IMBA 5 – Brazil
Decision Making in a Complex Environment
Thomas Saaty – Rozann Saaty

Fernando Santos
Juliana Freitas
Renata A Marques

Define the Best Location for ABAP Factory Implementation

Topic:
Define a place to implement an ABAP (SAP programming) Development Factory to support Brazil SAP Consolidation Project and also the future Brazil's SAP maintenances.

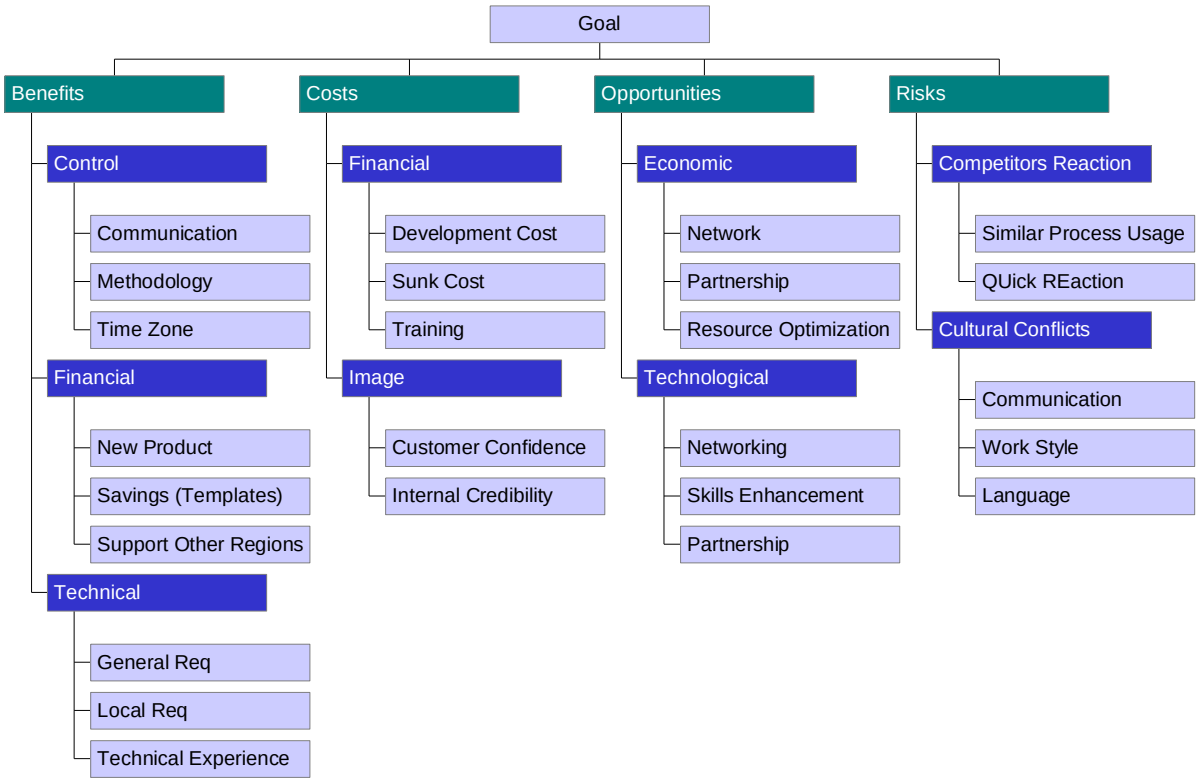
Introduction
An ABAP factory model should be defined to support Brazil SAP Consolidation project. This project has a huge timeline and also budget restrictions. The resources allocation is a key success factor for this project.

Background
Monsanto Brazil has today a local vendor that already provides ABAP development and maintenance for the current installation. The Monsanto Company has a contract with India and also have US resources option. For this special project that has more than 40.000 hours forecasted for development and also some budget restrictions, the alternative considering Benefits, costs, opportunities and risks should be carefully evaluated.

Alternatives : Have the ABAP Development and Maintenance Factory implemented in
Alternative 1: Brazil
Alternative 2: US
Alternative 3: India.

Fernando Santos
Juliana Freitas
Renata A Marques

Clusters and Nodes



Clusters/Nodes	

	• **Criteria**
	  ○ **Delivery on Time**
	  ○ **Financial**
	  ○ **Knowledge Transfer**
	  ○ **Quality**
	• **Model:** *This is the top level network.*
	  ○ **Benefits:** *Benefits*
	  ○ **Costs:** Costs and Investments Involved
	  ○ **Opportunities:** *Opportunities*
	  ○ **Risks:** *Risks*
	• **Select Location:**
	  ○ **Goal: Define Best Location for ABAP Factory (India, USA or Brasil):**

Benefits Network	
Clusters/Nodes	○ **Control:** *Manage the project considering the communication, methodology and time zone aspects* ○ **Financial:** *Financial aspects considering new products, savings using templates and supporting another regions* ○ **Technical:** *Technical Requirements considers the General and Local requirements like government requirements, and also the technical aspects by itself.*
Costs Network	
Clusters/Nodes	○ **Financial:** *Financial criteria considers the training, sunk investments and the fee that vendor will be charging* ○ **Image:** *Image criteria considers the customer confidence and the internal credibility*
Opportunities Network	
Clusters/Nodes	○ **Economic:** *The economic criteria consider network opportunities, partnership and resource optimization.* ○ **Technological:** *Technological criteria considers the network, skills enhancement and partnership opportunities*
Risks Network	
Clusters/Nodes	○ **Competitors Reaction:** *Competitors reaction will evaluate how quick the competitors can react and copy the model.* ○ **Cultural Conflicts:** *cultural conflicts will evaluate the communication, work style and language impacts.*

Alternative Rankings

Graphic	Alternatives	Total	Normal	Ideal	Ranking
	Brazil	0.1415	0.4602	1.0000	1
	Índia	0.0310	0.1008	0.2191	2
	USA	-0.1350	-0.4390	-0.9540	3

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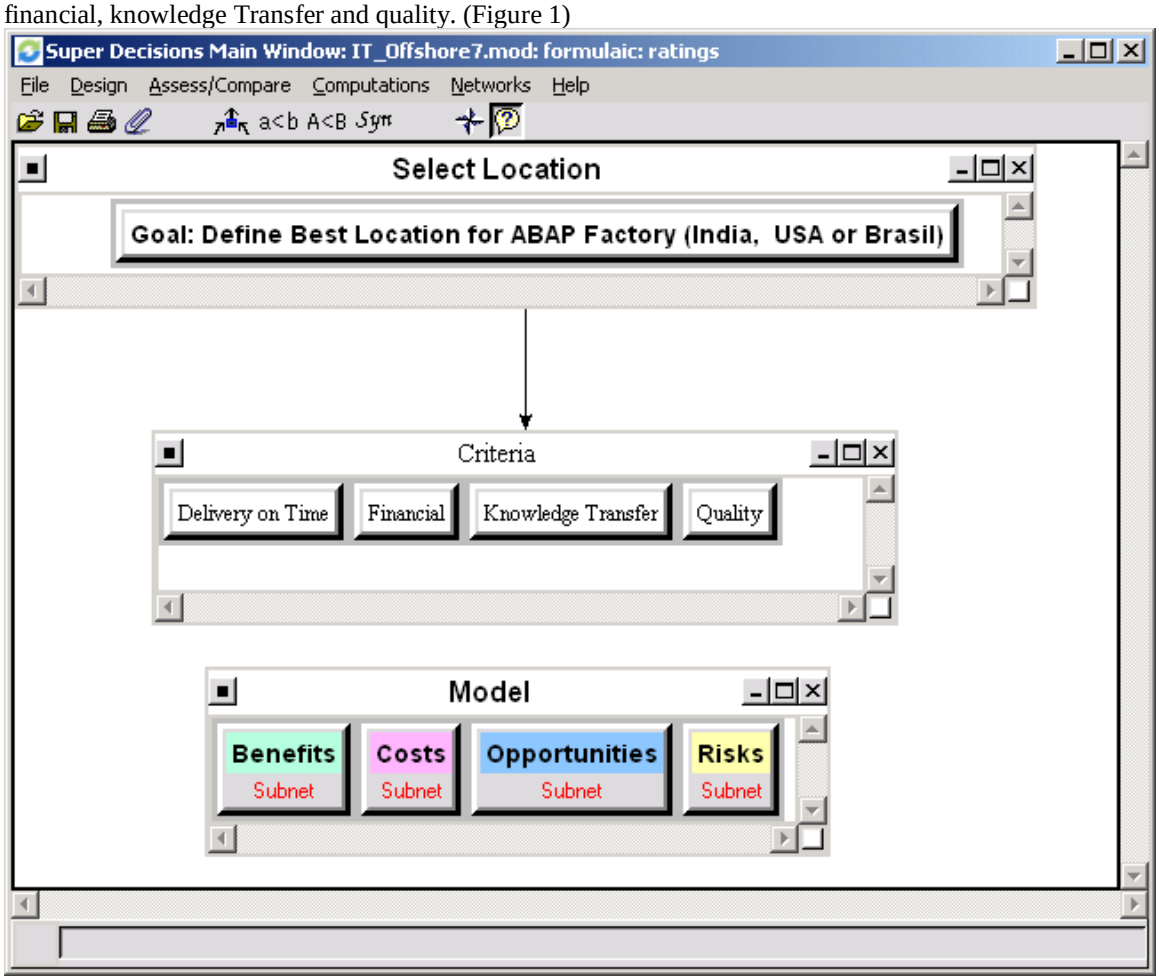
The Model

Ratings

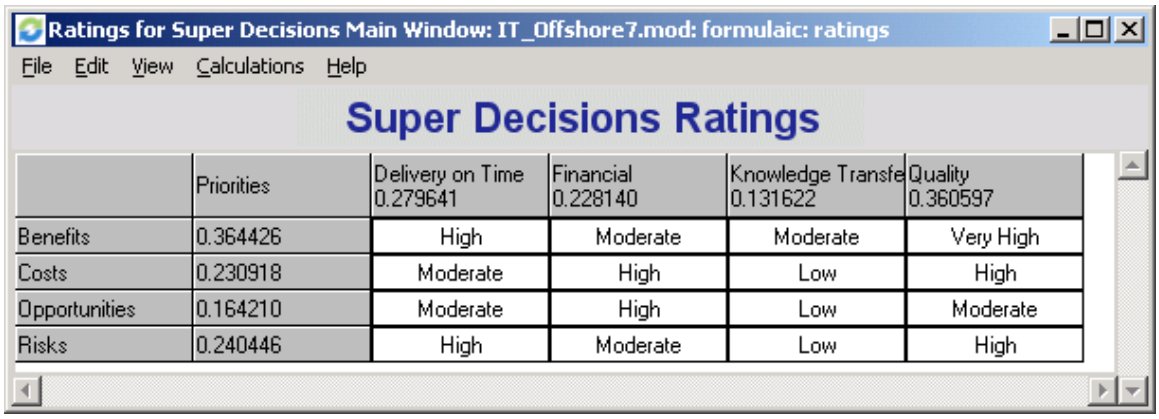
To establish Ratings scales and evaluate the importance of Benefits, Costs, Risks and Opportunities of the Decision Making Model, we developed a value criteria. The four criteria in our model are delivery on time, financial, knowledge Transfer and quality. (Figure 1)



(Figure 1)

Hierarchy of Criteria for Rating Benefits, Opportunities, Costs and Risks

The four merits of BOCR were rated according to five intensities listed below along with their priorities. The outcome is summarized in Table 1 and Table 2.



	Priorities	Delivery on Time 0.279641	Financial 0.228140	Knowledge Transfe 0.131622	Quality 0.360597
Benefits	0.364426	High	Moderate	Moderate	Very High
Costs	0.230918	Moderate	High	Low	High
Opportunities	0.164210	Moderate	High	Low	Moderate
Risks	0.240446	High	Moderate	Low	High

(Table 1)

Graphic	Ratings Alternatives	Total	Ideal	Normal	Ranking
	Benefits	0.5749	1.0000	0.3644	1
	Costs	0.3643	0.6336	0.2309	3
	Opportunities	0.2591	0.4506	0.1642	4
	Risks	0.3793	0.6598	0.2404	2

(Table 2)

Synthesized Results from Super Decision program

By using Super Decisions program, we obtained the synthesized results regarding Benefits, Opportunities, Costs, Risks and the final result of the whole model. The results are illustrated from Tables above FROM 3 to table 6.

Report for Benefits (Table 3)

Graphic	Alternatives	Total	Normal	Ideal	Ranking
	Brazil	0.7378	0.3612	0.9018	2
	India	0.8181	0.4005	1.0000	1
	USA	0.4867	0.2383	0.5949	3

Report for Benefits->Control

Graphic	Alternatives	Total	Normal	Ideal	Ranking
	Brazil	0.2970	0.5940	1.0000	1
	India	0.1151	0.2301	0.3874	2
	USA	0.0880	0.1759	0.2962	3

Report for Benefits->Financial

Graphic	Alternatives	Total	Normal	Ideal	Ranking
	Brazil	0.1653	0.3305	0.9013	2
	India	0.1833	0.3667	1.0000	1
	USA	0.1514	0.3028	0.8258	3

Report for Benefits->Technical

Graphic	Alternatives	Total	Normal	Ideal	Ranking
	Brazil	0.1338	0.2676	0.5439	2
	India	0.2460	0.4919	1.0000	1
	USA	0.1202	0.2405	0.4888	3

Report for Costs (Table 4)

Graphic	Alternatives	Total	Normal	Ideal	Ranking
	Brazil	0.5529	0.2281	0.5830	3
	India	0.9224	0.3806	0.9727	2
	USA	0.9483	0.3913	1.0000	1

Report for Costs->Financial

Graphic	Alternatives	Total	Normal	Ideal	Ranking
	Brazil	0.0950	0.1899	0.4447	3
	India	0.1915	0.3829	0.8965	2
	USA	0.2136	0.4271	1.0000	1

Report for Costs->Image

Graphic	Alternatives	Total	Normal	Ideal	Ranking
	Brazil	0.1643	0.3286	0.8775	2
	Índia	0.1872	0.3745	1.0000	1
	USA	0.1485	0.2970	0.7930	3

Report for Opportunities (Table 5)

Graphic	Alternatives	Total	Normal	Ideal	Ranking
	Brazil	0.5119	0.2688	0.5652	2
	Índia	0.9057	0.4755	1.0000	1
	USA	0.4870	0.2557	0.5377	3

Report for Opportunities->Economic

Graphic	Alternatives	Total	Normal	Ideal	Ranking
	Brazil	0.2330	0.4660	1.0000	1
	India	0.1671	0.3342	0.7172	2
	USA	0.0999	0.1998	0.4289	3

Report for Opportunities->Technological

Graphic	Alternatives	Total	Normal	Ideal	Ranking
	Brazil	0.0751	0.1501	0.2678	3
	India	0.2803	0.5605	1.0000	1
	USA	0.1447	0.2893	0.5161	2

Report for Risks (Table 6)

Graphic	Alternatives	Total	Normal	Ideal	Ranking
	Brazil	0.3484	0.1821	0.4130	3
	India	0.8437	0.4410	1.0000	1
	USA	0.7209	0.3768	0.8545	2

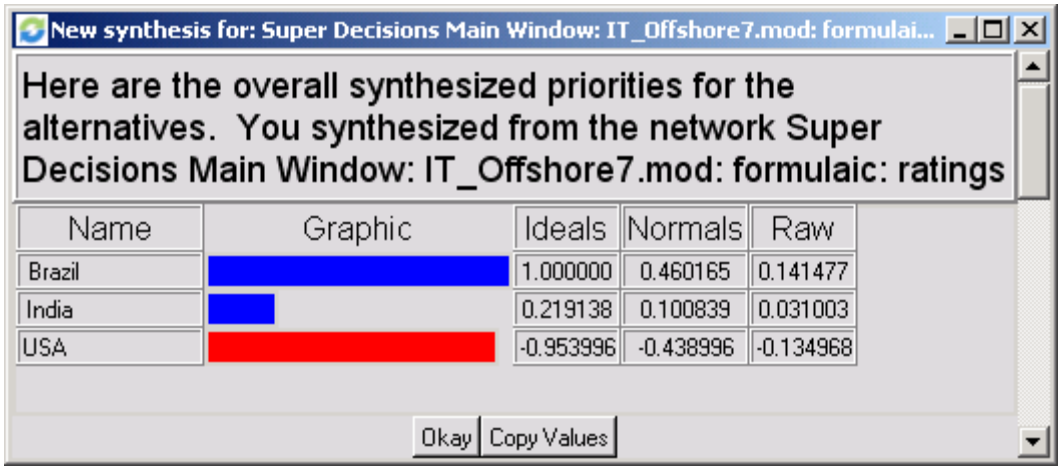
Report for Risks->Competitors Reaction

Graphic	Alternatives	Total	Normal	Ideal	Ranking
	Brazil	0.3125	0.6250	1.0000	1
	India	0.0682	0.1365	0.2184	3
	USA	0.1192	0.2385	0.3816	2

Report for Risks->Cultural Conflicts

Graphic	Alternatives	Total	Normal	Ideal	Ranking
	Brazil	0.0466	0.0932	0.1856	3
	India	0.2511	0.5022	1.0000	1
	USA	0.2023	0.4046	0.8058	2

Final Result of Whole Model (Table 7)



(Table 7)

Sensitivity Analysis

From the sensitivity graph for each of the BOCR node, we had the following results.

- If the changes in the priority of Benefits increases best alternative could change to India
- The increase of Cost priority will not change the final outcome of Brazil decision it will be always the best option. It has the lowest cost.
- The increase of Opportunities priority will not change the India as the best alternative
- The increase of Risks priority will not change the final outcome of Brazil decision it will be always the best option in terms of Low Risk.

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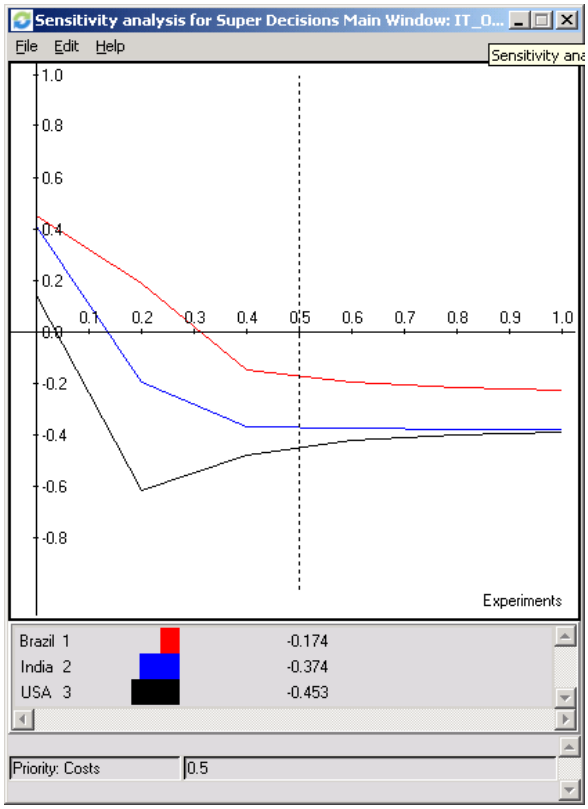
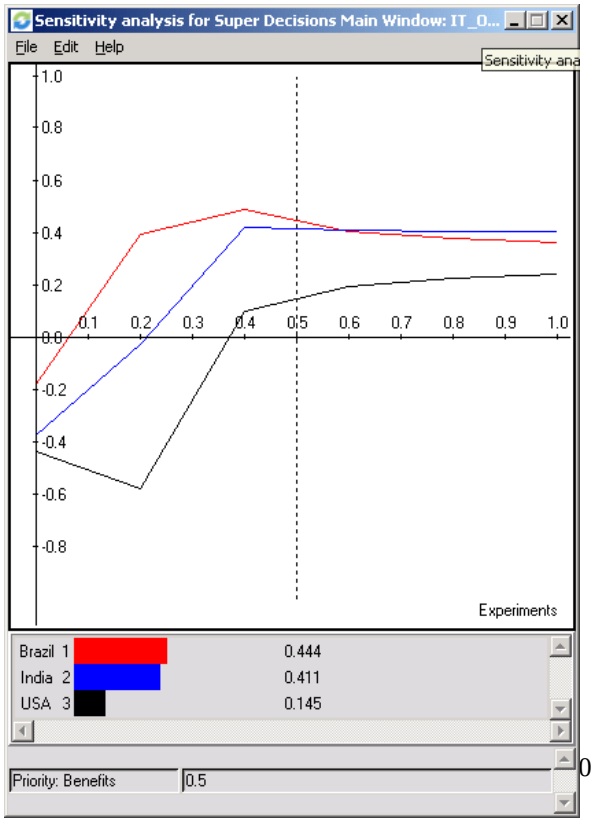
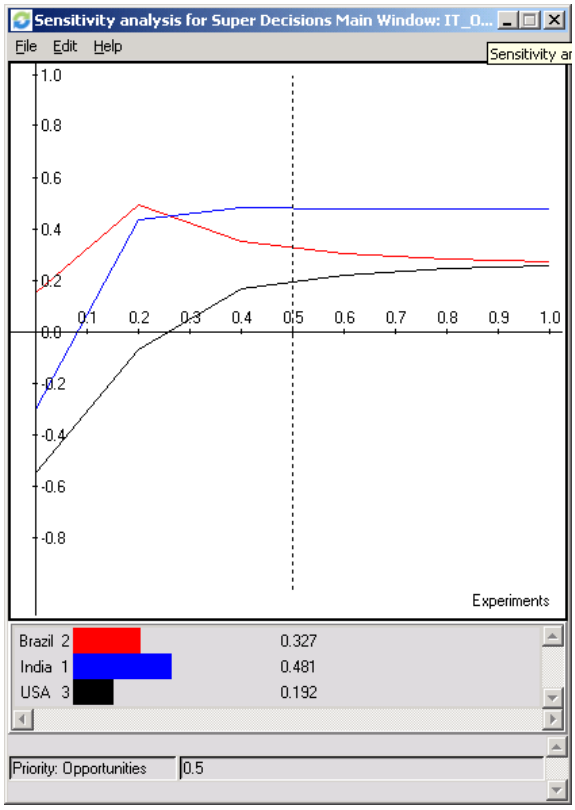
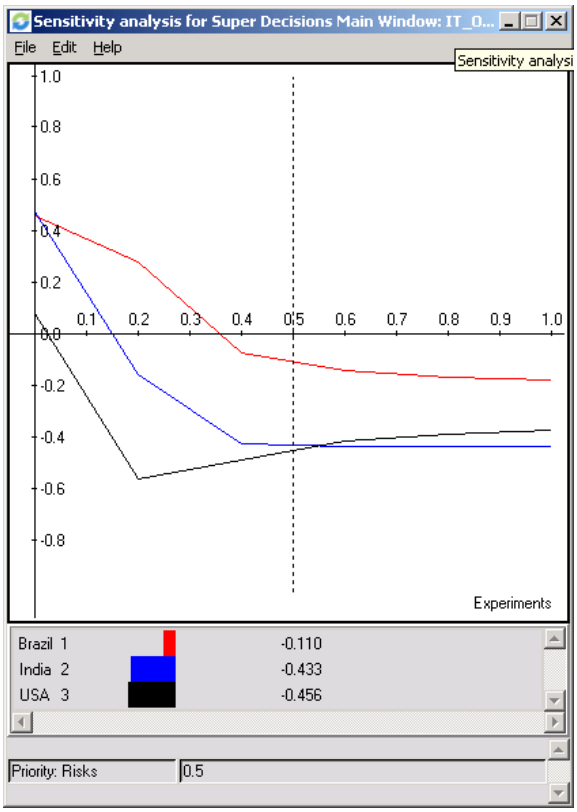




Sensitivity Analysis for Benefits



Sensitivity Analysis for Costs



Sensitivity Analysis for Opportunities

Sensitivity Analysis for Risks

Conclusion

The model results clearly support the alternative implement the ABAP Factory in Brazil, considering:
Benefits -> High control that Brazil can provide considering the communication (same language and culture) and time zone positive aspects (no differences between the Business Analysts and Programmers.

Costs --> Brazil has a low cost comparing with US and India. A low sunk cost will be needed considering that there is already a infrastructure implemented in Brazil.
Opportunity --> Although India has the higher opportunity, the model shows that the weight of this factor doesn't interfere in the final decision.

Risks --> There is lower risk for Brazil comparing with the US and India. Mainly considering the Cultural Conflicts.