

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

# THE IMPACT OF CULTURE ON STRATEGIC INFORMATION SYSTEMS PLANNING

---

A thesis presented in partial fulfilment of the requirements for the  
degree of

**Doctor of Philosophy**

In

Business Information Systems

at Massey University, Manawatu,  
New Zealand.

**RAJA HASLINDA RAJA MOHD ALI**

2014

## **ABSTRACT**

How employees behave or react in an organisation depends on the norms and belief systems of that organisation, which is known as organisational culture. Organisational culture affects the decision making processes deciding the direction of the development of the organisation, and strategic information systems (IS) planning is one such process. The determinants that influence strategic IS planning have been examined and tested in previous studies. However, it is not known how the determinants of strategic IS planning success are affected by culture.

Therefore, the present study aims to investigate the impact of organisational culture on strategic IS planning. It proposes a conceptual model describing how culture affects two important determiners of strategic IS planning success, top management commitment and user participation.

Data were collected via a questionnaire survey of medium-sized and large organisations in the information and communications technology (ICT) industry in New Zealand and Malaysia. Structural equation modelling was used to analyse the survey data and to test the model. Follow-up interviews with five top managers and thirteen general employees resulted in in-depth qualitative data focusing on the relationships found to be interesting in the model.

Fitting the model by using partial least squares structural equation modelling suggested that both user participation and top management commitment affected the two dimensions of strategic IS planning success, communication and technology. User participation affected the strategic IS planning success dimensions relating to communication ( $\beta=.30$ ) and technology ( $\beta=.24$ ); top management commitment affected the strategic IS planning success dimensions relating to communication ( $\beta=.31$ ) and technology ( $\beta=.42$ ). As to the effect of culture dimensions on the determinants of strategic IS planning success, collectivism affected user participation ( $\beta=.15$ ), and uncertainty avoidance affected top management commitment ( $\beta=.27$ ) and user participation ( $\beta=.30$ ). Qualitative data analysis resulted in rich descriptions of the managers' and users' perceptions of the reasons for the effects confirmed by fitting the survey data.

The present study contributes by demonstrating the impact of culture on the determinants of strategic IS planning success.

## **ACKNOWLEDGEMENTS**

This dissertation would not have been written without the guidance, help, support, and encouragement from my supervisor, family, and friends. First and foremost, I would like to express my deepest gratitude to my supervisors, Dr Alexei Tretiakov and Dr Barbara Crump for the guidance and encouragement that they have provided for the past four years. I am also grateful to the examiners, who provided suggestions for this thesis.

My deepest gratitude and love are also dedicated to the most important people in my life. Special thanks to my parents, my parents-in-law, and the rest of my family for their prayers and love. To my lovely husband, Suhizaz Sudin, and my three adorable and awesome kids (Hanie, Hadhie, and Hafiy), thank you for your love, encouragement, and support. You gave me the strength and persistence to complete this long Ph.D. journey.

I would also like to thank all my friends at Massey University and work colleagues at University Utara Malaysia for their support and encouragement. Finally, thank you to the management and staff of University Utara Malaysia for giving me the opportunity to engage in this journey. The financial support provided by the University has been of vital importance during my Ph.D. candidacy.

## **LIST OF PUBLICATIONS**

Ali, R. H. R. M., Tretiakov, A., & Crump, B. (2008). Understanding the Impact of National Culture on Strategic IS Planning. In *Proceedings of the 19th Australasian Conference on Information Systems* (pp. 791-801). Christchurch, New Zealand: Australasian Association of Information Systems.

Ali, R. H. R. M., Tretiakov, A., & Crump, B. (2009). Models of national culture in information systems research. In *Proceedings of the 20th Australasian Conference on Information Systems* (pp. 246-256). Melbourne, Australia: Australasian Association of Information Systems.

## TABLE OF CONTENTS

ABSTRACT .....	2
ACKNOWLEDGEMENTS.....	3
LIST OF PUBLICATIONS.....	4
LIST OF TABLES.....	12
LIST OF FIGURES .....	14
CHAPTER 1: INTRODUCTION .....	15
1.1 Background of the study.....	15
1.2 Research problem .....	16
1.3 Research questions and hypotheses .....	18
1.4 Significance of the study .....	18
1.4.1 Contributions to the theory .....	18
1.4.2 Contributions to practice .....	19
1.5 Scope of the study .....	19
1.6 Summary of methodology .....	20
1.7 Organisation of the thesis.....	21
CHAPTER 2: STRATEGIC INFORMATION SYSTEMS PLANNING .....	23
2.1 Introduction.....	23
2.2 Introducing strategic IS planning .....	23
2.2.1 Process models .....	25
2.2.2 Archetypical approaches.....	28
2.3 Evolution with time / maturity.....	30

2.4 Strategic IS planning success.....	31
2.4.1    Conceptualisations of strategic IS planning success.....	31
2.4.1.1    Strategic IS planning success viewed as the success of generic planning....	31
2.4.1.2    Strategic IS planning success viewed as IS / business alignment.....	34
2.4.1.3    Strategic IS planning success viewed as IS / business alignment—an attempt at detailed representation .....	38
2.4.2    Factors contributing to strategic IS planning success .....	39
2.4.2.1    Top management commitment.....	43
2.4.2.2    User participation .....	44
CHAPTER 3: CONCEPTUALIZATION OF CULTURE.....	46
3.1 Introduction.....	46
3.2 Holistic view of culture.....	46
3.3 Levels of culture.....	48
3.4 Dimensions of culture.....	49
3.5 Studies of the impact of culture on IS strategy .....	56
CHAPTER 4: MODEL DEVELOPMENT AND HYPOTHESES .....	58
4.1 Introduction.....	58
4.2 Conceptual foundations.....	58
4.2.1    Organisation values .....	58
4.2.2    Organisation practices .....	59
4.2.3    Organisation outcomes.....	60
4.3 Research model .....	60
4.3.1    Hypotheses relating to the effects of organisational practices.....	61
4.3.1.1    H1: Higher levels of top management commitment lead to better strategic IS planning success .....	61
4.3.1.2    H2: Higher levels of user participation lead to better strategic IS planning success.....	62

4.3.2	Hypotheses relating to the effects of organisational values .....	64
4.3.2.1	H3: Collectivism affects user participation.....	64
4.3.2.2	H4: Power distance affects user participation.....	64
4.3.2.3	H5a, H5b: Uncertainty avoidance affects user participation and top management commitment .....	65
CHAPTER 5: RESEARCH DESIGN AND METHODS .....		66
5.1	Introduction.....	66
5.2	Overall research approach.....	66
5.2.1	Positivist and interpretivist.....	66
5.2.2	Quantitative, qualitative, and mixed .....	66
5.2.3	Level of analysis.....	67
5.2.4	Key informants approach.....	67
5.2.5	Approach to data collection.....	70
5.3	Overview of research procedures.....	71
5.4	Operationalisation of constructs .....	73
5.4.1	Strategic IS planning success .....	73
5.4.2	Organisational practices.....	74
5.4.2.1	Top management commitment.....	74
5.4.2.2	User participation .....	74
5.4.3	Dimensions of organisational culture.....	75
5.4.3.1	Power distance .....	75
5.4.3.2	Uncertainty avoidance.....	75
5.4.3.3	Collectivism .....	75
5.5	The research instruments.....	78
5.5.1	Language related issues.....	78
5.5.2	Questionnaire for the survey .....	79

5.5.3	The semi-structured interview schedule.....	79
5.6	Participants.....	79
5.6.1	Questionnaire survey .....	79
5.6.1.1	Population.....	81
5.6.1.2	Sample .....	82
5.6.2	Interviews .....	82
5.7	Ethical considerations .....	83
5.7.1	Questionnaire survey .....	83
5.7.2	Interviews .....	84
5.8	Survey pre-testing .....	84
5.9	Data collection procedures.....	85
5.9.1	Survey procedures .....	85
5.9.2	Conducting the semi-structured interviews.....	86
5.10	Approach to quantitative data analysis.....	86
5.10.1	Normality, outliers and missing values.....	86
5.10.2	Checking for response bias .....	86
5.10.3	Representativeness of the sample .....	87
5.10.4	Checking for common method bias .....	87
5.10.5	Structural equation modelling.....	88
5.10.6	Effect size .....	90
5.11	Approach to qualitative data analysis.....	90
CHAPTER 6:	QUANTITATIVE DATA ANALYSIS AND FINDINGS .....	93
6.1	Introduction.....	93
6.2	Response rate.....	93

---

6.3 Preliminary analysis.....	94
6.3.1    Assessing normality and outliers .....	94
6.3.2    Missing values .....	95
6.4 Demographic data.....	96
6.4.1    Participant characteristics .....	96
6.4.1.1    The organisations .....	96
6.4.1.2    The respondents .....	100
6.5 Response bias .....	102
6.6 Response representativeness .....	104
6.7 Descriptive statistics for strategic IS planning.....	105
6.7.1    Years of strategic IS planning experience .....	105
6.7.2    Outsourcing of strategic IS planning.....	106
6.7.3    Strategic IS planning success .....	107
6.7.4    Top management commitment.....	108
6.7.5    User participation .....	111
6.8 Checking for common method bias .....	112
6.9 Model testing results.....	112
6.9.1    Measurement model.....	113
6.9.1.1    Convergent validity .....	113
6.9.1.2    Discriminant validity.....	116
6.9.2    Structural model .....	118
6.10 Cohen's effect sizes .....	119
6.11 Post-hoc analysis.....	120
6.12 Findings from qualitative interviews.....	121

6.12.1	Relationship between top management commitment and strategic IS planning success .....	122
6.12.1.1	Mature organisation (MO) .....	122
6.12.1.2	New organisation (NO).....	125
6.12.1.3	Difference of commitment in strategic IS planning stages.....	126
6.12.2	Relationship between user participation in strategic IS planning success	130
6.12.2.1	Mature organisation.....	130
6.12.2.2	New organisation.....	133
6.12.2.3	Different ways for users to participate.....	135
6.12.3.1	Mature organisation.....	136
6.12.3.2	New organisation.....	138
6.12.4	Other factors contributing to strategic IS planning success .....	140
CHAPTER 7: DISCUSSION, CONCLUSIONS, AND FURTHER RESEARCH		144
7.1	Introduction.....	144
7.2	Determinants of strategic IS planning success .....	144
7.2.1	Effects of top management commitment.....	144
7.2.2	Effects of user participation .....	145
7.3	Effects of culture on determinants of strategic IS planning success.....	146
7.3.1	Effect of collectivism on user participation .....	147
7.3.2	Effect of uncertainty avoidance on user participation and top management commitment .....	147
7.3.3	Effect of power distance on user participation.....	149
7.4	Implications of the study .....	149
7.4.1	Significance for theory.....	149
7.4.2	Significance for practice .....	150
7.5	Limitations of the study and further research .....	151

7.6 Conclusion .....	152
<b>REFERENCES .....</b>	<b>154</b>
APPENDIX A: Invitation letter .....	167
APPENDIX B: Ethics notification letter for questionnaire survey .....	168
APPENDIX C: Ethics notification letter for interviews.....	169
APPENDIX D: Information sheet.....	170
APPENDIX E: Questionnaire survey .....	173
APPENDIX F: Reminder e-mail.....	179
APPENDIX G: PLS analysis output.....	180
APPENDIX H: Background of the respondent organisations .....	182
University A (mature organisation).....	182
University B (new organisation).....	182
University C (new organisation).....	182
APPENDIX I: Findings from qualitative interviews with survey participants.....	183
I.1 Approach to data collection .....	183
I.2 Relationship between user participation and strategic IS planning success .....	184
I.3 Relationship between top management commitment and strategic IS planning success .....	187
I.4 Other determinants of strategic IS planning success .....	190
I.5 Other themes relating to IS planning success .....	191

## LIST OF TABLES

Table 2-1: Strategic IS Planning Success Measures .....	36
Table 2-2: Items for the Subdimensions of the Measure of Strategic IS Planning Success by Segars and Grover (1998).....	37
Table 2-3: Strategic IS Planning Success Studies .....	41
Table 3-1: Dimensions of Culture.....	53
Table 5-1: Operationalisation of Constructs .....	76
Table 6-1: Response Rate .....	94
Table 6-2: Organisation Type .....	96
Table 6-3: Types of Branches .....	97
Table 6-4: Organisation Ownership .....	97
Table 6-5: Organisation Size .....	98
Table 6-6: Organisation Activity .....	98
Table 6-7: Organisation Product .....	99
Table 6-8: Import / Export Activities.....	99
Table 6-9: Respondent Job Title .....	100
Table 6-10: Respondent Experience.....	101
Table 6-11: Respondent Education Level.....	102
Table 6-12: Results of Non-Response Bias Tests Based on the Number of Employees and Sales Income .....	102
Table 6-13: Results of Non-Response Bias Tests Based on Items Used to Measure Determinants of Strategic IS Planning Success Construct .....	103
Table 6-14: Results of Non-Response Bias Based on Items Used to Measure Strategic IS Planning Success Construct.....	104
Table 6-15: Numbers of Organisations in Different Size Ranges.....	105
Table 6-16: Strategic IS Planning Experience .....	106
Table 6-17: Strategic IS Planning Outsourcing .....	106
Table 6-18: Strategic IS Planning Success (Combined) .....	107
Table 6-19: Strategic IS Planning Success (New Zealand) .....	108

Table 6-20: Strategic IS Planning Success (Malaysia) .....	108
Table 6-21: Top Management Commitment (Combined) .....	109
Table 6-22: Top Management Commitment (New Zealand) .....	110
Table 6-23: Top Management Commitment (Malaysia) .....	110
Table 6-24: User Participation (Combined).....	111
Table 6-25: User Participation (New Zealand).....	112
Table 6-26: User Participation (Malaysia) .....	112
Table 6-27: Factor Loadings .....	113
Table 6-28: Factor Loadings After Deleting Problematic Items .....	115
Table 6-29: AVE, Composite Reliability and Cronbach's Alpha .....	116
Table 6-30: Item Cross-loadings .....	117
Table 6-31: Squared Root of AVE and Latent Variable Correlations .....	118
Table 6-32: Cohen's Effect Size for the Effect of Top Management Commitment on Strategic IS Planning Success .....	120
Table 6-33: Cohen's Effect Size for the Effect of User Participation on Strategic IS Planning Success .....	120
Table 6-34: Cohen's Effect Size for the Effect of Culture on Determinants of Strategic IS Planning Success .....	120
Table G-1: PLS Analysis Results Overview.....	180
Table G-2: Latent Variable Correlations.....	180
Table G-3: Outer Model (Weights and Loadings) .....	181
Table G-4: Path Coefficients .....	181

## LIST OF FIGURES

Figure 1-1. Thesis outline .....	22
Figure 2-1. Information systems strategy triangle (Pearlson & Saunders, 2010).....	24
Figure 2-2. Strategic IS planning process model (Lederer & Salmela, 1996).....	27
Figure 2-3. Strategic alignment model.....	28
Figure 2-4. Stages of strategic IS planning maturity (Grover & Segars, 2005).....	30
Figure 3-1. Layers of culture (Trompenaars, 1996) .....	47
Figure 3-2. Virtual onion model (Gallivan & Srite, 2005) .....	48
Figure 3-3. A dynamic view across levels of culture (Leung et al., 2005).....	49
Figure 4-1. Overview of the research model.....	61
Figure 5-1. Overall mixed method procedures (based on a similar diagram by Creswell and Clark, 2011).....	72
Figure 5-2. Semi-structured interview schedule.....	80
Figure 6-1. The results for the structural model. Solid lines denote hypotheses confirmed at $p < .05$ . Numbers next to hypotheses labels are path coefficients; the corresponding p values are given in brackets.....	119
Figure 6-2. Post-hoc analysis—moderating effect of collectivism.....	121