IT Project Valuation Survey

- Preliminary Report -

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January 2005

Abstract

The study sought to identify whether country-related characteristics affect the choice of the valuation model used for IT projects. The research design involved a web-based survey for data collection available during May 2004 – January 2005. While 165 respondents participated in the survey, there were not enough respondents per country to yield significance. The subsequent statistical analysis failed to identify a significant country effect on the choice of valuation model used.

Introduction

Valuation method

In general, three main categories of valuation models may be identified:

Realistic: involves measurement using "hard numbers" such as financial methodologies (return on investment, net present value, discounted cash flow, internal rate of return, break-even and payback). It requires either the system being implemented so that realistic data could be collected, or at least a prototype be implemented.

Perceived: numbers are derived from subjective evaluations of people involved in the project in a technical, business, or managerial capacity. It reflects individual's view on the benefits to be derived from the system.

Normative: comparative data is used, from either "best practice" or benchmarking models. It may involve the development of a pilot system, or of a model that is used to provide information on what the expected value "should be".

Project Size

Projects may be categorized as either small, medium size, or large, based on their use of resources, complexity, and time duration.

Small projects are fairly simple, require less than 400 hours of effort, and are completed within three months. For example, projects that impact specific departmental business processes or projects that enhance and/or maintain existing systems or applications.

Medium size projects are those significantly more demanding that the small ones, however, not involved enough to be defined as large.

Large projects are complex, involved technology projects with broad impact to major processes. They typically require many tasks to be completed, and employ significant resources. Their duration may exceed one year.

Results – Discussion and Implications

Sample

The survey was available on the Internet from May 2004 through January 2005. During this time a number of 165 respondents participated in the survey. Of them, 45 provided their email address and requested the results of the study. A number of 21 responses were found to be incomplete, and had to be dropped from the data set. Off the 144 responses left, 9 respondents indicated they had no involvement with IS projects, therefore they were disqualified (Figure 1).

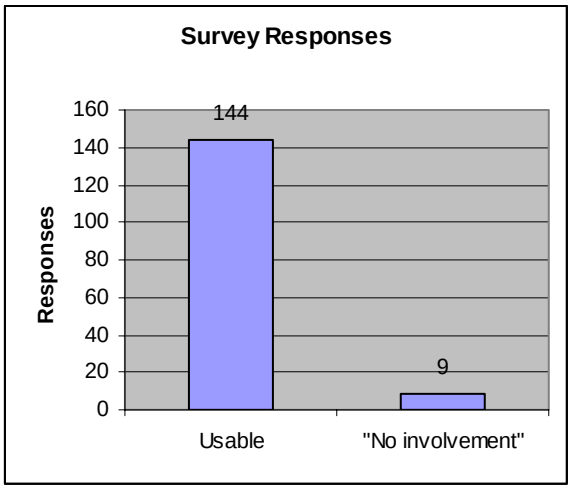

Figure 1. Survey responses

Of these 135 respondents, 3 respondents did not provide country information and their responses were removed from the data set. The final data set had 132 usable responses. The countries represented in the sample are indicated below:

Countries of Origin (respondents):

Australia 1	Germany 2	Mexico 3	Spain 1
Bangladesh 1	Ghana 1 (India)	Nigeria 1	Sweden 1
Brazil 2	India 14	Pakistan 1	Switzerland 1
Canada 9	Iran 1	Poland 1	Thailand 2
China 2	Ireland 1	Portugal 1	Turkey 2
Croatia 1	Israel 1	Romania 1	UK 4
Egypt 1	Italy 1	Singapore 2	USA 68
France 1	Japan 1	Slovenia 1	Venezuela 1

A graphical representation of the number of respondents by country follows (Figure 2):

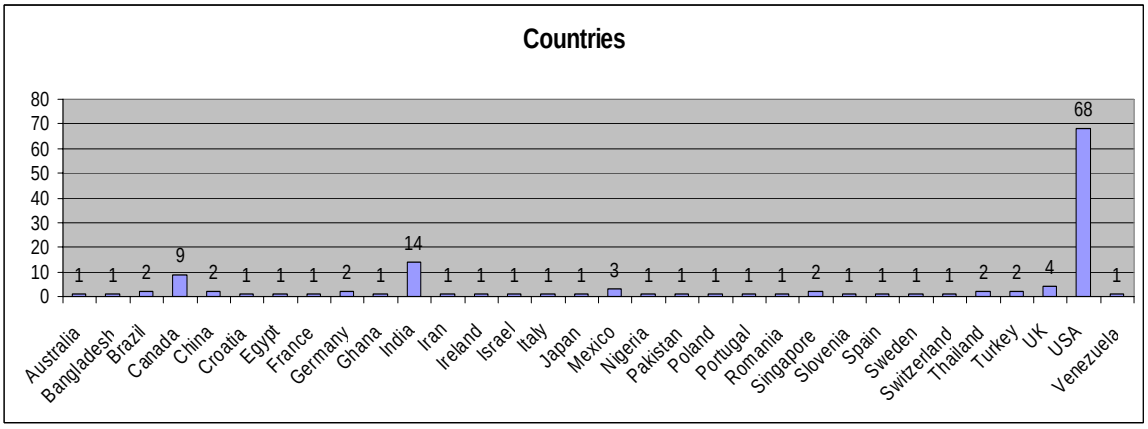

Figure 2. Countries

It is apparent that the largest number of respondents came from the USA. The respondents indicated the country they were working in as follows:

Countries of Work (respondents working in…):

Australia 1
Bangladesh 1
Brazil 2
Canada 9
China 1
Croatia 1
Egypt 1
France 1
Germany 3
India 11
Iran 1
Ireland 1
Israel 1
Italy 1
Japan 0
Mexico 3
Nigeria 1
Pakistan 2
Poland 1
Portugal 1
Romania 1
Singapore 2
Slovenia 1
Spain 1
Sweden 1
Switzerland 0
Thailand 1
Turkey 3
UK 4
USA 70
Venezuela 1
Worldwide 4

Respondent Demographics

In terms of responsibilities, 70 respondents reported a Project Manager role, 55 were Members of the Project Team, and 7 were Project Beneficiary (Figure 3):

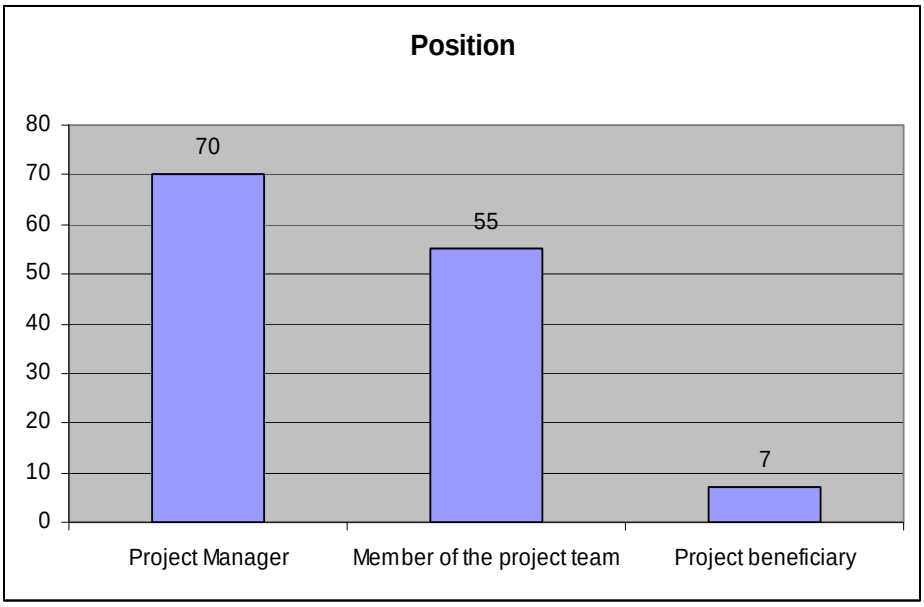

Figure 3. Respondent position

The Respondents indicated their degree of involvement with IT projects as “very limited” (2 respondents); “somewhat limited” (7 respondents); “somewhat significant” (28 respondents); or “very significant” (95 respondents) – see Figure 4.

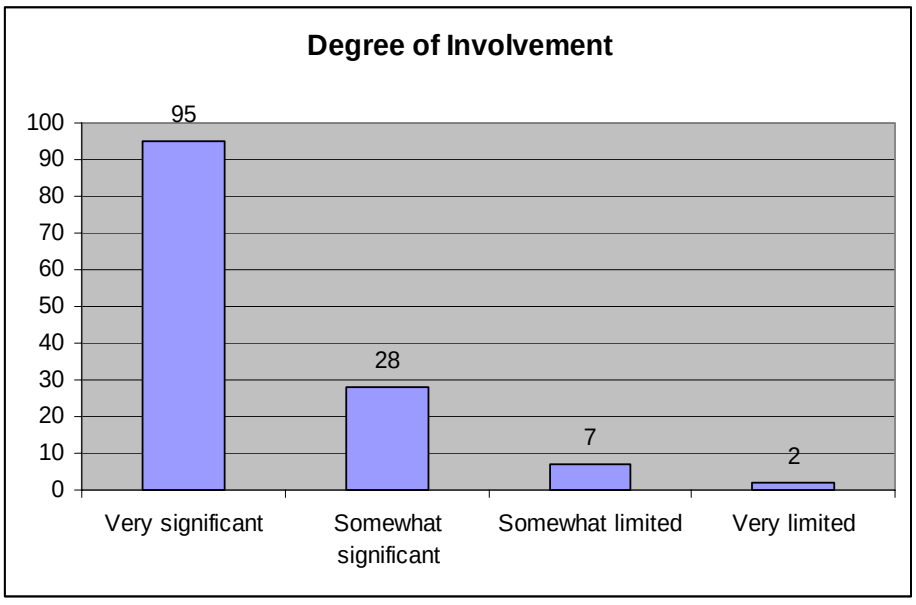

Figure 4. Degree of Involvement

Organizational Demographics

The organizations the respondents worked for were assessed in terms of size as follows:

Number of employees (Figure 5):
Less than 100: 35 respondents
100 – 500: 22 respondents
Over 500: 68 respondents
Don't know: 1 respondent
No response: 6 respondents

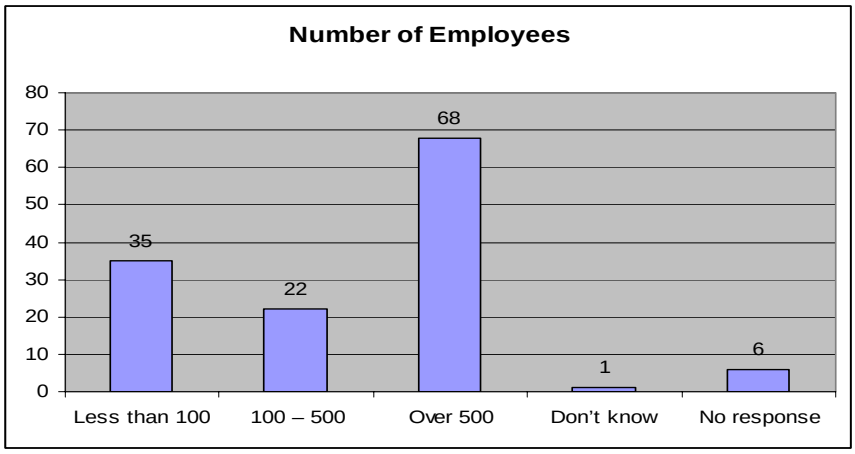

Figure 5. Organization size – number of employees

Annual revenue (Figure 6):
Under $1 million: 22 respondents
$1 - $10 million: 19 respondents
$10 - $50 million: 12 respondents
$50 - $500 million: 19 respondents
Over $500 million: 42 respondents
Don't know: 12 respondents
No response: 6 respondents

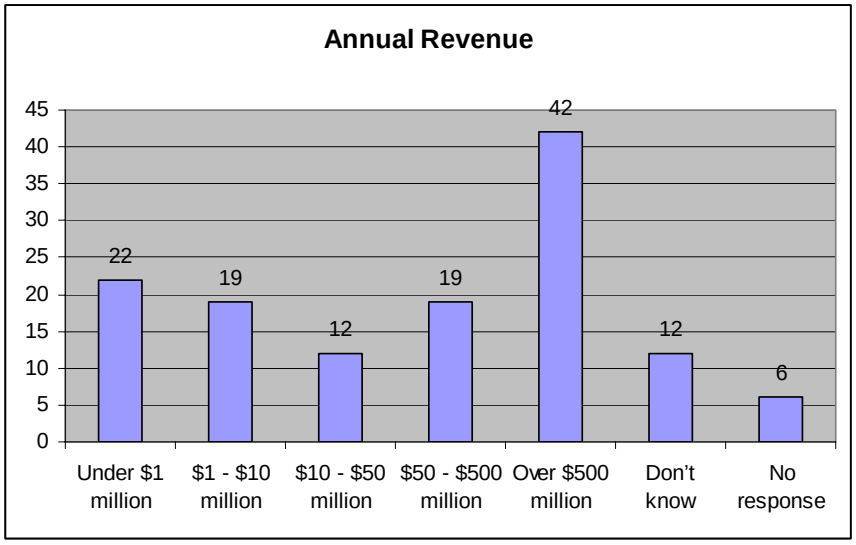

Figure 6. Organization size – annual revenue

For the next questions, six respondents consistently did not provide any information. Their responses were removed from the data set thus leaving 132 – 6 = 116 usable responses.

Respondents identified their company's primary business as (Figure 7):

Aerospace: 5
Agriculture: 0
Banking: 7
Communications: 9
Construction: 1
Consulting: 13
Education: 7
Entertainment: 3
Financial services: 8
Government: 9
Healthcare: 6
Insurance: 3
Manufacturing: 6
Media / Marketing / Advertising: 1
Real Estate: 0
Retail: 2
Services: 4
Software Development: 26
Transportation: 1
Travel / Hospitality 2
Utilities: 1
Wholesale: 1
Don't know: 1
Other: 9

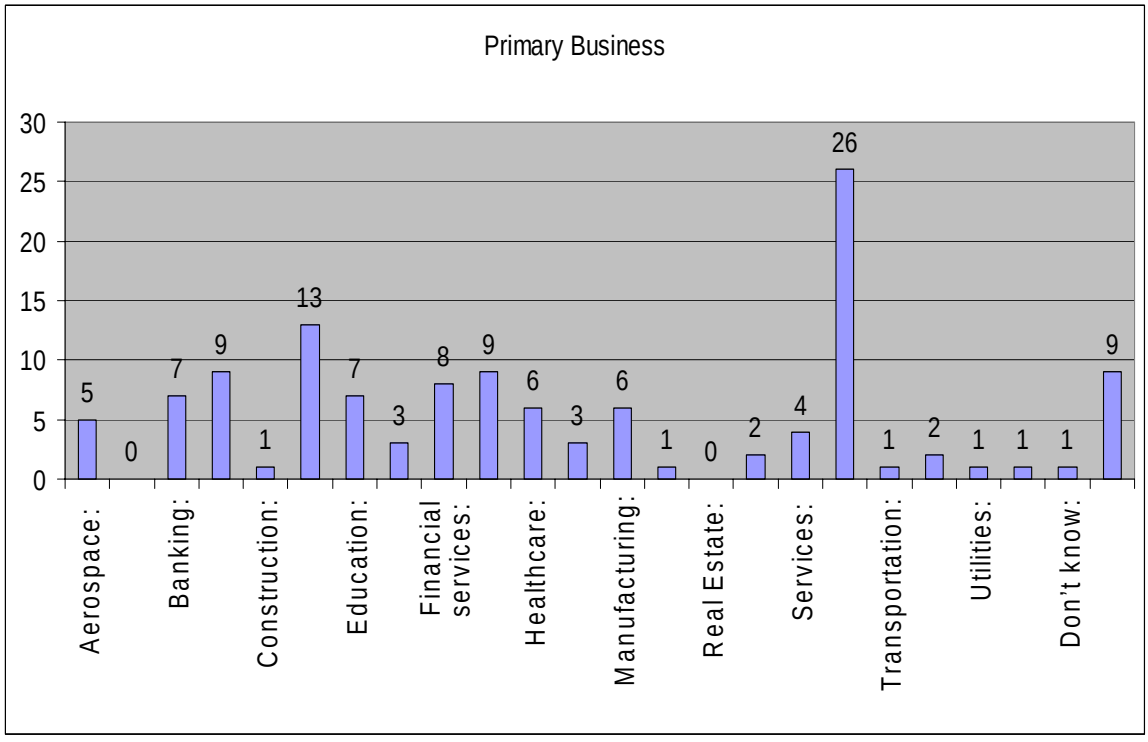

Figure 7. Primary business.

In general terms, the respondents identified their role in the company as: IS / IT Management (39); Corporate Management (11); Middle Management (27); Staff (34); and Other (13). The information is presented in figure 8.

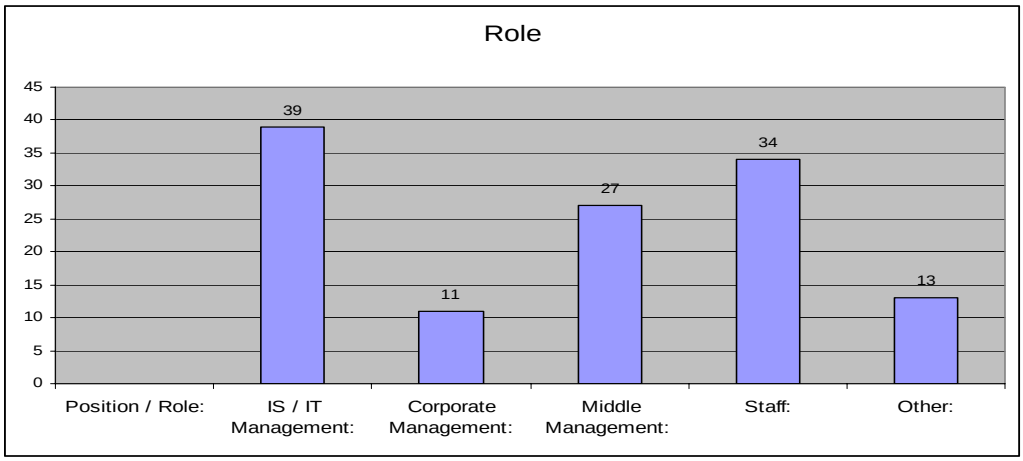

Figure 8. Respondent role.

Respondents indicated their actual position as (figure 9):

Professional:	13	IS / IT Management:	21
Management:	13	Project Management:	43
Executive:	6	Finance / Accounting / Auditor:	1
Junior Manager:	3	Other:	8
Staff:	16		

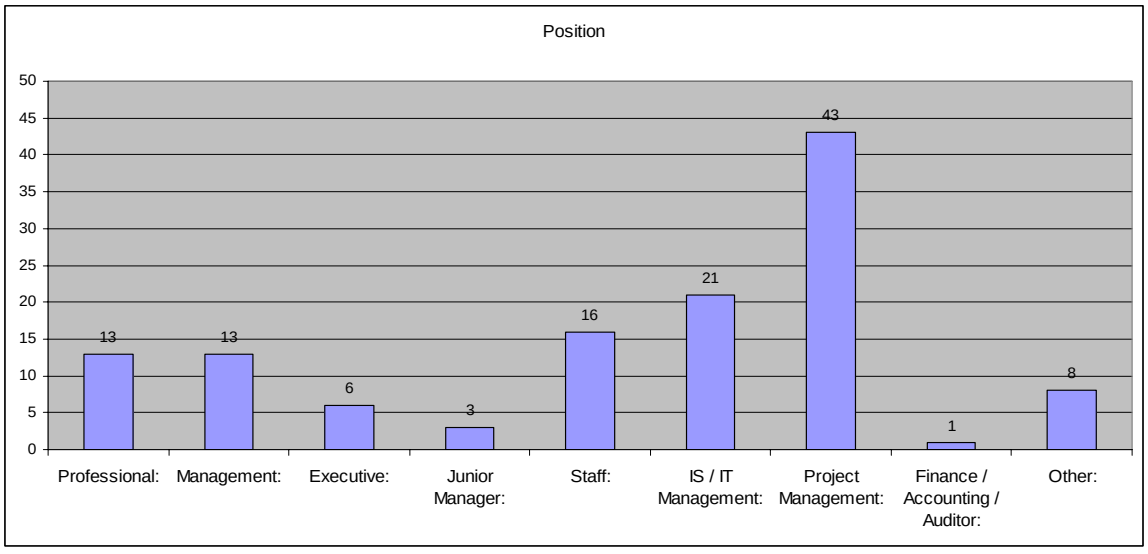

Figure 9. Respondent position.

Valuation Methods

Valuation model used for small projects (figure 10):

Realistic:	26 respondents
Perceived:	56 respondents
Normative:	24 respondents
Other:	4 respondents
No Response:	16 respondents

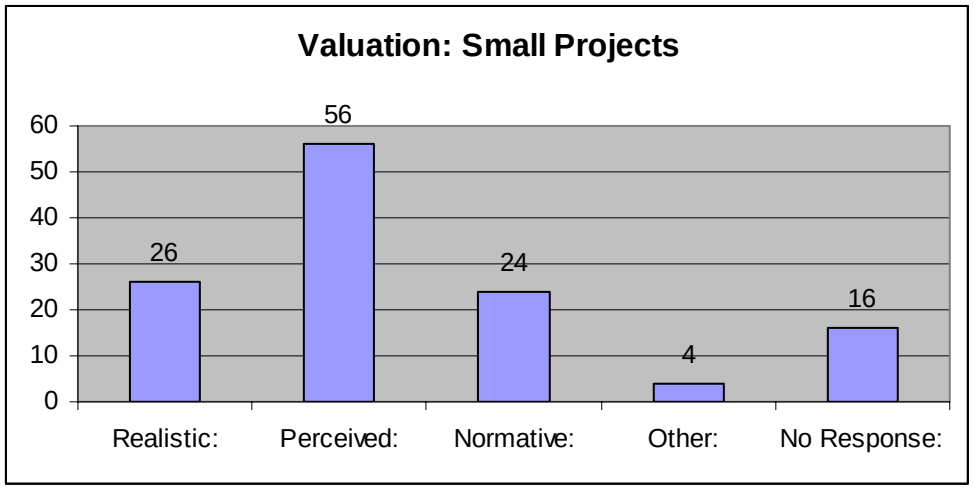

Figure 10. Valuation model choice – small projects

Valuation model used for medium size projects (figure 11):

Realistic:	29 respondents
Perceived:	42 respondents
Normative:	24 respondents
Other:	3 respondents
No Response:	28 respondents

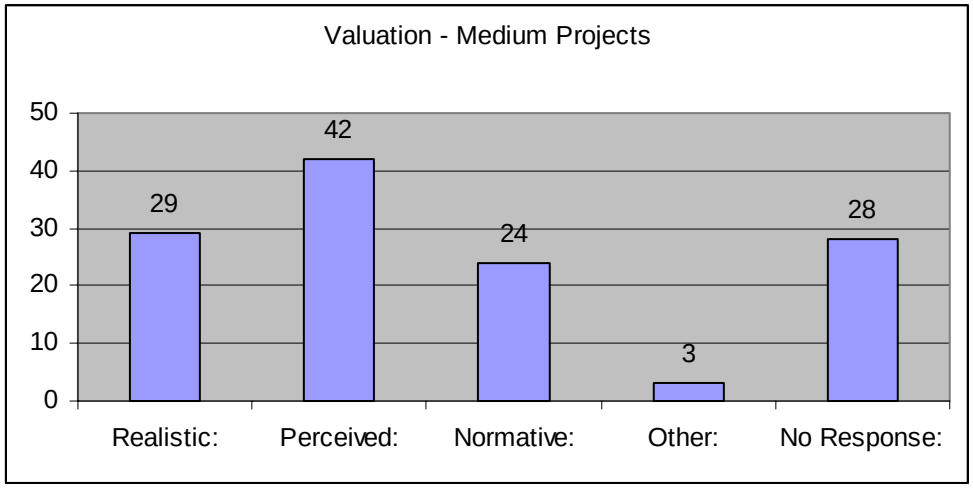

Figure 11. Valuation model choice– medium size projects

Valuation model used for large projects (figure 12):

Realistic:	39 respondents
Perceived:	27 respondents
Normative:	25 respondents
Other:	5 respondents
No Response:	30 respondents

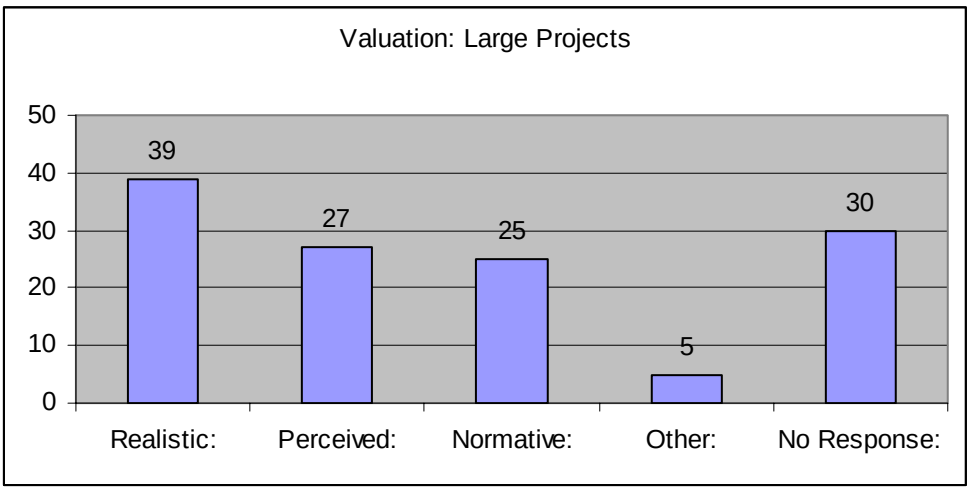

Figure 12. Valuation model choice – large projects

The most common valuation method as reported by the respondents is shown below (table 1):

Table 1. Choice of valuation method

Project Size	**Valuation Method**
Small	Perceived (45%)
Medium	Perceived (33%)
Large	Realistic (41%)

Data Cleanup

Although the survey was available over a period of 9 months, a relatively small number of usable responses were collected. Due to incomplete data being submitted, the final, usable data set only contained 132 responses. Furthermore, the countries represented in the study had between 1 and 68 responses, with a mean of 5.15.

In an attempt increase statistical power, the researcher assigned countries to groups based on similar characteristics. Using Hofstede's model for country characteristics (Hofstede, 1984), the countries were assigned to quartiles along the four national dimensions identified by Hofstede: Power Distance, Uncertainty Avoidance, Masculinity, and Individualism.

The concept of Power Distance relates to the socially determined equilibrium between subordinates and their bosses. The table below groups countries by quartile, from lower- to upper-quartiles, with 1 being the lowest, and 4 the highest quartile (table 2):

Table 2. Power Distance

Quartile 1	2	3	4
Austria	Argentina	Belgium	Croatia
Denmark	Australia	Brazil	India
Israel	Bangladesh	Chile	Mexico
New Zealand	Canada	China	Philippines
	Finland	Colombia	Poland
	Germany	France	Romania
	Ghana	Greece	Slovenia
	Ireland	Hong Kong	Venezuela
	Italy	Iran	Yugoslavia
	Netherlands	Japan	
	Nigeria	Pakistan	
	Norway	Peru	
	South Africa	Portugal	
	Sweden	Singapore	
	Switzerland	Spain	
	UK	Taiwan	
	USA	Thailand	
		Turkey	

The Uncertainty Avoidance relates to how individuals cope with uncertainty stemming from technology, law and religion, or - in organizations - with technology, rules, and rituals. The table below groups countries by quartile, from lower- to upper-quartiles, with 1 being the lowest, and 4 the highest quartile (table 3):

Table 3. Uncertainty Avoidance

Quartile 1	2	3	4
Denmark	Bangladesh	Australia	Argentina
Singapore	Canada	Austria	Belgium
	Ghana	China	Brazil
	Hong Kong	Finland	Chile
	India	Germany	Colombia
	Ireland	Iran	Croatia
	New Zealand	Italy	France
	Nigeria	Netherlands	Greece
	Norway	Pakistan	Israel
	Philippines	Switzerland	Mexico
	South Africa	Taiwan	Peru
	Sweden	Thailand	Poland
	UK		Portugal
	USA		Romania
			Slovenia
			Spain
			Turkey
			Venezuela
			Yugoslavia
			Japan

The concept of Individualism describes the relationship between the individual and the collectivity which prevails in a given society. In organizations it is reflected in the way people work together. The table below groups countries by quartile from lower- to upper-quartiles, with 1 being the lowest and 4 the highest quartile (table 4):

Table 4. Individualism

Quartile 1	2	3	4
Chile	Argentina	Austria	Australia
China	Brazil	Bangladesh	Canada
Colombia	Croatia	Belgium	Italy
Hong Kong	Greece	Denmark	Netherlands
Pakistan	India	Finland	New Zealand
Peru	Iran	France	UK
Singapore	Japan	Germany	USA
Taiwan	Mexico	Ghana	
Thailand	Philippines	Ireland	
Venezuela	Poland	Israel	
	Portugal	Nigeria	
	Romania	Norway	
	Slovenia	South Africa	
	Turkey	Spain	
	Yugoslavia	Sweden	
		Switzerland	

The concept of Masculinity relates to socialization patterns. Men are considered to be more assertive and women to be more nurturing: business organizations can be construed as having “masculine” goals, thus a relationship between the perceived goals of the organization and the career possibilities. The table below groups countries by quartile, from lower- to upper-quartiles with 1 being the lowest and 4 the highest quartile (table 5):

Table 5. Masculinity

Quartile 1	2	3	4
Croatia	Brazil	Argentina	Austria
Denmark	Chile	Australia	Japan
Netherlands	China	Bangladesh	
Norway	Finland	Belgium	
Poland	France	Canada	
Romania	Iran	Colombia	
Slovenia	Israel	Germany	
Sweden	Pakistan	Ghana	
Yugoslavia	Peru	Greece	
	Portugal	Hong Kong	
	Singapore	India	
	Spain	Ireland	
	Taiwan	Italy	
	Thailand	Mexico	
	Turkey	New Zealand	
		Nigeria	
		Philippines	
		South Africa	
		Switzerland	
		UK	
		USA	
		Venezuela	

Statistical Analysis

The valuation method used (Realistic, Perceived, Normative), is the Dependent Variable (DV). The Independent Variables (IVs) tested were Project Size, Power Distance Quartile, Uncertainty Avoidance Quartile, Masculinity Quartile, and Individuality Quartile. The DV and IVs were assigned numeric values, to allow for subsequent statistical analysis. The following coding was used (table 6):

Table 6. Variables

Variable		**Code**			
Description	**Name**	**1**	**2**	**3**	**4**
Valuation Method	P_ValCode	Realistic	Perceived	Normative	
Project Size	P_SizeCode	Small	Medium	Large	
Uncertainty Avoidance	H_UA_Q	1st Quartile	2nd Quartile	3rd Quartile	4th Quartile
Power Distance	H_PD_Q	1st Quartile	2nd Quartile	3rd Quartile	4th Quartile
Masculinity	H_MAS_Q	1st Quartile	2nd Quartile	3rd Quartile	4th Quartile
Individuality	H_IND_Q	1st Quartile	2nd Quartile	3rd Quartile	4th Quartile

The data were analyzed using SPSS version 11.0, a statistical analysis software package. The DV (Valuation Method) and one of the IVs (Project Size) are categories. Furthermore, none of the variables in the model are intervals, rather discrete values. This situation suggests Discriminant Analysis as the appropriate statistical method.

The responses collected from the survey were downloaded from the website as a comma-delimited file each row containing all the responses from one respondent. The file was imported into Microsoft Excel and the data was separated into multiple row, to allow for only one DV in each row. This resulted in a number of 301 values for the DV.

Discriminant

Analysis Case Processing Summary

Table 7. Analysis case processing summary

Unweighted Cases		N	Percent
Valid		289	96.0
Excluded	Missing or out-of-range group codes	12	4.0
	At least one missing discriminating variable	0	.0
	Both missing or out-of-range group codes and at least one missing discriminating variable	0	.0
	Total	12	4.0
Total		301	100.0

As depicted above (table 7), missing values for the DV further reduced the data set to 289 valid cases.

Group Statistics

Table 8. Group statistics

P_ValCode		Mean	Std. Deviation	Valid N (listwise)	
				Unweighted	Weighted
1	P_SizeCode	2.14	.824	94	94.000
	H_PD_Q	2.24	.729	94	94.000
	H_UA_Q	2.17	.728	94	94.000
	H_IND_Q	3.36	1.115	94	94.000
	H_MAS_Q	2.76	.617	94	94.000
2	P_SizeCode	1.78	.784	123	123.000
	H_PD_Q	2.37	.824	123	123.000
	H_UA_Q	2.37	.852	123	123.000
	H_IND_Q	3.33	1.112	123	123.000
	H_MAS_Q	2.75	.622	123	123.000
3	P_SizeCode	2.00	.822	72	72.000
	H_PD_Q	2.26	.979	72	72.000
	H_UA_Q	2.06	.837	72	72.000
	H_IND_Q	3.13	1.310	72	72.000
	H_MAS_Q	2.64	.827	72	72.000
Total	P_SizeCode	1.95	.819	289	289.000
	H_PD_Q	2.30	.836	289	289.000
	H_UA_Q	2.22	.817	289	289.000
	H_IND_Q	3.29	1.165	289	289.000
	H_MAS_Q	2.72	.677	289	289.000

The group statistics are presented in table 8 above.

Tests of Equality of Group Means

Table 9. Tests of equality of group means

	Wilks' Lambda	F	df1	df2	Sig.
P_SizeCode	.964	5.409	2	286	.005
H_PD_Q	.995	.749	2	286	.474
H_UA_Q	.975	3.651	2	286	.027
H_IND_Q	.993	.955	2	286	.386
H_MAS_Q	.995	.746	2	286	.475

The Test of Equality of Group Means (table 9) indicates that two of the independent variables (Project Size; Uncertainty Avoidance) are significant. Wilks' Lambda is significant by the F test for project size (P_SizeCode) and H_UA_Q. The rest of independent variables can be dropped from the model.

In general, the smaller the Wilk's Lambda the more important is the independent variable to the discriminant function.

Pooled Within-Groups Matrices

Table 10. Pooled within-groups matrices

		P_SizeCode	H_PD_Q	H_UA_Q	H_IND_Q	H_MAS_Q
Covariance	P_SizeCode	.651	-7.284E-03	9.319E-03	3.524E-02	1.530E-02
	H_PD_Q	-7.284E-03	.700	.399	-.324	.126
	H_UA_Q	9.319E-03	.399	.656	-6.266E-02	7.238E-02
	H_IND_Q	3.524E-02	-.324	-6.266E-02	1.359	.576
	H_MAS_Q	1.530E-02	.126	7.238E-02	.576	.459
Correlation	P_SizeCode	1.000	-.011	.014	.037	.028
	H_PD_Q	-.011	1.000	.589	-.332	.223
	H_UA_Q	.014	.589	1.000	-.066	.132
	H_IND_Q	.037	-.332	-.066	1.000	.729
	H_MAS_Q	.028	.223	.132	.729	1.000

The Pooled Within-Groups Matrices shows the covariance matrix has 286 degrees of freedom (table 10).

Covariance Matrices

Table 11. Covariance matrices

P_ValCode		P_SizeCode	H_PD_Q	H_UA_Q	H_IND_Q	H_MAS_Q
1	P_SizeCode	.680	-3.420E-02	-3.455E-02	4.621E-02	1.270E-02
	H_PD_Q	-3.420E-02	.531	.270	-.348	4.976E-02
	H_UA_Q	-3.455E-02	.270	.530	-5.148E-02	7.435E-02
	H_IND_Q	4.621E-02	-.348	-5.148E-02	1.244	.498
	H_MAS_Q	1.270E-02	4.976E-02	7.435E-02	.498	.380
2	P_SizeCode	.615	-4.018E-02	1.539E-02	-1.819E-02	-3.119E-02
	H_PD_Q	-4.018E-02	.679	.469	-.450	1.306E-02
	H_UA_Q	1.539E-02	.469	.726	-.292	-7.097E-02
	H_IND_Q	-1.819E-02	-.450	-.292	1.238	.484
	H_MAS_Q	-3.119E-02	1.306E-02	-7.097E-02	.484	.387
3	P_SizeCode	.676	8.451E-02	5.634E-02	.113	9.859E-02
	H_PD_Q	8.451E-02	.958	.450	-7.570E-02	.421
	H_UA_Q	5.634E-02	.450	.701	.317	.316
	H_IND_Q	.113	-7.570E-02	.317	1.717	.835
	H_MAS_Q	9.859E-02	.421	.316	.835	.685
Total	P_SizeCode	.671	-1.645E-02	-6.428E-03	3.479E-02	1.432E-02
	H_PD_Q	-1.645E-02	.699	.403	-.320	.126
	H_UA_Q	-6.428E-03	.403	.668	-5.440E-02	7.636E-02
	H_IND_Q	3.479E-02	-.320	-5.440E-02	1.358	.576
	H_MAS_Q	1.432E-02	.126	7.636E-02	.576	.458

The covariance matrices show the total covariance matrix has 288 degrees of freedom (table 11).

Box's Test of Equality Covariance Matrices

Log Determinants

Table 12. Log determinants

P _ValCode	Rank	Log Determinant
1	5	-4.306
2	5	-4.094
3	5	-3.772
Pooled within-groups	5	-3.846

The ranks and natural logarithms of determinants printed are those of the group covariance matrices (table 12).

Test Results

Table 13. Test results

Box's M		67.834
F	Approx.	2.201
	df1	30
	df2	186541.8
	Sig.	.000

Tests null hypothesis of equal population covariance matrices (table 13).

Summary of Canonical Discriminant Functions

Eigenvalues

Table 14. Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	.060[a]	81.2	81.2	.238
2	.014[a]	18.8	100.0	.117

The Eigenvalues show two categories, meaning there are two discriminant functions listed in descending order of importance (table 14). The first 2 canonical discriminant functions were used in the analysis. The "% of Variance" column shows how much of the change is explained by each function. The values indicate the canonical correlation is low.

Wilks' Lambda

Table 15. Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1 through 2	.930	20.468	10	.025
2	.986	3.909	4	.418

For this particular test Wilk's Lambda shows each function is significant (table 15).

Standardized Canonical Discriminant Function Coefficients

Table 16. Standardized canonical discriminant function coefficients

	Function	
	1	2
P_SizeCode	-.768	.494
H_PD_Q	.111	-.473
H_UA_Q	.617	.712
H_IND_Q	.401	.263
H_MAS_Q	-.251	.360

The Standardized Canonical Discriminant Function Coefficients indicate the relative importance of the independent variables in predicting the dependent variable. The above shows that P_SizeCode, H_UA_Q, and H_IND_Q in their order of significance for function1, and H_UA_Q, P_SizeCode, and H_PD_Q, in their order of significance for function 2 (table 16).

Structure Matrix

Table 17. Structure matrix

	Function	
	1	2
P_SizeCode	-.752*	.529
H_UA_Q	.612*	.471
H_PD_Q	.294*	-.066
H_IND_Q	.111	.654*
H_MAS_Q	.126	.555*

The Structure Matrix shows Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions (table 17). The variables are ordered by absolute size of correlation within function. The "*" symbol indicates largest absolute correlation between each variable and any discriminant function

Canonical Discriminant Function Coefficients

Table 18. Canonical Discriminant function coefficients

	Function	
P_ValCode	1	2
1	-.214	.134
2	.283	1.790E-03
3	-.205	-.178

The Canonical Discriminant Function Coefficient table shows the unstandardized canonical discriminant functions evaluated at group means (table 18). These values are typically used in Multiple Regression to construct the actual prediction equation which can be used to classify new cases.

Functions at Group Centroids

Table 19. Functions at group centroids

	Function	
P_ValCode	1	2
1	-.214	.134
2	.283	1.790E-03
3	-.205	-.178

Functions at Group Centroids rely on unstandardized canonical discriminant functions evaluated at group means and are used to establish the cutting point for classifying cases (table 19).

Classification Statistics

Classification Processing Summary

Table 20. Classification processing summary

Processed		301
Excluded	Missing or out-of-range group codes	0
	At least one missing discriminating variable	0
Used in Output		301

Prior Probabilities for Groups

Table 21. Prior probabilities for groups

P_ValCode	Prior	Cases Used in Analysis	
		Unweighted	Weighted
1	.333	94	94.000
2	.333	123	123.000
3	.333	72	72.000
Total	1.000	289	289.000

Classification Function Coefficients

Table 22. Classification function coefficients

	P_ValCode		
	1	2	3
P_SizeCode	3.127	2.574	2.928
H_PD_Q	3.691	3.831	3.868
H_UA_Q	1.165	1.427	.897
H_IND_Q	2.849	2.990	2.782
H_MAS_Q	1.128	.873	.959
(Constant)	-16.191	-15.797	-14.939

The Classification Function Coefficients are used for Fisher's linear discriminant functions (table 22).

Territorial Map

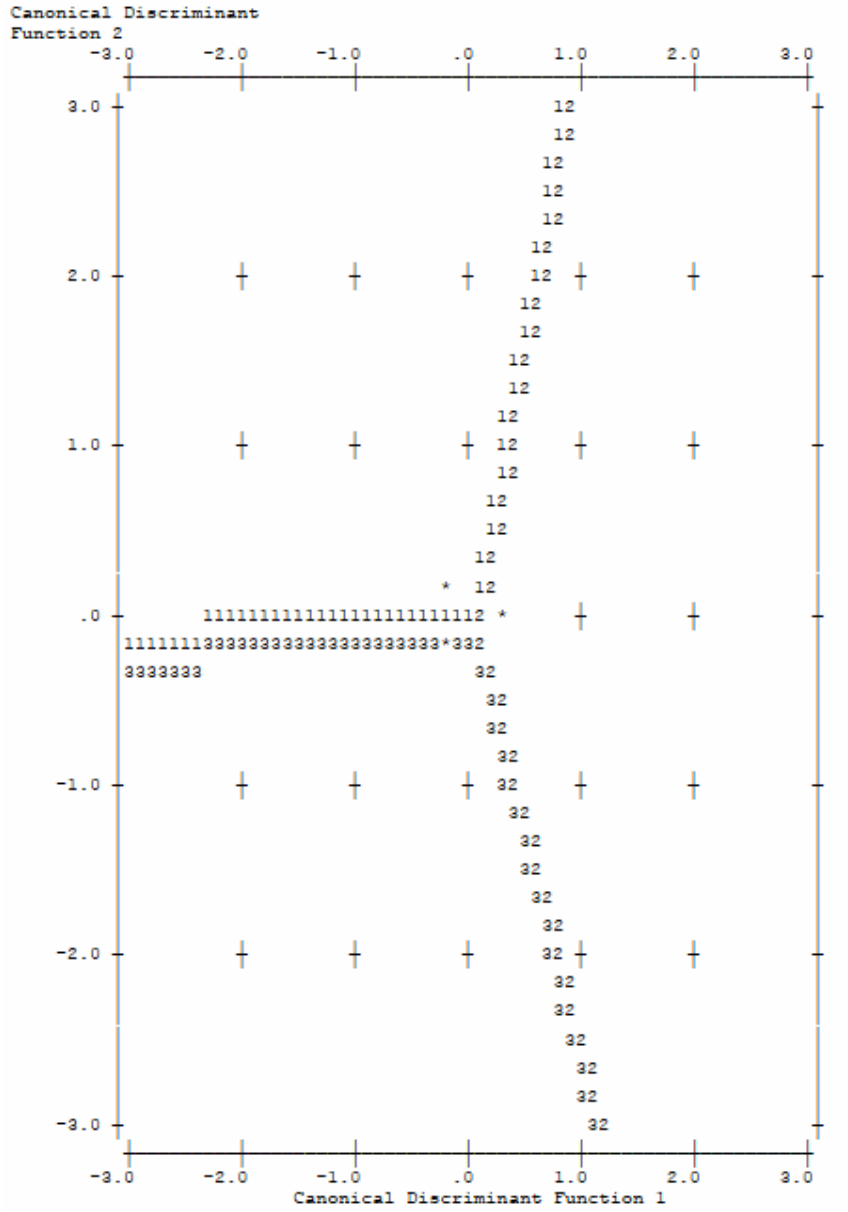

Figure 13. Territorial map

Symbols used in territorial map
Symbol Group Label
------ ----- --------------------
1 1
2 2
3 3
* Indicates a group centroid

The territorial map (figure 13) is a plot of the boundaries used to classify cases into groups based on discriminant function scores.

Separate-Groups Graphs

The scatterplots that follow show the discriminant scores of the cases on the two discriminant functions. The first three scatterplots (figures 14 through 16) show this separately for each of the three valuation choices. The fourth scatterplot (figure 17) shows ungrouped cases. The fifth scatterplot (figure 18) shows the discriminant scores of the cases for the combined groups.

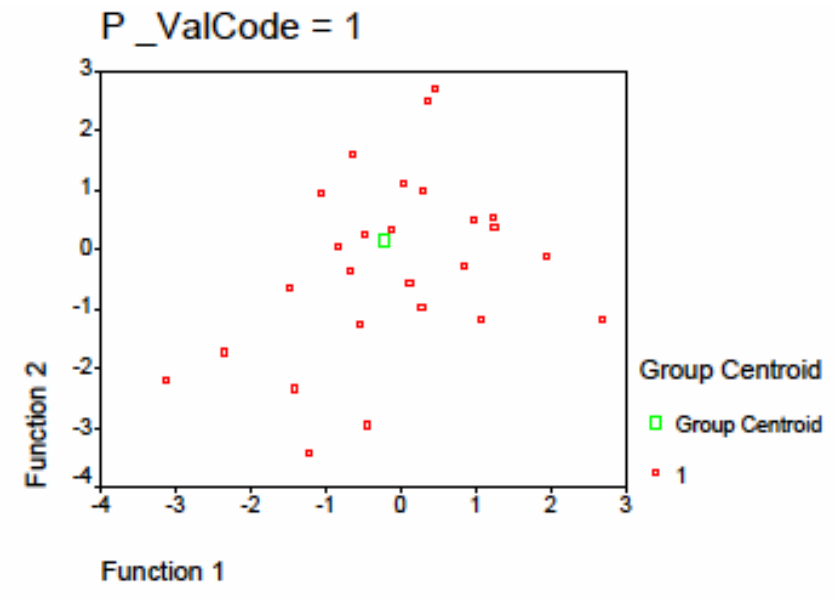

Figure 14. Canonical discriminant function (P_ValCode = 1)

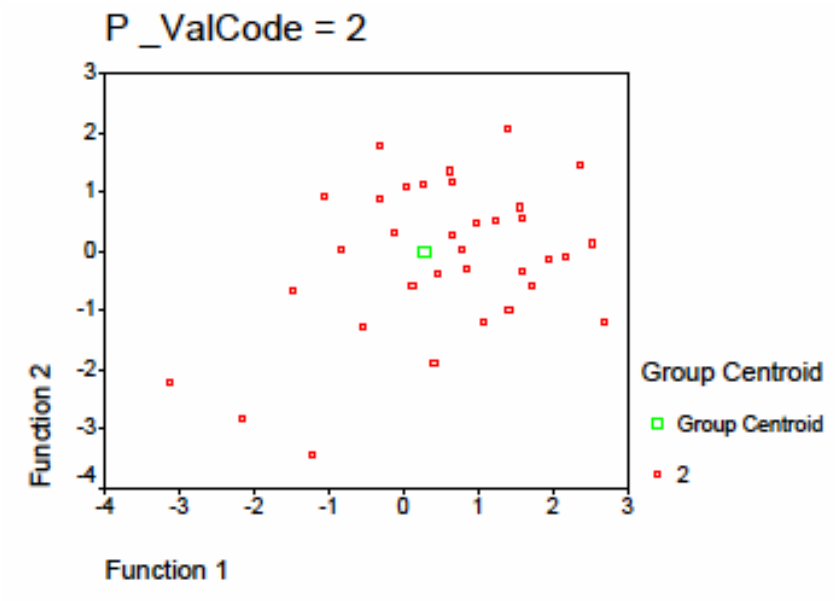

Figure 15. Canonical Discriminant Functions (P_ValCode = 2)

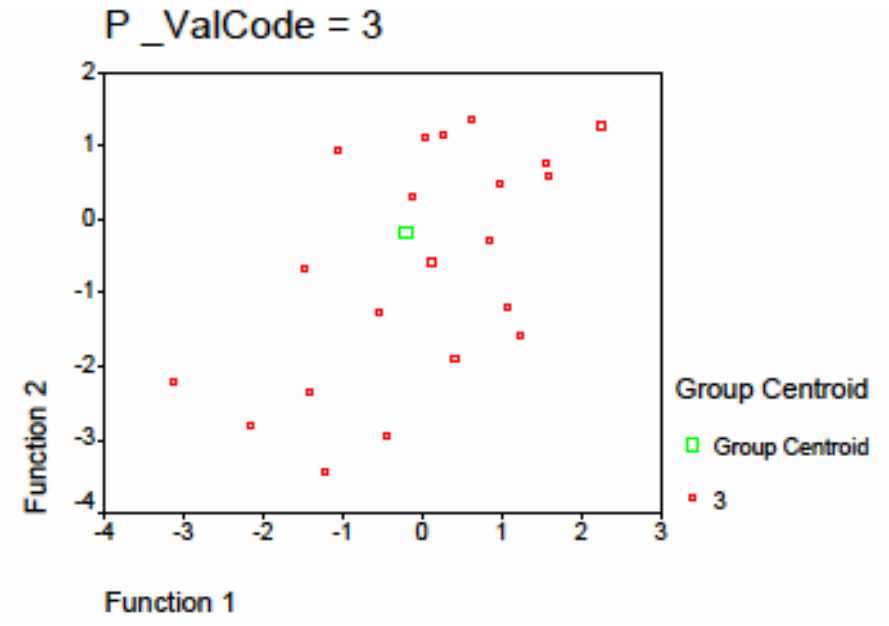

Figure 16. Canonical Discriminant Functions (P_ValCode = 3)

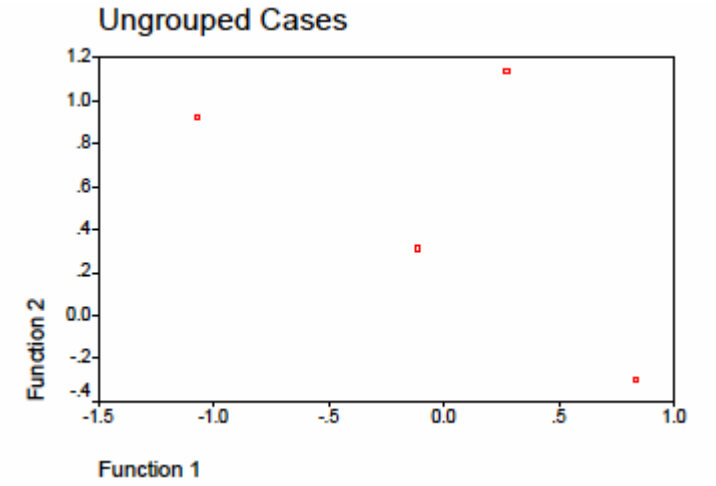

Figure 17. Canonical Discriminant Functions (Ungrouped Cases)

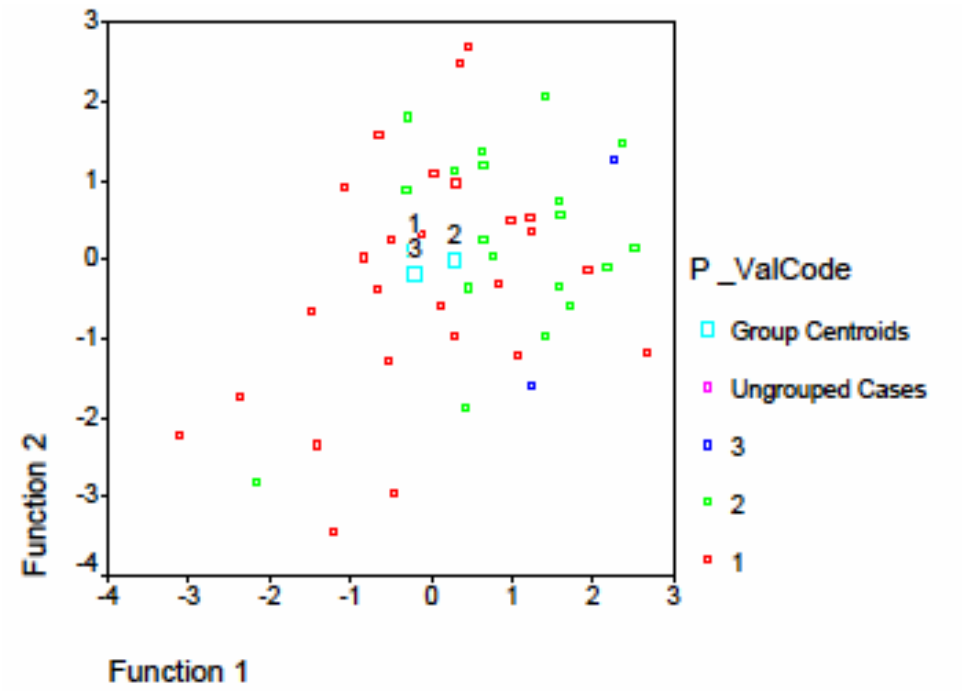

Figure 18. Canonical Discriminant Functions

Classification Results

Table 23. Classification results

			Predicted Group Membership			
		P ValCode	1	2	3	Total
Original	Count	1	54	27	13	94
		2	53	57	13	123
		3	33	22	17	72
		Ungrouped cases	8	4	0	12
	%	1	57.4	28.7	13.8	100.0
		2	43.1	46.3	10.6	100.0
		3	45.8	30.6	23.6	100.0
		Ungrouped cases	66.7	33.3	.0	100.0

The classification results help assess how well the discriminant function works, and if it works equally well for each group of dependent variables (table 23). The results indicate that 44.3% of the original cases can be classified correctly.

Conclusion

This is not a satisfactory level of discrimination, and it does not indicate that country has any effect on the choice of valuation model used for IT projects. As the Test of Equality of Group Means (table 9) indicates, two of the independent variables (Project Size; Uncertainty Avoidance) are significant. Yet, the low predictive power suggests that further testing of other models is required. Administering the study to a larger sample that includes at least 30 respondents for each country represented may yield different results.

Limitations

The relatively small sample size (132 usable responses) combined with the small number of respondents from each country represented in the sample (mean value 5.25) seemingly affected the significance of the findings.

References

Hofstede, G. (1984). Culture's Consequences. International Differences in Work-Related Values. Sage Publications, Beverly Hills, CA.

Appendices

Appendix 1: Hofstede’s dimensions of international differences in work-related values
Appendix 2: Privacy policy

Appendix 1

Hofstede's dimensions of international differences in work-related values									
		Power Distance		Uncertainty Avoidance		Individualism		Masculinity	
	Respondents		Q	Actual	Q		Q		Q
Argentina		49	2	86	4	46	2	56	3
Australia	1	36	2	51	3	90	4	61	3
Austria		11	1	70	3	55	3	79	4
Bangladesh	1		0		0		0		0
Belgium		65	3	94	4	75	3	54	3
Brazil	2	69	3	76	4	38	2	49	2
Canada	9	39	2	48	2	80	4	52	3
Chile		63	3	86	4	23	1	28	2
China	2		0		0		0		0
Colombia		67	3	80	4	13	1	64	3
Croatia	1		0		0		0		0
Denmark		18	1	23	1	74	3	16	1
Finland		33	2	59	3	63	3	26	2
France	1	68	3	86	4	71	3	43	2
Germany	2	35	2	65	3	67	3	66	3
Ghana	1		0		0		0		0
Greece		69	3	112	4	35	2	57	3
Hong Kong		68	3	29	2	25	1	57	3
India	14	77	4	40	2	48	2	56	3
Iran	1	58	3	59	3	41	2	43	2
Ireland	1	28	2	35	2	70	3	68	3
Israel	1	13	1	81	4	54	3	47	2
Italy	1	50	2	75	3	76	4	70	3
Japan	1	54	3	92	4	46	2	95	4
Mexico	3	81	4	82	4	30	2	69	3
Netherlands		38	2	53	3	80	4	14	1
New Zealand		22	1	49	2	79	4	58	3
Nigeria	1		0		0		0		0
Norway		31	2	50	2	69	3	8	1
Pakistan	1	55	3	70	3	14	1	50	2
Peru		64	3	87	4	16	1	42	2
Phillipines		94	4	44	2	32	2	64	3
Poland	1		0		0		0		0
Portugal	1	63	3	104	4	27	2	31	2
Romania	1		0		0		0		0
Singapore	2	74	3	8	1	20	1	48	2
Slovenia	1		0		0		0		0
South Africa		49	2	49	2	65	3	63	3
Spain		57	3	86	4	51	3	42	2
Sweden	1	31	2	29	2	71	3	5	1
Switzerland	1	34	2	58	3	68	3	70	3
Taiwan		58	3	69	3	17	1	45	2
Thailand	1	64	3	64	3	20	1	34	2
Turkey	2	66	3	85	4	37	2	45	2
UK	4	35	2	35	2	89	4	66	3
USA	67	40	2	46	2	91	4	62	3
Venezuela	1	81	4	76	4	12	1	73	3
Yugoslavia		76	4	88	4	27	2	21	1
mean		51	3	64	3	51	3	51	3

Appendix 2.

Privacy Policy

We respect and are committed to protecting your privacy. This Privacy Policy lets you know how your personal information is processed and used. We promise that we will take steps to use your personal information only in ways that are compatible with this Privacy Policy.

Every computer connected to the Internet is given a domain name and an IP address. The domain name and IP address reveal nothing personal about you other than the IP address from which you have accessed our site. We use this information in conjunction with a timestamp and other data submitted by you in the survey in an effort to eliminate duplicate submissions.

The information you provide in the survey will be used solely for advancing scientific knowledge in the area of technology projects valuation. The information you provide will be kept private and anonymous.

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