

Decision Making in a Complex Environment

Final Project

April 6, 2004

Outsourcing a Firm's Application Development Group

Megan D. Farkasovsky
Anna Greda

Contents

<u>Background</u>	3
<u>The Model</u>	3
<u>Alternatives</u>	3
<u>Merits</u>	4
<u>Benefits</u>	5
<u>Opportunities</u>	6
<u>Costs</u>	8
<u>Risks</u>	10
<u>Priorities</u>	11
<u>Strategic Criteria</u>	13
<u>Ratings Scale</u>	14
<u>Rating the Alternatives</u>	14
<u>Conclusion</u>	15
<u>Sensitivity</u>	16
<u>Appendix 1</u>	17
<u>Sources</u>	31

Background

Outsourcing Information Technology (IT) functions is a growing trend in businesses looking for ways to reduce cost and hasten time-to-market of their customer-facing and internal applications. The strategy of outsourcing functions, tasks, and activities to another company has existed for decades. During periods of recession, corporations cut costs by moving jobs that are of a repetitive nature to lower-cost regions, typically “offshore” or in non-U.S. countries. For example, manufacturing companies have been leveraging offshore resources since the 1950s, while the offshoring of IT started about 10-15 years ago with the movement of legacy system maintenance tasks to Ireland and Canada. According to Bart Perkins, Computer World, businesses are now looking towards outsourcing for three reasons: budget pressures, a view of IT as a “no win” function, and the existence of specialized service providers. Many firms continue to face budget constraints with budgets remaining flat and most firms looking to reduce costs. In some cases, the IT function is viewed as a utility that can and should be outsourced. With the rapid changes in technology, it is difficult for in-house developers to match the skill sets of outsourcers with specialized, targeted skills, making it more attractive to outsource development activities in order to keep up with improvements in technology. Given these views, many businesses are resurrecting the interest in outsourcing.

IT outsourcing seems to be easier than ever to accomplish: telecommunications have improved drastically, enabling better productivity of a remote workforce; geographic distances are becoming more transparent with use of collaboration tools available today, such as online web meetings and improved video conferencing technology. And who can argue with the obvious personnel and IT asset cost reduction opportunities associated with this strategy? All of this, however, must be tempered with the soft costs and risks inherent in moving a firm’s codified business processes to a potentially insecure, unstable environment.

The decision model network and judgments discussed below is based upon research, as cited in the Sources section of this paper.

The Model

The objective or goal of this model is to address the question: “How should companies staff their application development function?” Our model includes the benefits, opportunities, costs, and risks involved in making this decision. Further detail appears below. Please note that all pair-wise comparisons and associated “questions” for our model appear in the Appendix 1.

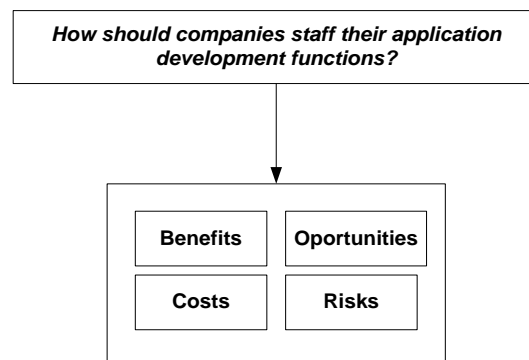
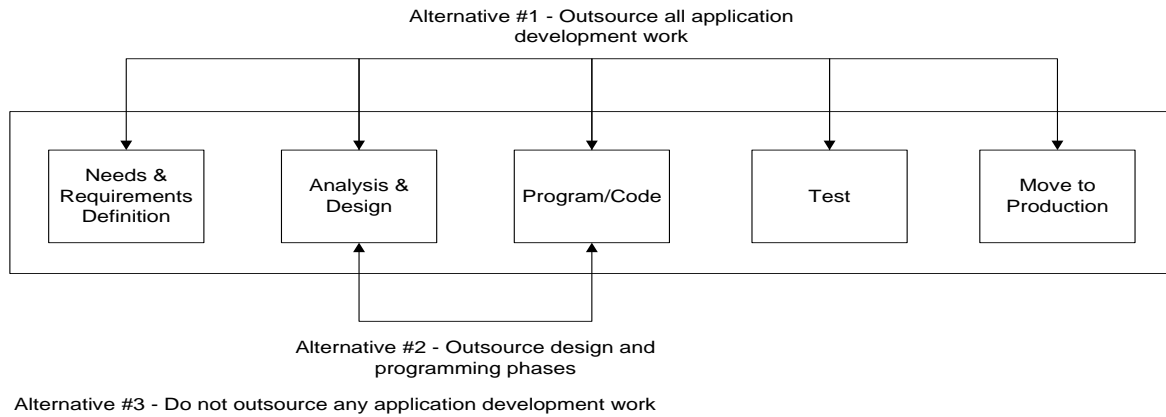


Figure 1. BOCR model

- **Alternatives:**
 1. Outsource all application development work
 2. Outsource the design and programming phases
 3. Do not outsource any application development work

Systems Development Life Cycle



Merits

The merits and elements used in our model are described below and shown in the following table.

Table 1. Clusters in the Decision Networks and Elements in the Clusters

BOCR	Control Criteria	Clusters	Elements in Clusters
Benefits	Economic	Financial	1 IT assets, 2 Personnel, 3 Legal
		Operational	1 Time to finish project / job, 2 Use of project management, 3 Knowledge transfer during requirements def, 4 Control / influence over human resources, 5 Fast time-to-market
	Technological	Technology	1 Leverage solutions from prev. business problems, 2 Newest technology available
		Resources	1 Knowledge of latest technologies, 2 Immediately available
Opportunities	Customer - related	Customer base	1 Grow into other countries, 2 Customer retention
		Marketing	1 Agile, quick response to customer requests, 2 New features / functionality
	Economic	Business development	1 Expansion into foreign countries, 2 Expand product line
		Financial	1 Make investments, 2 Reduce debt
		Employees	1 Focus - quality assurance of software, 2 Focus - firm's core capabilities, 3 Focus - software alignment with business, 4 Productivity
Costs	Economic	Financial	1 IT assets, 2 Personnel, 3 Legal
		Operational	1 Time to finish project / job, 2 Use of project management, 4 Knowledge transfer during requirements def, 4 Control / influence over human resources, 5 Time-to-market
		Resources	1 Knowledge of latest technologies, 2 Immediately available
	Social	Stakeholders	1 Company shareholders perception, 2 Media criticism, 3 Company executives / managers perception, 4 Company employees perception
		Labor	1 US unemployment, 2 Employee morale, 3 Control / influence over human resources, 4 Productivity
Risks	Economic	Financial	1 Legal costs
		Business processes	1 Business process knowledge, 2 Business continuity, 3 Quality assurance
		Security	1 Physical, 2 Intellectual property, 3 Geopolitical environment - stability
		Communication	1 Geographic distance, 2 Communication tool availability - email voice mail, 3 H-1B and L-1 visa availability, 4 Language differences
	Social	Labor	1 Employee morale, 2 Productivity, 3 US unemployment
		Stakeholders	1 Company shareholders perception, 2 Media criticism, 3 Company executives / managers perception, 4 Company employees perception

All networks	Alternatives	1 Outsource all application development work, 2 Outsource the design and programming phases, 3 Do not outsource any application development work
--------------	--------------	--

Benefits

Economic and Technological benefits were identified for this portion of the model.

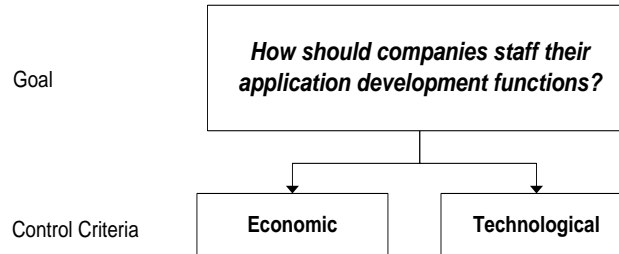


Figure 2. Benefits model

Under Economic benefits, we identified two clusters: Financial and Operational.

- Financial includes nodes: IT assets, Personnel, and Legal. IT Assets refers to the reduction of IT infrastructure costs such as workstations, servers, and licensing; Personnel refers to the reduction of costs for things such as salaries, health insurance, pension benefits; Legal refers to the avoidance of costs associated with contract negotiations.
- Operational includes nodes: Time to finish project/job, Use of project management, Knowledge transfer during requirements definition, Control/influence over human resources, and Fast time-to-market. The concepts behind these items are rather self-explanatory; however to expand upon a couple may be necessary. Knowledge transfer during requirements definition is a key item when it comes to documenting system and application requirements and communicating those effectively to the persons programming and testing the application. Fast time-to-market relates to an enterprise's ability to quickly and with agility, meet its customer needs and wants through use of IT solutions.

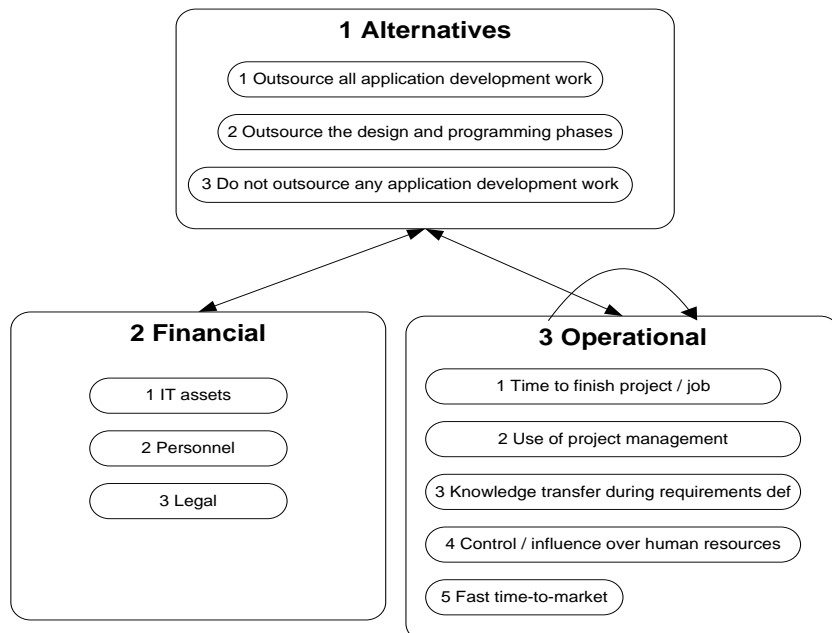


Figure 3. Clusters with elements under Economic Benefits

Under Technological benefits, we identified two clusters: Technology and Resources.

- Technology includes nodes: Leverage solutions from previous business problems and newest technologies available. The first item relates to an application development group's ability to take what it has learned from solving similar or other business problems in the past, and leveraging or applying that experience to a current or new problem. The second item relates to an enterprise being able to take advantage of newer technologies without a lot of cost to the firm in terms of ramping up its IT infrastructure.
- Resources include nodes: Knowledge of latest technologies and immediately available. These speak to the human resource aspect of technology benefits in that people are knowledgeable in the newest ways to use technology and these people are readily available to work on a new high priority project.

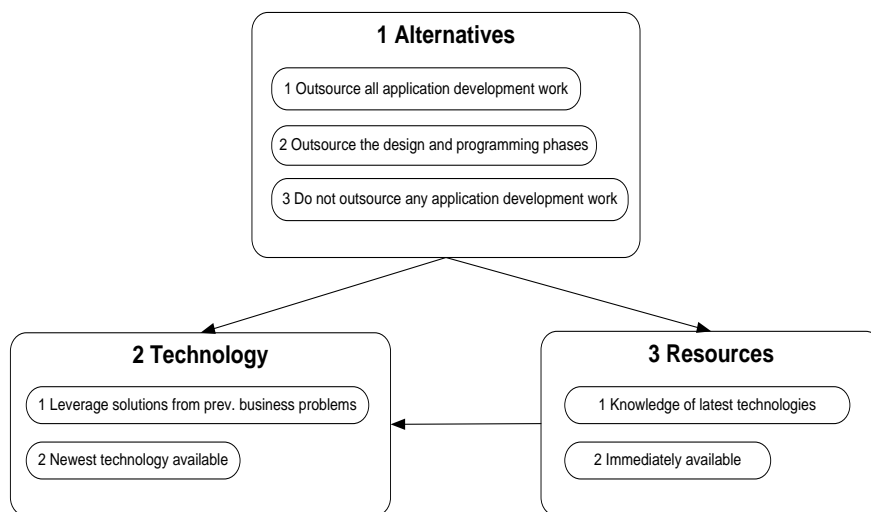


Figure 4. Clusters with elements under Technological Benefits

Opportunities

Economic and Customer-related opportunities were identified for this portion of the model.

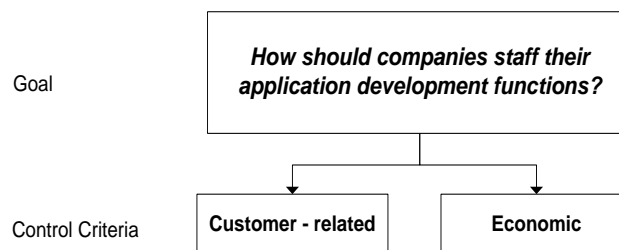


Figure 5. Opportunities model

Under Economic opportunities, we identified three clusters: Business development, Financial, and Employees.

- Business development includes nodes: Expansion into foreign countries and Expand product line. Expanding into foreign countries is an opportunity when outsourcing with non-U.S. vendors.

- Expanding product line may be a stretch, but it is identified as an opportunity because the cost reduction provided by outsourcing may enable expansion of a firm's offering.
- Financial includes nodes: Make investments and Reduce debt. Opportunities to engage in these financial activities may be present more readily when outsourcing as opposed to not outsourcing (i.e., rather than investing in a firm's own IT assets and personnel, the firm may identify an opportunity to invest money saved through outsourcing.)
 - Employees include nodes: Focus-quality assurance of software, Focus-firm's core capabilities, Focus-software alignment with business, and Productivity. The three "focus" opportunities identified relate to having IT employees concentrate on these value-add competencies rather than focusing on the rote tasks of programming or coding. An opportunity to increase productivity among employees may also be present when outsourcing.

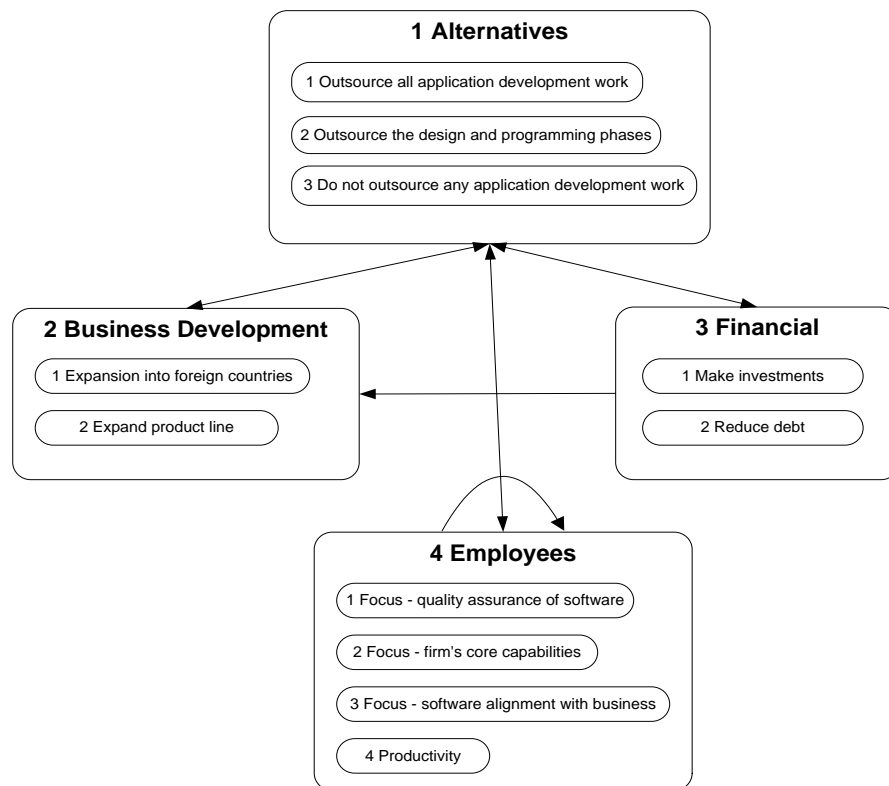


Figure 6. Clusters with elements under Economic Opportunities

Under Customer-related opportunities, we identified two clusters: Customer base and Marketing.

- Customer base includes nodes: Grow into other countries and Customer retention. Expansion of customer base by growing into other countries may be an opportunity with respect to the outsourcing alternatives. By meeting (exceeding) customer business needs and requirements through technology, a firm has an opportunity to better retain its existing customers.
- Marketing includes nodes: Agile, quick response to customer requirements and New features/functionality. By have an applications development process that is able to quickly address customer requirements, a firm has an opportunity to improve its marketing to new and existing customers. New features/functionality in an application can be marketed and present another customer-based opportunity for the firm.

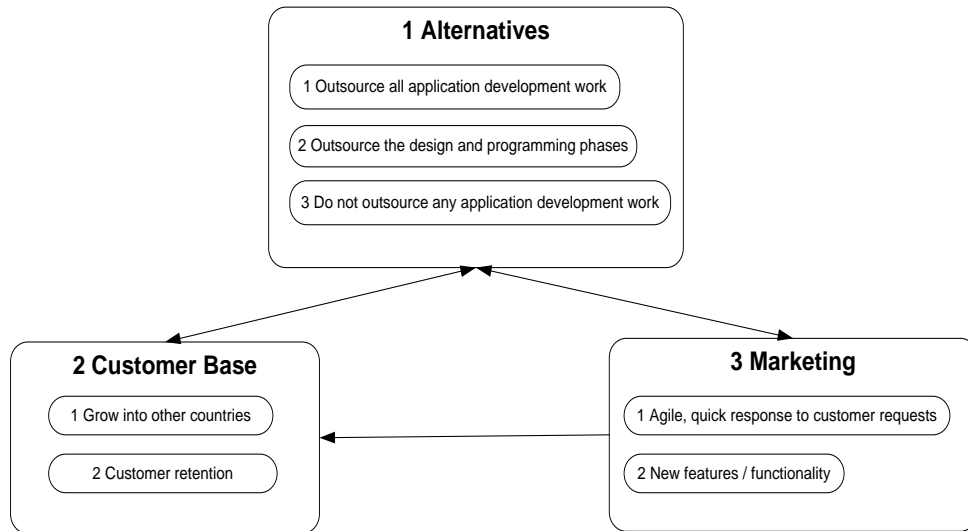


Figure 7. Clusters with elements under Customer-related Opportunities

Costs

Economic and Social costs were identified for this portion of the model.

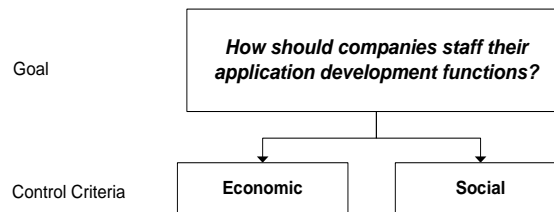


Figure 8. Costs model

Under Economic costs, we identified three clusters: Financial, Operational, and Resources.

- Financial includes nodes: IT Assets, Personnel, and Legal. IT Assets refers to the cost of retaining IT infrastructure for things such as workstations, servers, and licensing; Personnel refers to the retention of costs for things such as salaries, health insurance, pension benefits; Legal refers to the accumulation of costs associated with contract negotiations.
- Operational includes nodes: Time to finish project/job, Use of project management, Knowledge transfer during requirements definition, Control/influence over human resources, and Fast time-to-market. In terms of cost, the first four items' cost increases with outsourcing. They are interrelated with or without outsourcing. Fast time-to-market relates to an enterprise's ability to quickly and with agility, meets its customer needs and wants through use of IT solutions. Without outsourcing, this becomes a cost.
- Resources include nodes: Knowledge of latest technologies and immediately available. Without outsourcing, these two items become costs; resources with knowledge of the latest technologies may not be available quickly.

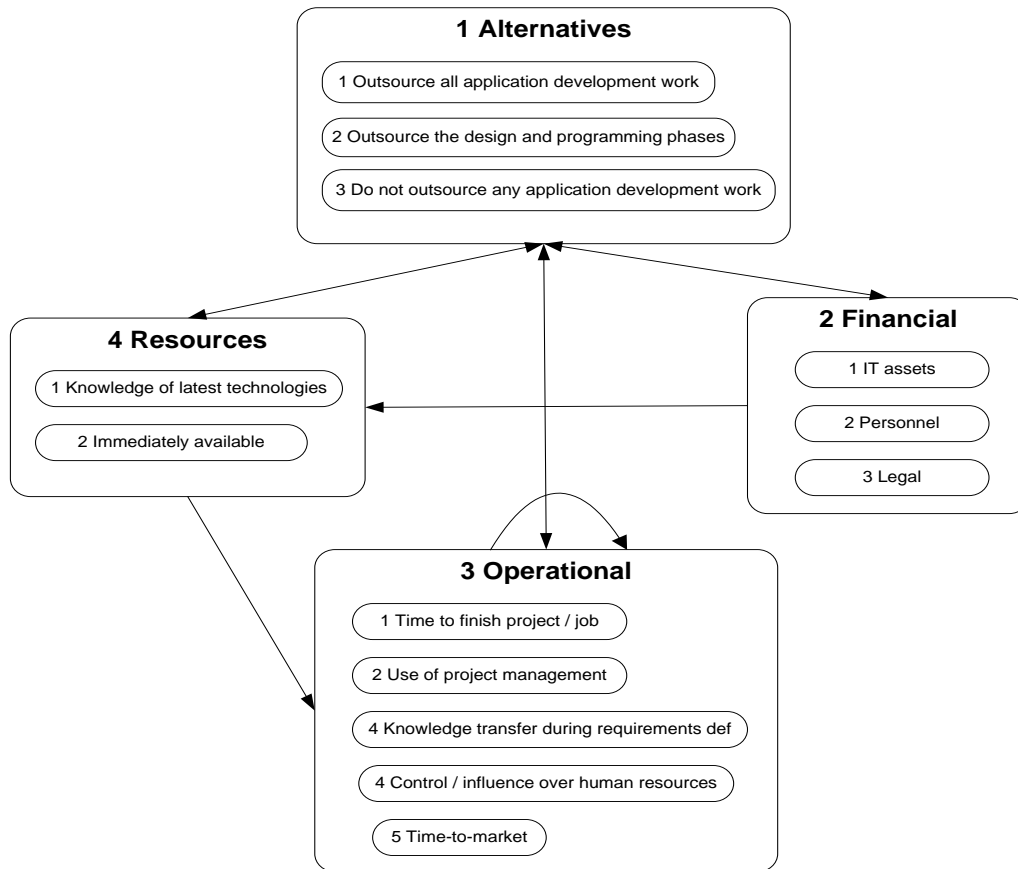


Figure 9. Clusters with elements under Economic Costs

Under Social costs, we identified two clusters: Stakeholders and Labor.

- Stakeholders include nodes: Company shareholders' perception, Media criticism, Company executives/managers' perception, Company employees' perception. These four nodes are rather self-explanatory and represent the various stakeholders' perceptions' influence on this decision.
- Labor includes nodes: U.S. unemployment, Employee morale, Control/influence over human resources, Productivity. Again, these nodes are rather self-explanatory in terms of costs for the alternatives.

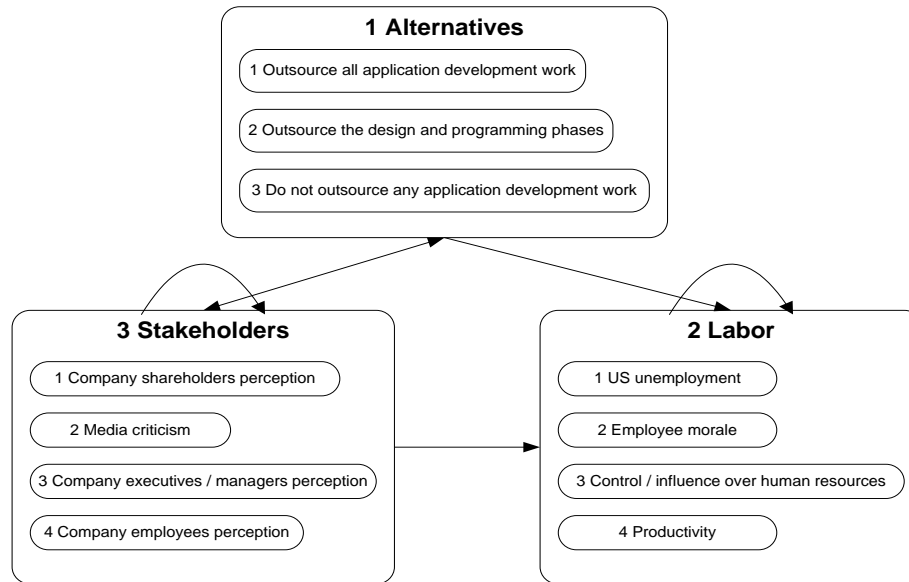


Figure 10. Clusters with elements under Social Costs

Risks

Economic and Social risks were identified for this portion of the model.

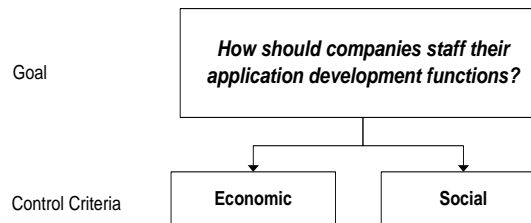


Figure 11. Risks model

Under Economic risks, we identified four clusters: Financial, Security, Communication, Business processes.

- Financial includes node: Legal costs. The risk of incurring legal costs is represented here.
- Security includes nodes: Physical, Intellectual property, and Geopolitical environment – stability. The risk to the physical security of servers and other IT equipment is represented through the Physical node. The Intellectual property node represents the risk of losing control or ownership of programs and software written for an enterprise. The Geopolitical environment risk pertains to the increased risk of outsourcing a firm’s programming function to an area of the world that is or soon may be at war.
- Communication includes nodes: Geographic distance, Communication tool availability – email/voice mail, H-1B and L-1 visa availability, Language differences. Distance, communication tool availability, and language differences represent the risks of poor communication as a result of outsourcing. With the risk that H-1B and L-1 visas will be limited, a firm may have a much more difficult time bringing in foreign outsourcers to work closely and communication with its U.S.-based personnel.
- Business processes includes nodes: Business process knowledge, Business continuity, and Quality assurance. By outsourcing the areas represented by these nodes reflect the risk that any of these could suffer.

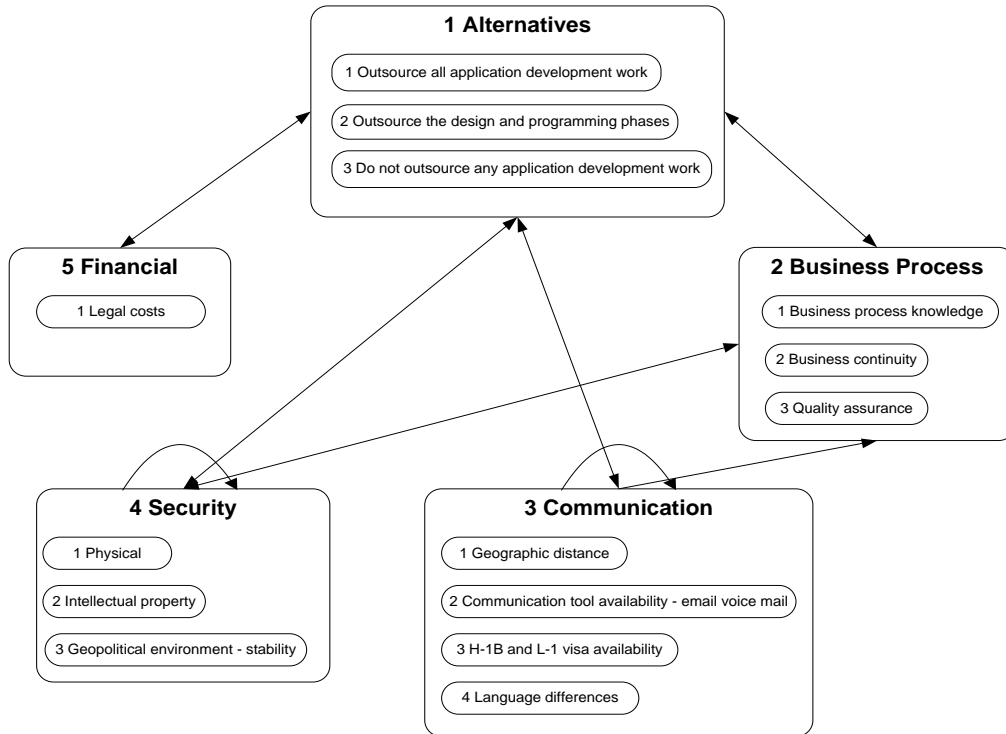


Figure 12. Clusters with elements under Economic Risks

Under Social risks, we identified two clusters: Labor and Stakeholders.

- Labor includes nodes: Employee morale, Productivity, U.S. unemployment. These nodes are rather self-explanatory in terms of risks and influence on the alternatives.
- Stakeholders includes nodes: Company shareholders' perception, Media criticism, Company executives/managers' perception, and Company employees' perception. These four nodes are rather self-explanatory and represent the various stakeholders' perceptions' influence on this decision in terms of risk.

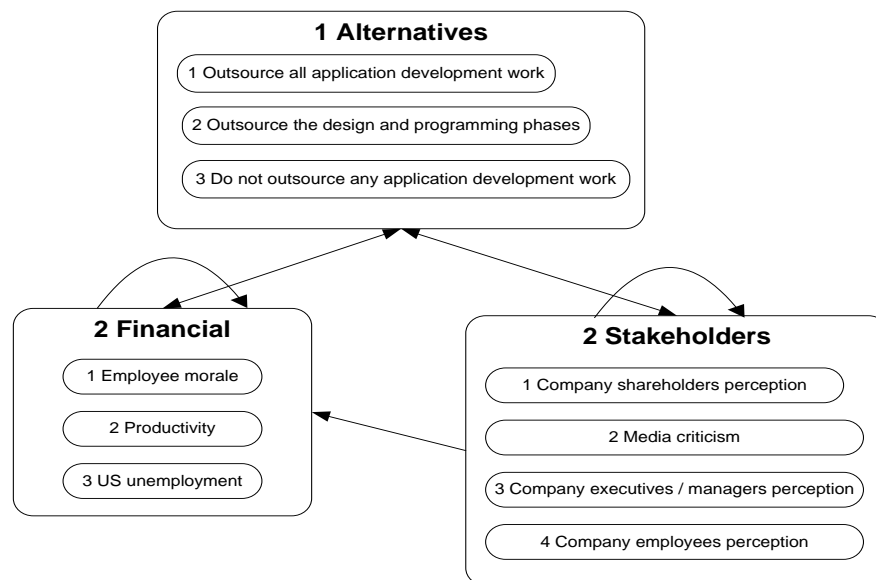


Figure 13. Clusters with elements under Social Risks

BOCR Priorities

The elements under each of the BOCR merits received priorities through pair-wise comparisons (see also Appendix 1), as shown in the table below.

Table 2. Criteria and Elements with Their Priorities

BOCR	Criteria	Clusters	Elements	Local priorities	Global priorities
Benefits	Economic (0.8333)	Alternatives	1 Outsource all application dev. func.	0.6962	0.3427
			2 Outsource the design...	0.1926	0.0948
			3 Do not outsource	0.1112	0.0548
		Financial	1 IT assets	0.4598	0.1886
			2 Personnel	0.1563	0.0641
			3 Legal	0.3839	0.1575
		Operational	1 Time to finish project / job	0.1830	0.0178
			2 Use of project management	0.2367	0.0231
			3 Knowledge transfer during requirements def	0.2194	0.0214
			4 Control / influence over human resources	0.1190	0.0116
			5 Fast time-to-market	0.2419	0.0236
	Technological (0.1667)	Alternatives	1 Outsource all application dev. func.	0.4411	0.2189
			2 Outsource the design...	0.4411	0.2189
			3 Do not outsource	0.1178	0.0584
		Resources	1 Knowledge of latest technologies	0.1853	0.0306
			2 Immediately available	0.8147	0.1347
		Technology	1 Leverage solutions from prev. business	0.8000	0.2708
			2 Newest technology available	0.2000	0.0677
Opportunities	Customer – related (0.2500)	Alternatives	1 Outsource all application dev. func.	0.4518	0.2033
			2 Outsource the design...	0.3911	0.1760
			3 Do not outsource	0.1510	0.0707
		Customer base	1 Grow into other countries	0.2830	0.0707
			2 Customer retention	0.7170	0.1793
		Marketing	1 Agile, quick response to customer requests	0.8333	0.2500
			2 New features / functionality	0.1667	0.0500
	Economic (0.7500)	Alternatives	1 Outsource all application dev. func.	0.4249	0.2042
			2 Outsource the design...	0.3463	0.1665
			3 Do not outsource	0.2288	0.1100
		Business development	1 Expansion into foreign countries	0.5000	0.1338
			2 Expand product line	0.5000	0.1338
		Financial	1 Make investments	0.6667	0.0982
			2 Reduce debt	0.3333	0.0491
		Employees	1 Focus - quality assurance of software	0.2906	0.0304
			2 Focus - firm's core capabilities	0.2118	0.0221
			3 Focus - software alignment with business	0.2929	0.0306
			4 Productivity	0.2047	0.0214
Costs	Economic (0.8333)	Alternatives	1 Outsource all application dev. func.	0.3178	0.1440
			2 Outsource the design...	0.2838	0.1286
			3 Do not outsource	0.3984	0.1806
		Financial	1 IT assets	0.2631	0.0371
			2 Personnel	0.5472	0.0771
			3 Legal	0.1897	0.0267
		Operational	1 Time to finish project / job	0.2114	0.0670
			2 Use of project management	0.1626	0.0516
			4 Knowledge transfer during requirements def	0.0994	0.0315
			4 Control / influence over human resources	0.2341	0.0743
			5 Time-to-market	0.2924	0.0928
		Resources	1 Knowledge of latest technologies	0.2578	0.0229
			2 Immediately available	0.7422	0.0659
		Alternatives	1 Outsource all application dev. func.	0.3604	0.1108

	Social (0.1667)		2 Outsource the design...	0.3314	0.1019
			3 Do not outsource	0.3082	0.0948
		Stakeholders	1 Company shareholders perception	0.1536	0.0566
			2 Media criticism	0.2740	0.1009
			3 Company executives / managers perception	0.2260	0.0832
			4 Company employees perception	0.3464	0.1275
		Labor	1 US unemployment	0.0602	0.0195
			2 Employee morale	0.3288	0.1066
			3 Control / influence over human resources	0.1138	0.0369
			4 Productivity	0.4971	0.1612
Risks	Economic (0.7500)	Alternatives	1 Outsource all application dev. func.	0.4358	0.1940
			2 Outsource the design...	0.4358	0.1940
			3 Do not outsource	0.1283	0.0571
		Financial	1 Legal costs	1.0000	0.0471
		Business process	1 Business process knowledge	0.2360	0.0303
			2 Business continuity	0.5074	0.0652
			3 Quality assurance	0.2566	0.0329
		Security	1 Physical	0.3001	0.0698
			2 Intellectual property	0.4343	0.1010
			3 Geopolitical environment - stability	0.2656	0.0618
		Communication	1 Geographic distance	0.0795	0.0117
			2 Communication tool availability - email voice mail	0.3559	0.0523
			3 H-1B and L-1 visa availability	0.2111	0.0310
			4 Language differences	0.3535	0.0519
	Social (0.2500)	Alternatives	1 Outsource all application dev. func.	0.3930	0.1715
			2 Outsource the design...	0.3929	0.1715
			3 Do not outsource	0.2140	0.0934
		Labor	1 Employee morale	0.4872	0.1867
			2 Productivity	0.3376	0.1294
			3 US unemployment	0.1753	0.0672
		Stakeholders	1 Company shareholders perception	0.1378	0.0249
			2 Media criticism	0.2213	0.0399
			3 Company executives / managers perception	0.4227	0.0762
			4 Company employees perception	0.2183	0.0394

Table 3 represents priorities for Alternatives under each BOCR control criterion.

Table 3 Priorities for Alternatives under BOCR Control Criterion								
Alternatives	Benefits		Opportunities		Costs		Risks	
	Econ. (0.8333)	Techn. (0.1667)	Cust.-rel. (0.2500)	Econ. (0.7500)	Econ. (0.8333)	Soc. (0.1667)	Econ. (0.7500)	Soc. (0.2500)
1 Outsource all application development work	1.0000	1.0000	1.0000	1.0000	0.7975	1.0000	1.0000	1.0000
2 Outsource the design and programming phases	0.2766	1.0000	0.8655	0.8151	0.7122	0.9195	1.0000	1.0000
3 Do not outsource any application development work	0.1597	0.2669	0.3477	0.5385	1.0000	0.8552	0.2944	0.5446

Priorities presented in Table 3 we were used to obtain priorities in Table 4. These values were used to ratings BOCR under Strategic Criteria (Table 5) and establish overall outcome, as shown in Table 7.

Table 4 Priorities for Alternatives under BOCR				
Alternatives	Benefits	Opportunities	Costs	Risks
1 Outsource all application development work	1	1	0.8313	1
2 Outsource the design and programming phases	0.3972	0.8277	0.7468	1
3 Do not outsource any application development work	0.1776	0.4908	0.9759	0.3570

In the next step we established **Strategic criteria** (as shown in figure 14):

1. Financial
2. Technology
 - a) Availability of experts
 - b) Flexibility
3. Time-to-market
4. Social
 - a) Media perception
 - b) Shareholder & employee perception

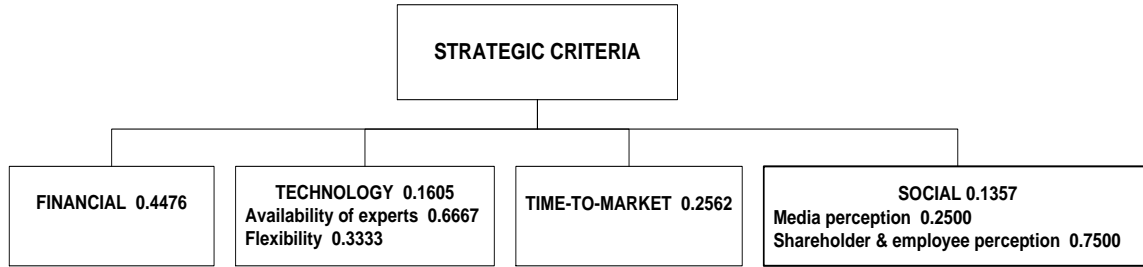


Figure 14. Strategic criteria

- The **ratings scale** shown below was used to rate BOCR with respect to the strategic criteria.

Table 5. Strategic criteria scale for ratings

Availability of experts (0.0826)	Shareholder & employee perception (0.0785)	Media perception (0.0262)	Financial (0.3453)	Flexibility (0.0413)	Time-to-market (0.1977)
Immediately (0.6267)	Very supportive (0.4626)	Very supportive (0.4626)	High possibility to reduce costs (0.5909)	Hi (0.6267)	Fast (0.4626)
Moderately (0.2797)	Moderately supportive (0.3073)	Moderately supportive (0.3073)	Moderate possibility to reduce costs (0.2754)	Medium (0.2797)	Moderately fast (0.3073)
Delayed (0.0936)	Neutral (0.1416)	Neutral (0.1416)	Somewhat unlikely to reduce costs (0.0905)	Low (0.0936)	Average (0.1416)
	Moderately unsupportive (0.0584)	Moderately unsupportive (0.0584)	Unlikely to reduce costs (0.0432)		Moderately slow (0.0584)
	Very unsupportive (0.0299)	Very unsupportive (0.0299)			Slow (0.0299)

- The **merits' ratings**:

Table 6. Rating Importance of Benefits, Opportunities, Costs and Risks

	Availability of experts	Shareholder & employee perception	Media perception	Financial	Flexibility	Time-to-market	Priorities
Benefits	Immediately	Moderately unsupportive	Moderately unsupportive	High possibility to reduce costs	Hi	Fast	0.2983
Opportunities	Immediately	Moderately supportive	Moderately supportive	High possibility to reduce costs	Hi	Fast	0.1051
Costs	Moderately	Moderately unsupportive	Moderately unsupportive	Somewhat unlikely to reduce costs	Med	Average	0.2983
Risks	Immediately	Moderately unsupportive	Moderately unsupportive	High possibility to reduce costs	Hi	Fast	0.2983

Conclusion

After pair-wise comparisons of the alternatives and ratings comparisons of the merits, our model shows that Alternative #1: “Outsource all application development work”, is the best choice. The main driver for this result is the financial benefits. Using background research and personal interviews to describe this model and compare and rate its nodes, we are not surprised by this outcome.

Table 7. Overall Outcome

Alternatives	Benefits 0.2983	Opportunities 0.1051	Costs 0.2983	Risks 0.2983	Outcome BO/CR	Outcome $bB + oO - cC - rR$
1 Outsource all application development work	1.0000	1.0000	0.8313	1.0000	1.2030	-0.1429
2 Outsource the design and programming phases	0.3972	0.8277	0.7468	1.0000	0.4402	-0.3156
3 Do not outsource any application development work	0.1776	0.4908	0.9759	0.3570	0.2502	-0.2930

Sensitivity Graphs for BOCR

Figure 14. Sensitivity Graphs for Benefits

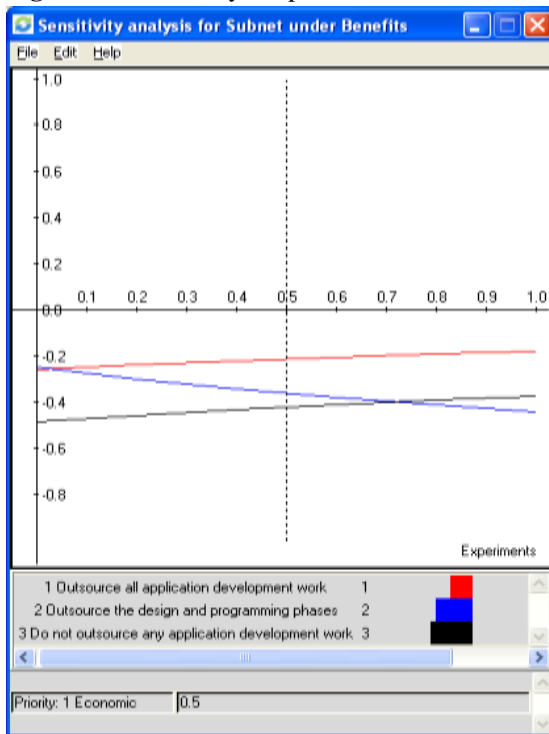


Figure 15. Sensitivity Graphs for Opportunities

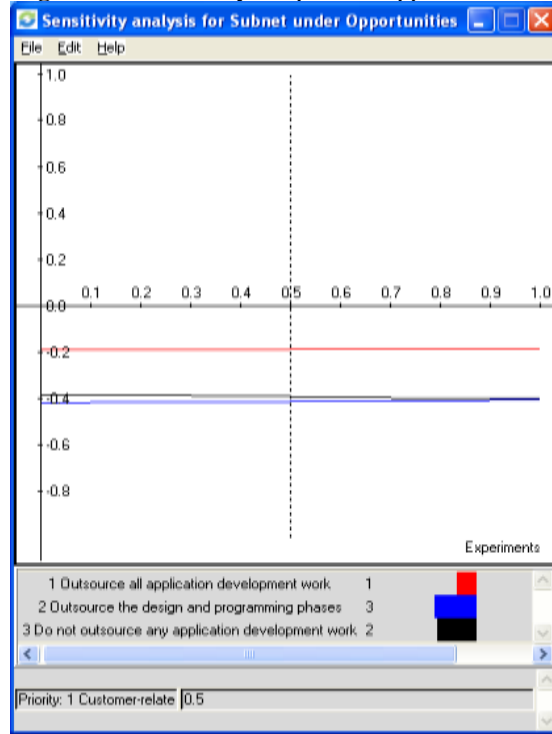


Figure 16. Sensitivity Graphs for Costs

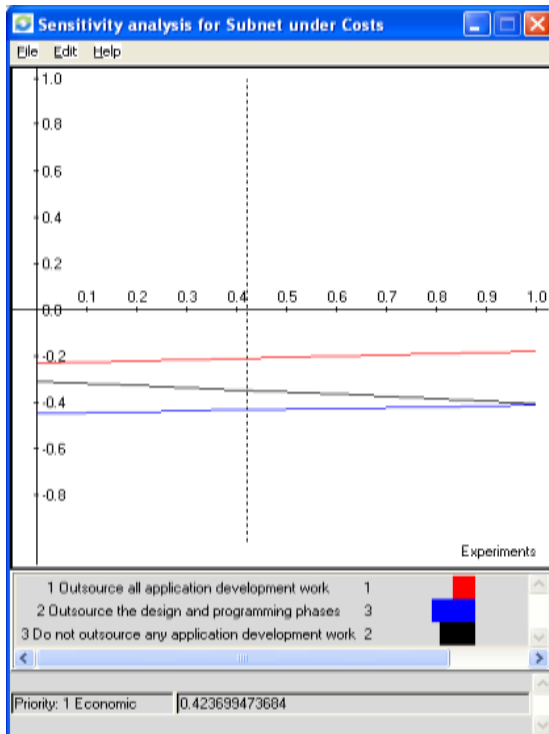
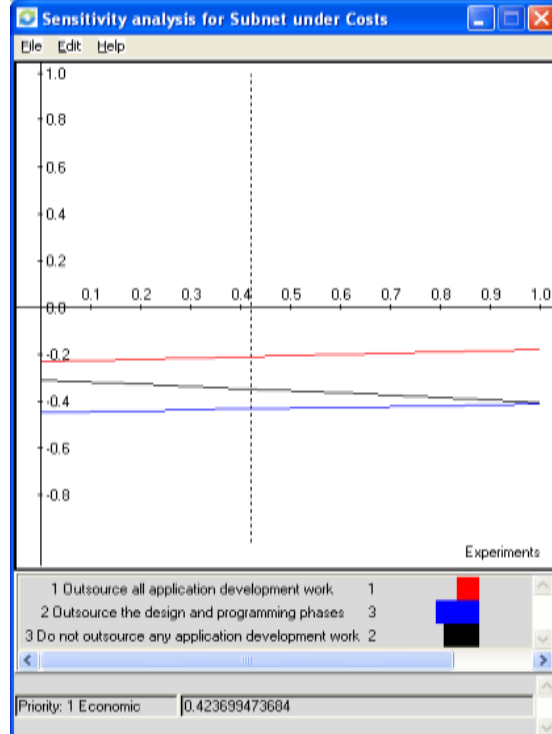


Figure 17. Sensitivity Graphs for Risks



Appendix 1

Pair-wise Comparisons of elements under **BENEFITS**

Pair-wise comparisons for "Control Criteria" wrt to Goal: "How should comp. staff their appl. dev. funct.?"

Question: With respect to Goal which is more important beneficial criterion

Benefits Goal	1 Eco	2 Tech.	Vec. Wts.
1 Economic	1	5	0.8333
2 Technological		1	0.1667

Pair-wise Comparisons of elements under **BENEFITS (Economic)**

Pair-wise comparisons for "Financial" wrt to "1 Outsource all application..."

Question: With respect to "Outsource all application...." where can the firm realizes more Financial savings?

	1 IT as.	2 Per.	3 Leg.	Vec. Wts.
1 IT assets	1	4	1	0.4579
2 Personnel		1	1/3	0.1260
3 Legal			1	0.4161

Pair-wise comparisons for "Operational" wrt to "1 Outsource all appl."

Question: With respect to "Outsource all application...." where can the firm realizes more Operational Benefits?

	1 Time	2 Use	3 Kn	4 Con	5 Fast	Vec Wts
1 Time to finish proj.	1	1/2	3	4	4	0.1853
2 Use of project man.		1	3	4	2	0.3455
3 Knowledge transfer..			1	3	2	0.1132
4 Control/influence...				1	3	0.0602
5 Fast time-to-market					1	0.2958

Pair-wise comparisons for "Financial" wrt to "2 Outsource the design..."

Question: With respect to "Outsource the design..." where can the firm realizes more Financial savings?

	1 IT as.	2 Per.	3 Leg.	Vec. Wts.
1 IT assets	1	3	2	0.5396
2 Personnel		1	1/2	0.1634
3 Legal			1	0.2970

Pair-wise comparisons for "Operational" wrt to "2 Outsource the design..."

Question: With respect to "Outsource the design...." where can the firm realizes more Operational Benefits?

	1 Time	2 Use	3 Kn	4 Con	5 Fast	Vec. Wts.
1 Time to finish proj.	1	5	1/2	2	1/3	0.2232
2 Use of project man.		1	1/2	2	1/2	0.1159
3 Knowledge transfer..			1	2	1	0.2605
4 Control/influence...				1	2	0.0995
5 Fast time-to-market					1	0.3009

Pair-wise comparisons for "Financial" wrt to "3 Do not outsource..."

Question: With respect to "Do not outsource...." where can the firm realizes more Financial Savings?

	1 IT as.	2 Per.	3 Leg.	Vec. Wts.
1 IT assets	1	1	1	0.3333
2 Personnel		1	1	0.3333
3 Legal			1	0.3333

Pair-wise comparisons for "1 Alternatives" wrt to "1 IT assets"

Question: With respect to IT assets, which alternative can bring more Economic Benefits?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	6	8	0.7536
2 Outsource the d.		1	4	0.1811
3 Do not outsource			1	0.0653

Pair-wise comparisons for "Operational" wrt to "3 Do not outsource..."

Question: With respect to "Do not outsource" where can the firm realizes more Operational Benefits?

	1 Time	2 Use	3 Kn	4 Con	5 Fast	Vec. Wts.
1 Time to finish proj.	1	1	1/5	1/5	1/3	0.0773
2 Use of project man.		1	1	1	1/2	0.1643
3 Knowledge transfer...			1	3	2	0.3512
4 Control/influence...				1	1	0.1973
5 Fast time-to-market					1	0.2098

Pair-wise comparisons for "1 Alternatives" wrt to "2 Personnel"

Question: With respect to “2 Personnel”, which alternative can bring more Economic Benefits?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	6	8	0.7536
2 Outsource the d.		1	4	0.1811
3 Do not outsource			1	0.0653

Pair-wise comparisons for “1 Alternatives” wrt to “3 Legal”

Question: With respect to “3 Legal”, which alternative can bring more Economic Benefits?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	6	8	0.7536
2 Outsource the d.		1	4	0.1811
3 Do not outsource			1	0.0653

Pair-wise comparisons for “1 Alternatives” wrt to “1 Time to finish project”

Question: With respect to “1 Time to finish project”, which alternative can bring more Economic Benefits?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	3	5	0.6267
2 Outsource the d.		1	4	0.2797
3 Do not outsource			1	0.0936

Pair-wise comparisons for “1 Alternatives” wrt to “4 Control/influence...”

Question: With respect to “4 Control/influence...”, which alternative can bring more Economic Benefits?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1/3	1/6	0.0914
2 Outsource the d.		1	1/4	0.2176
3 Do not outsource			1	0.6910

Pair-wise comparisons for “1 Alternatives” wrt to “3 Knowledge transfer ...”

Question: With respect to “3 Knowledge transfer...”, which alternative can bring more Economic Benefits?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1/3	1/6	0.0881
2 Outsource the d.		1	1/5	0.1947
3 Do not outsource			1	0.7172

Pair-wise comparisons for “1 Alternatives” wrt to “2 Use to proj. man.”

Question: With respect to “2 Use to proj. man.”, which alternative can bring more Economic bBenefits?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	2	4	0.5584
2 Outsource the d.		1	3	0.3196
3 Do not outsource			1	0.2120

Pair-wise comparisons for “1 Alternatives” wrt to “5 fast time-to-market”

Question: With respect to “5 fast time-to-market”, which alternative can bring more Economic Benefits?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	3	6	0.6442
2 Outsource the d.		1	4	0.2706
3 Do not outsource			1	0.0852

Pair-wise comparisons for “Operational” wrt to “2 Use of project man.”

Question: With respect to “2 Use of project man.” where can the firm realizes more Operational Benefits?

	1 Out	2 Kn	3 Co	Vec. Wts.
1 Time to finish proj.	1	1/2	1/2	0.1958
3 Knowledge transfer...		1	2	0.4934
4 Control/influence...			1	0.3108

Pair-wise Comparisons of elements under **BENEFITS (Technological)**

Pair-wise comparisons for “Technology” wrt to “1 Outsource all appl.”

Question: With respect to “1 Outsource all appl.” where can the firm realizes more Technological Benefits?

	1 Know.	2 Immed.	Vec. Wts.
1 Leverage solutions from...	1	4	0.8000
2 Newest technology avail.		1	0.2000

Pair-wise comparisons for “Resources” wrt to “1 Outsource all appl.”

Question: With respect to “1 Outsource all appl.” where can the firm realizes more Resources Benefits?

	1 Know.	2 Immed.	Vec. Wts.
1 Knowledge of latest tech	1	1/4	0.2000
2 Immediately available		1	0.8000

Pair-wise comparisons for "Technology" wrt to "2 Outsource the design."

Question: With respect to "2 Outsource the design." where can the firm realizes more Technological Benefits?

	1 Know.	2 Immed.	Vec. Wts.
1 Leverage solutions from...	1	4	0.8000
2 Newest technology avail.		1	0.2000

Pair-wise comparisons for "Resources" wrt to "2 Outsource the design."

Question: With respect to "2 Outsource the design." where can the firm realizes more Resources Benefits?

	1 Know.	2 Immed.	Vec. Wts.
1 Knowledge of latest tech	1	1/5	0.1667
2 Immediately available		1	0.8333

Pair-wise comparisons for "Resources" wrt to "3 Do not outsource..."

Question: With respect to "3 Do not outsource..." where can the firm realizes more Resource Benefits?

	1 Know.	2 Immed.	Vec. Wts.
1 Knowledge of latest tech	1	1/4	0.2000
2 Immediately available		1	0.8000

Pair-wise comparisons for "Technology" wrt to "3 Do not outsource..."

Question: With respect to "3 Do not outsource..." where can the firm realizes more Technological Benefits?

	1 Know.	2 Immed.	Vec. Wts.
1 Leverage solutions from...	1	4	0.8000
2 Newest technology avail.		1	0.2000

Pair-wise comparisons for "1 Alternatives" wrt to "1 Knowledge of latest tech."

Question: With respect to "1 Knowledge of latest tech.", which alternative can bring more Technological Benefits?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	4	0.4444
2 Outsource the d.		1	4	0.4444
3 Do not outsource			1	0.1111

Pair-wise comparisons for "Technology" wrt to "1 Knowledge of latest tech."

Question: With respect to "1 Knowledge of latest tech." where can the firm realizes more Technological Benefits?

	1 Know.	2 Immed.	Vec. Wts.
1 Leverage solutions from...	1	4	0.8000
2 Newest technology avail.		1	0.2000

Pair-wise comparisons for "1 Alternatives" wrt to "2 Immediately available"

Question: With respect to "2 Immediately available", which alternative can bring more Technological Benefits?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	5	0.4545
2 Outsource the d.		1	5	0.4545
3 Do not outsource			1	0.0909

Pair-wise comparisons for "1 Alternatives" wrt to "1 Leverage solutions from..."

Question: With respect to "1 Leverage solutions from...", which alternative can bring more Technological Benefits?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	4	0.4444
2 Outsource the d.		1	4	0.4444
3 Do not outsource			1	0.1111

Pair-wise comparisons for "1 Alternatives" wrt to "2 Newest technology avail..."

Question: With respect to "2 Newest technology avail...", which alternative can bring more Technological Benefits?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	2	0.4000
2 Outsource the d.		1	2	0.4000
3 Do not outsource			1	0.2000

Pair-wise Comparisons of elements under OPPORTUNITIES

Pair-wise comparisons for "Control Criteria" wrt to Goal: "How should comp. staff their appl. dev. funct.?"

Question: With respect to Goal which is the more important Opportunity Criterion?

Opportunities Goal	1 Cus	2 Eco	Vec. Wts.
1 Customer related	1	1/3	0.2500
2 Economic		1	0.7500

Pair-wise Comparisons of elements under **OPPORTUNITIES (Customer related)**

Pair-wise comparisons for “Customer base” wrt to “1 Outsource all appl.”

Question: With respect to “Outsource all application...”, which is the more probable Customer base Opportunity?

	1 Grow	2 Cust.	Vec. Wts.
1 Grow into other countries	1	1/3	0.2500
2 Customer retention		1	0.7500

Pair-wise comparisons for “Marketing” wrt to “1 Outsource all appl.”

Question: With respect to “Outsource all application...”, which is the more probable Marketing Opportunity?

	1 Agile	2 New	Vec. Wts.
1 Agile, quick response to...	1	5	0.8333
2 New features/functionality		1	0.1667

Pair-wise comparisons for “Customer base” wrt to “2 Outsource the design.”

Question: With respect to “2 Outsource the design.”, which is the more probable Customer base Opportunity?

	1 Grow	2 Cust.	Vec. Wts.
1 Grow into other countries	1	1/2	0.3333
2 Customer retention		1	0.6667

Pair-wise comparisons for “Marketing” wrt to “2 Outsource the design.”

Question: With respect to “2 Outsource the design.”, which is the more probable Marketing Opportunity?

	1 Agile	2 New	Vec. Wts.
1 Agile, quick response to...	1	5	0.8333
2 New features/functionality		1	0.1667

Pair-wise comparisons for “Customer base” wrt to “3 Do not outsource...”

Question: With respect to “3 Do not outsource...”, which is the more probable Customer base Opportunity?

	1 Grow	2 Cust.	Vec. Wts.
1 Grow into other countries	1	1/2	0.3333
2 Customer retention		1	0.6667

Pair-wise comparisons for “Marketing” wrt to “3 Do not outsource...”

Question: With respect to “3 Do not outsource...”, which is the more probable Marketing Opportunity?

	1 Agile	2 New	Vec. Wts.
1 Agile, quick response to...	1	5	0.8333
2 New features/functionality		1	0.1667

Pair-wise comparisons for “1 Alternatives” wrt to “2 Customer retention ”

Question: With respect to “2 Customer retention”, which Alternative is more likely to have Customer related Opportunity?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	2	0.4000
2 Outsource the d.		1	2	0.4000
3 Do not outsource			1	0.2000

Pair-wise comparisons for “1 Alternatives” wrt to “1 Grow into other countries ”

Question: With respect to “1 Grow into other countries”, which Alternative is more likely to have Customer related Opportunity?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	3	4	0.6250
2 Outsource the d.		1	2	0.2385
3 Do not outsource			1	0.1365

Pair-wise comparisons for “1 Alternatives” wrt to “1 Agile, quick response to...”

Question: With respect to “1 Agile, quick response to...”, which Alternative is more likely to have Customer related Opportunity ?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all..	1	1	4	0.4444
2 Outsource the d.		1	4	0.4444
3 Do not outsource			1	0.1111

Pair-wise comparisons for “Customer base” wrt to “1 Agile, quick response to...”

Question: With respect to “2 Outsource the design.”, which is more probable Customer base Opportunity?

	1 Grow	2 Cust.	Vec. Wts.
1 Grow into other countries	1	1/3	0.2500
2 Customer retention		1	0.7500

Pair-wise comparisons for “1 Alternatives” wrt to “2 New features/functionality”

Question: With respect to “2 New features/functionality”, which Alternative is more likely to have Customer related Opportunity?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	2	0.4000
2 Outsource the d.		1	2	0.4000

3 Do not outsource

1

0.2000

Pair-wise comparisons for "Customer base" wrt to "2 New features/functionality"

Question: With respect to "2 New features/functionality", which is more probable Customer base Opportunity?

	1 Grow	2 Cust.	Vec. Wts.
1 Grow into other countries	1	1/2	0.3333
2 Customer retention		1	0.6667

Pair-wise Comparisons of elements under OPPORTUNITIES (Economic)

Pair-wise comparisons for "Business development" wrt to "1 Outsource all appl."

Question: With respect to "1 Outsource all appl.", which is more probable Business development Opportunity?

	1 Expansion	2 Expand	Vec. Wts.
1 Expansion into foreign countries	1	1	0.5000
2 Expand product line		1	0.5000

Pair-wise comparisons for "Employees" wrt to "1 Outsource all appl."

Question: With respect to "1 Outsource all appl.", which is more probable Employees Opportunity?

	1 Fo	2 Fo	3 Fo	4 Pr	Vec. Wts.
1 Focus – quality assur.	1	1	2	2	0.3177
2 Focus – firm's core...		1	3	1	0.3207
3 Focus – software alig.			1	2	0.1871
4 Productivity				1	0.1745

Pair-wise comparisons for "Financial" wrt to "1 Outsource all appl."

Question: With respect to "1 Outsource all appl.", which is more probable Financial Opportunity?

	1 Make	2 Reduce	Vec. Wts.
1 Make investments	1	2	0.6667
2 Reduce debts		1	0.3333

Pair-wise comparisons for "Business development" wrt to "2 Outsource the design."

Question: With respect to "2 Outsource the design.", which is more probable Business development Opportunity?

	1 Expansion	2 Expand	Vec. Wts.
1 Expansion into foreign countries	1	1	0.5000
2 Expand product line		1	0.5000

Pair-wise comparisons for "Employees" wrt to "2 Outsource the design."

Question: With respect to "2 Outsource the design.", which is more probable Employees Opportunity?

	1 Fo	2 Fo	3 Fo	4 Pr	Vec. Wts.
1 Focus – quality assur.	1	3	3	2	0.4640
2 Focus – firm's core...		1	1	2	0.2069
3 Focus – software alig.			1	1	0.1677
4 Productivity				1	0.1614

Pair-wise comparisons for "Financial" wrt to "2 Outsource the design."

Question: With respect to "2 Outsource the design.", which is more probable Financial Opportunity?

	1 Make	2 Reduce	Vec. Wts.
1 Make investments	1	2	0.6667
2 Reduce debts		1	0.3333

Pair-wise comparisons for "Business development" wrt to "3 Do not outsource..."

Question: With respect to "3 Do not outsource...", which is more probable Business development Opportunity?

	1 Expansion	2 Expand	Vec. Wts.
1 Expansion into foreign countries	1	1	0.5000
2 Expand product line		1	0.5000

Pair-wise comparisons for "Employees" wrt to "3 Do not outsource..."

Question: With respect to "3 Do not outsource...", which is more probable Employees Opportunity?

	1 Fo	2 Fo	3 Fo	4 Pr	Vec. Wts.
1 Focus – quality assur.	1	2	1	2	0.3462
2 Focus – firm's core...		1	2	2	0.2855
3 Focus – software alig.			1	1	0.2048
4 Productivity				1	0.1635

Pair-wise comparisons for "Financial" wrt to "3 Do not outsource..."

Question: With respect to “3 Do not outsource...”, which is more probable Financial Opportunity?

	1 Make	2 Reduce	Vec. Wts.
1 Make investments	1	2	0.6667
2 Reduce debts		1	0.3333

Pair-wise comparisons for “1 Alternatives” wrt to “1 Expansion into foreign countries ”

Question: With respect to “1 Expansion into foreign countries”, which Alternative is more likely to have Economic Opportunity?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	2	0.4000
2 Outsource the d.		1	2	0.4000
3 Do not outsource			1	0.2000

Pair-wise comparisons for “1 Alternatives” wrt to “2 Expand product line ”

Question: With respect to “2 Expand product line”, which Alternative is more likely to have Economic Opportunity?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	1	0.3333
2 Outsource the d.		1	1	0.3333
3 Do not outsource			1	0.3333

Pair-wise comparisons for “1 Alternatives” wrt to “1 Focus – quality assur.”

Question: With respect to “2 Expand product line”, which Alternative is more likely to have Economic Opportunity?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	2	1/2	0.3108
2 Outsource the d.		1	1/2	0.1958
3 Do not outsource			1	0.4934

Pair-wise comparisons for “Employees” wrt to “1 Focus – quality assur.”

Question: With respect to “1 Focus – quality assur.”, which is more probable Employees Opportunity?

	3 Fo	4 Pr	Vec. Wts.
3 Focus – software alig.	1	2	0.6667
4 Productivity		1	0.3333

Pair-wise comparisons for “1 Alternatives” wrt to “2 Focus – firm’s core....”

Question: With respect to “2 Focus – firm’s core...”, which Alternative is more likely to have Economic Opportunity?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	3	0.4286
2 Outsource the d.		1	3	0.4286
3 Do not outsource			1	0.1429

Pair-wise comparisons for “1 Alternatives” wrt to “4 Productivity”

Question: With respect to “4 Productivity”, which Alternative is more likely to have Economic Opportunity?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	2	0.4000
2 Outsource the d.		1	2	0.4000
3 Do not outsource			1	0.2000

Pair-wise comparisons for “1 Alternatives” wrt to “2 Reduce debts”

Question: With respect to “2 Reduce debts”, which Alternative is more likely to have Economic Opportunity?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	2	3	0.5396
2 Outsource the d.		1	2	0.2970
3 Do not outsource			1	0.1634

Pair-wise comparisons for “1 Alternatives” wrt to “1 Make investments”

Question: With respect to “1 Make investments”, which Alternative is more likely to have Economic Opportunity?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	2	3	0.5396
2 Outsource the d.		1	2	0.2970
3 Do not outsource			1	0.1634

Pair-wise Comparisons of elements under COSTS

Pair-wise comparisons for “Control Criteria” wrt to Goal: “How should comp. staff their appl. dev. funct?”

Question: Which criterion is more important with respect to costs of application development function?

Costs Goal	1 Eco	2 Soc	Vec. Wts.
1 Economic	1	5	0.8333
2 Social		1	0.1617

Pair-wise Comparisons of elements under COSTS (Economic)

Pair-wise comparisons for "Resources" wrt to "1 Outsource the design."

Question: With respect to "1 Outsource all appl." where can the firm realizes more Resources Costs?

	1 Know.	2 Immed.	Vec. Wts.
1 Knowledge of latest tech	1	1/4	0.2000
2 Immediately available		1	0.8000

Pair-wise comparisons for "1 Financial" wrt to "1 Outsource all appl."

Question: With respect to "1 Outsource all appl." where can the firm realizes more Financial Costs?

	1 IT as.	2 Per.	3 Leg.	Vec. Wts.
1 IT assets	1	1/3	2	0.2631
2 Personnel		1	2	0.5472
3 Legal			1	0.1897

Pair-wise comparisons for "2 Operational" wrt to "1 Outsource all appl."

Question: With respect to "1 Outsource all appl." where can the firm realizes more Operational Costs?

	1 Time	2 Use	3 Con	4 Kn	5 Fast	Vec. Wts.
1 Time to finish proj.	1	2	2	1	1/2	0.2037
2 Use of project man.		1	1	1/2	1/2	0.1203
3 Control/influence...			1	1/2	1/3	0.1080
4 Knowledge transfer..				1	1/3	0.1914
5 Fast time-to-market					1	0.3766

Pair-wise comparisons for "1 Financial" wrt to "2 Outsource the design."

Question: With respect to "2 Outsource the design." where can the firm realizes more Financial Costs?

	1 IT as.	2 Per.	3 Leg.	Vec. Wts.
1 IT assets	1	1/3	2	0.2631
2 Personnel		1	2	0.5472
3 Legal			1	0.1897

Pair-wise comparisons for "1 Financial" wrt to "3 Do not outsource..."

Question: With respect to "3 Do not outsource..." where can the firm realizes more Financial Costs?

	1 IT as.	2 Per.	3 Leg.	Vec Wts
1 IT assets	1	1/3	2	0.2631
2 Personnel		1	2	0.5472
3 Legal			1	0.1897

Pair-wise comparisons for "2 Operational" wrt to "2 Outsource the design."

Question: With respect to "2 Outsource the design." where can the firm realizes more Operational Costs?

	1 Time	2 Use	3 Con	4 Kn	5 Fast	Vec. Wts.
1 Time to finish proj.	1	1/3	2	1/2	1/2	0.1236
2 Use of project man.		1	2	2	1/2	0.2684
3 Control/influence...			1	1/3	1/3	0.0871
4 Knowledge transfer..				1	1	0.2220
5 Fast time-to-market					1	0.2988

Pair-wise comparisons for "2 Operational" wrt to "3 Do not outsource..."

Question: With respect to "2 Outsource the design." where can the firm realizes more Operational Costs?

	1 Time	2 Use	3 Con	4 Kn	5 Fast	Vec. Wts.
1 Time to finish proj.	1	1	1/2	1/2	1/3	0.1213
2 Use of project man.		1	2	2	2	0.2917
3 Control/influence...			1	1/2	1/3	0.1285
4 Knowledge transfer..				1	1/2	0.1771
5 Fast time-to-market					1	0.2814

Pair-wise comparisons for "Resources" wrt to "2 Outsource the design."

Question: With respect to "2 Outsource the design." where can the firm realizes more Resources Costs?

	1 Know.	2 Immed.	Vec Wts
1 Knowledge of latest tech	1	1/2	0.3333
2 Immediately available		1	0.6667

Pair-wise comparisons for "Resources" wrt to "3 Do not outsource..."

Question: With respect to "3 Do not outsource..." where can the firm realizes more Resources Costs?

	1 Know.	2 Immed.	Vec Wts
1 Knowledge of latest tech	1	1/3	0.2500
2 Immediately available		1	0.7500

Pair-wise comparisons for "1 Alternatives" wrt to "1 IT assets"

Question: With respect to "1 IT assets" which Alternative is more costly?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1/3	1/5	0.1007
2 Outsource the d.		1	1/4	0.2255
3 Do not outsource			1	0.6738

Pair-wise comparisons for "1 Alternatives" wrt to "2 Personnel"
Question: With respect to "2 Personnel" which Alternative is more costly?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1/3	1/5	0.1007
2 Outsource the d.		1	1/4	0.2255
3 Do not outsource			1	0.6738

Pair-wise comparisons for "1 Alternatives" wrt to "3 Legal"
Question: With respect to "3 Legal" which Alternative is more costly?

	1 Out	2 Out	3 Do not	Vec Wts.
1 Outsource all...	1	1	3	0.4434
2 Outsource the d.		1	2	0.3874
3 Do not outsource			1	0.1692

Pair-wise comparisons for "1 Alternatives" wrt to "1 Time to finish project"
Question: With respect to "1 Time to finish project" which Alternative is more costly?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1/2	3	0.3487
2 Outsource the d.		1	2	0.4836
3 Do not outsource			1	0.1677

Pair-wise comparisons for "1 Alternatives" wrt to "2 Use to proj. man."
Question: With respect to "2 Use to proj. man." which Alternative is more costly?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	3	1	0.4600
2 Outsource the d.		1	3	0.3189
3 Do not outsource			1	0.2211

Pair-wise comparisons for "2 Operational" wrt to "2 Use of project man."
Question: With respect to "2 Use of project man." where can the firm realizes more Operational Costs?

	1 Out	2 Kn	3 Co	Vec. Wts.
1 Time to finish proj.	1	1	1/3	0.2000
3 Knowledge transfer...		1	1/3	0.2000
4 Control/influence...			1	0.6000

Pair-wise comparisons for "1 Alternatives" wrt to "3 Control/influence..."
Question: With respect to "3 Control/influence..." which Alternative is more costly?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	3	5	0.6267
2 Outsource the d.		1	4	0.2797
3 Do not outsource			1	0.0936

Pair-wise comparisons for "1 Alternatives" wrt to "4 Knowledge transfer ..."
Question: With respect to "4 Knowledge transfer ..." which Alternative is more costly?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	4	5	0.6738
2 Outsource the d.		1	3	0.2255
3 Do not outsource			1	0.1007

Pair-wise comparisons for "1 Alternatives" wrt to "1 Knowledge of latest tech"
Question: With respect to "1 Knowledge of latest tech" which Alternative is more costly?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	1	0.3333
2 Outsource the d.		1	1	0.3333
3 Do not outsource			1	0.3333

Pair-wise comparisons for "1 Alternatives" wrt to "5 fast time-to-market"
Question: With respect to "5 fast time-to-market" which Alternative is more costly?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1/2	1/4	0.1365
2 Outsource the d.		1	1/3	0.2385
3 Do not outsource			1	0.6250

Pair-wise comparisons for "2 Operational" wrt to "1 Knowledge of latest tech."
Question: With respect to "1 Knowledge of latest tech." where can the firm realize more Operational Costs

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Time to finish proj.	1	1	1	0.2037
4 Knowledge transfer...			1	0.1914

1 Outsource all...	1	1	1/3	0.2000
2 Outsource the d.		1	1/3	0.2000
3 Do not outsource			1	0.6000

Pair-wise comparisons for “2 Operational” wrt to “2 Immediately available”

Question: With respect to “2 Immediately available” where can the firm realizes more Operational Costs?

	1 Time	5 Fast	Vec. Wts.
1 Time to finish proj.	1	1	0.5000
5 Fast time-to-market		1	0.5000

Pair-wise Comparisons of elements under COSTS (Social)

Pair-wise comparisons for “Stakeholders” wrt to “1 Outsource all appl.”

Question: With respect to “1 Outsource all appl.” where can the firm realizes more Stakeholders Costs?

	1 US	2 Em	3 Co	4 Pr	Vec. Wts.
1 Company stakeholders p.	1	1/3	1/4	1	0.1136
2 Media criticism		1	2	2	0.4101
3 Company executives/men.			1	3	0.3394
4 Company employees per.				1	0.1369

Pair-wise comparisons for “Labor” wrt to “1 Outsource all appl.”

Question: With respect to “1 Outsource all appl.” where can the firm realizes more Labor Costs?

	1 US	2 Em	3 Co	4 Pr	Vec. Wts.
1 US unemployment	1	1/4	1/2	1/5	0.0794
2 Employee morale		1	2	1/3	0.2710
3 Control/influence over...			1	1	0.2187
4 Productivity				1	0.4309

Pair-wise comparisons for “Labor” wrt to “2 Outsource the design.”

Question: With respect to “2 Outsource the design.” where can the firm realizes more Labor Costs?

	1 US	2 Em	3 Co	4 Pr	Vec. Wts.
1 US unemployment	1	1/3	1/4	1	0.1136
2 Employee morale		1	2	2	0.4101
3 Control/influence over...			1	3	0.3394
4 Productivity				1	0.1369

Pair-wise comparisons for “Stakeholders” wrt to “2 Outsource the design.”

Question: With respect to “2 Outsource the design.” where can the firm realizes more Stakeholders Costs?

	1 US	2 Em	3 Co	4 Pr	Vec. Wts.
1 Company stakeholders p.	1	1/4	1/2	1/5	0.0794
2 Media criticism		1	2	1/3	0.2710
3 Company executives/men.			1	1	0.2187
4 Company employees per.				1	0.4309

Pair-wise comparisons for “Labor” wrt to “3 Do not outsource...”

Question: With respect to “3 Do not outsource...” where can the firm realizes more Labor Costs?

	1 US	2 Em	3 Co	4 Pr	Vec. Wts.
1 US unemployment	1	1	1	1	0.2407
2 Employee morale		1	1	1/3	0.1750
3 Control/influence over...			1	1/3	0.1750
4 Productivity				1	0.4092

Pair-wise comparisons for “Stakeholders” wrt to “3 Do not outsource...”

Question: With respect to “3 Do not outsource...” where can the firm realizes more Stakeholders Costs?

	1 Co	2 Me	3 Co	4 Co	Vec. Wts.
1 Company stakeholders p.	1	2	2	1/2	0.2947
2 Media criticism		1	1	1	0.1917
3 Company executives/men.			1	2	0.2508
4 Company employees per.				1	0.2629

Pair-wise comparisons for “1 Alternatives” wrt to “1 Company stakeholders p.”

Question: With respect to “1 Company stakeholders p.” which Alternative is more costly?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	3	0.4286
2 Outsource the d.		1	3	0.4286
3 Do not outsource			1	0.1429

Pair-wise comparisons for “Stakeholders” wrt to “1 Company stakeholders p.”

Question: With respect to “1 Company stakeholders p.” where can the firm realizes more Stakeholders Costs?

	2 Me	3 Co	Vec. Wts.
2 Media criticism	1	3	0.7500
3 Company executives/men.		1	0.2500

Pair-wise comparisons for “1 Alternatives” wrt to “2 Media criticism”

Question: With respect to “2 Media criticism” which Alternative is more costly?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	4	0.4444
2 Outsource the d.		1	4	0.4444
3 Do not outsource			1	0.1111

Pair-wise comparisons for “Stakeholders” wrt to “2 Media criticism”

Question: With respect to “2 Media criticism” where can the firm realizes more Stakeholders Costs?

	1 Co	3 Co	4 Co	Vec. Wts.
1 Company stakeholders p.	1	2	1/2	0.3108
3 Company executives/men.		1	1/2	0.1958
4 Company employees per.			1	0.4934

Pair-wise comparisons for “1 Alternatives” wrt to “3 Company executives/men.”

Question: With respect to “2 Media criticism” which Alternative is more costly?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	1/3	0.2000
2 Outsource the d.		1	1/3	0.2000
3 Do not outsource			1	0.6000

Pair-wise comparisons for “1 Alternatives” wrt to “4 Company employees per.”

Question: With respect to “4 Company employees per.” which Alternative is more costly?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	3	0.4434
2 Outsource the d.		1	2	0.3874
3 Do not outsource			1	0.1692

Pair-wise Comparisons of elements under RISKS

Pair-wise comparisons for “Control Criteria” wrt to Goal: “How should comp. staff their appl. dev. funct.?”

Question: With respect to Goal which criterion holds more Risks?

Risks Goal	1 Eco	2 Soc	Vec. Wts.
1 Economic	1	1/2	0.3333
2 Social		1	0.6666

Pair-wise Comparisons of elements under RISKS (Economic)

Pair-wise comparisons for “Business Process” wrt to “1 Outsource all appl.”

Question: With respect to “1 Outsource all appl.” where the firm realizes more Business process Risks?

	1 Bus	2 Bus	3 Qua	Vec. Wts.
1 Business process kn.	1	1	3	0.4286
2 Business continuity		1	3	0.4286
3 Quality assurance			1	0.1429

Pair-wise comparisons for “Communication” wrt to “1 Outsource all appl.”

Question: With respect to “1 Outsource all appl.” where the firm realizes more Communication Risks?

	1 Ge	2 Co	3 H-1B	4 La	Vec. Wts.
1 Geographic distance	1	1/5	1/4	1/4	0.2947
2 Communication tool avail.		1	2	2	0.1917
3 H-1B and L-1 visa avail.			1	1	0.2508
4 Language differences				1	0.2629

Pair-wise comparisons for “Security” wrt to “1 Outsource all appl.”

Question: With respect to “1 Outsource all appl.” where the firm realizes more Security Risks?

	1 Phy	2 Inn	3 Geo	Vec. Wts.
1 Physical	1	1/3	1	0.2211
2 Intellectual property		1	1	0.4600
3 Geopolitical environment			1	0.3189

Pair-wise comparisons for “Business Process” wrt to “2 Outsource the design.”

Question: With respect to “2 Outsource the design.” where the firm realizes more Business Process Risks?

	1 Bus	2 Bus	3 Qua	Vec. Wts.
1 Business process kn.	1	1	3	0.4286
2 Business continuity		1	3	0.4286
3 Quality assurance			1	0.1429

Pair-wise comparisons for “Communication” wrt to “2 Outsource the design.”

Question: With respect to “2 Outsource the design.” where the firm realizes more Communication Risks?

	1 Ge	2 Co	3 H-1B	4 La	Vec. Wts.
1 Geographic distance	1	1/5	1/4	1/4	0.2947
2 Communication tool avail.		1	2	2	0.1917
3 H-1B and L-1 visa avail.			1	1	0.2508
4 Language differences				1	0.2629

Pair-wise comparisons for “Security” wrt to “2 Outsource the design.”

Question: With respect to “2 Outsource the design.” where the firm realizes more Security Risks?

	1 Phy	2 Inn	3 Geo	Vec. Wts.
1 Physical	1	1/3	1	0.2211
2 Intellectual property		1	1	0.4600
3 Geopolitical environment			1	0.3189

Pair-wise comparisons for “Business Process” wrt to “3 Do not outsource...”

Question: With respect to “3 Do not outsource...” where the firm realize more Business Process Risks?

	1 Bus	2 Bus	3 Qua	Vec. Wts.
1 Business process kn.	1	1	1	0.3333
2 Business continuity		1	1	0.3333
3 Quality assurance			1	0.3333

Pair-wise comparisons for “Communication” wrt to “3 Do not outsource...”

Question: With respect to “3 Do not outsource...” where the firm realizes more Communication Risks?

	1 Ge	2 Co	3 H-1B	4 La	Vec. Wts.
1 Geographic distance	1	1	1	1	0.2500
2 Communication tool avail.		1	1	1	0.2500
3 H-1B and L-1 visa avail.			1	1	0.2500
4 Language differences				1	0.2500

Pair-wise comparisons for “Security” wrt to “3 Do not outsource...”

Question: With respect to “3 Do not outsource...” where the firm realizes more Security Risks?

	1 Phy	2 Inn	3 Geo	Vec. Wts.
1 Physical	1	1/2	1	0.2500
2 Intellectual property		1	2	0.5000
3 Geopolitical environment			1	0.2500

Pair-wise comparisons for “1 Alternatives” wrt to “1 Business process kn.”

Question: With respect to “1 Business process kn.” which alternative is more risky?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	5	0.4545
2 Outsource the d.		1	5	0.4545
3 Do not outsource			1	0.0909

Pair-wise comparisons for “1 Alternatives” wrt to “2 Business continuity.”

Question: With respect to “2 Business continuity.” which alternative is more risky?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	3	0.4286
2 Outsource the d.		1	3	0.4286
3 Do not outsource			1	0.1429

Pair-wise comparisons for “1 Alternatives” wrt to “3 Quality assurance.”

Question: With respect to “3 Quality assurance.” which alternative is more risky?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	2	0.4000
2 Outsource the d.		1	2	0.4000
3 Do not outsource			1	0.2000

Pair-wise comparisons for “1 Alternatives” wrt to “1 Geographic distance.”

Question: With respect to “1 Geographic distance.” which alternative is more risky?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	3	0.4286
2 Outsource the d.		1	3	0.4286
3 Do not outsource			1	0.1429

Pair-wise comparisons for “1 Alternatives” wrt to “2 Communication tool avail.”

Question: With respect to “2 Communication tool avail.” which Alternative is more risky?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	4	0.4444
2 Outsource the d.		1	4	0.4444
3 Do not outsource			1	0.1111

Pair-wise comparisons for “1 Alternatives” wrt to “3 H-1B and L-1 visa avail.”

Question: With respect to “3 H-1B and L-1 visa avail.” which Alternative is more risky?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	5	0.4545
2 Outsource the d.		1	5	0.4545
3 Do not outsource			1	0.0909

Pair-wise comparisons for “1 Alternatives” wrt to “4 Language differences”

Question: With respect to “4 Language differences” which Alternative is more risky?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	3	0.4286
2 Outsource the d.		1	3	0.4286
3 Do not outsource			1	0.1429

Pair-wise comparisons for “1 Alternatives” wrt to “Legal costs”

Question: With respect to “Legal costs” which Alternative is more risky?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	3	0.4286
2 Outsource the d.		1	3	0.4286
3 Do not outsource			1	0.1429

Pair-wise comparisons for “1 Alternatives” wrt to “1 Physical”

Question: With respect to “1 Physical” which Alternative is more risky?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	2	0.4000
2 Outsource the d.		1	2	0.4000
3 Do not outsource			1	0.2000

Pair-wise comparisons for “1 Alternatives” wrt to “2 Intellectual property”

Question: With respect to “2 Intellectual property” which Alternative is more risky?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	6	0.4615
2 Outsource the d.		1	6	0.4615
3 Do not outsource			1	0.0769

Pair-wise comparisons for “1 Alternatives” wrt to “3 Geopolitical environment”

Question: With respect to “3 Geopolitical environment” which Alternative is more risky?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	5	0.4545
2 Outsource the d.		1	5	0.4545
3 Do not outsource			1	0.0909

Pair-wise comparisons for “Security” wrt to “3 Geopolitical environment”

Question: With respect to “3 Geopolitical environment” where the firm realizes more Security Risks?

	1 Phy	2 Inn	Vec. Wts.
1 Physical	1	3	0.7500
2 Intellectual property		1	0.2500

Pair-wise Comparisons of elements under **RISKS (Social)**

Pair-wise comparisons for “Labor” wrt to “1 Outsource all appl.”

Question: With respect to “1 Outsource all appl.” where the firm realizes more Labor Risks?

	1 Em	2 Pr	3 US	Vec. Wts.
1 Employee morale	1	4	3	0.6250
2 Productivity		1	1/2	0.1365
3 US unemployment			1	0.2385

Pair-wise comparisons for “Stakeholders” wrt to “1 Outsource all appl.”

Question: With respect to “1 Outsource all appl.” where the firm realizes more Stakeholders Risks?

	1 Co	2 Me	3 Co	4 Co	Vec. Wts.
1 Company shareholders per.	1	1/4	1/2	1/3	0.1009

2 Media criticism	1	1/2	1/2	0.2293
3 Company executives/managers perc.		1	1/2	0.2674
4 Company employees perception			1	0.4024

Pair-wise comparisons for "Labor" wrt to "2 Outsource the design."

Question: With respect to "2 Outsource the design." where the firm realizes more Labor Risks?

	1 Em	2 Pr	3 US	Vec. Wts.
1 Employee morale	1	4	3	0.6250
2 Productivity		1	1/2	0.1365
3 US unemployment			1	0.2385

Pair-wise comparisons for "Stakeholders" wrt to "2 Outsource the design."

Question: With respect to "2 Outsource the design." where the firm realizes more Stakeholders Risks?

	1 Co	2 Me	3 Co	4 Co	Vec. Wts.
1 Company shareholders per.	1	1/3	1/2	2	0.1817
2 Media criticism		1	2	1	0.3730
3 Company executives/managers perc.			1	2	0.2681
4 Company employees perception				1	0.1772

Pair-wise comparisons for "Labor" wrt to "3 Do not outsource..."

Question: With respect to "3 Do not outsource..." where the firm realizes more Labor Risks?

	1 Em	2 Pr	3 US	Vec. Wts.
1 Employee morale	1	1/3	1	0.2098
2 Productivity		1	2	0.5499
3 US unemployment			1	0.2402

Pair-wise comparisons for "Stakeholders" wrt to "3 Do not outsource..."

Question: With respect to "3 Do not outsource..." where the firm realizes more Stakeholders Risks?

	1 Co	2 Me	3 Co	4 Co	Vec. Wts.
1 Company shareholders per.	1	2	1/2	2	0.2796
2 Media criticism		1	1	1/2	0.1763
3 Company executives/managers perc.			1	2	0.3434
4 Company employees perception				1	0.2006

Pair-wise comparisons for "1 Alternatives" wrt to "1 Employee morale "

Question: With respect to "1 Employee morale" which Alternative is more risky?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	4	0.4444
2 Outsource the d.		1	4	0.4444
3 Do not outsource			1	0.1111

Pair-wise comparisons for "1 Alternatives" wrt to "2 Productivity "

Question: With respect to "2 Productivity" which Alternative is more risky?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	3	0.4286
2 Outsource the d.		1	3	0.4286
3 Do not outsource			1	0.1429

Pair-wise comparisons for "1 Alternatives" wrt to "3 US unemployment "

Question: With respect to "3 US unemployment" which Alternative is more risky?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	3	0.4286
2 Outsource the d.		1	3	0.4286
3 Do not outsource			1	0.1429

Pair-wise comparisons for "1 Alternatives" wrt to "1 Company shareholders per."

Question: With respect to "1 Company shareholders per." which Alternative is more risky?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	2	0.4000
2 Outsource the d.		1	2	0.4000
3 Do not outsource			1	0.2000

Pair-wise comparisons for "1 Alternatives" wrt to "2 Media criticism"

Question: With respect to "2 Media criticism" which Alternative is more risky?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	4	0.4444

2 Outsource the d.	1	4	0.4444
3 Do not outsource		1	0.1111

Pair-wise comparisons for "1 Alternatives" wrt to "3 Company executives/managers perc."

Question: With respect to "3 Company executives/managers perc." which Alternative is more risky?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	1/3	0.2000
2 Outsource the d.		1	1/3	0.2000
3 Do not outsource			1	0.6000

Pair-wise comparisons for "1 Alternatives" wrt to "4 Company employees perception"

Question: With respect to "4 Company employees perception" which Alternative is more risky?

	1 Out	2 Out	3 Do not	Vec. Wts.
1 Outsource all...	1	1	3	0.4286
2 Outsource the d.		1	3	0.4286
3 Do not outsource			1	0.1429

Sources

- Annett, Creighton, and Wong. "Understanding Outsourcing: An Online Journal Roundtable." *Wall Street Journal*. March 1, 2004.
- Aron, Ravi. "Sourcing in the Right Light." *Optimize*. June 1, 2003. *CMP Media*. LexisNexis. Sept. 15, 2003.
- Beck, Jennifer. "IT Services Outsourcing Goes Strategic." *CIO Magazine*. July 19, 2002. Oct. 20, 2003. <http://www.cio.com/analyst/report372.html>.
- Carr, Jim. "Contract Manufacturer Leverages Outsourcing...." *Network Magazine*. Sept. 1, 2003. *CMP Media*. Sept. 15, 2003.
- Champy, James. "Re-examining the Infrastructure \$." *Optimize*. Sept. 1, 2003. *CMP Media*. LexisNexis. Sept. 15, 2003.
- Chandras, Rajan. "Going Offshore Without Going Off the Deep End." *Intelligent Enterprise*. Aug. 10, 2003. *CMP Media*. LexisNexis. Sept. 15, 2003.
- "Changing Strategies." *Computer Business Review Online*. Jan. 8, 2003. Sept. 9, 2003. http://www.cbronline.com/print_friendly/de9664c065b4ed56c2256d7800329e23.
- Davis and Harwood. "Kerry Targets Job Outsourcing with Corporate-Tax Overhaul." *Wall Street Journal*. March 26, 2004.
- Depner, Jason. Personal interviews. Dec. 1, 2003 and March 29, 2004.
- Dikerson, Schwartz, Udell, and Yager. "To Offshore... or Not." *InfoWorld*. March 8, 2004. Issue 10.
- Dubie, Denise. "Net Execs are Bullish on Outsourcing." *NetworkWorldFusion*. Oct. 27, 2003. Nov. 13, 2003. <http://www.nwfusion.com/news/2003/1027vanguard.html>.
- Elk, Arlene. Personal interview. Dec. 3, 2003.
- Frankhouser, Tami. Personal interview. Dec. 3, 2003.
- Fitzgerald, Michael. "At Risk Offshore." *CIO Magazine*. Nov. 15, 2003. Nov. 25, 2003. <http://www.cio.com/archive/111503/offshore.html?printversion=yes>.
- Gross, Grant. "CEOs Defend Moving Jobs Offshore at Tech Summit." *NetworkWorldFusion*. Oct. 9, 2003. Oct. 20, 2003. <http://www.nwfusion.com/news/2003/1009ceosdefend.html>.
- Hall, Mark. "Outsourcing Deals Fail Half the Time...." *ComputerWorld*. Nov. 3, 2003. Nov. 13, 2003. <http://www.computerworld.com/printthis/2003/9,4814,86748,00.html>.
- Haniffa, Aziz. "US May Eliminate H1-B Visas." Nov. 29, 2003. <http://www.rediff.com/money/2003/jul/16bpo.htm>.
- Hayes, Frank. "Businessy IT." *ComputerWorld*. Nov. 3, 2003. Nov. 3, 2003. <http://www.computerworld.com/printthis/2003/0,4814,86783,00.html>.
- Hayes, Mary. "Precious Connections." *InformationWeek*. Oct. 20, 2003. Pg. 35-50.

Hayes and McDougall. "Gaining Ground." InformationWeek March 31, 2003. CMP Media LexisNexis. Sept. 15, 2003.

"IT Majors Need to Work on Brand Equity." Financial Times Information. Aug. 16, 2003. Global News Wire. LexisNexis. Sept. 15, 2003.

"JD Edwards to Farm Out Development to Covansys." Financial Times Information. March 26, 2003. Global News Wire. LexisNexis. Sept. 15, 2003.

Kalakota and Robinson. "Offshore Outsourcing: Will Your Job Disappear in 2004?" InformIT. February 27, 2004.

King, Julia. "ITs Global Itinerary." ComputerWorld. Sept. 15, 2003. LexisNexis. Sept. 15, 2003.

Kleinhammer, Nelsen, and Warner. "Balancing the Risks." Darwin Magazine. June, 2003. Oct. 20, 2003. <http://www.darwinmag.com/read/060103/risk.html?action=print>.

Law, Gillian. "Outsourcing to Transform IT, Gartner Says." NetworkWorldFusion. Oct. 3, 2003. Oct. 20, 2003. <http://www.nwfusion.com/news/2003/1003outsototr.html>.

Maher, Kris. "Next on the Outsourcing List." *Wall Street Journal*. March 23, 2004.

Margulius, David L. "Staying Stateside." InfoWorld. March 8, 2004. Issue 10.

Mariani, Bill. Personal interview. Dec. 2, 2003.

McDougall, Paul. "Opportunity on the Line." InformationWeek. Oct. 20, 2003. Pg. 53-56.

Messmer, Ellen. "Overseas Outsourcing Gains Momentum." NetworkWorldFusion. June 30, 2003. Oct. 20, 2003. <http://www.nwfusion.com/news/2003/0630outsourcing.html>.

Mitchell, Robert L. "Opinion: How IT has Outsourced Itself." ComputerWorld. March 15, 2004.

Musthaler, Linda. "Managing Outsourcing." NetworkWorldFusion. Nov. 3, 2003. Nov. 13, 2003. <http://www.nwfusion.com/newsletters/techexec/2003/1103techexec1.html>.

Overby, Stephanie. "The Hottest Trend in Outsourcing Management." CIO Magazine. June 1, 2003. Oct. 20, 2003. http://www.cio.com/archive/060103/outsourcing_sidebar_3.html.

Overby, Stephanie. "Inside Outsourcing in India." CIO Magazine. June 1, 2003. Oct. 20, 2003. <http://www.cio.com/archive/060103/outsourcing.html>.

Overby, Stephanie. "Your Monthly Metrics Checklist." CIO Magazine. June 1, 2003. Oct. 20, 2003. http://www.cio.com/archive/060103/outsourcing_sidebar_2.html.

Perkins, Bart. "A Reality Check on Going Offshore." ComputerWorld. June 16, 2003. LexisNexis. Sept. 15, 2003.

Perkins, Bart. "Offshore: The Third Time's the Charm." ComputerWorld. Oct. 13, 2003. Oct. 20, 2003. <http://www.computerworld.com/printthis/2003/0.4814.85899.00.html>.

Perkins, Bart. "Outsourcing's Dirty Little Secret." ComputerWorld. Nov. 10, 2003. Nov. 11, 2003. <http://www.computerworld.com/printthis/2003/0.4814.86959.00.html>.

www.pmi.org

Read, Brendan B. "Out of Center Call Centers." Call Center May 1, 2003. Gale Group, Inc. LexisNexis. Sept. 15, 2003.

"Taking the Lead in Responding to IT Industry Needs" PMI Today. November 2003.

Tamanini, Kristin. Personal interview. Dec. 4, 2003.

Thibodeau, Patrick. "Anti-offshore-outsourcing Groups Banding Together." ComputerWorld. February 24, 2004.

Tripathi, Ravi. "Outsourcing – the Myths and the Facts." *Wall Street Journal*. March 1, 2004.

Weiss, Todd R. "Proposed Bill Would Ban Some Forms of Government Outsourcing." ComputerWorld. February 24, 2004.

Wriston, Walter B. "Ever Heard of Insourcing?" *Wall Street Journal*. March 24, 2004.