

Management Control in International Joint Ventures as Self-Organising Systems

by

Geri Hadrian Djajadikerta

BEC (UnPar), MSc (BIT), MBA (Montana)

A thesis
submitted for the degree of
Doctor of Philosophy

School of Accounting
Faculty of Business
University of Technology, Sydney

2002

CERTIFICATE OF AUTHORSHIP / ORIGINALITY

I certify that this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis represents the original work and contribution of the author except as acknowledged by general and specific references

Signature of Candidate

Production Note:
Signature removed prior to publication.

ACKNOWLEDGEMENTS

Like an end of a journey, finally this doctoral thesis reached its destination. It was a challenging but enjoyable long venture, and I would like to express my gratitude to the people that have assisted me in the process. First and foremost, I would like to express my deepest appreciation to my supervisor Professor Peter Booth for his intellectual guidance and wisdom on this thesis. I appreciate the trust that he gave me to pursue my initiative, and his continuous support and friendship over the time I have undertaken this study. I offer my admiration for his kindness and brightness.

My appreciation also goes to my co-supervisor Professor Stewart Clegg for providing me with an exemplary way of thinking about research, and constant support through the Innovative Collaborations, Alliances, and Networks (ICAN) Research, a Key University Research Centre at the University of Technology, Sydney, that he chaired. I highly regard his enthusiasm and commitment on research.

I would like to express my gratitude to the examiners of this thesis, Professors Michael D. Shields at Michigan State University, Kim Langfield-Smith at Monash University, and Margaret A. Abernethy at the University of Melbourne.

I would also like to thank Professor Stephen Taylor, the Chair of the proposal committee, Professors Rob Lynch and Zoltan Matolcsy, the proposal reviewers, for their valuable comments on my thesis proposal.

I would like to thank Professor Barbara Gray at Pennsylvania State University for her feedback on my thesis proposal during her visit to the Faculty of Business in 1999. Thanks also to Professor Wynne Chin at the University of Houston for providing assistance with the PLS-Graph package.

At the University of New South Wales, where I have worked during the last period of my candidature, I would particularly like to thank Professor Wai Fong Chua, the Head of School of Accounting, for her support.

My thanks goes also to my PhD colleagues and good friends, Francesco Giacobbe for his constant support, and Dr Tho Nguyen for our many inspiring discussions. The comments from many of my former Masters students at the University of Technology, Sydney, and the University of New South Wales, are also appreciated. The assistance of Mrs Judy Dousha, the Office Manager in the School of Accounting and Ms Tania Tambiah, the Research Manager in the Faculty of Business at the University of Technology, Sydney are gratefully acknowledged.

My final appreciation goes to my wife Tri, and my son and best mate Alvin for creating a wonderful and pleasant environment at home. Thank you Tri, for keeping our spirit and motivation high while we both facing the same challenge to complete our doctoral theses. Thank you Alvin, for keeping me sharp with your critical and dynamic comments, and keeping me joyful with your charming and dazzling character. I now look forward to enjoying my life more with the two of you.

CONTENTS

Certificate of Authorship / Originality	ii
Acknowledgements	iii
List of Figures	x
List of Tables	xi
Abstract	xii
1. Introduction	1
1.1. Introduction	1
1.2. Rationale	2
1.2.1 Previous Research in International Joint Ventures	2
1.2.2. Research Opportunity from the Emerging Science of Complexity	4
1.3. Statement of the Research Questions	5
1 4. Summary	7
2. Literature Review	9
2.1. Introduction	9
PART 1	9
2.2. Key Definitional Issues of International Joint Ventures	9
2.2.1. Joint Ventures as a Means of Strategic Alliances	10
2.2.2. Joint Ventures and International Joint Ventures	11
2.2.3. Strategic Motives for International Joint Ventures Formation	12
2 2.4. Summary of the Key Definitional Issues of International Joint Ventures	13
2.3. Complex and Dynamic Features of International Joint Ventures	14
2.3.1 Types of International Joint Ventures	14
2.3.2 Bargaining Power in International Joint Ventures	16
2 3 3 International Joint Ventures Failures and Instability	17
2.3.4 Summary of the Review of Complex and Dynamic Features of International Joint Ventures	20

2.4. Evolutionary View of Organisations' Development	21
2.4.1. Current Dominant Paradigm	21
2.4.2. The Emerging Science of Complexity	22
2.4.3. Complex Adaptive Systems	22
2.4.4. Self-Organisation	25
2.4.5. Complexity	26
2.4.6. Fitness Boundary	27
2.4.7. Benefits of the Emerging Science of Complexity	28
2.4.8. Summary of the Evolutionary View of Organisations' Development	29
 PART 2	 30
2.5 Self-Organising Properties of International Joint Ventures	30
2.5.1. Complexity of International Joint Ventures	31
2.5.1.1. Task Complexity	32
2.5.1.2. Organisational Complexity	34
2.5.2. Self Reference of International Joint Ventures	34
2.5.3. Autonomy of International Joint Ventures	35
2.5.4. Redundancy of International Joint Ventures	36
2.5.5. Summary of the Review of Self-Organising Properties of International Joint Ventures	36
2.6 Management Control Systems	37
2.6.1. What is Management Control?	38
2.6.2. Management Control in International Joint Ventures	39
2.6.2.1. Control Mechanisms	39
2.6.2.2. Extent of Control	42
2.6.2.3. Focus of Control	44
2.6.3. Logic for Research in Management Control Systems Design	45
2.6.4. Summary of the Review of Management Control Systems	47
 3. Synthesis of Theoretical Premises for Studying Control in International Joint Ventures	 48
3.1. Introduction	48

3.2. Proposed Framework and Model	48
3.2.1. Major Variables	48
3.2.1.1. Complexity	49
3.2.1.2 Management Control	51
3.2.1.3. Autonomy and Redundancy	52
3.2.1.4. Performance	53
3.2.2. International Joint Ventures Management Control Model	54
3.3. Hypotheses	58
3.3.1. Hypotheses on Task and Organisational Complexity	59
3.3.2. Hypotheses on Complexity and Control	59
3.3.3. Hypotheses on Control and Outcomes	63
3.3.3.1 Hypotheses on Control and Performance	63
3.3.3.2 Hypotheses on Control and Autonomy	65
3.3.3.3 Hypotheses on Complexity, Autonomy, and Performance	66
3.3.3.4. Hypotheses on Control and Redundancy	66
3.3.3.5 Hypotheses on Complexity, Redundancy, and Performance	67
3.4 Summary	67
4. Research Method	70
4.1 Introduction	70
4.2. Choice of Research Method	70
4.3. Measurement	72
4.3.1. Reflective and Formative Indicators	72
4.3.2. Model Constructs and Measures	74
4.3.2.1 Embedded Task Complexity	74
4.3.2.2 Dynamic Task Complexity	75
4.3.2.3 Organisational Complexity	78
4.3.2.4 Preventive Control Mechanisms	80
4.3.2.5 Promotive Control Mechanisms	82
4.3.2.6 Control Extent	83
4.3.2.7. Control Focus	84

4.3.2.8	Autonomy	85
4.3.2.9	Redundancy	87
4.3.2.10	Performance	88
4.3.2.11	Summary	89
4.3.3	Measurement Scale	90
4.4	Data Analysis Method	91
4.5	Sample	94
4.5.1	Target Population	94
4.5.2	Sample Selection and Sample Size Requirement	95
4.6	Questionnaire Development	96
4.6.1	Validity Issue	97
4.6.2	Questionnaire Construction	97
4.7	Questionnaire Pilot Test	98
4.8	Questionnaire Administration	99
4.9	Summary	102
5	Data Analyses and Results	103
5.1	Introduction	103
5.2	Response Characteristics	103
5.3	Preliminary Analyses	104
5.3.1	Missing Value Analysis	104
5.3.2	Descriptive Analysis	104
5.4	Exploratory Analyses	106
5.5	Modelling using Partial Least Square (PLS)	109
5.6	Model Evaluation	111
5.6.1	Outer (Measurement) Model	111
5.6.1.1	Outer Model for Constructs with Reflective Indicators	111
5.6.1.1.1	Individual Item Reliability	112
5.6.1.1.2	Composite Reliability	116
5.6.1.1.3	Discriminant Validity	118
5.6.1.2	Outer Model for Constructs with Formative Indicators	120
5.6.2	Inner (Structural) Model	121
5.6.2.1	R-squares	128

APPENDIX	158
A.1. Questionnaire Pilot Test	158
A.2. Exhibits	166
A.3. Tables	185
REFERENCES	196

List of Figures

Figure 2.1.	A Typology of International Joint Ventures	15
Figure 2.2.	An Organisational Network Consisting of Two Agents	24
Figure 2.3.	Alliance Complexity	32
Figure 2.4.	Factors that Determine Task Complexity	33
Figure 2.5.	A Range of Control Mechanisms	42
Figure 2.6.	Contingent Control Framework	46
Figure 3.1.	A Two-Partner Equity International Joint Venture's Network	55
Figure 3.2.	The Proposed Complexity-Control-Outcomes Framework	56
Figure 3.3.	The Proposed Model of Management Control in International Joint Ventures	58
Figure 4.1.	A Latent Variable with 5 Reflective Indicators	73
Figure 4.2.	A Latent Variable with 5 Formative Indicators	74
Figure 4.3.	The Embedded Task Complexity Construct	75
Figure 4.4.	The Dynamic Task Complexity Construct	77
Figure 4.5.	The Organisational Complexity Construct	80
Figure 4.6.	The Preventive Control Mechanisms Construct	81
Figure 4.7.	The Promotive Control Mechanisms Construct	82
Figure 4.8.	The Control Extent Construct	84
Figure 4.9.	The Control Focus Construct	85
Figure 4.10.	The Autonomy Construct	86
Figure 4.11.	The Redundancy Construct	87
Figure 4.12.	The Performance Construct	89
Figure 5.1.	Estimated Results for the Proposed Model of Management Control in International Joint Ventures	122

List of Tables

Table 2.1.	Critical Contingencies of the Formation of Joint Ventures	13
Table 2.2.	Classification of International Joint Ventures	15
Table 2.3.	Components of Resource-Based and Context-Based Bargaining Power in International Joint Ventures	17
Table 2.4.	Summary of Results on Instability of Joint Ventures	18
Table 2.5.	Descriptions of Steps in an Organisational Network	24
Table 2.6.	Effects of Task Complexity Factors	33
Table 2.7.	Effects of Organisational Complexity Factors	34
Table 3.1.	Major Variables of International Joint Ventures' Complexity	51
Table 3.2.	Major Variables of Management Control	52
Table 3.3.	Descriptions of Steps in an International Joint Venture's Network	55
Table 3.4.	Hypotheses	68
Table 4.1.	A Summary of Constructs and Indicators	89
Table 4.2.	A Summary of Questionnaires' Responses	102
Table 5.1.	Descriptive Statistics for Model Constructs and Indicators	104
Table 5.2.	Individual Reliabilities for Indicators based on PCA Analysis	107
Table 5.3.	Composite Reliabilities for Constructs based on PCA Analysis	108
Table 5.4.	Individual Reliabilities for Indicators based on PCA Analysis	109
Table 5.5.	Correlations between Constructs and Indicators in the Outer Model	112
Table 5.6.	Correlations among Constructs Scores (AVE in diagonal)	119
Table 5.7.	Outer Model Analysis for Organisational Complexity Construct	121
Table 5.8.	Inner (Structural) Model Analyses	123
Table 5.9.	Total Causal Effects on Constructs	125
Table 5.10.	R-squares and Effect Size f^2 of the Exclusion of the Embedded and the Dynamic Task Complexities from the Model on the Endogenous Constructs	129
Table 5.11.	Q-squares based on the Blindfolding Procedure	132
Table 5.12.	Redundancy Impact q^2 of the Exclusion of the Embedded and the Dynamic Task Complexities from the Model on the Endogenous Constructs	134
Table 5.13.	Results of the Hypotheses Testing	140

Abstract

The need for more dynamic views on international joint ventures' control research has recently become a growing concern. Changes in the complexity of relationships between organisations and their environments have led to an increase in control problems and to a need to investigate a suitable framework of management control. The concept of self-organising systems that has emerged within the science of complexity produces some useful and interesting new ways to examine the behaviour of complex systems. Therefore, extending the recent development in self-organising systems into international joint ventures' control research is an opportunity to explore new insights into the development of joint ventures. This study takes an integrative approach by focusing on the integration of management control and self-organising properties of international joint ventures. The purpose of this study is to investigate the roles of management control systems in affecting international joint ventures' performance, from the perspective of alliance complexity constraints. A model of management control in international joint ventures as self-organising systems, representing a complexity-control-outcomes framework, is developed and tested empirically using the partial least square (PLS) approach, a distinctive structural equation modeling (SEM) based technique.

The primary results of this study show that formal control mechanisms and control extent have significant direct effects on management autonomy and the international joint ventures' performance. Management autonomy as an intervening endogenous construct has a significant direct effect on the international joint ventures' performance. Significant direct effects of organisational complexity on the formal control mechanisms and control extent are found, and a significant indirect effect of organisational complexity on the management autonomy is found. The overall results suggest a sound link between the complexity-control framework with the control-outcomes framework, and the achievement of fit between these two frameworks is important for superior international joint ventures' performance.