Decision Making Final Project

Mitsubishi Strategy Selection

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Background

In 2012, Mitsubishi Motors commenced production of MiEV, an electric car, in its U.S plant. From that base, the company planned to expand sales in North America and export vehicles to other regions.

In mature markets like North America, demand recovery is expected in the following years. But Mitsubishi planned to move one step ahead of market needs by introducing eco-cars. Some analysts and shareholders doubted its strategy because of electric car's usage limitation and expensive retail price. They recommend Mitsubishi continue focusing on compact, fuel-efficient models and prioritize investments targeting the expansion of its sales network.

Despite many years of development and marketing, electric cars' future continues to remain unpredictable. Thousands of electric cars were sold in 2011, but compared with a total market of 12.8 million vehicles such numbers are still too tiny. Yet many manufacturers are still preparing to enter this new market.

Our project is to analyze the best decision for Mitsubishi Motors. We use the ANP method to compare all tangible and intangible criteria against the benefits, opportunities, costs and risks of a set of alternatives to see which alternative Mitsubishi should adopt.

The first step in this process is to define a goal. In this case, the goal is to determine the best business strategy for Mitsubishi Motors to compete in the U.S. market. Next, we identify the strategic criteria to provide the framework for the decision:

Alternatives

The following alternatives are used in our ANP model

- Invest more on electricity car
- Remain the current strategy

Main structure of overall network

The following table illustrates the Benefits, Opportunities, Costs, and Risks (BOCR) that are identified for the evaluation of two alternatives.

Merits	Criteria	Sub-criteria	Bottom-criteria	Merits	Criteria	Sub-criteria	Bottom-criteria
Benefits	Economic	Market	Brand image	Costs	Financial	Manufacturing	Component
			Industry competition status				Labor
			Market share			Marketing	Advertisement
		Financial	After sales service cost				Promotion activities
			Tax incentives		Operational	Manufacturing	Manufacturing technology level
	Environmental	Pollution	Carbon emission				Production capacity
			Noise				Quality control
		Resources	Electricity price			Marketing	Customer service
			Fuel price				Distribution channel
	Operational	Engineering	Advanced technologies	Risks	Corporation	External	Increase in tax

			Design simplicity				Restriction in regulations
		Manufacturing	Capacity utilization			Internal	Internal objection
			ease of manufacturing				Technical barriers
Opportunities	Economic	Financial	Economics of scales		Industry	Economic	Fluctuation in interest rate
			Stock price				Fluctuation in material price
		Market	Market trend			Market	Increase in competition
			New market				Overcapacity
	Environmental	Social	Corporate image				
			Increase in population				
		Eco-friendly	Increase in environmental consciousness				
			Increase in fuel price				

The Strategic Criteria:

In our model, we determine three strategic criteria which we think that our conclusion is affected by. These are:

1) *Existing Product Synergies*

2) *Manufacturing impact*

3) *Market attractiveness*

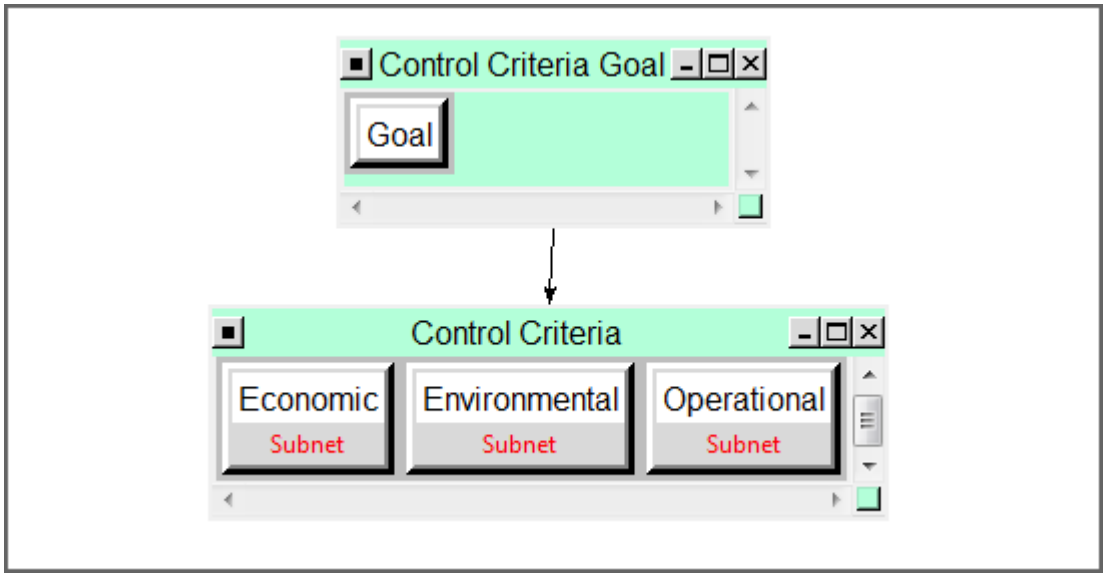
Our rating intervals are very low, low, average, high and very high impact on the BOCR. Deciding how existing product synergies will be affected, we think that the risk is very high. For manufacturing impact, the risk will be low due to the fact that Mitsubishi should have created well-designed manufacturing capability for its division of electric-powered car and current car production. Market attractiveness for our BOCR is high due to the fact that Mitsubishi needs to introduce its electric car and also will spend to improve its brand image.

Super Decisions Ratings

	Priorities	Existing product syr 0.268368	Manufacturing impa 0.117221	Market attractivene 0.614411
1.Benefits	0.279180	High	High	High
2.Opportunities	0.248423	Average	Average	High
3.Costs	0.288530	High	Very high	High
4.Risks	0.183868	Very high	Low	Low

According to our ratings, market attractiveness has higher impact over other two strategic criteria. For BOCR, costs and benefits that Mitsubishi will face are equal nearly.

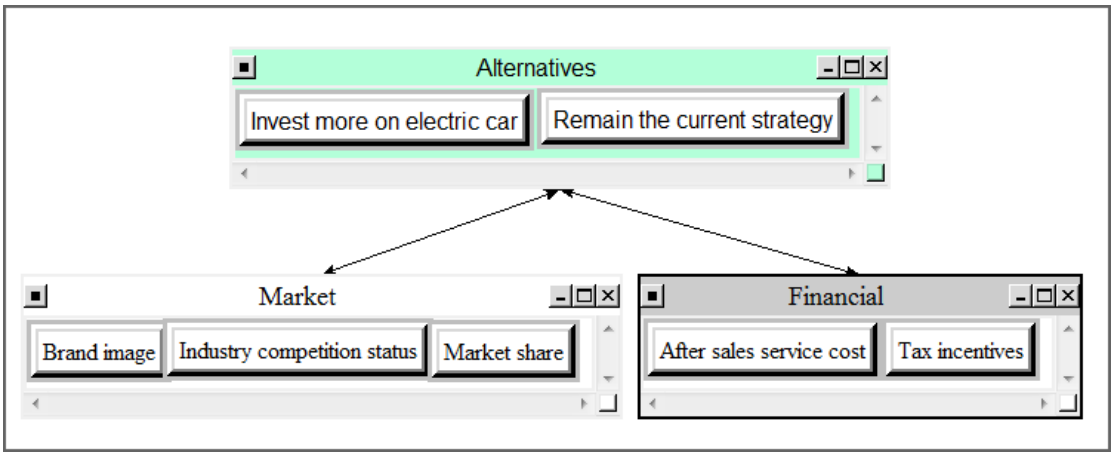
Main structure of Benefit network



We have three control criteria under the Benefits network

1. Economic:

   For economic part, we need to two dimensions of benefits: market and finance



   a) Market

   - *Brand image*

     Brand image is an important aspect of any car maker. Due to recent environmental consciousness among consumers, electric car can help to increase Mitsubishi's brand image, much as Prius hybrid did for Toyota and Leaf for Nissan. On the other hand, brand image is a medium that can help Mitsubishi to attract potential consumers.

   - *Industry competition status*

     Automobile market is a mature, competitive market. There is limited opportunity to compete

by cost reduction or process innovation. To survive in the market, companies need to strategically differentiate their products from others. Current industry competition status therefore affects which alternative to select. If competition increases, Mitsubishi may decide to focus more on electric car to avoid direct compete with existed automakers.

- *Market share*

  Mitsubishi's alternatives can be affected by the market share. Mitsubishi will tend to remain current strategy if they already have enough market shares in fuel-based car market and will tend to focus more on electric car to expand market share if they have few market shares. On the other hand, which alternative they choose will also affect their future market share.

b) Financial

- *After sales service cost*

  According to research, electric cars require considerably less maintenance than gas-driven cars. This can bring financial benefit for not only customers but also for automakers. On the other hand, if the after service cost (battery recharge and replace, technical personnel training, etc.) become more important for Mitsubishi, it will be more likely to invest more on electric car product

- *Tax incentive*

  Mitsubishi's alternatives can be affected by government's tax incentive policies. The more tax incentive the government provides, the more likely Mitsubishi will select to invest on electric car. On the other hand, Mitsubishi's introduction of electric car will also affect the government's tax policies in the future.

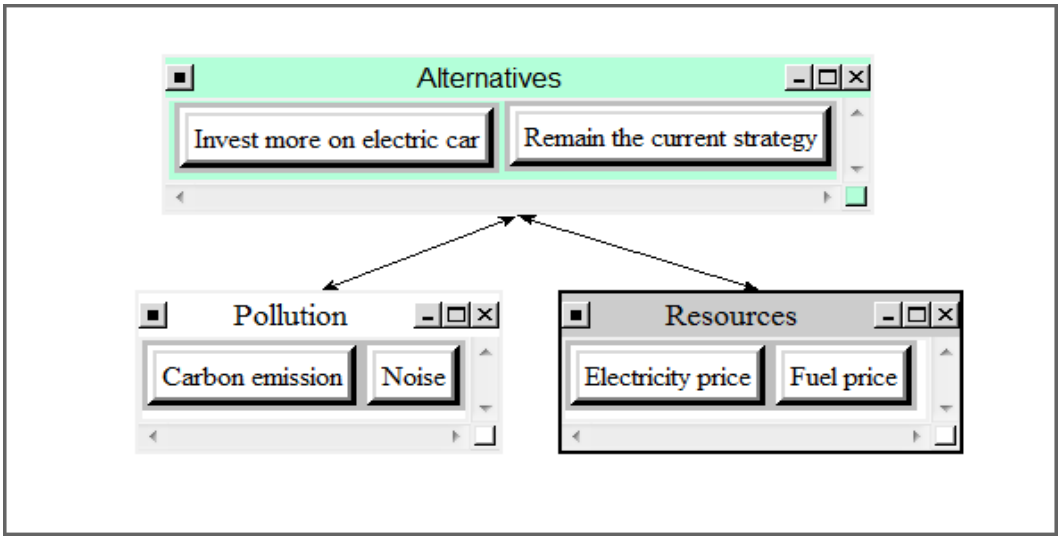
For Economic criterion under Benefit network, Financial criterion is strongly more important than Market criterion in current situation because Mitsubishi is under the pressure of shareholder. As a result, the better alternative is *investing more on electric car*

Here are the overall synthesized priorities for the alternatives. You synthesized from the network Subnet under 1.Benefits -> Economic

Name	Graphic	Ideals	Normals	Raw
Invest more on electric car		1.000000	0.663627	0.331814
Remain the current strategy		0.506870	0.336373	0.168186

2. Environmental:

Two environmental benefits are considered: pollution and resources



a) Pollution

Mitsubishi's alternatives can be affected by current pollution situation. Electric cars contribute to cleaner air in cities because they produce no harmful pollution at the tailpipe. The introduction of electric car will be beneficial to reduce *carbon emission*. In addition, In general, electric cars generally produce less roadway *noise* as compared to fuel-based cars. On the other hand, these advantages also make electric car more attractive to environmental conscious customers.

b) Resources

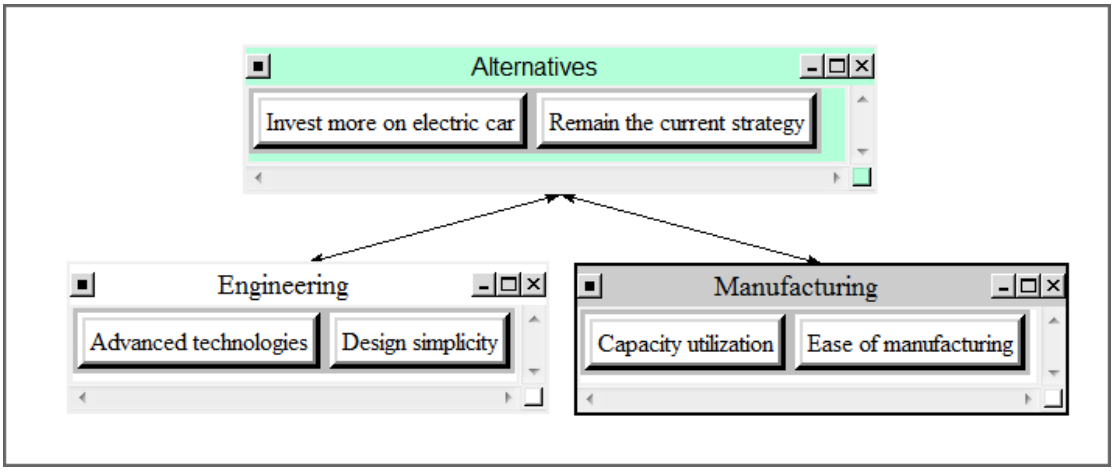
Mitsubishi's alternatives will be affected by resource factors such as *fuel price* and *electricity price*. The scarcity of fuel is more important than electricity and thus makes it more important.

For Environmental criterion under Benefit network, Pollution criterion is moderately more important than Resources criterion. As a result, the better alternative is *investing more on electric car*

Here are the overall synthesized priorities for the alternatives. You synthesized from the network Subnet under 1.Benefits -> Environmental

Name	Graphic	Ideals	Normals	Raw
Invest more on electric car		1.000000	0.862138	0.431069
Remain the current strategy		0.159907	0.137862	0.068931

3. Operational:



Two operational benefits are considered: engineering and manufacturing

a) Engineering

- *Advanced technologies*

  Compared to gas-driven car, electric car needs more advanced technologies, especially in battery storage and safety testing. The availability of advanced technologies will affect Mitsubishi's strategy selection while the investment of electric car will also improve current technologies of electric car engineering.

- *Design simplicity*:

  Design simplicity is an important factor for automobile engineering. Designing an electric car is more complicated than designing a traditional car.

b) Manufacturing

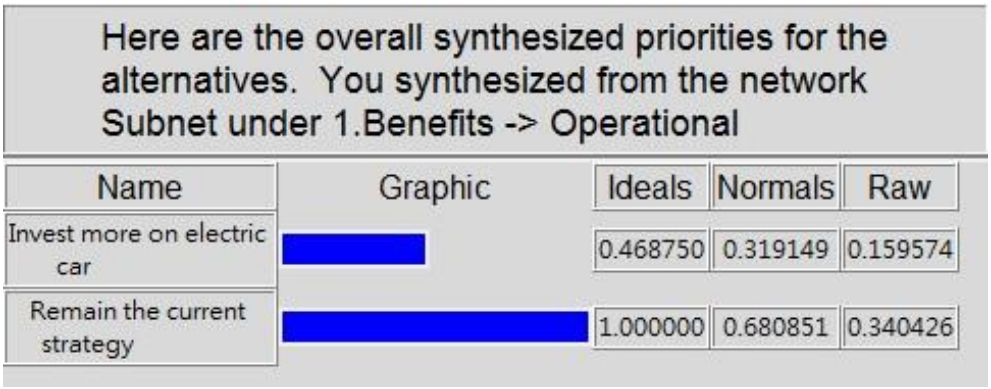
- *Capacity utilization*

  Mitsubishi's alternatives will be affected by current manufacturing capacity and vice versa. Compared to fuel-based car, electric car takes more capacity in manufacturing.

- *Ease of manufacturing*

  Mitsubishi's alternatives will be also affected by the ease of manufacturing. Mitsubishi can exploit its previous experience in gas-driven car, so it would be less challenged to stay in current strategy.

For Operational criterion under Benefit network, Engineering criterion is moderately more important than Manufacturing criterion because the former's cost variance is usually larger than the latter's. As a result, the better alternative is *remaining the current strategy.*



Here are the overall synthesized priorities for the alternatives. You synthesized from the network Subnet under 1.Benefits -> Operational

Name	Graphic	Ideals	Normals	Raw
Invest more on electric car		0.468750	0.319149	0.159574
Remain the current strategy		1.000000	0.680851	0.340426

Main structure of Opportunity network

There are two sub-criteria under the control criteria of opportunity, first is “Economic”:

a) Economic:

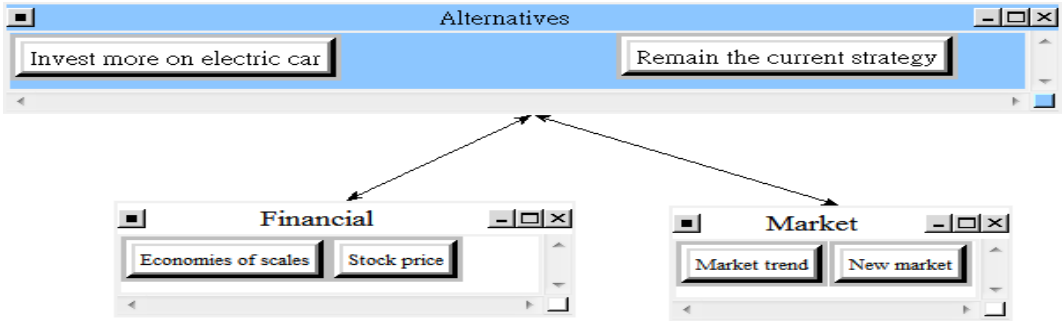
In this dimension, we consider in both financial and market parts.

- *Financial:*

  The successfulness of alternatives can be determined by economies of scales and stock price, which means if it could bring the biggest economies of scales to reduce the cost and if it could bring up the stock price than other competitors.

- *Market:*

  In terms of market, we consider if the alternatives can be consistent with the current and future market trend. If Mitsubishi is considering entering a new market, will the alternatives help?



When weighing the importance of the economies of scales and the stock price, we have come into a result that economies of scales is four times more important than the stock price.

While in terms of market, the new market is three times more important than the market trend. After deciding how much these nodes are important, we then decide how well the alternatives perform under the financial part and the market part.

The result is seen as follow: Remaining the current strategy is better when talking about the economic aspect.

Here are the overall synthesized priorities for the alternatives. You synthesized from the network Subnet under 2.Opportunities -> Economic

Name	Graphic	Ideals	Normals	Raw
Invest more on electric car		0.401997	0.286732	0.143366
Remain the current strategy		1.000000	0.713268	0.356634

b) Environmental:

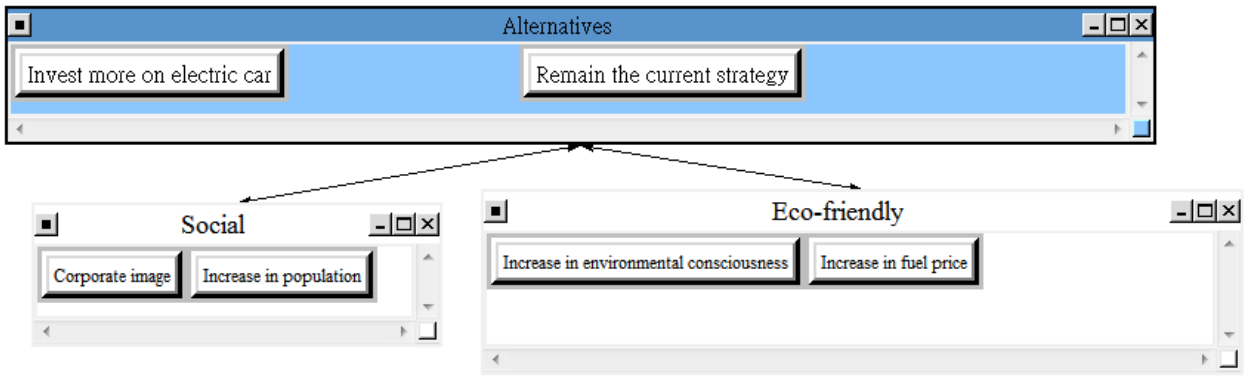
In this dimension, we consider in both social and eco-friendly part.

- *Social:*

  There are two nodes under this cluster, which are corporate image and increase in population. Can the company's strategy help improve its image among public? Besides, how the population increase in the future will also influence what strategy Mitsubishi should take.

- *Eco-friendly:*

  This is the rising public consciousness recently. Since automobile industry is tightly related to oil consumption and carbon emission. It becomes an important factor when making a future strategy.



Next part, we weigh the importance between social and eco-friendly, and the result shows that eco-friendly is equally to moderately important than social.

For nodes under the social cluster, corporate image is three times more important than the increase in population. It is because that customers' impression toward corporate can greatly influence their buying decision in automobile industry.

As for the eco-friendly part, the increase in the fuel price is thought to be the biggest factor. Although more and more people are getting concerns of the environmental protection, it is more crucial when it comes to dealing with money issue. Therefore, the rising oil price will strike the whole automobile industry

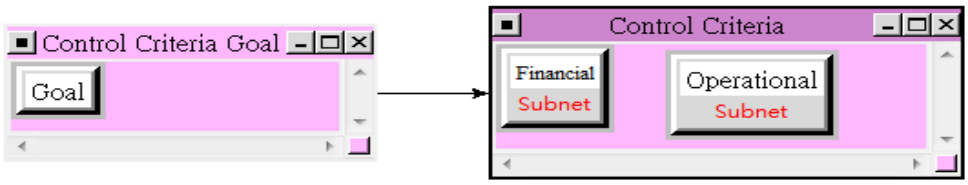
directly.

From the following, it shows that investing more on electric car is supposed to be a better choice than remaining the current strategy.

Here are the overall synthesized priorities for the alternatives. You synthesized from the network Subnet under 2.Opportunities -> Environmental

Name	Graphic	Ideals	Normals	Raw
Invest more on electric car		1.000000	0.723982	0.361991
Remain the current strategy		0.381250	0.276018	0.138009

Main structure of Cost network



Two sub-criteria are to be discussed under the control criteria of cost, first is "Financial":

a) *Financial:*

In this dimension, we consider in both manufacturing and marketing parts. Every cost involving in the finance will be grouped under the financial part.

- Manufacturing

  Two factors considering here are component and labor. No matter launching a new strategy or remaining the current one, Mitsubishi all have to pay out for its material and labor costs. Any strategy that could help Mitsubishi decrease the cost should be a better decision.

- *Marketing:*

  Marketing is a very important part in the automobile industry. Hence, every manufacturer invests a huge amount of money in branding its products. To some degree, a good product image almost represents the success of the product.

When doing the pairwise comparison under the financial criteria, we decide that the manufacturing cluster is four times important than the marketing cluster.

For the component and labor nodes under the manufacturing cluster, component is moderately more important than labor. The material cost is fluctuated by the world economy, and therefore it is more uncertain. However, Mitsubishi can reduce the labor number by adopting advanced technology, so the cost is more under control.

As for the advertisement and promotion activities under the marketing cluster, we decide that

advertisement is five times more important than the promotion activities and is more costly. The reason is that consumers can receive the information from advertisement unconsciously and passively by watching TV or reading magazines. However, they can only attend the promotions activities by their own will.

The result shows that investing more on electric car will be more costly than remaining the current strategy.

Here are the overall synthesized priorities for the alternatives. You synthesized from the network Subnet under 3.Costs -> Financial

Name	Graphic	Ideals	Normals	Raw
Invest more on electric car		1.000000	0.828186	0.414093
Remain the current strategy		0.207458	0.171814	0.085907

b) *Operational:*

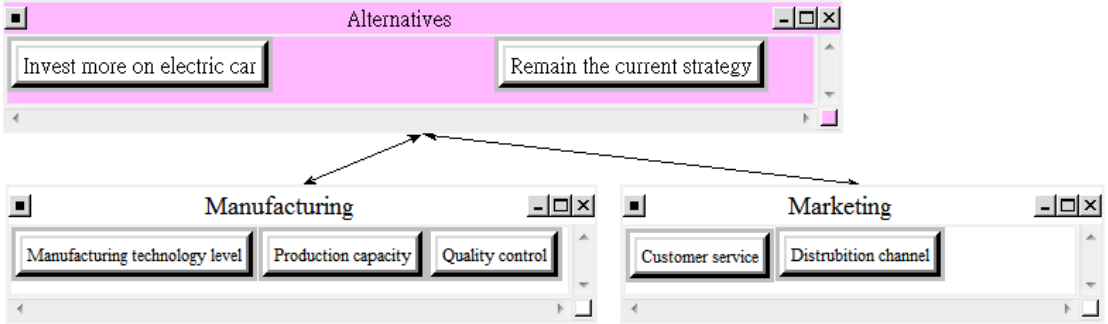
In this dimension, we consider in both manufacturing and marketing part. The costs here mean any other costs that are invisible and not related to finance.

- *Manufacturing:*

  There are three nodes under this cluster, which are manufacturing technology level, production capacity and quality control. Different strategies will cause different levels of costs, and keeping the low cost is always an issue in automobile industry. Therefore, it is crucial to evaluate how the alternatives cost under in terms of the nodes.

- *Marketing:*

  Besides branding, customer service and distribution channel are also an important categories when talking about marketing. Customer service affects customers' image toward the company and its images, so Mitsubishi should not ignore its power. Also the penetration of the distribution also represents the company's power in promoting their products.



In this section, the cost of manufacturing still weighs four times more than that of marketing.

For the nodes under the manufacturing part, we conclude that manufacturing technology level is the most important; followed by quality control and then production capacity. The reason why manufacturing technology level is the first is because new technology usually needs to more capitals to invest.

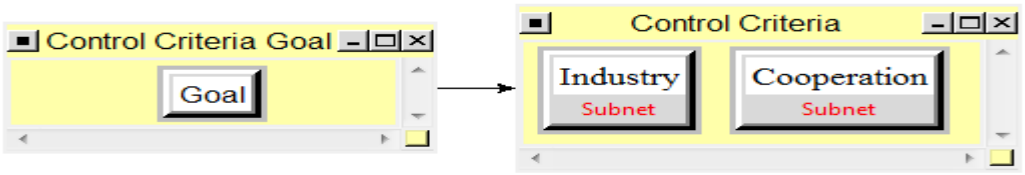
As for the marketing part, distribution channel is four times more important than customer service. Since the US market is geographically broad, it is important for Mitsubishi to be sure that customers can always reach their distributor when buying a car.

The following results shows that invest more on electric car will be more costly in operational dimension.

Here are the overall synthesized priorities for the alternatives. You synthesized from the network Subnet under 3.Costs -> Operational

Name	Graphic	Ideals	Normals	Raw
Invest more on electric car		1.000000	0.791888	0.395944
Remain the current strategy		0.262805	0.208112	0.104056

Main structure of Risk network



Under the control criteria of risk, we have two sub-criteria:

1. Industry:

   In terms of alternatives, Mitsubishi has two different risk areas that should be thought.

   a) Economic

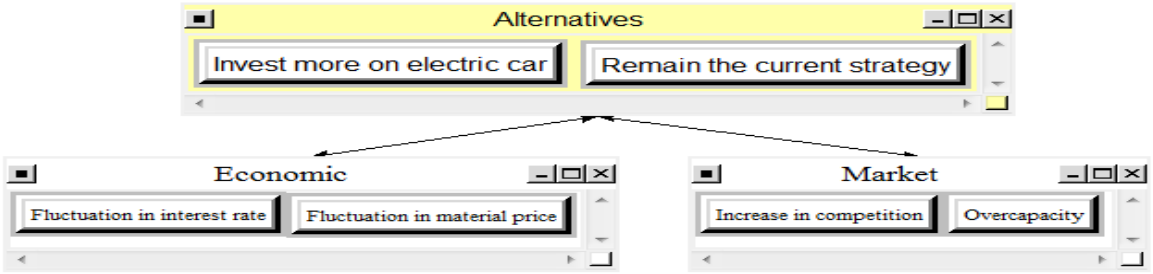
   Mitsubishi's alternatives can be affected by fluctuations in the *interest rate* and *material price.*

   Demand for materials may increase when other car producers start manufacturing electric cars.

   b) Market*:*

   Mitsubishi's alternatives can be affected by the *increase in the completion* and *overcapacity*.

   Electric car is a new product, so Mitsubishi's decision can be affected by the increasing number of electric car in the market. On the other hand, people may not prefer electric car for some reasons and the firm can be exposed to overcapacity.



In Economy, fluctuations in material price have more effect than fluctuations in the interest rate in terms of both two alternatives.

In Market, increase in the completion among rivalries is more effective than overcapacity to stay in the current strategy. However, being overcapacity plays more important role in the investing more on electric car alternative.

For Industry under Risk criteria, the result is *investing more electric car.*

Here are the overall synthesized priorities for the alternatives. You synthesized from the network Subnet under 4.Risks -> Industry

Name	Graphic	Ideals	Normals	Raw
Invest more on electric car		1.000000	0.726187	0.363094
Remain the current strategy		0.377056	0.273813	0.136906

2. Corporation:

In terms of alternatives, Mitsubishi has two different risk areas that should be thought.

a) External

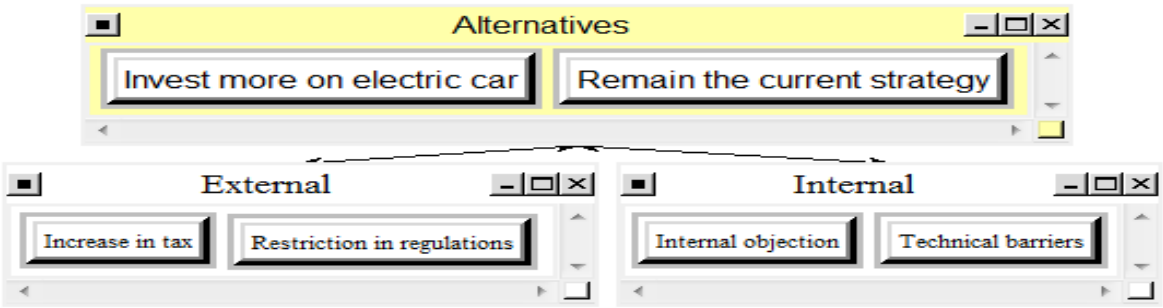
Mitsubishi's alternatives will be affected by external factors such as increase in tax rates and restriction in regulations. For example, restrictions about CO2 emissions and fuel-efficiency can affect the strategy of Mitsubishi. All the car models should be appropriate for these regulations.

b) Internal

Mitsubishi's alternatives will be affected by internal factor such as *technical barrier* and *objection* made by financial management or strategy department.

External factors are more effective than internal factors in choosing the decision. In external factors, restrictions are more powerful than increase in tax rate for both alternatives. Restrictions are difficult to apply immediately.

For internal factors, technical barriers are more effective than internal objection in investing for electric car because if Mitsubishi doesn't have enough facilities for electric car production, they may not think about it. On the other hand, internal objection has a dominant place for the current situation. Financial reports and conformity to strategy are main issues for the company.



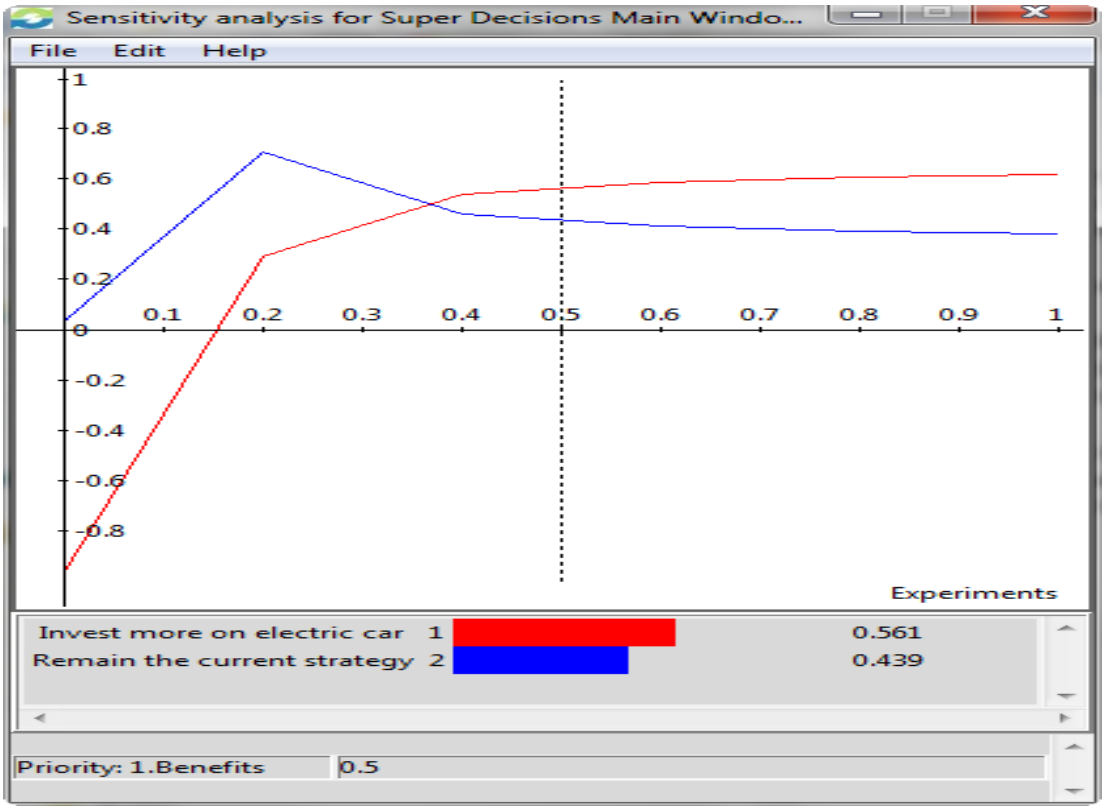
For Cooperation under Risk criteria, the result is *remaining the current strategy.*

Here are the overall synthesized priorities for the alternatives. You synthesized from the network Subnet under 4.Risks -> Cooperation

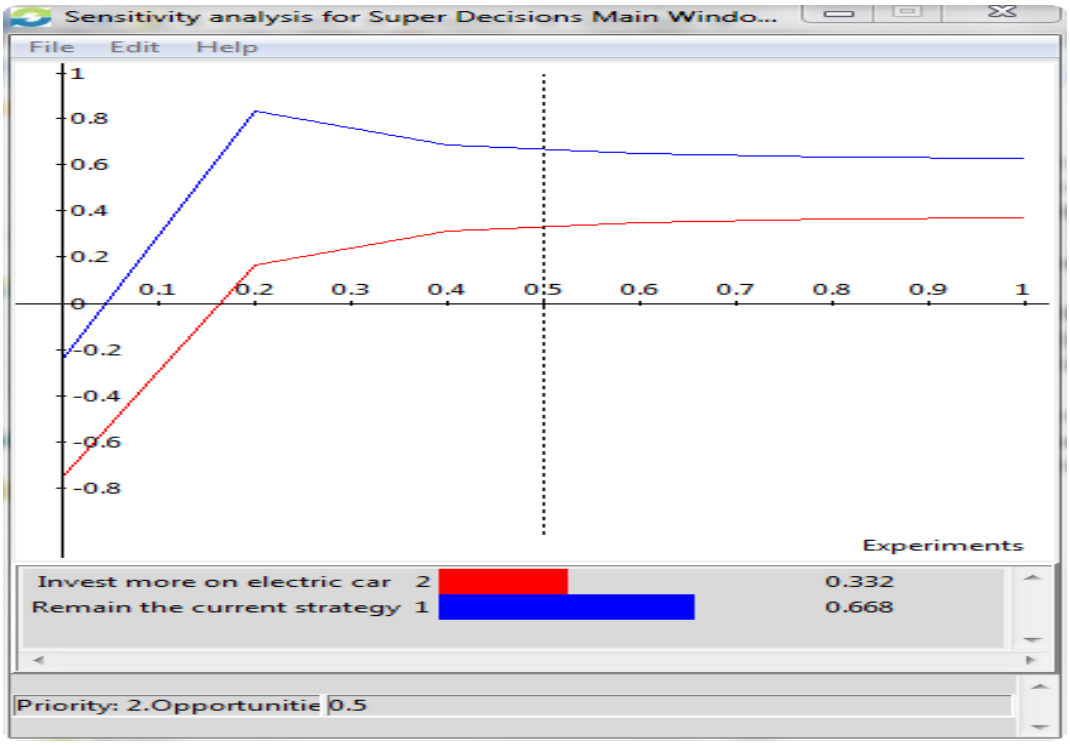
Name	Graphic	Ideals	Normals	Raw
Invest more on electric car		0.524808	0.344180	0.172090
Remain the current strategy		1.000000	0.655820	0.327910

The Sensitivity Analysis

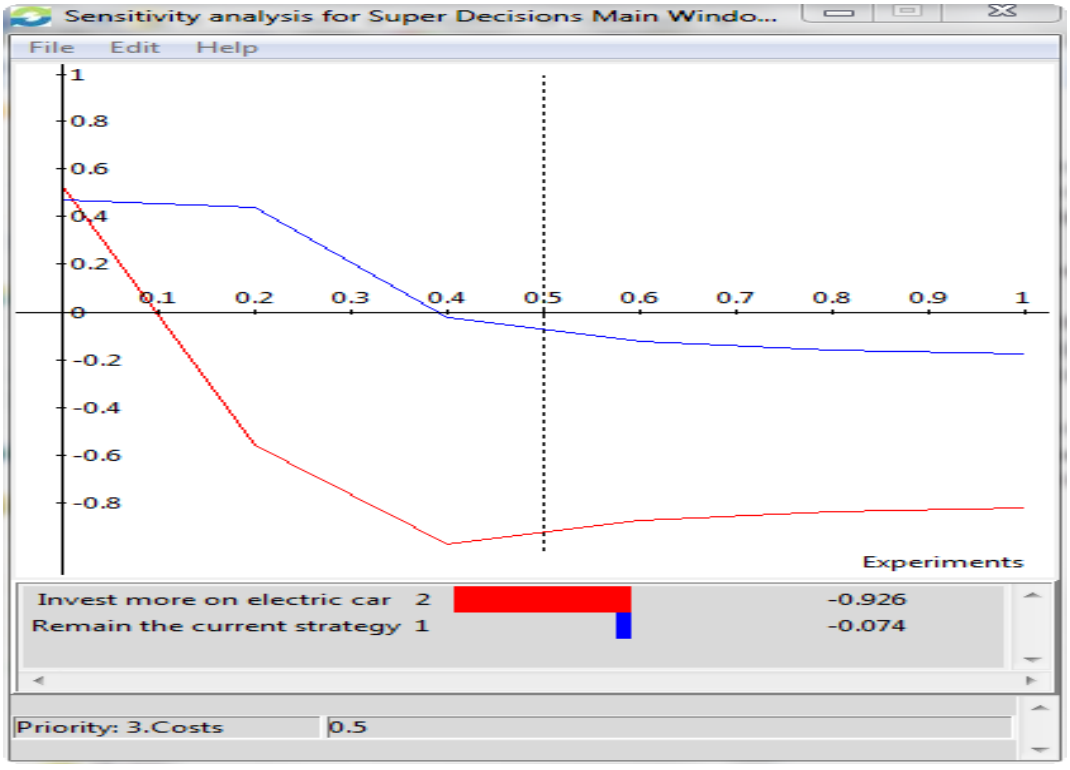
As long as the importance of benefits increases, the benefit of investing more on electric cars will surpass the remaining strategy.



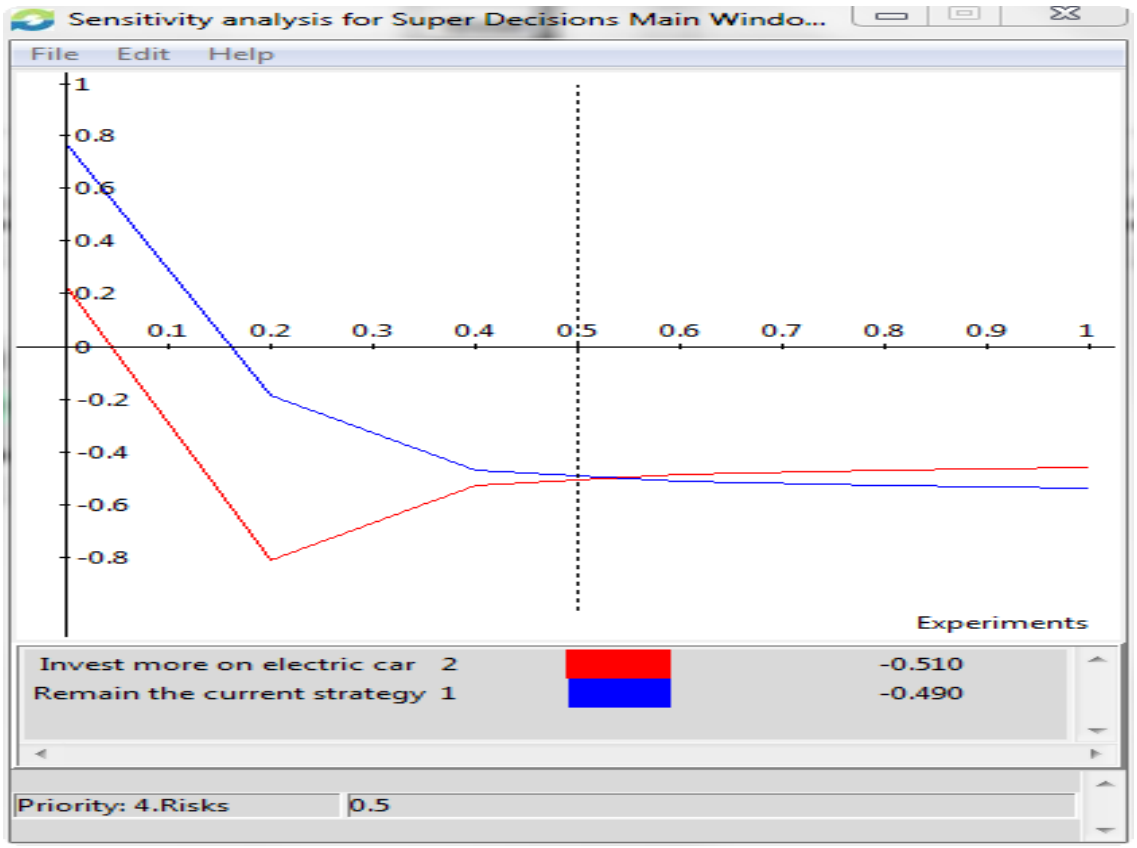
The below analysis suggests that even though the importance of opportunities increases, the result remains the same.



It shows that even the importance of costs increase, the priority of investing more on electric cars is still far below than remaining the current strategy.



The result shows that if the importance of risks rises, the risk of investing more on electric car will increase and even surpass the remaining strategy.



RESULTS

Based on our model's results, we conclude that Mitsubishi should remain in the current strategy. Despite of the fact that the company has environmental opportunities for investing more on electric car, overall perspective is that the company's best choice should be remaining the current strategy.

Here are the overall synthesized priorities for the alternatives. You synthesized from the network Super Decisions Main Window: Final project.sdmod: formulaic: ratings

Name	Graphic	Ideals	Normals	Raw
Invest more on electric car		0.242863	0.195406	0.687825
Remain the current strategy		1.000000	0.804594	2.832157

The company should show some efforts in improving its economic benefits and operations if they want to get benefits from electric-car selling. In our model, the priorities for our strategic criteria are the cost and benefit. Therefore, the company should focus on its factors in these priorities. They are the main driving forces of this decision.

In the long term, again there will be no change in our decision. The decision about strategy of Mitsubishi is that they should remain in the current strategy.

Here are the overall synthesized priorities for the alternatives. You synthesized from the network Super Decisions Main Window: Chen,Chen,Tagal,StrategySelectionof Mitsubishi-FinalProject.sdmod: formulaic: ratings

Name	Graphic	Ideals	Normals	Raw
Invest more on electric car		-0.201039	-0.167387	-0.033050
Remain the current strategy		1.000000	0.832613	0.164395