunity for local businesses the foreign direct investments being advantageous for the region and the state are surely important influences in the decision making
	2.3 Employment generation	Having businesses investing at the same time means that they generate jobs. Those can and will be taken over by local people having a good education and training. Keeping this in mind when making a decision is essential
	2.4 Infrastructure	A better infrastructure is beneficial for all parts of the society. A well-established infrastructure also attracts investors
3 Culture	**3.1 Population distribution**	Tremendous differences in historical backgrounds but also in education and wealth lead to a very unbalanced population distribution and to a widening gap between the two main regions of the state, overcming the issues and balancing the population distribution is a great opportunity for economy and society
	3.2 Local affiliation	The strong local affiliations offer and opportunity for the future development of the region
	3.3 Upward mobility	Enabling more people to increase their skillset gives them a chance to move upwards in the society, which in the long term clearly is beneficial for the whole society
	3.4 Social systems	The improvement of social systems such as Healthcare, Education etc. is a vital benefit to be considered in the process of decision making also in the longer term

iii. Costs Cluster/Nodes

The structure for the costs Cluster with criteria and subcriteria is the following:

Control Criteria	*Subcriteria*	*Description*
1 Political	**1.1 Violence**	Depending on what decision is made, people in the region and in the state certainly will express their anger, resulting in potential violent riots, implying significant costs for the region
	1.2 Cost of corruption	The cost of corruption most likely is the cost of not making progress, therefore, immense costs are connected to corruptive activities
	1.3 Reduction in Taxes	Another expense will be a reduction in the tax income the administration has to for making investments etc. When making a decision, this has to be considered
	1.4 Election spending	Election campaigns are very costly in India, maybe even more than in western countries/regions. Depending on the decision very high spendings and hence costs will occur.
2 Economic	**2.1 Infrastructure development**	The development of infrastructure is always a costly activity. Hence, when making the decision those costs have to be taken into consideration doubtlessly
	2.2 Reduction in FDI	If the decision is not made in favor of foreign businesses coming into the region, general FDI is certainly reduced, meaning a loss on different levels such as taxes, employment etc.
	2.3 Unemployment	Unemployment always signifies a huge expense for a goverment and finally for the whole society having to deal with a high rate of unemployment. A cost position that cannot be forgotten in the decision making process
	2.4 Costs to business	Besides the decrease in new FDI, existing businesses might also struggle with certain decisions that are made, if they encounter themselves in unfavorbale situation afterwards
3 Culture	**3.1 Social instability**	Costs due to social instabilities have to be considered as well. People not really knowing what to expect might behave differently than normal not consuming that much or even leaving the country. Depending on the decision one might encounter riots and destruction.
	3.2 Stagnation	If nothing happens to forcing the economy the cost of stagnation and finally of losing track of stronger regions have to be considered
	3.3 Poverty	Costs of a big portion of the total population being very poor certainly impacts the decision making a lot.
	3.4 Illiteracy	People not being able to read and/or write are clearly not well educated and will find it very difficult to find jobs etc. Hence making a decision that will most likely not change anything about this issue implies costs to cover the gap in competitiveness and productivity that is created by not educating them

iv. Risks Cluster/Nodes

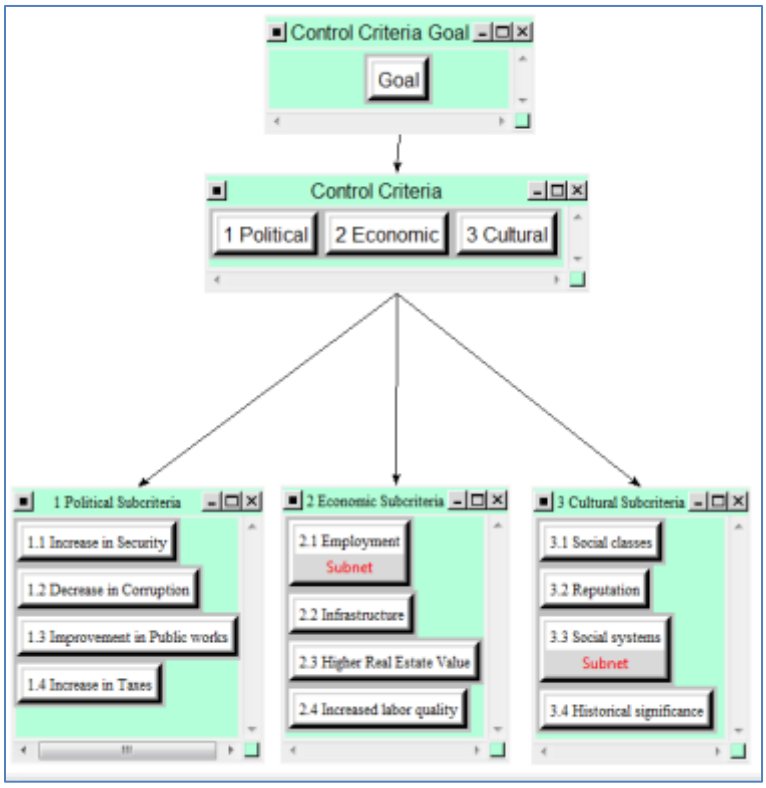
Finally, we look at the structural concept of the Risks cluster and the criteria/subcriteria:

Control Criteria	*Subcriteria*	*Description*
1 Political	**1.1 Government Instability**	Depending on the decision that is made, the risk of governmental instability is high. Not having a stable and sound institution is certainly a risk in the long run.
	1.2 Budget Gap	In case of a constant decrease in tax revenues for the administration, the risk of a steadily widening budget gap is severe.
	1.3 Increase in corruption	Increased corruption in the long term leads to an imbalanced, unequal state construct that surely not reflect the will of te majority of people.
	1.4 Increase in crime	The risk of incresed and steadily increasing crime rates due to imbalances in the system
2 Economic	**2.1 Trade barriers**	Eventually imposed trade barriers bear remarkable risks for both the state as well as for businesses operating in the region
	2.2 Inflation	The risk of long-term decrease in the value of money
	2.3 Reduced labor supply	The supply of qualified labor is essential for business being successful or being willing to invest in the region/state. If an adequate supply of labor is not guaranteed this might become a big issue in the long-run
	2.4 Purchasing Power	People not having a high purchasing power due to the decision that was made lose their competitiveness and their attractiveness to marketers
3 Culture	**3.1 Cultural Isolation**	The risk of cultural isolation also might imply the risk of building extreme negative opinions and images towards other cultures
	3.2 Societal Imbalances	Risks due to societal imbalances have to be considered in the long run as well. People not really knowing what to expect might behave differently than normal not bein able or willing to consum that much or even leaving the country. Depending on the decision one might encounter riots and destruction.
	3.3 Psychological divide	Decisions might strengthen the perceived divide of the two main regions leading to future instabilities and problems.
	3.4 Increase in poverty	Risks of a big portion of the total population being very poor certainly impacts the decision making since long term poverty is hard to handle most likely causing severe problems on all levels of the society.

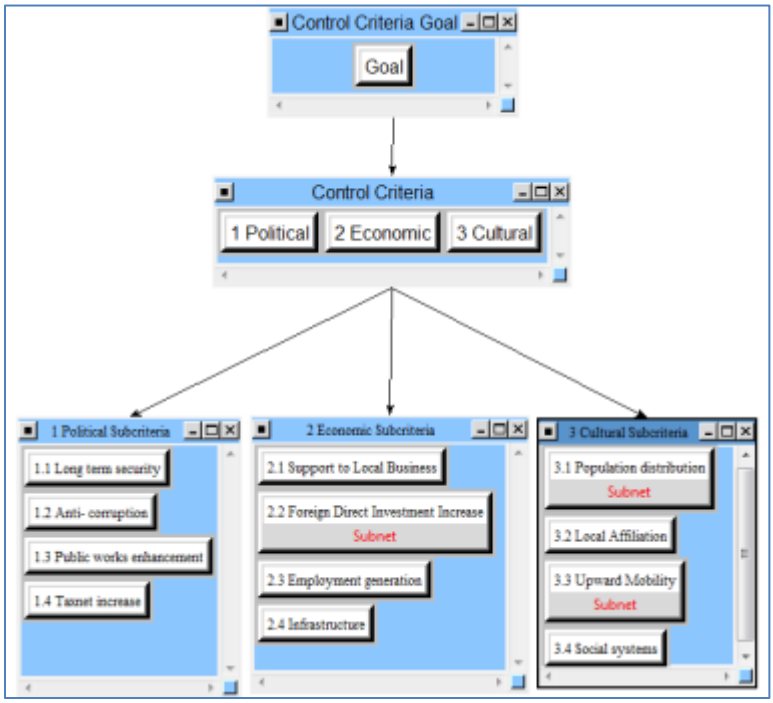
After developing the above mentioned and explained criteria with its subcriteria and structured them according to the BOCR, we then were able to build the hierarchical models under each of the BOCR criteria. The following screenshots should give an impression how the hierarchical models looked like in the model:

b. Hierarchical Models

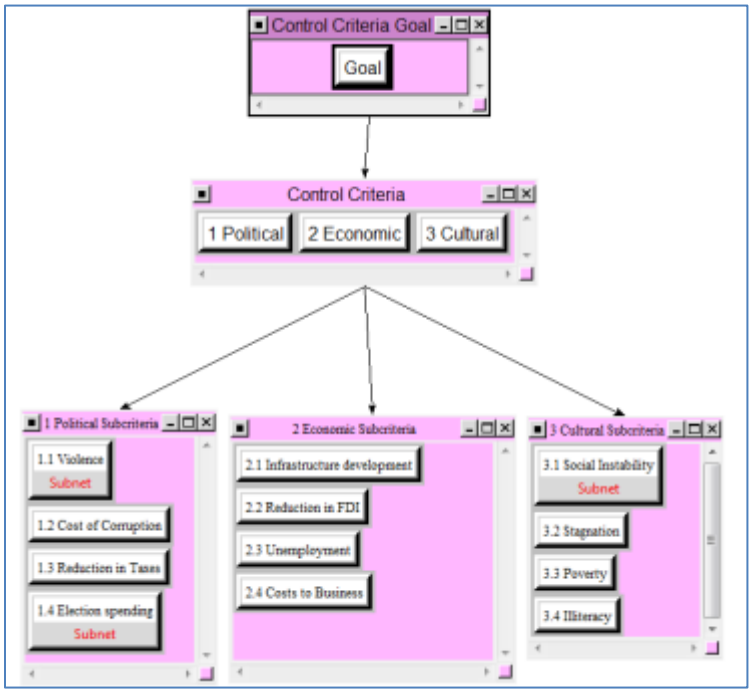
i. Benefits



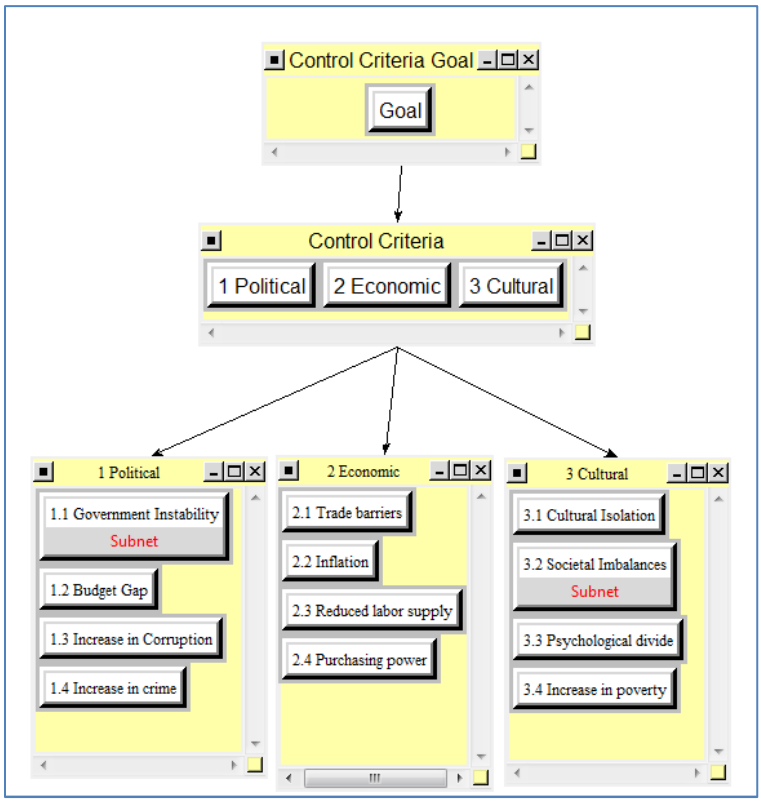
ii. Opportunities



iii. Costs

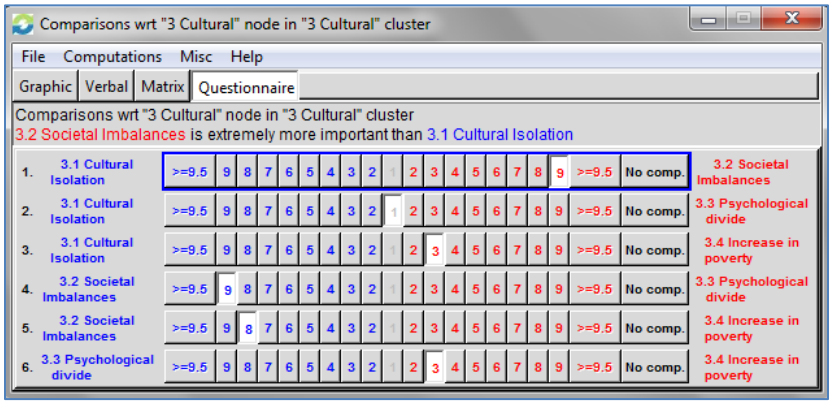


iv. Risks



In the following step of developing the model, we compared the criteria as well as the subcriteria pairwise in order to enable the SuperDecisions Software to calculate the respective priorities for every

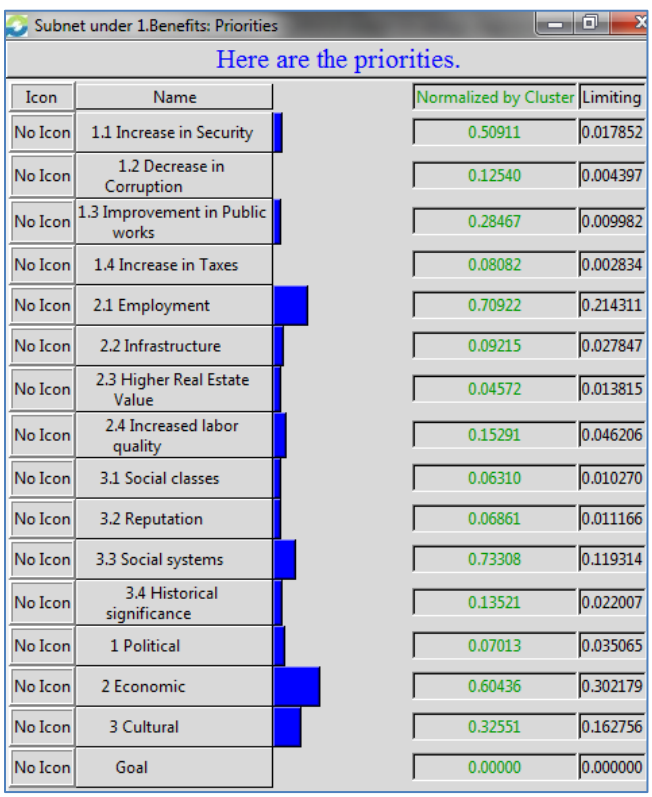
criterion and sub-criterion. Doing so, we finally identified the most important subcriteria for each Control Criteria Goal (Benefit, Opportunity, Cost, Risk) by considering the “top 70%” of the respective priorities. For the pairwise comparison we ensured that the inconsistency values were never higher than the given 0.1 threshold. An example for the pairwise comparison is shown below:



c. Priorities after Pairwise Comparison

As mentioned above, after pairwise comparing all criteria and subcriteria in the model, we got the priorities accordingly:

i. Benefits



Icon	Name	Normalized by Cluster	Limiting
No Icon	1.1 Increase in Security	0.50911	0.017852
No Icon	1.2 Decrease in Corruption	0.12540	0.004397
No Icon	1.3 Improvement in Public works	0.28467	0.009982
No Icon	1.4 Increase in Taxes	0.08082	0.002834
No Icon	2.1 Employment	0.70922	0.214311
No Icon	2.2 Infrastructure	0.09215	0.027847
No Icon	2.3 Higher Real Estate Value	0.04572	0.013815
No Icon	2.4 Increased labor quality	0.15291	0.046206
No Icon	3.1 Social classes	0.06310	0.010270
No Icon	3.2 Reputation	0.06861	0.011166
No Icon	3.3 Social systems	0.73308	0.119314
No Icon	3.4 Historical significance	0.13521	0.022007
No Icon	1 Political	0.07013	0.035065
No Icon	2 Economic	0.60436	0.302179
No Icon	3 Cultural	0.32551	0.162756
No Icon	Goal	0.00000	0.000000

ii. Opportunities

Subnet under 2.Opportunities: Priorities

Here are the priorities.

Icon	Name	Normalized by Cluster	Limiting
No Icon	1.1 Long term security	0.14544	0.005455
No Icon	1.2 Anti- corruption	0.16405	0.006153
No Icon	1.3 Public works enhancement	0.45780	0.017171
No Icon	1.4 Taxnet increase	0.23272	0.008729
No Icon	2.1 Support to Local Business	0.14133	0.019684
No Icon	2.2 Foreign Direct Investment Increase	0.70958	0.098825
No Icon	2.3 Employment generation	0.09138	0.012727
No Icon	2.4 Infrastructure	0.05770	0.008036
No Icon	3.1 Population distribution	0.11477	0.037096
No Icon	3.2 Local Affiliation	0.04472	0.014453
No Icon	3.3 Upward Mobility	0.70750	0.228678
No Icon	3.4 Social systems	0.13302	0.042994
No Icon	1 Political	0.07501	0.037507
No Icon	2 Economic	0.27854	0.139272
No Icon	3 Cultural	0.64644	0.323221
No Icon	Goal	0.00000	0.000000

iii. Costs

Subnet under 3.Costs: Priorities

Here are the priorities.

Icon	Name	Normalized by Cluster	Limiting
No Icon	1.1 Violence	0.13836	0.046311
No Icon	1.2 Cost of Corruption	0.10075	0.033722
No Icon	1.3 Reduction in Taxes	0.04990	0.016701
No Icon	1.4 Election spending	0.71099	0.237972
No Icon	2.1 Infrastructure development	0.41611	0.018297
No Icon	2.2 Reduction in FDI	0.18901	0.008311
No Icon	2.3 Unemployment	0.11205	0.004927
No Icon	2.4 Costs to Business	0.28284	0.012437
No Icon	3.1 Social Instability	0.68508	0.083115
No Icon	3.2 Stagnation	0.12444	0.015097
No Icon	3.3 Poverty	0.08293	0.010061
No Icon	3.4 Illiteracy	0.10756	0.013049
No Icon	1 Political	0.66941	0.334707
No Icon	2 Economic	0.08794	0.043971
No Icon	3 Cultural	0.24264	0.121322
No Icon	Goal	0.00000	0.000000

iv. Risks

Subnet under 4.Risks: Priorities

Here are the priorities.

Icon	Name	Normalized by Cluster	Limiting
No Icon	1.1 Government Instability	0.71796	0.212419
No Icon	1.2 Budget Gap	0.05822	0.017225
No Icon	1.3 Increase in Corruption	0.10207	0.030198
No Icon	1.4 Increase in crime	0.12175	0.036022
No Icon	2.1 Trade barriers	0.09747	0.003658
No Icon	2.2 Inflation	0.36061	0.013533
No Icon	2.3 Reduced labor supply	0.31830	0.011945
No Icon	2.4 Purchasing power	0.22362	0.008392
No Icon	3.1 Cultural Isolation	0.06132	0.010217
No Icon	3.2 Societal Imbalances	0.73028	0.121672
No Icon	3.3 Psychological divide	0.06132	0.010217
No Icon	3.4 Increase in poverty	0.14707	0.024503
No Icon	1 Political	0.59173	0.295864
No Icon	2 Economic	0.07506	0.037528
No Icon	3 Cultural	0.33322	0.166608
No Icon	Goal	0.00000	0.000000

Taking these priorities and calculating the "top 70%" for each Hierarchy model (BOCR), we get the overview that is shown below:

v. Priorities Summary

CRITERIA AND THEIR PRIORITIES				
Merits	**Criteria**	**Subcriteria**	**Priorities**	**Normalized Priorities**
Benefits	Political	Increase in Security	0.01833	0.03666
	0.0701	Decrease in Corruption	0.003923	0.00785
		Improvement in public works	0.009787	0.01957
		Increase in Taxes	0.003025	0.00605
	Economic	**Employment**	0.214311	0.42862
	0.6044	Infrastructure	0.027847	0.05569
		Higher Real estate value	0.013815	0.02763
		Increased labor quality	0.046206	0.09241
	Cultural	Social classes	0.010269	0.02054
	0.3255	Reputation	0.011165	0.02233
		Social systems	0.119315	0.23863
		Historical significance	0.022007	0.04401
	Total Benefits:		**0.5**	**67%**
Opportunities	Political	Long term security	0.004962	0.00992
	0.075	Anti-corruption	0.006744	0.01349
		Public works enhancement	0.017292	0.03458
		Taxnet Increase	0.008508	0.01702
	Economic	Support to local businesses	0.019684	0.03937
	0.2785	**Foreign Direct Investment increase**	0.098825	0.19765
		Employment generation	0.012727	0.02545
		Infrastructure	0.008036	0.01607
	Cultural	**Population distribution**	0.037096	0.07419
	0.6464	Local affiliation	0.014453	0.02891
		Upward mobility	0.228678	0.45736
		Social systems	0.042994	0.08599
	Total Opportunities:		**0.5**	**73%**
Costs	Political	**Violance**	0.046311	0.09262
	0.6694	Cost of corruption	0.033722	0.06744
		Reduction in taxes	0.016701	0.03340
		Election spending	0.237972	0.47594
	Economic	Infrastructure development	0.018297	0.03659
	0.0879	Reduction in FDI	0.008311	0.01662
		Unemployment	0.004927	0.00985
		Costs to Business	0.012437	0.02487
	Cultural	**Social instability**	0.083115	0.16623
	0.2426	Stagnation	0.015097	0.03019
		Poverty	0.010061	0.02012
		Illiteracy	0.013049	0.02610
	Total Costs:		**0.5**	**73%**
Risks	Political	**Government Instability**	0.212419	0.42484
	0.5917	Budget gap	0.017225	0.03445
		Increase in corruption	0.030198	0.06040
		Increase in crime	0.036022	0.07204
	Economic	Trade barriers	0.003658	0.00732
	0.0751	Inflation	0.013533	0.02707
		Reduced labor supply	0.011945	0.02389
		Purchasing power	0.008392	0.01678
	Cultural	Cultural Isolation	0.010217	0.02043
	0.3332	**Societal imbalances**	0.121671	0.24334
		Psychological divide	0.010217	0.02043
		Increase in poverty	0.024503	0.04901
	Total Risks:		**0.5**	**67%**

The above overview highlights the most important subcriteria for each merit according to the "top 70%" rule. Deriving the most relevant subcriteria allows us to then develop and design the last and most

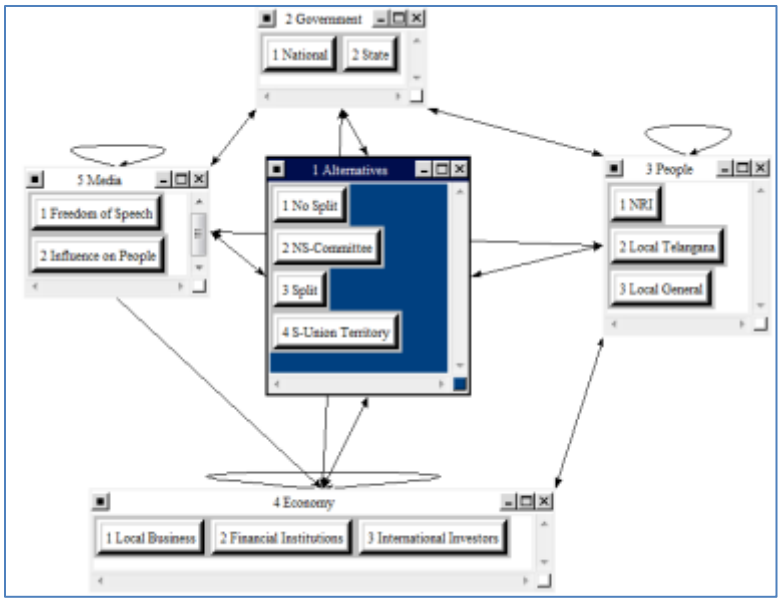
detailed level of our overall model: the ANP networks for the top subcriteria, at that point bringing in the alternatives that were introduced at the beginning of this report. The evaluation of the four alternatives is done based on the "stakeholders-approach." That means that we basically included the most relevant stakeholders having an interest in the respective underlying subcriteria and pointed out their relationships and influences among each other as well as towards the alternatives.

d. ANP Models

In the ANP models we used the following abbreviations for the alternatives to make the model more clearly arranged:

Abbreviation	Description
No Split	Do not split the State (Status Quo)
NS-Committee	Do not split the State, but create a Development Committee for the betterment of the Telangana Region
Split	Split the State, keeping Hyderabad as the capital of Telangana and develop a new capital for Andhra
S-Union Territory	Spilt the State and convert Hyderabad into a Union Territory

i. ANP model for Benefits → Economic Subcriteria → Employment



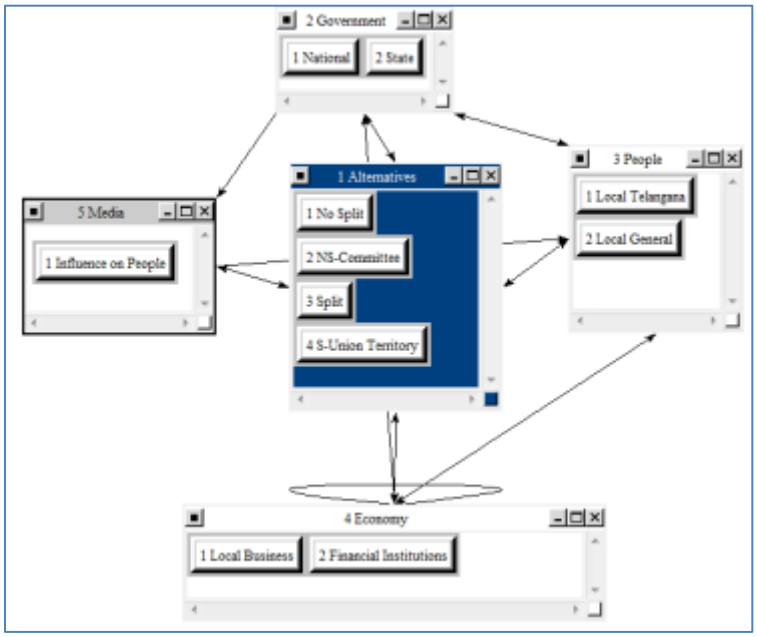
For this model, we identified the following stakeholders having an interest towards the benefits for employment:

- Government
  - National
  - State
- People

    - Non-Resident-Indians (NRIs – basically Expats having relatives or close friends in India, whom they mostly support financially)
    - Local population of Telangana
    - The remaining portion of the state's population
- Economy
    - Local Businesses
    - Financial Institutions
    - International Investors
- Media
    - Influence on people
    - Freedom of Speech

All of the above mentioned parties have an influence on the alternatives and vice versa; they all are affected by the decision that is made, in the one way or in the other. Furthermore, a lot of the stakeholders influence each other also (which can be seen in the arrows going back and forth between the stakeholders clusters.

ii. ANP Model for Benefits → Cultural Subcriteria → Social Systems



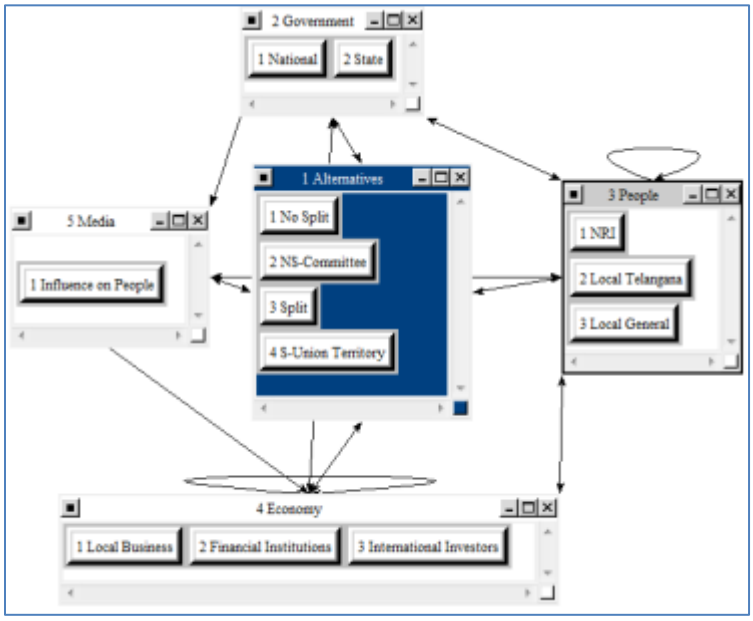
For this model, we identified the following stakeholders having an interest towards the benefits for employment:

- Government
    - National
    - State
- People
    - Local population of Telangana

    - The remaining portion of the state's population
- Economy
    - Local Businesses
    - Financial Institutions
- Media
    - Influence on people

Compared to the first ANP model we developed, it can be seen, that for this model, we removed some of the stakeholders, since we felt that they are not necessarily relevant for the Social Systems subcriteria. However, the interactions and influences are again very strong and are illustrated by the arrows in the model.

iii. ANP Model for Opportunities → Economic Subcriteria → Foreign Direct Investment Increase



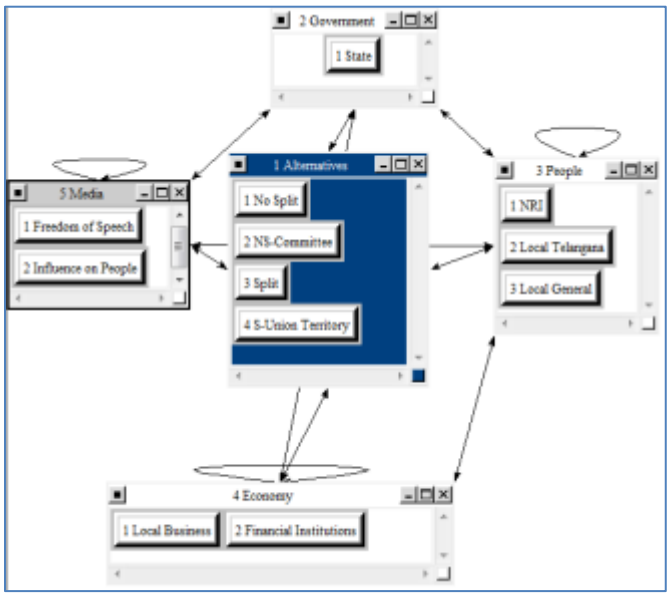
For this model, we identified the following stakeholders having an interest towards the benefits for employment:

- Government
    - National
    - State
- People
    - NRIs
    - Local population of Telangana
    - The remaining portion of the state's population
- Economy
    - Local Businesses
    - Financial Institutions

    - International Investors
- Media
    - Influence on people

Here again, the stakeholders are adapted according to the subcriteria.

iv. ANP Model for Opportunities → Cultural Subcriteria → Population Distribution

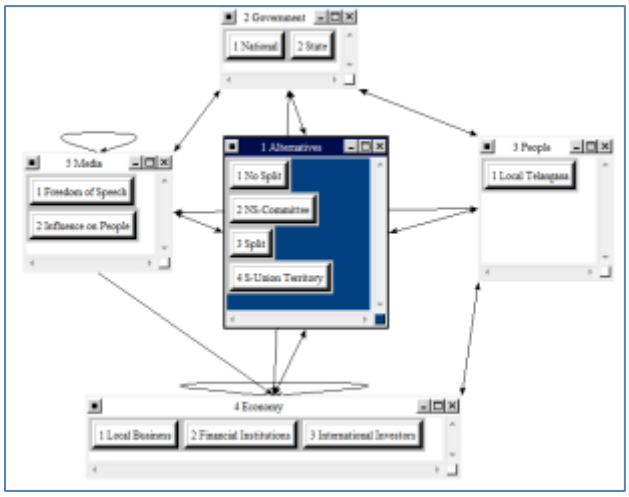


For this model, we identified the following stakeholders having an interest towards the benefits for employment:

- Government
    - State
- People
    - NRIs
    - Local population of Telangana
    - The remaining portion of the state's population
- Economy
    - Local Businesses
    - Financial Institutions
- Media
    - Influence on people
    - Freedom of Speech

Here again, the stakeholders are adapted according to the subcriteria.

v. ANP Model for Opportunities → Cultural Subcriteria → Upward Mobility

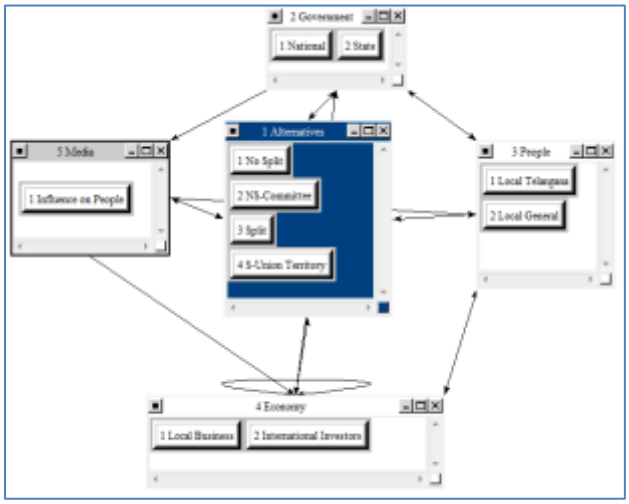


For this model, we identified the following stakeholders having an interest towards the benefits for employment:

- Government
  - State
  - National
- People
  - Local population of Telangana
- Economy
  - Local Businesses
  - Financial Institutions
  - International Investors
- Media
  - Influence on people
  - Freedom of Speech

Here again, the stakeholders are adapted according to the subcriteria.

vi. ANP Model for Costs → Political Subcriteria → Violence

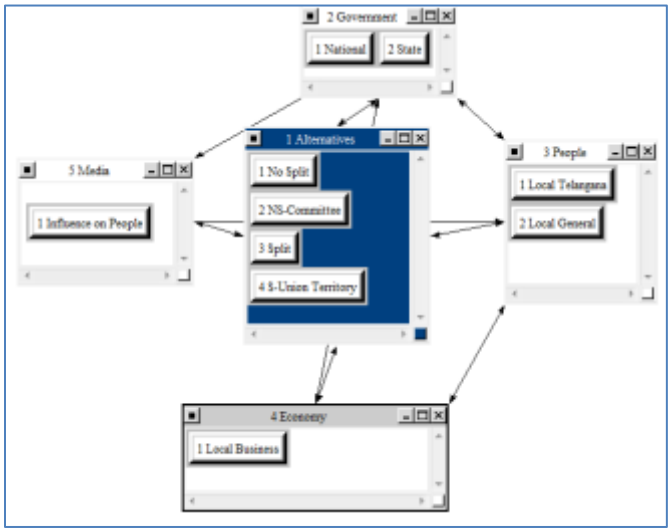


For this model, we identified the following stakeholders having an interest towards the benefits for employment:

- Government
  - State
  - National
- People
  - Local population of Telangana
  - Local General
- Economy
  - Local Businesses
  - International Investors
- Media
  - Influence on people

Here again, the stakeholders are adapted according to the subcriteria.

vii. ANP Model for Costs → Political Subcriteria → Election Spending

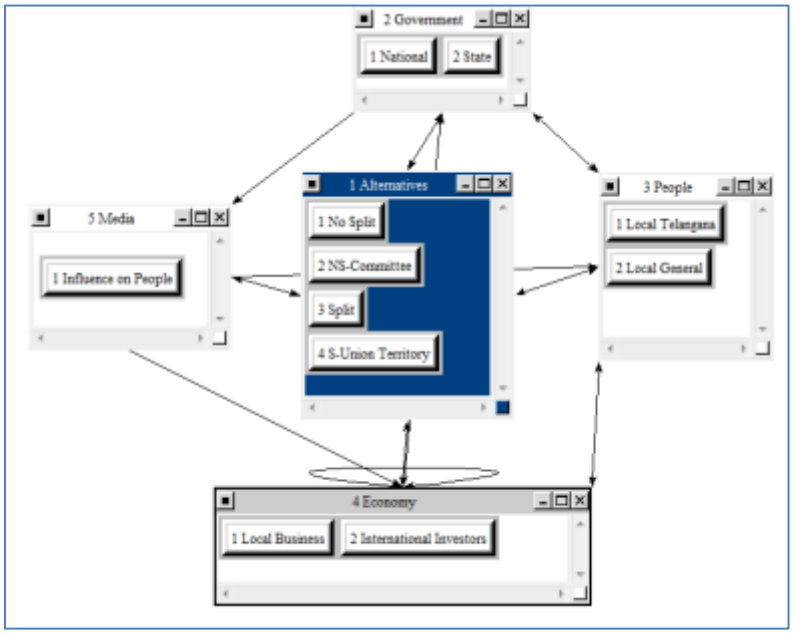


For this model, we identified the following stakeholders having an interest towards the benefits for employment:

- Government
  - State
  - National
- People
  - Local population of Telangana
  - Local General
- Economy
  - Local Businesses
- Media
  - Influence on people

Here again, the stakeholders are adapted according to the subcriteria.

viii. ANP Model for Costs → Cultural Subcriteria → Social Instability

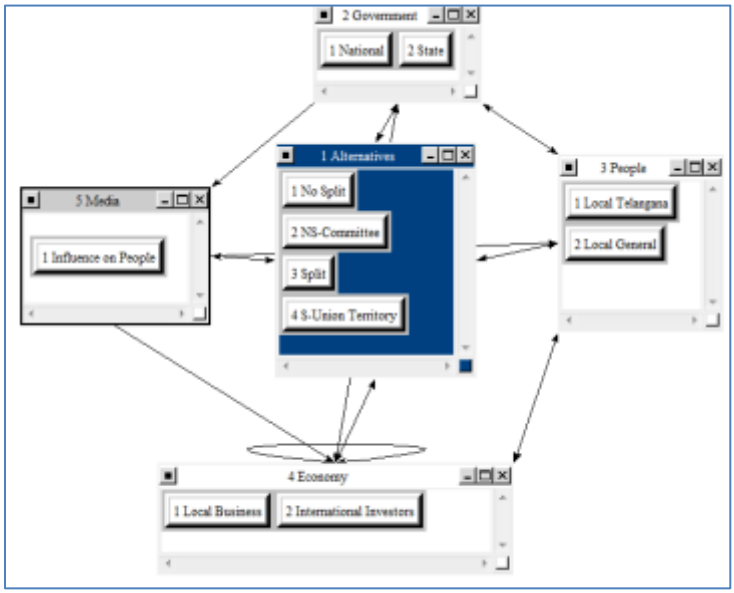


For this model, we identified the following stakeholders having an interest towards the benefits for employment:

- Government
  - State
  - National
- People
  - Local population of Telangana
  - Local General
- Economy
  - Local Businesses
  - International Investors
- Media
  - Influence on people

Here again, the stakeholders are adapted according to the subcriteria.

ix. ANP Model for Risks → Political Subcriteria → Government Instability

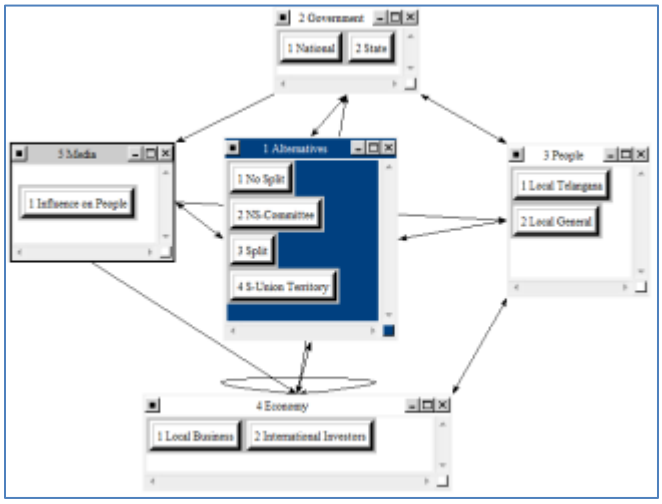


For this model, we identified the following stakeholders having an interest towards the benefits for employment:

- Government
  - State
  - National
- People
  - Local population of Telangana
  - Local General
- Economy
  - Local Businesses
  - International Investors
- Media
  - Influence on people

Here again, the stakeholders are adapted according to the subcriteria.

x. ANP Model for Risks → Cultural Subcriteria → Societal Imbalances



For this model, we identified the following stakeholders having an interest towards the benefits for employment:

- Government
  - State
  - National
- People
  - Local population of Telangana
  - Local General
- Economy
  - Local Businesses
  - International Investors
- Media
  - Influence on people

Here again, the stakeholders are adapted according to the subcriteria.

e. The Ratings Model

Once we fully developed the BOCR part of the model, we then were able to finish the whole decision model by designing the ratings model, forming the second and final part. We completed the decision making process by taking the results from the BOCR part to provide us with the final and most adequate decision to make about the future of Andhra Pradesh.

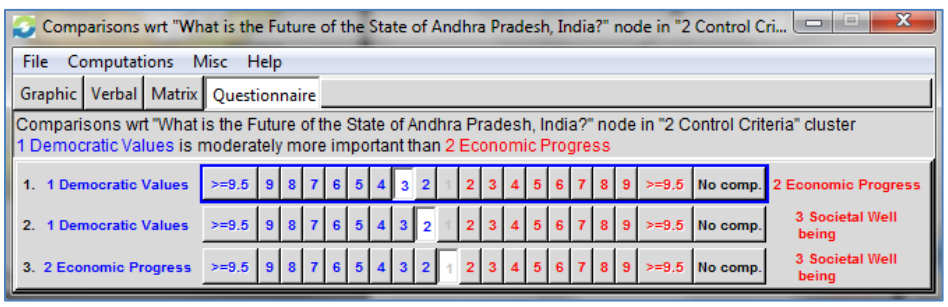
For the Ratings model, we first identified possible strategic and overarching criteria, which we best could apply to all relevant alternatives coming out of the BOCR part of the model. In that context the most important and universal criteria are the following:

1. Democratic Values

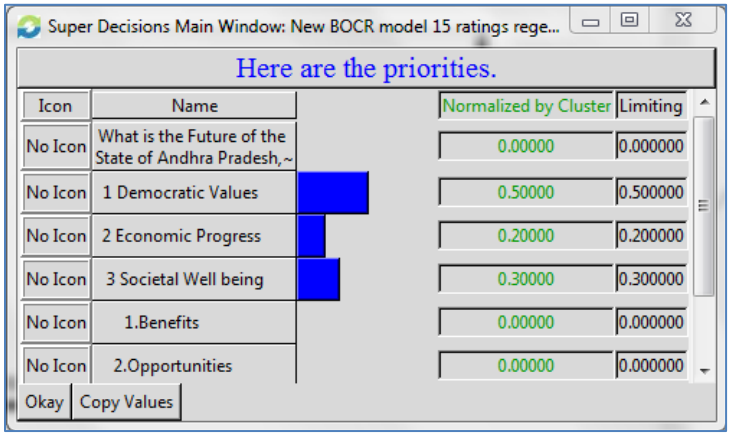
- The democratic values that are conveyed by the respective alternatives clearly is a very important measurement and evaluation criteria, since protecting or if necessary extending the democratic values should be the most important and pursued goal for every administration and society in general.

2. Economic Progress
   - Being successful in establishing and increasing a certain degree of wealth, forcing and supporting the economic progress doubtlessly is crucial. Hence, every alternative that is favored for each of the BOCR control criteria has to be evaluated with regard to its impact on the economic progress of Andhra Pradesh.
3. Societal Well being
   - Finally, the societal well-being also plays an important and decisive role for the final decision. Only if the aspect of societal well-being is well considered, it will be possible to successfully make and implement a decision for the long-term. Basically every governmental or economic activity largely relies on and thus depends on the societal well-being. If this should not be the case, the decision will not be easily and widely accepted by the population and the society. Furthermore, businesses and investors are more likely to invest into a region, where the societal structure is clearly aiming at or has already achieved a status of overall well-being.

Given the fact that the above mentioned strategic evaluation criteria have a different importance with regard to the decision making about the future of Andhra Pradesh, we weighted the criteria as follows:



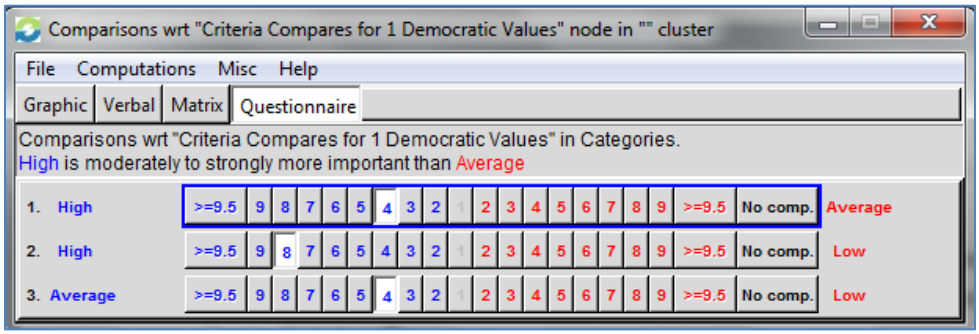
Resulting in the respective priorities:



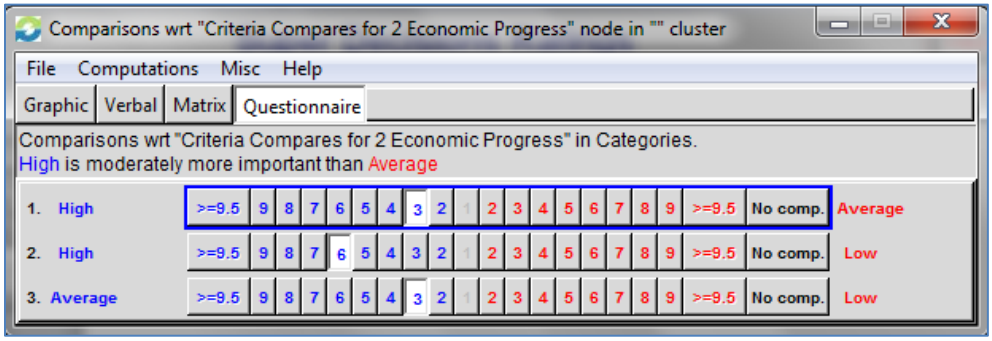
Next, after prioritizing the criteria, we established the ratings-values/options describing the impact of the recommended decision from each of the BOCR control criteria as follows:

- high impact
- average impact
- low impact

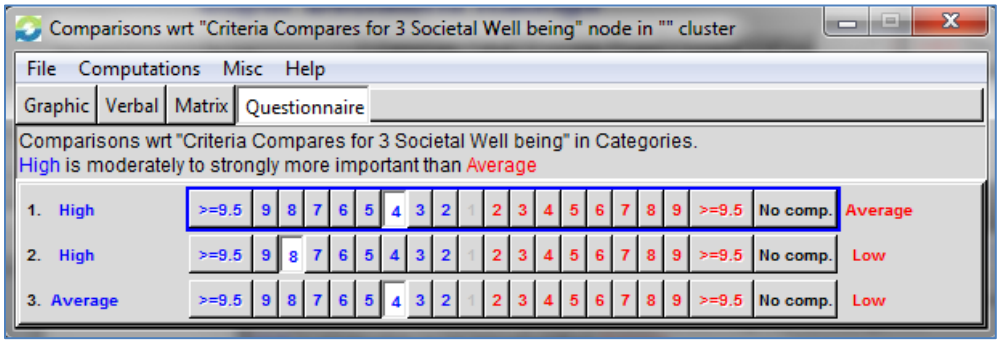
Assessing the comparison of those ratings, we get the following for the Democratic Values criteria:



For Economic Progress:



And finally for Societal Well-being:



As the last step in developing the model and before getting the final result, we rated the BOCR criteria according to the above introduced “impact-on-the-strategic-criteria” values, resulting in the below shown ratings table:

Ratings for Super Decisions Main Window: New BOCR model 15 ratings regenerated_ch...

File Edit View Calculations Help

Super Decisions Ratings

	Priorities	Totals	1 Democratic Value 0.500000	2 Economic Progre: 0.200000	3 Societal Well beir 0.300000
1.Benefits	0.113087	0.281101	Average	Low	Average
2.Opportunities	0.269865	0.670808	High	Average	Average
3.Costs	0.352541	0.876315	High	Average	High
4.Risks	0.264507	0.657489	Average	High	High

This final ratings table illustrates our rating towards the impact of the recommended alternatives (please refer to the following results part for the actual alternatives that were recommended) for each of the benefits, opportunities, costs and risks on the strategic criteria of democratic values, economic progress and societal well-being.

Note in context that the benefits and costs parts rather focus on the short term impact, whereas opportunities and risks put more emphasis on the longer-term impact on the strategic criteria.

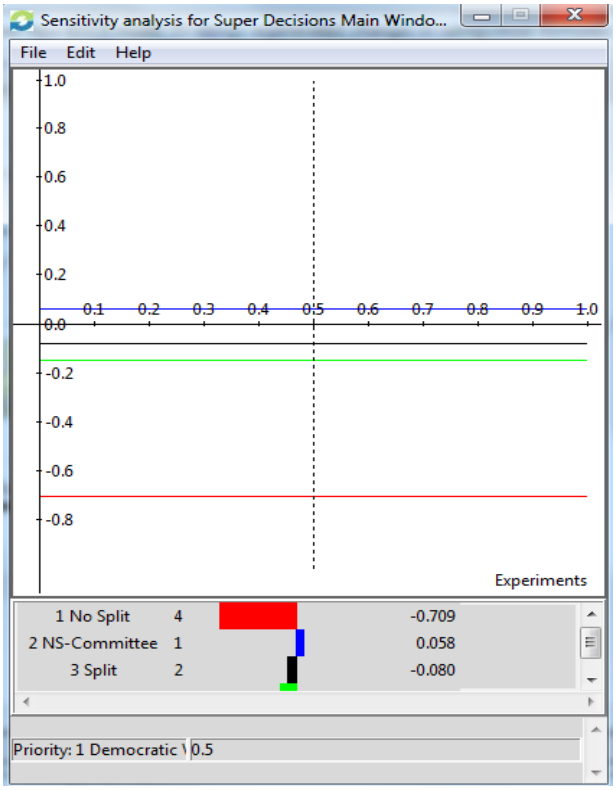
In particular, we had the impression that the impact of the suggested alternative for benefits has an average impact on the democratic values, a low (positive) impact on the economic progress and an average impact on the societal well-being. In contrast to that, for the best alternative in opportunities, we see a high long-term impact on democratic values, an average on economic progress and also an average impact on the societal well-being in the long-term.

The costs alternative has a high cost impact on the democratic values, however comes along with average costs on economic progress and again relatively high costs on the societal well-being. For the recommended alternative in risks, we evaluate the impact on the democratic values in the long term from a risk perspective as average, as highly risky on the economic progress and also with high risk in the societal well-being.

Once the rating is finalized, we get the overall result and recommendation of the model what alternative is the best choice for our question/decision problem about the future of Andhra Pradesh by synthesizing the model.

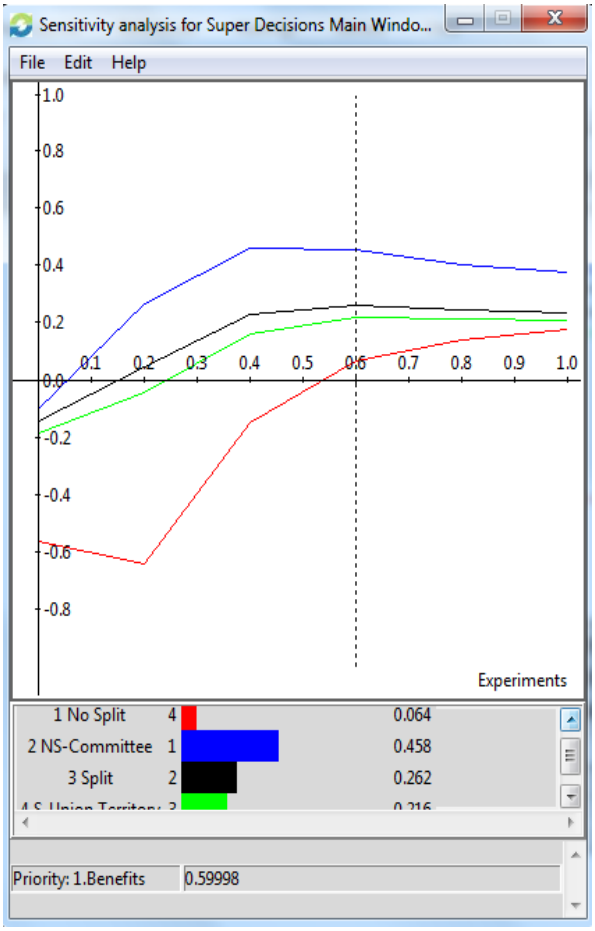
3. Sensitivity Analysis

To better understand how the priority weights will affect the model outcomes, a sensitivity analysis was conducted for each of the BOCR nodes. The results of the exercise are in the following section. The figure below represents the best option, Alternative 2, based on the normalized results from the overall model using the Additive (negative) feature. Sensitivity analysis cannot be conducted in the Multiplicative formula will cause the B, O, C, and R to cancel each other out.


Sensitivity analysis for Super Decisions Main Windo...
File Edit Help
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
-0.8
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
Experiments
1 No Split 4 -0.709
2 NS-Committee 1 0.058
3 Split 2 -0.080
Priority: 1 Democratic \ 0.5

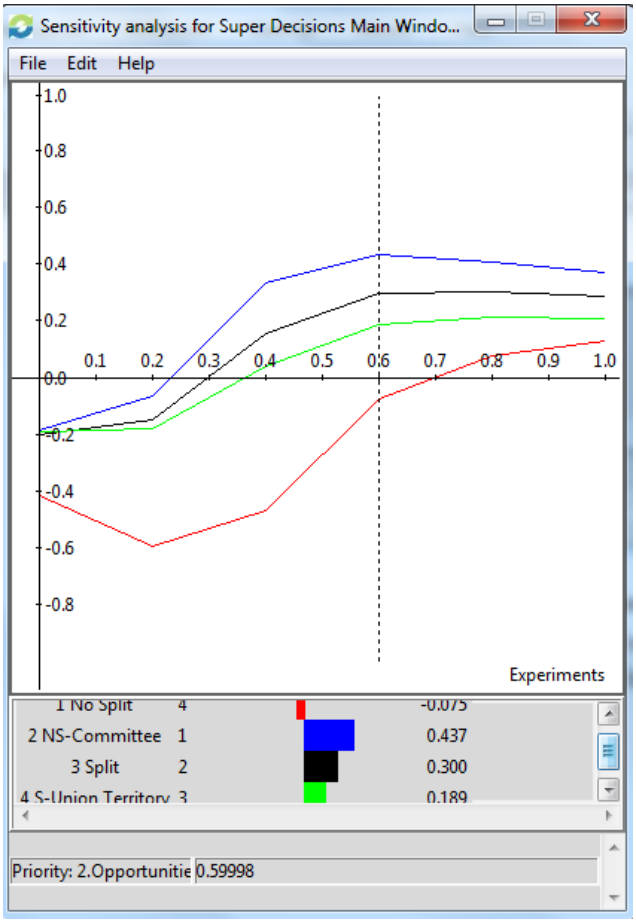
3.1 Benefits

Despite the weighting of the BOCR model, Alternative 2 (No Split but Form Development Committee) will be the highest ranked alternative. However, Alternative 3 and 4 are more closely ranked to Alternative 2, if ***Benefits*** is weighted under 5%. Interestingly, Alternative 2 levels out at the best option with .458 rating if ***Benefits*** is rated between 40-60%.



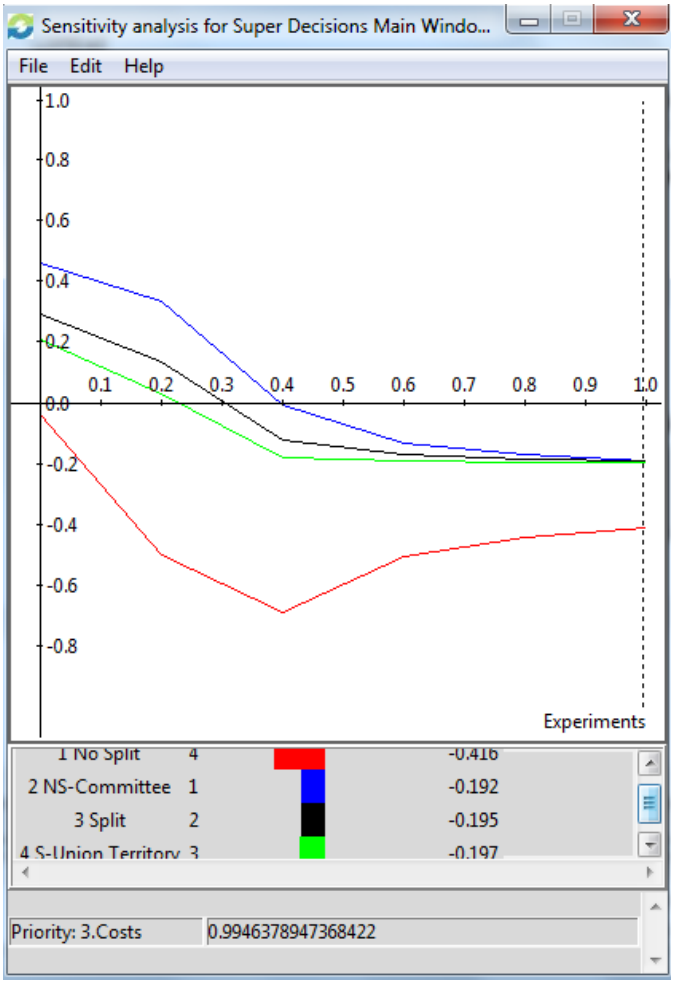
3.2 Opportunities

Similar to Benefits, Alternative 2 (No Split but Form Development Committee) will be the highest ranked alternative no matter what the rating weight applied to ***Opportunities***, though the Alternative 2, 3, and 4 are very close if the weight is under 10%. Alternative 1 will ranked the lowest regardless of the weighting. Alternative 2 has its highest rating when ***Opportunities*** is weighted at approximately 60%.



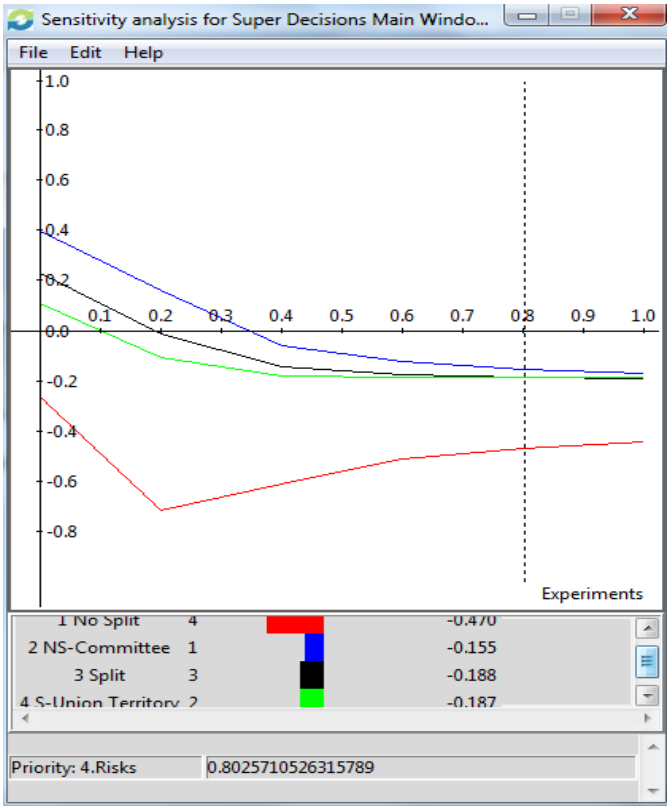
3.3 Costs

Alternative 2 (No Split but Form Development Committee) is still the preferred option despite the weighting applied to ***Costs***. Similar to ***Benefits*** and ***Opportunities***, the Alternatives 2, 3 and 4 are closely ranked if ***Costs*** is weight over 90%. However, Alternative 1 (No Split) is still the less preferred since it would be the most costly option.



3.4 Risks

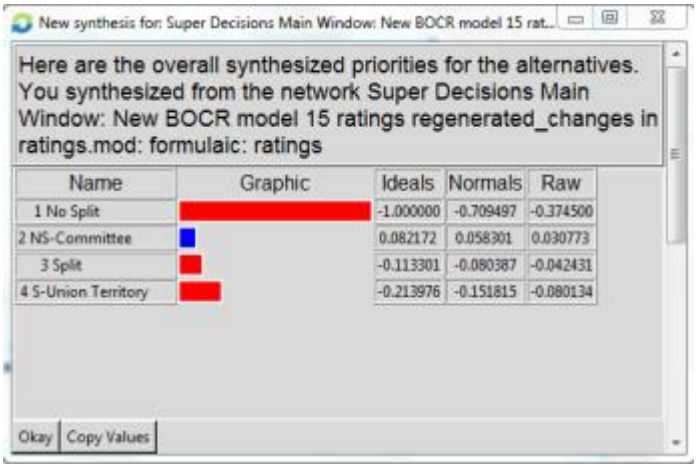
Alternative 2 (No Split but Form Development Committee) would be the most preferred option despite the weight of importance applied to ***Risks***. However, if a rating of 78.4% is applied to Risks, Alternatives 2, 3, and 4 would tie in the rankings. If a weighted rating of approximately 80.25% or above is applied to ***Risks***, then Alternative 4 (Union Territory) is the preferred option.



4 Results and Conclusion

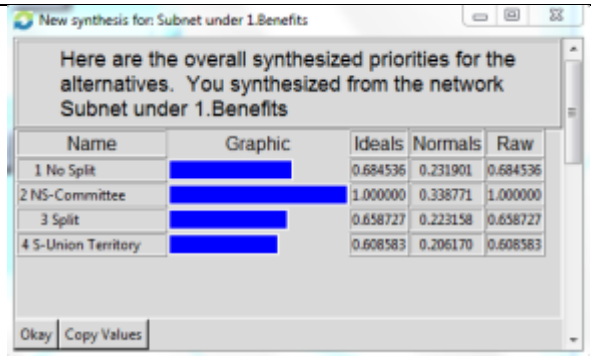
4.1 Additive (Negative)

Based on the additive sensitivity analysis, the best short term option is Alternative 2, (No Split but Form Development Committee).

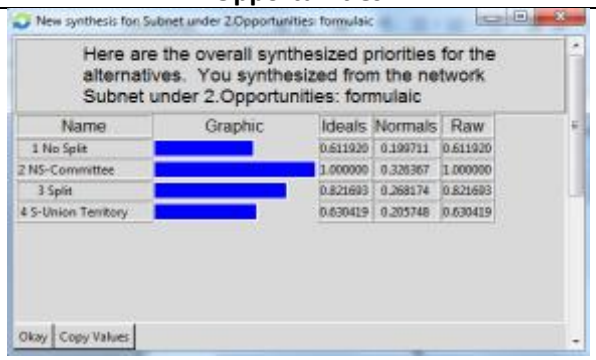


The same conclusion of selecting Alternative 2 (No Split but Form Development Committee) is rated the highest in the ***Benefits*** and ***Opportunities*** sub-networks. For the ***Costs*** and ***Risks*** sub-networks, Alternative 1 (No Split) was considered the most costly and Alternative 4 (Union Territory) was least costly option. However, Alternatives 2 and 3 were close to Alternative 4, particularly under ***Risks***.

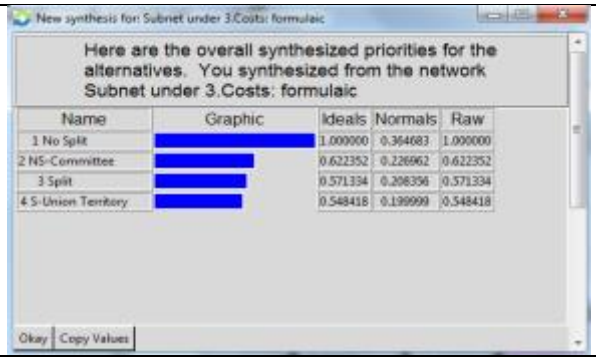
Benefits



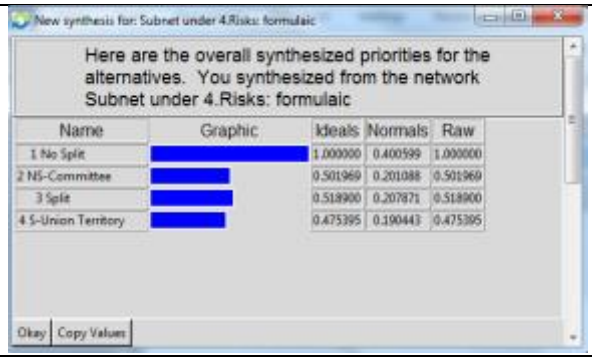
Opportunities



Costs

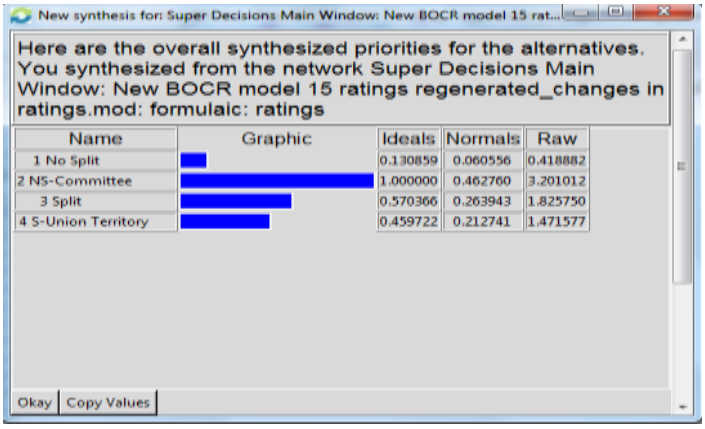


Risks



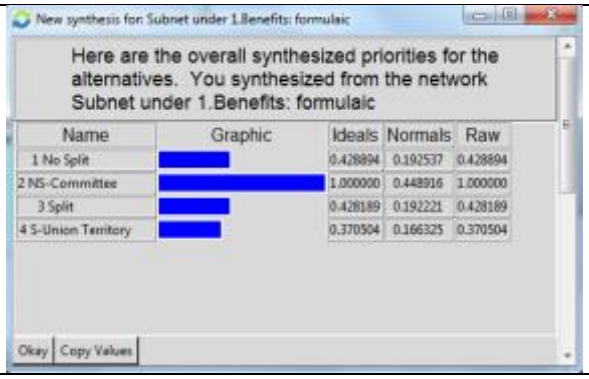
4.2 Multiplicative

Based on the multiplicative computation, the best short term option is still Alternative 2, (No Split but Form Development Committee).

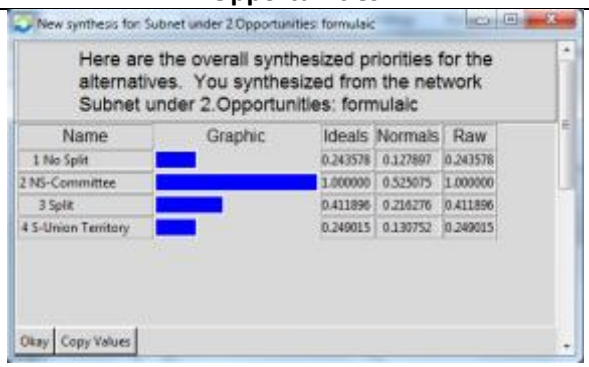


The same conclusion of selecting Alternative 2 (No Split but Form Development Committee) is rated the highest in the ***Benefits*** and ***Opportunities*** sub-networks. For the ***Costs*** and ***Risks*** sub-networks, Alternative 1 (No Split) was considered the most costly and Alternative 4 (Union Territory) was least costly option. However, Alternatives 2 and 3 were close to Alternative 4, particularly under ***Risks***.

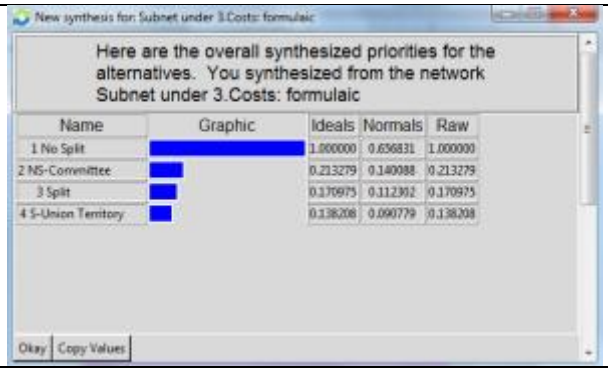
Benefits



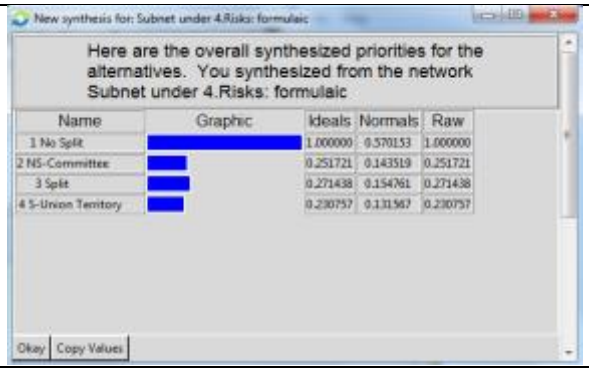
Opportunities



Costs



Risks



4.3 Conclusion

Based on the results of the model, the best alternative selection for the region of Telegana in Andhra Pradesh is to not split into a separate state but create a development committee for the betterment of the region. Not only is this the best option selected by the model both in the short and long term, but this alternative was also designated the preferred, most workable choice by the Srikrishna Committee. (New Delhi Television Ltd., 2011)

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