

## Table of Contents

1.	Introduction.....	1
1.1.	Research Background .....	1
1.1.1.	Growth of IT Investment .....	1
1.1.2.	Importance of Intellectual Capital (IC).....	2
1.1.3.	Development of IC Research.....	3
1.1.4.	Development of High-Tech Industry.....	4
1.2.	Research Motivation.....	4
1.2.1.	IT Productivity Paradox.....	4
1.2.2.	Measurement of Intangible Assets .....	5
1.2.3.	An Assessment Tool for Practitioners.....	5
1.3.	Research Issues .....	6
1.4.	Research Objective .....	6
1.5.	Research Limitations .....	6
1.6.	Research Flow .....	6
2.	Literature Review .....	8
2.1.	The Issues of IT .....	8
2.2.	Views of IT Assessment.....	8
2.2.1.	Resource-Oriented View .....	8
2.2.2.	Capability-Oriented View .....	11
2.2.3.	Management-Oriented View .....	14
2.3.	Performance Indicators in High-Tech Industry .....	16
2.3.1.	IC Indicators of PIP project in the IT Sector .....	16
2.3.2.	Performance Indicators of e-Commerce in the Manufacturing Sector .....	18
3.	Research Method .....	21
3.1.	Definition of IT Capital .....	21
3.2.	Development of Indicators .....	22
3.3.	Research Dimensions of IT Capital.....	25
3.3.1.	Dimensions of IT Capital.....	25
3.3.2.	Research Dimensions in the Form of Questions .....	26
4.	Case Studies .....	33
4.1.	Case Study 1 .....	33
4.1.1.	Background .....	33
4.1.2.	IT Capital – Input.....	33
4.1.3.	IT Capital – Output .....	35
4.1.4.	IT Capital – Management .....	36
4.2.	Case Study 2 .....	36

4.2.1. Background .....	36
4.2.2. IT capital – input .....	36
4.2.3. IT capital – output .....	37
4.2.4. IT capital – management.....	38
4.3. Case Study 3 .....	39
4.3.1. Background .....	39
4.3.2. IT capital – input .....	39
4.3.3. IT capital – output .....	40
4.3.4. IT capital – management.....	41
4.4. Case Study 4 .....	42
4.4.1. Background .....	42
4.4.2. IT capital – input .....	42
4.4.3. IT capital – output .....	42
4.4.4. IT capital – management.....	43
4.5. Case Study 5 .....	43
4.5.1. Background .....	44
4.5.2. IT capital – input .....	44
4.5.3. IT capital – output .....	45
4.5.4. IT capital – management.....	46
4.6. Case Study 6 .....	46
4.6.1. Background .....	46
4.6.2. IT capital – input .....	46
4.6.3. IT capital – output .....	47
4.6.4. IT capital – management.....	48
5. Research Implications.....	49
5.1. A Preliminary Set of Performance Indicators .....	49
5.2. Differences in Indicators between Cases .....	57
5.3. The Implications of IT Capital.....	63
6. Concluding Remarks and Future Research Work .....	65
References.....	66
Appendix A: IT Capital Questionnaire .....	70
Appendix B: IT Capital Performance Indicators Adaptation.....	76

## List of Tables

Table 3.1: Relationship between theories and IT capital indicators and dimensions .....	24
Table 3.2: Dimension of IT Human Resources.....	27
Table 3.3: Dimension of IT Infrastructure .....	27
Table 3.4: Dimension of IT Application Ability.....	28
Table 3.5: Dimension of IT R&D Ability.....	28
Table 3.6: Dimension of Organizational Structure and Culture .....	28
Table 3.7: Dimension of Strategy Contribution and Decision Quality.....	29
Table 3.8: Dimension of Innovative Products and Services .....	30
Table 3.9: Dimension of Reducing Cost .....	30
Table 3.10: Dimension of Process Efficiency.....	31
Table 3.11: Dimension of Supplier/Customer Relationship .....	31
Table 3.12: Dimension of Knowledge Management and Organizational Learning ...	32
Table 3.13: Dimension of Intelligence Proprietary.....	32
Table 5.1: Cases information.....	49
Table 5.2: Scores for indicator adaptation – IT input (Case 1).....	49
Table 5.3: Scores for indicator adaptation – IT output (Case 1).....	50
Table 5.4: Scores for indicator adaptation – IT input (Case 2).....	50
Table 5.5: Scores for indicator adaptation – IT output (Case 2).....	51
Table 5.6: Scores for indicator adaptation – IT input (Case 3).....	51
Table 5.7: Scores for indicator adaptation – IT output (Case 3).....	52
Table 5.8: Scores for indicator adaptation – IT input (Case 4).....	52
Table 5.9: Scores for indicator adaptation – IT output (Case 4).....	53
Table 5.10: Scores for indicator adaptation – IT input (Case 5).....	53
Table 5.11: Scores for indicator adaptation – IT output (Case 5).....	54
Table 5.12: Scores for indicator adaptation – IT input (Case 6).....	54
Table 5.13: Scores for indicator adaptation – IT output (Case 6).....	55
Table 5.14: Rank of IT capital performance indicators – IT input .....	56
Table 5.15: Rank of IT capital performance indicators – IT output .....	56
Table 5.16 : Differences in dimension of ‘IT Human Resources’ .....	58
Table 5.17: Differences in dimension of ‘IT Infrastructure’ .....	58
Table 5.18: Differences in dimension of ‘IT Application Capability’ .....	59
Table 5.19: Differences in dimension of ‘IT R&D Capability’ .....	59
Table 5.20: Differences in dimension of ‘Organizational Structure and Culture’ .....	59
Table 5.21: Differences in dimension of ‘Strategy Contribution and Decision Quality’ .....	60
Table 5.22: Differences in dimension of ‘Innovative Products and Services’ .....	60

Table 5.23: Differences in dimension of ‘Reducing Cost’ .....	61
Table 5.24: Differences in dimension of ‘Process Efficiency’ .....	61
Table 5.25: Differences in dimension of ‘Supplier/Customer Relationship’ .....	62
Table 5.26: Differences in dimension of ‘KM and Organizational Learning’ .....	62
Table 5.27: Differences in dimension of ‘Intellectual Property’ .....	63

## List of Figures

Fig. 1.1: Global enterprise IT Spending amount from 2001 to 2008.....	1
Fig. 1.2: IT investment of firms in Taiwan from 2001 to 2003 .....	2
Fig. 1.3: IT spending of firms in Taiwan from 2003 to 2004(Industry level) .....	2
Fig. 1.4: 1997~2005 Production value of information hardware industry in Taiwan... <td>4</td>	4
Fig. 1.5: Research flow.....	7
Fig. 2.1: Resource categories .....	9
Fig. 2.2: R&D Dynamics .....	9
Fig. 2.3: Navigator (PharmaWorld) .....	10
Fig. 2.4: Effector plot (PharmaWorld) .....	11
Fig. 2.5: Concept & financial justification stakeholders .....	12
Fig. 2.6: Taxonomy of benefits considered as part of cost/benefit/value analysis .....	13
Fig. 2.7: Taxonomy of costs considered as part of bespoke cost/benefit analysis.....	13
Fig. 2.8: The IT Value Creation Process: From Potential to Realized Value and Return .....	14
Fig. 2.9: Potential Value, Conversion Contingencies and Realized Value .....	15
Fig. 2.10: Value Conversion Contingencies Across Multiple Levels of Analysis .....	15
Fig. 2.11: Discovering Potential and Realizing Value .....	16
Fig. 2.12: PIP Project overview .....	17
Fig. 2.13: Categories of IC indicators.....	17
Fig. 2.14: Conceptual Framework .....	19
Fig. 2.15: IT Infrastructure Metrics .....	19
Fig. 2.16: Performance Metrics .....	19
Fig. 3.1: IT capital structure.....	21
Fig. 3.2: Structure of IT Capital performance indicators.....	26