Antecedents and Consequences of Strategic Information Systems Planning (SISP) Success: A South Korean Perspective

A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy

Jungho (Marino) Yang

Bachelor of Science (Hallym University), MBA (Kyunghee University) and Master of Commerce (University of New South Wales)

School of Business Information Technology and Logistics

College of Business

RMIT University

August 2017

DECLARATION

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of this thesis is the result of work which has been carried out since the official commencement date of the approved research program; any editorial work, paid or unpaid, carried out by a third party is acknowledged; and, ethics procedures and guidelines have been followed.

I acknowledge the support I have received for my research through the provision of an Australian Government Research Training Program Scholarship.

Signed:

Jungho Yang

August 2017

DEDICATION

This thesis is dedicated to

my beloved wife and son,

and my family.

ABSTRACT

This thesis explores antecedents of Strategic Information Systems Planning (SISP), successful outcomes of SISP and the organisational impact of successful SISP in the South Korean context. Since information systems (IS) and information technology (IT) are now an essential requirement supporting all aspects of business operations, the need for SISP is important for achieving success with IT investments and implementation. SISP helps identify organisational resources as well as considers the environmental, economic and organisational requirements for successful IT investment and implementation.

SISP was introduced by Lederer and Sethi (1988), Lederer and Salmela (1996) and Salmela et al. (2000) as planning for the selection and implemention of IT in organisations, with the aim of achieving alignment of IS objectives with business objectives to sustain a competitive advantage from IT investments. Earlier studies on SISP have individually explored management issues, participation and communication of business and IT stakeholders, impact of environmental factors and SISP resources in relation to SISP success. However, to date, there has been a dearth of research that has explored SISP success factors for improving successful outcomes and the impact of SISP success in organisations. Further, earlier studies on SISP are generally from the United States of America, the United Kingdom, Australia, Singapore and Taiwan. Although the penetration of IT in South Korean organisations is high, to date there is no study on SISP in the South Korean context. Therefore, the primary objective of this study is to investigate the relationship between SISP success factors for successful outcomes and the impact of SISP success in South Korean organisations.

Since none of the earlier studies on SISP were undertaken in the context of South Korea, a qualitative research via interviews, with four business managers and four IT managers in South Korean organisations, was undertaken to establish if success factors of SISP identified from literature, were applicable in the South Korean context prior to the development of hypotheses and the conceptual model. The research model was constructed based on a literature analysis, interview findings and resulting hypotheses. A survey of 317 large organisations in South Korea that used SISP for IT investment and implementation was undertaken to understand SISP success factors, outcomes and the organisational impact of SISP in this context. The survey data was analysed utilising a Structural Equation Modelling (SEM) technique, and the analysis of data confirmed 15 of 19 hypotheses.

Research findings suggest that SISP success factors in the South Korean context include top management participation and support, effective communication and knowledge sharing between business and IT stakeholders, the impact of internal and external environment, adequate resources for SISP and inclusion of IS vendors in the SISP process. Successful outcomes of SISP from this study are IS planning effectiveness and business and IT alignment. The impact of SISP successful outcomes includes the following: organisational capabilities of recombining and reconfiguring overall business and IT processes, resources and structures; IS competencies for improving the ability and role of IS function and the potential impact of IT; and IT infrastructure flexibility in responding to internal and external changes, situations and trends.

This study makes an original contribution to theory and practice through its development and validation of a research model for measuring the relationship between antecedents and the impact of SISP success on organisational outcomes. It adds to SISP literature by showing the relationship between SISP success factors, successful outcomes of SISP and the impact of SISP outcomes in organisations. Furthermore, practitioners will be able to use the findings from this study to successfully implement SISP for positive organisational impact. This study is from large organisations in the South Korean context. It offers a basis for researchers to explore further the relationship between SISP success factors, outcomes and impact on small and medium enterprises (SMEs), and in other contexts. It also provides a starting point for practitioners including IT vendors to explore further the reason at the SISP level in South Korean organisations.

ACKNOWLEDGEMENT

It would be very difficult to name all the people who have supported me in this research over the last few years. However, I can say that the completion of the research would not have been possible without their generous help and valuable advice. To all who have helped, directly and indirectly, I am forever thankful for their contributions.

First and foremost, I should express my sincerest gratitude to my senior supervisors, Dr Konrad Peszynski and Professor Alemayehu Molla, who have fully supported me with their great support, guidance, mentorship and constant encouragement imbued with academic excellence during the last four years. Their confidence in my research capabilities and trustworthy advice has always been a great incentive and motivation for me to finish this research within the specified time. It is a great privilege and pleasure to be supervised by such outstanding scholars. I am also grateful to my second and third supervisors, Dr Ian Storey and Dr Zijad Pita, for offering me valuable advice and support in research planning and statistics tutoring for my research, and to Dr Philippa Moylan for editorial support.

I would like to express my gratitude to both the Australian Government and RMIT University for providing me with a scholarship and generous financial assistance to attend several conferences and to write up this thesis without any problems. I am also grateful for the 317 survey respondents and 8 interviewees who have positively supported me to undertake and complete this thesis.

I would like to thank most sincere friends Byungchol Choi, Inbalk Kim, Kangjin Lee, Bumsik Ahn, Wonsun Eo and Haorianto Tjioe for their kind encouragement and frank support. They should all know that they have contributed to my emotional strength in pursuing this challenging journey. Furthermore, I am grateful to the other doctorial students Ming Hock Yew, Yong Wee Sek, Andrew Linden, George Marano, Bac Nguyen, Nergiz Ilhan, Binh Pham, Brian Nguyen and Ho Thi Phuong Dung for their sense of humour and for sharing in both my academic and personal life which has made my PhD journey more joyful and enabled me to be more grounded. I was happy to study with this friendly and cheerful group of colleagues.

It cannot be expressed in words, but I would like to extend my earnest gratitude and feeling to my all family: Insik Yang (father), Jungja Seo (mother), Seungho Yang (brother), Jiyeon Yang (sister), Sunghwan Cho (brother-in-law), Yoonjin Cho (niece), Kangyoun Cho (nephew), Yoomin Yang (nephew) and Juntae Han (cousin) as well as Sungtae Hur (parent-in-law), Insoon Baik (mother-in-law), Yeonwook Hur (sister-in-law) and Sangho Hur (brother-in-law). This doctoral research journey would not have been successfully completed without their solid love, support and encouragement.

Last but by no means least, I must thank my wonderful and very patient wife Yonhee, whose support for me, not only in this venture but throughout out married life, has been nothing short of incredible. Yonhee's belief in me as well as her encouragement and sacrifices throughout the journey have been most inspiring. I am also grateful to my son Matthew Taemin, who is a precious gift of mine, providing me with unspeakable joy in my life and who has been a pleasurable distraction from PhD work. Therefore, I should say that this thesis is dedicated to my wife and son.

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LIST OF ABBREVIATIONS

AMOS	Analysis of Moment Structures
ANOVA	Analysis of Variance
APMEV	Active Partnership between Members of the organisation and External Vendors
APS	Advanced Planning and Scheduling
ARS	Adequate Resources for SISP
AVE	Average Variance Extracted
BITSA	Business-IT Strategic Alignment
BTOS	Bartlett's Test Of Sphericity
CEO	Chief Executive Officer
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CFO	Chief Financial Officer
CIO	Chief Information Officer
CMIN	Chi-square
CR	Construct Reliability
CRM	Customer Relationship Management
D2	Mahalanobis distance
DF	Degrees of Freedom
ECKS	Effective Communication and Knowledge Sharing
EFA	Exploratory Factor Analysis
EIP	Enterprise Information Portal
EM	Expectation Maximisation

ERP	Enterprise Resource Planning
GOF	Goodness Of Fitness
HR	Human Resource
ICT	Information and Communication Technologies
IEE	Impact of the Internal and External Environment
IFI	Incremental Fit Indices
IS	Information Systems
IScom	IS competencies
ISPE	IS Planning Effectiveness
IT	Information Technology
ITIF	IT Infrastructure Flexibility
KIEC	Korea Institute for Electronic Commerce
KMOMSA	Kaiser-Meyer-Olkin Measure of Sampling Adequacy
KMS	Knowledge Management System
KORCHAMBIZ	The Korea Chamber of Commerce and Industry
MAR	Missing At Random
MCAR	Missing Completely At Random
MDM	Master Data Management
MI	Modification Indices
ML	Maximum Likelihood
NFI	Normed Fit Index
NIA	National Information Society Agency
NIPA	National IT Industry Promotion Agency
OL	Organisational Learning
Orcap	Organisational Capabilities

PCA	Principal Component Analysis
PCFI	Parsimony Comparative Fit Index
PLMS	Product Lifecycle Management System
PNFI	Parsimony Normed Fit Index
RMSEA	Root Mean Square Error of Approximation
RMSR	Root Mean Square Residual
SCM	Supply Change Management
SEM	Structural Equation Modelling
SFL	Standardised Factor Loadings
SISP	Strategic Information Systems Planning
SMC	Squared Multiple Correlations
SMEs	Small and Medium Enterprises
SPSS	Statistical Package for the Social Sciences
SRMR	Standardised Root Mean Residual
TLI	Tucker-Lewis Index
TMPS	Top Management Participation and Support
WMS	Wealth Management System

LIST OF PUBLICATIONS

1. Yang, J., Singh, M., Pita, Z., and Storey, I. (2015) 'The Relationship Between Strategic Information Systems Planning Facilitators and the Success of South Korean Organisations,' 19th Pacific Asia Conference on Information Systems, Singapore, Singapore, 5–9 July, 2015.
2. Yang, J., Pita, Z., and Singh, M. (2014) 'Measurement of Determinants for Enhancing Strategic Information Systems Planning (SISP) Success and Dynamic Capabilities in South Korea', 25th Australian Conference on Information Systems, Auckland, New Zealand, 8–10 December, 2014.
3. Yang, J., and Pita, Z. (2014), 'Research Instrument for the Measurement of Enablers for Enhancing SISP Success and Dynamic Capability,' 18th Pacific Asia Conference on Information Systems (PACIS), Chengdu, China, June 24–26, China.
4. Yang, J., Pita, Z., and Singh, M. (2013) 'A Conceptual Framework for Assessing Strategic Information Systems Planning (SISP) Success in the Current Dynamic Environments', 24th Australian Conference on Information Systems, Melbourne, Australia, 4–6 December, 2013.
5. Yang, J., Pita, Z., and Singh, M. (2013) 'Key drivers for measuring success of strategic information systems planning', 21st International Business Information Management (IBIMA) Conference, Vienna, Jun 26–28, 2013.

CHAPTER 1 Introduction

1.1. Overview

This dissertation reports on a study concerned with exploring antecedents of Strategic Information Systems Planning (SISP), successful outcomes of SISP and the organisational impact of successful SISP in privately owned large South Korean organisations.

This chapter comprises a brief research background and motivation for the research, research objectives, research questions, and the contribution and the significance of the research, followed by an outline of the thesis structure.

1.2. Research Background and Motivation

The current business environment is comprised of customers, stakeholders, the public and all of the external forces influencing business within organisations, including social, economic, political, technological and environmental considerations as well as the market and competition-related factors (Rainey, 2010). Most organisations are also transforming into increasingly sophisticated and integrated business organisations, which are more competitive, flexible (or agile), cost-effective, performance-oriented, profitable and sustainable (Grant et al., 2010; Verity, 2012). Therefore, current organisations, markets and economics exist within a fast-changing and dynamic world (Grant et al., 2010; Rainey, 2010; Verity, 2012).

In today's rapidly changing and highly dynamic business environments, Information System (IS) and Information Technology (IT) driven business practices have become essential factors for organisations' improvement and survival, and at the same time for achieving improved competitive advantage and organisational performance (O'Brien and Marakas, 2009; Wallace, 2013; Ward and Peppard, 2002). The increased level of dependence and utilisation of IS/IT is expanding to allow and implement new patterns of interaction in the organisation, such as strategic alliances, partnerships, outsourcing and virtualisation by providing more adaptive, flexible, collaborative and information-intensive business processes and structures (Bechor et al., 2010; Rondeau et al., 2010). For example, globalisation (Grant et al., 2010; Lutchman, 2012; Rajapaksha and Singh, 2009) and e-business (Bai and Lee, 2003; Daniel and Wilson, 2003; Raymond and Bergeron, 2008) are important factors, which enable organisations to become more reliant on IT for their business management, innovation and success.

IS/IT enables organisations to facilitate digitalisation of their processes and products (Lutchman, 2012; McAfee and Brynjolfsson, 2008; Zwass, 2003), to support effective business processes and to help global communication and interaction between business elements and resources (Gottschalk, 2007; Lientz, 2010). Many organisations have thus continued to invest a considerable amount of financial and human resources into IS/IT-related projects (McNurlin et al., 2009; Wallace, 2013).

Since IS/IT is an important tool for all types of business management and operations, and there is a considerable amount of investment in IT implementation, the need for SISP is of vital importance to the context of organisations for promoting a creative partnership with business and IT professionals (McNurlin et al., 2009) and also for attaining organisational success with IT (Cassidy, 2006; Wallace, 2013). Hence, SISP enables organisations to adjust and combine business and IT objectives and strategies to meet their business requirements, and to overcome their business challenges and issues (Lientz, 2010; Yeh et al., 2011; Zwass, 2009).

SISP is important for helping organisations to establish and provide a road map that realises the anticipated benefits from their IT investments (Lientz, 2010). This is because SISP mainly involves decision-making about business and IT investment, objectives and plans (Otim et al., 2009). With optimisation of the investment and the creation of the required IS/IT capability based on SISP, organisations are able to attain competitive advantage (Cassidy, 2006; Grover and Segars, 2005; Wallace, 2013) and improved organisational performance (Bechor et al., 2010; Lientz, 2010; Otim et al., 2009).

However, undertaking SISP suitable for the organisation's goals and strategies is not easy. There are also no universal approaches or methodologies to undertake it in the best possible way (McNurlin et al., 2009; Palanisamy, 2005). This is due to every organisation having a different culture, business directions, objectives and strategies that they pursue (Lee and Hsu, 2009; Ward and Peppard, 2002). These economic, environmental and organisational contexts and features also differ from each other (McNurlin et al., 2009).

Improper SISP might cause the repetitive IS/IT implementation, which is likely to be inflexible and incompatible (Lientz, 2010; Yeh et al., 2011), and it might have a negative effect on the expected benefits of IT investment (Pai, 2006; Zwass, 2009). Therefore, although many organisations have recognised the importance of SISP in the past decade, “they have developed IS strategies that have been left to gather dust” or have been implemented in “a half-hearted manner” (Ward and Peppard, 2002, pp. 125-126). Some studies have also suggested that it is still not sufficient for SISP theories and methods to fully support the capabilities (Choi and Bae, 2007), competencies (Bhatt, 2009) and flexibility of organisations (Palanisamy, 2005; Tallon, 2009; Yeh et al., 2011). Moreover, the theories and methods for SISP do not systematically support sophisticated strategic planning in the current digital and global business environment, which consists of large integrated systems (Lee and Bai, 2003), and e-business and mobile business (Grant et al., 2010).

Unless successfully planned, the IT implementation of the organisation might face the risk of increased costs as well as the organisation’s overall benefits and performance being decreased. Therefore, if organisations are to become more flexible, innovative and systematic with the strategic implementation and use of IT, it is essential that they should not underestimate the importance of identifying environmental, managerial and organisational factors that have a positive effect on successful SISP (Piccoli and Ives, 2005; Reich and Benbasat, 2000; Zwass, 2009). This indicates that organisations need to take multiple perspectives for planning based on the attention of their cultures and interactions as well as taking into account political, structural and technological factors (Bai and Lee, 2003; Bechor et al., 2010; Lientz, 2010; King, 2009; Wallace, 2013).

Consequently, organisations need to consider possible ‘antecedents’ as factors leading to successful SISP. Considering antecedents of SISP enables organisations to achieve business goals and strategies (McNurlin et al., 2009; Reich and Benbasat, 2000), and to enhance sustainable organisational performance (Bechor et al., 2010; Lientz, 2010; Newkirk et al., 2009) and a competitive advantage (Bhatt, 2009; Zwass, 2009; Yeh et al., 2011) as an organisational impact of SISP success. However, earlier studies on SISP have not generally examined the extent of impact which antecedents play on organisations' successful outcomes of SISP and to observe how much SISP success is associated with realising better impact.

Most of the past studies have focused on either the business perspective or the IS/IT perspective, but not on both perspectives, although there are various levels of business and IS/IT professionals from the organisation who are generally involved in SISP ([CIO or IS/IT perspective: Bai and Lee, 2003; Basu et al., 2002; Bechor et al., 2010; Chi et al., 2005; Hartono et al., 2003; Lee and Bai, 2003; Newkirk et al., 2008; Philip, 2007; Stemberger et al., 2011] and [CEO or business perspective: Duhan, 2007; Philip, 2007; Rondeau et al., 2010]). Therefore, it is worthwhile to compare and observe the relationship between antecedents for successful SISP and the impact of SISP success with both business and IT sectors, as leading insights might be different from one manager to another in an organisation, or one industry sector to another.

Further, most of these studies on SISP are from organisations in developed countries, such as North America (Bechor et al., 2010; Newkirk et al., 2008; Ravichandran and Liu, 2011) and Western Europe (Duhan, 2007; Gottschalk, 1999a, b; Schwarz et al., 2010). Few studies to date have addressed antecedents for SISP success and the impact obtained from successful outcomes of SISP, and especially not in developing countries, such as South Korea.

Domestically and internationally, South Korea has been considered as one of the main countries, leading an information and knowledge-based society with strong leadership in information and communication technologies (ICT) and e-business (Hong and Hwang, 2011; National Information Society Agency (NIA), 2013). This encompasses digital economy rankings (13^{th} out of 70 countries) from EIU (2010); the networked readiness index (10^{th} out of 148 countries) from WEF (2014); e-governance development rankings (1^{st} out of 190 countries) from the UN (2012); and the world e-government leaders (1^{st} out of the top 25 countries) from the UN (2014).

Despite the high diffusion of IS/IT, only about 50% of South Korean large organisations have formally conducted SISP and the rest have implemented their IS/IT system without strategic and systematic planning (NIA, 2013). However, to date, SISP studies in the South Korean context (a leader in Information Technology adoption and utilisation) is sparse. Thus, this study addresses the research gaps by empirically examining antecedents vital for successful SISP and analysing the relationship between antecedents and the impact of SISP success in a developing country, with a particular focus on organisations in South Korea.

1.3. Research Objectives

This study had the following objectives.

1) To investigate essential antecedents that encourage South Korean organisations to achieve successful SISP;
2) To examine the impact realised from SISP success in South Korean organisations;

3) To analyse the relationship between antecedents of SISP and the impact of SISP success in South Korean organisations; and
4) To examine and compare business and IT sector perspectives on the importance of antecedents and the relationship between antecedents and impact of SISP success in South Korean organisations.

Now that the background and motivation with the objectives for this study have been outlined, the next section addresses the research questions used to achieve the objectives.

1.4. Research Questions

The primary research question addressed by this study was:

- **What is the relationship between antecedents of SISP on SISP success, and what is the impact of SISP success on South Korean organisations?**

To support the primary question, several secondary questions were proposed in relation to each objective:

- *What SISP success factors as antecedents need to be considered to undertake successful SISP in South Korean organisations?*
- *How are the successful outcomes of SISP achieved by considering the antecedents measured in South Korean organisations?*
- *What is the impact of SISP success, and how is it measured in South Korean organisations?*

- *How do the perspectives on the relationship between antecedents essential for successful SISP and the impact of SISP success differ between the business and IT sectors within South Korean organisations?*

The next section introduces the contribution and significance to the body of knowledge of this study.

1.5. Contribution and Significance of the Study

This study provides a theoretical understanding of the nature and extent of various antecedents essential for successful SISP. It provides an analysis of the relationship between antecedents for successful SISP and the impact of SISP success. Moreover, this study will practically support organisations to undertake SISP more effectively by providing information on the antecedents contributing to achieving long-term goals and strategies as well as understanding relationships.

The findings of this study will enable both academics and practitioners to deepen and expand the body of knowledge about the importance of an extensive consideration of antecedents for SISP and the relationship between antecedents and the impact for SISP success. Furthermore, the results of this study will be used both in theoretical and practical applications by central and sampled organisations in South Korea and in other countries. Thus, this study will be relevant to academic researchers, research students and practitioners as well as top management (i.e., Chief Executive Officer [CEO], Chief Information Officer [CIO], Chief Financial Officer [CFO] and so on), business and IT managers, and numerous professional consultants. The next section addresses the outline of the research to explain how this research has been composed.

1.6. Outline of the Research

Before providing a more detailed review and explanation of the research chapters, a blueprint of this study is provided to assist and guide the reader in following how the study has been created and planned.

Chapter Two presents a review of the literature to provide background information on SISP. The chapter also identifies success factors essential for organisations to undertake SISP, the successful outcomes of SISP and the impact of SISP success.

Chapter Three presents the research design. The chapter outlines the research paradigm, methodology, and method utilised in the empirical research to justify the purposes of the study to answer the developed research questions and to test the hypothesis. It also provides the primary context, sampling, data collection technique and analysis method for the mixed methods approach in order to perform this study.

Chapter Four presents the findings and results of the qualitative interview performed from the eight interviewees in South Korean large organisations. The chapter examines the overall process of selecting organisations and interviewees, profiles of the chosen organisations and interviewees, data collection and the data analysis method. This chapter also confirms variables identified in the literature review and proposes the conceptual model of the survey that was undertaken, based on the literature review and the interview results, in order for the relationship between antecedents and the impact of SISP success to be tested.

Chapters Five and Six address the questionnaire survey undertaken from the top 1,000 large organisations in South Korea to confirm the conceptual model, to answer the research questions, and to test hypotheses derived from Chapter Four.

Chapter Seven offers an extensive discussion of the core findings of the study, reporting on the results of the analysis and interpretation of the semi-structured interview findings and the survey findings in the context of the literature.

Chapter Eight, the final part of the study, first summarises the analysis of the interview and the survey data presented in earlier chapters. An overall evaluation of the study and its implications is discussed, the limitations of this study are discussed and future research is suggested.

1.7. Conclusion

This chapter outlines the research background in which this PhD study is situated, and it discusses the research rationale. This chapter addresses how the study has focused on examining essential antecedents for achieving successful SISP and analysing the relationship between antecedents and the impact of SISP success. This chapter also introduces the content of this thesis.

CHAPTER 2 Literature Review

2.1. Introduction

In the current world, IS/IT has encouraged organisations to build effective strategies and transform into more integrated, sophisticated and sustainable business enterprises (Bechor et al., 2010; Rainey, 2010; Rondeau et al., 2010). As IS/IT is increasingly incorporated into all aspects of business operations, undertaking strategic information systems planning (SISP) has become the focus of much attention in the past few years (Luftman and Derksen, 2012; McNurlin et al., 2009; Ravichandran and Liu, 2011).

South Korea is no exception to a global trend that has seen a rapid introduction of IT systems and SISP. South Korea is currently one of the main, and most advanced, IS/IT countries in information and communication technologies (ICT), e-business and e-governance (NIA, 2013). Since the mid-1990s, a number of organisations quickly shifted toward e-business to create quality products and services by innovating organisational business processes. The overall level of IS/IT systems usage in South Korean organisations is fairly high and has a significant impact on business performance globally (Hong and Hwang, 2011; NIA, 2013). During the last decade, SISP has primarily been adopted in large organisations, prior to IS/IT implementation, to realise business potential and to make an early and effective return on investment (ROI) (Cho and Cho, 2005; NIA, 2008).

Despite the high diffusion rate of advanced IS/IT systems in organisations, the IT implementation through SISP is not still high (KIEC, 2009). Therefore the IT utilisation level of most organisations does not reach the level of creating business impact and opportunities (NIPA, 2012). Existing South Korean researchers attempt to address this issue primarily from the absence of effective strategic planning (KIEC, 2009; NIPA, 2012) and poor consideration of various factors essential for SISP success (Kim et al., 2005b). Few studies, however, have empirically investigated how much SISP factors affect a successful outcome of SISP and how much SISP success influences the impact as the consequences of SISP success in the South Korean context.

The main objective of this chapter is to identify the research gaps in relation to the following: what are the antecedents for SISP's successful outcome and the impact of SISP success in South Korean organisations that justifies the need for conducting this study through reviewing the related literature. In order to attain this objective, the rest of the chapter is organised as follows. Section 2.2 addresses an overview of IS/IT and SISP in South Korean organisations. Section 2.3 reviews background information on SISP to discuss SISP success factors. Section 2.4 provides a comprehensive overview of SISP success factors followed by the discussion of the successful outcomes of SISP in Section 2.5. Section 2.6 investigates the impact of SISP success that emerges as a consequence of the successful outcomes of SISP. Section 2.7 proposes a research model based on the literature review, followed by the proposal of several prominent theories available for enhancing the investigation of the relationship between antecedents and the impact of SISP success in Section 2.8. Section 2.9 draws a conclusion for this chapter.

2.2. Overview of IT and SISP in South Korean Organisations

According to Hong and Hwang (2011), Kim and Lee (2010) and the National Information Society Agency (NIA) (2013), both private and public industries in South Korea have achieved and increased their operational capabilities and organisational performance by adapting highly advanced global IS/IT systems and mobile facilities. Furthermore, white papers from the South Korean national information society agency (NIA, 2010, 2013) and academic studies (Cho et al, 2007; Kim et al., 2006) show that with the progress of IS/IT systems and the availability of Internet access since the mid-1990s, a number of organisations have quickly shifted toward e-business. This has enabled the organisations to create and provide quality products and services by innovating organisational business processes. Therefore, the overall level of IS/IT systems usage in South Korean organisations is fairly high and has a significant impact on business performance globally (Hong and Hwang, 2011; NIA, 2013).

During the last decade, SISP has primarily been adopted in large organisations, prior to IT implementation, to realise business potential and to make an early and effective return on investment (ROI) (Cho and Cho, 2005; NIA, 2008). The organisations have benefitted from the SISP's effectiveness. Evidence of this effectiveness can be ssen in the organisations' improved key business processes, success in achieving organisational objectives and strategies, and setting up of IS/IT investment priority planning. The NIA[1] (2008) also indicated that the diffusion rate of SISP in organisations has gradually been increasing every year. However, despite the high utilisation of IS/IT and mounting

[1] The NIA has defined SISP as the process of building and identifying an information technology procedure or system for satisfying business requirements by aligning, integrating and controlling overall information strategies and plans necessary for business operation based on mid and long-term business strategies and plans. The NIA's survey has transferred the control of the KIEC since 2009 with the same definition. For the analysis and evaluation for SISP in organisations, KIEC introduced and utilised a number of variables, such as acceptingness, environment, governance, leadership, process, resources and performance.

interest in SISP, the diffusion level of SISP is still not very high. In 2009, the Korea Institute for Electronic Commerce (KIEC) announced a report titled ‘e-business and IT use survey of Korean companies’. Details are shown in Table 2.1. The institute reported that 48.9% of large organisations that have more than 1,000 employees have formally conducted SISP, and the rate of SISP undertaking in the rest of the organisations was not high. Among the organisations undertaking SISP, 57.2% of the organisations commonly review their SISP every two years, 26.8% of organisations conduct the review every year and 16% of them undertake the review every three years.

Table 2.1. SISP undertaking classified by the number of employees

No. of employees	10–49	50–249	250–999	Over 1,000
SISP undertaking (%)	3.0 %	10.0 %	24.8 %	48.9 %

Source: KIEC, 2009, p. 84

This indicates that overall numbers of organisations that undertake and review SISP to deal with the rapidly changing internal and external conditions of the organisation are still not high. Further, regardless of size, most South Korean organisations still do not have much interest in SISP and do not have a proper understanding of the importance of SISP review. Hence, KIEC (2009) has suggested that organisations need to first build a strategic planning for adequately aligning their business and IT goals and their strategies to maximise organisational impacts effectively.

According to the IT use index[2] of the National IT Industry Promotion Agency (NIPA)[3]

[2] The IT use index is defined as an indexation of capability and level for effective IS/IT application and management in organisations to create values and to promote business performance, customer value chains and collaboration. The IT utilisation levels are classified with four process areas, which are alignment and integration of only IT functions or processes in the organisation, that of internal business-IT processes in the organisations, that of intra- and inter-organisational business-IT processes, and attainment of strategic management and creating new business opportunities. This survey was conducted with its target of more than 5,500 organisations, which have 10 or more employees across the industries. The survey results of approximately 2,500 organisations were collected and analysed.

(2012), the IT utilisation level of most large Korean organisations still remains in the stage of the alignment and integration between intra- and inter-organisation processes as shown in Table 2.2.

Table 2.2. IT utilisation level in South Korean organisations

The level of IT use (%)	Organisations less than 500 employees			Organisations more than 500 employees		
	2010	2011	2012	2010	2011	2012
Alignment and integration of only IT functions and processes	46.6	55.0	50.4	72.9	79.1	80.6
Alignment and integration of internal business and IT processes	35.0	41.5	43.6	68.4	73.8	78.7
Alignment and integration of intra- and inter-organisational business and IT processes	30.8	29.7	25.5	53.6	58.8	57.5
Attainment of strategic management and creating new business opportunities	17.4	24.3	18.2	41.5	44.9	51.0

Source: NIPA, 2012

The above table indicates that most South Korean organisations still do not reach the level of strategic management and creating new business opportunities through the IT implementation and use. The NIPA diagnosed the reason as the absence of strategic and systematic planning for implementing and using their IT systems. Therefore, the agency suggested that organisations need to undertake effective planning proper for their characteristics, scale and IT level to improve the impact of IT implementation in today's increasingly competitive changing business and IT environment (NIPA, 2012).

Despite the necessity and impact of SISP in organisations, there have been few studies on SISP in South Korea that examine what factors need to be considered to undertake successful SISP to maximise the impact for implementing and utilising IT systems in

[3] The name of KIEC was changed to NIPA in 2010.

a strategic way. Some Korean authors (Kim et al., 2005b; Oh et al., 2000) have pointed out that most organisations have recently been successful in the effective management of information, processes and resources through SISP, and in the creation of impacts and value through IT system. However, a number of organisations have paid little attention to identifying various factors important for SISP, and understanding the consequences of SISP success (Kim et al., 2005b). There have been several studies that discuss a specific factor(s) that become an issue or challenge for achieving SISP success as presented in Table 2.3. It has also been argued by some South Korean authors (Choi and Bae, 2007; Kim et al., 2003) that the current SISP in South Korean organisations is still lacking in the capability and flexibility to systematically support and sustain sophisticated strategic planning.

Table 2.3. The issues for a successful SISP in South Korean organisations

Year	Author(s)	Issue(s) and challenge(s) of SISP
1999	Min S. K., Suh, E. H., and Kim, S. Y.	• Lack of top management concern and support • Inadequate performing process reengineering • Poorly developed enterprise architecture
2002	Jang, K. I., Yun, Y. S., Ryu, M. H., Hong, S. W., and Noh, T. H.	• Deficient mutual communication and consensus between business and IT sectors • Inadequate interest in and understanding of SISP
2003	Son, S. H., and Lee, S.	• Insufficient consideration of internal and external environmental factors of the organisation
2005a	Kim, S. K., Koo, J. H., and Lee, J. S.	• Poorly developed enterprise architecture
2005b	Kim, Y., Lee, S., and Kim, W.	• Lack of capability to undertake a proper SISP in organisations • Insufficient allocation of resources for SISP

The above table indicates that an insufficient consideration of various factors essential for successful SISP prevents organisations from obtaining the capability and flexibility to systematically support strategic planning and, as a result, to realise better organisational impact and opportunities through successful IT implementation. Hence, it is important for organisations to understand the importance of considering various antecedents to undertake SISP successfully and to maximise the impact of SISP success as well as to minimise potential issues. The next section provides an overview of SISP.

2.3. Strategic Information Systems Planning (SISP)

Strategic Information Systems Planning (SISP) is the process of identifying a selection of Information Systems/Information Technology (IS/IT) applications, including hardware, software, databases and computer networks to support organisations in determining their business goals and plans, and achieving a competitive advantage from IS investments (Lederer and Sethi, 1988). Earl (1993) defines SISP as an activity of aligning investment in IS/IT with business objectives for efficient and effective management of IS resources, and developing technology policies and architectures to exploit IS for a competitive advantage. Doherty et al. (1999) refer to SISP as the planning process of prioritising and selecting hardware and software applications, so that IS strategy is aligned to corporate strategy as well as having the ability to create a competitive advantage from its IT investment. The definition of SISP offered by Segar and Grover (1999), however, indicates that SISP is a complicated set of organisational activities that require a step-by-step planning method for achieving the organisational strategic objectives regarding an organisation's IT investment. According to Bechor et al. (2010), SISP is the process of strategic thinking that classifies and selects the most appropriate IS/IT for the organisation so that the organisation can achieve business objectives and strategies as well as strengthen the long-term IS activities and policies of the organisations. Hovelja et al. (2010) also suggest that SISP is a continuous learning process that comprises the alignment of IS implementation activities with business activities to ensure strategic use of IS in the organisation to gain sustainable business success from IS investments.

There are four primary objectives of SISP implied by the definitions discussed above. These are:

(1) Classifying and selecting the most appropriate IS/IT for the organisation (Earl, 1993; Lederer and Sethi, 1988);

(2) Aligning IS plans and strategies with the organisation's business plans and strategies (Doherty et al., 1999; Earl, 1993);

(3) Achieving business goals and strategies from IT investment (Bechor et al., 2010; Segars and Grover, 1999); and

(4) Realising a competitive advantage from the IS/IT investment (Earl, 1993; Lederer and Sethi, 1988; Segar and Grover, 1999).

The above discussion indicates that SISP enables organisations to achieve a competitive advantage by strategically aligning IS/IT to business. Thus, SISP in the context of this research is defined as the planning process for selecting and implementing IS/IT in the organisations for the achievement of strategic alignment of IS/IT goals with business goals and sustaining a competitive advantage from the IT investment.

In different contexts, SISP is also referred to as Management Information Systems Planning (MISP) (Bowman et al., 1983), Information Systems Strategic Planning (ISSP) (Bai and Lee, 2003; King, 2000; Yeh et al., 2011) and Strategic Planning for Information Systems (SPIS) (Ward and Peppard, 2002). Thus, these terms are used interchangeably to explain SISP activities within the literature.

Salmela et al. (2000) observe that SISP is characterised by comprehensive planning as well as incremental planning. Comprehensive planning refers to planning which organisations attempt with organisation-wide strategic decisions based on the integration of key IS and business decisions into comprehensive IS plans. Comprehensive planning focuses more on engaging strategically with various groups of stakeholders, including top management, business and IT managers, and people from diverse organisational units (Earl, 1993; Galliers et al., 1994). Formal and multiple layers of analyses for environmental trends and risks both inside and outside of the organisation are used to develop plans (Salmela et al., 2000), which are complicated and integrated with overall business strategy (Newkirk et al., 2003). Thus, comprehensive planning enables organisations to address complicated business and IT processes, and structures with a high diffusion and use of IS/IT (Salmela and Spil, 2002).

On the other hand, incremental planning refers to the kind of planning where organisations attempt to make decisions on a one-by-one basis, focusing on one or more IS and business issues at a time (Earl, 1993; Salmela et al., 2000). Incremental planning typically keeps the planning team small where planning is based more on an informal contact and network of a few key individuals such as top management, and business and IT managers (Earl, 1993; Pyburn, 1983), whose personal experiences and judgements inform the planning process (Sambarmuthy et al., 1994). Incremental planning is loosely integrated with an overall strategy although it is more flexible and simple than the comprehensive approach (Mohdzain and Ward, 2007). Incremental planning is more appropriate for organisations that have simple business and IT processes, whose structures comprise a smaller number of employees and departments and where there is a comparatively low diffusion and utilisation of IS/IT (Salmela and Spil, 2002).

Although there are comprehensive and incremental SISP planning approaches, none of these is accepted as the standard approach, and neither is universally regarded as more successful than the other (McNurlin et al., 2009; Ward and Peppard, 2002). Therefore, organisations utilise the approach that is more effective and worthwhile to maximise the benefits of IS/IT in the organisation (Cassidy, 2006) for overall planning success (Philip, 2007). SISP seeks to justify IT investment and its impact on organisations to realise technology investment success (Piccoli, 2008; Ward and Peppard, 2002). Further, SISP aims to produce benefits that exceed IT investment costs and contributes positively to achieving improved organisational performance and competitive advantage (Drnevich and Croson, 2013; Segars and Grover, 1998; Tallon and Pinsonneault, 2011). SISP helps organisations achieve a competitive advantage and management efficiencies by assisting organisations manage and control resources (Salmela and Spil, 2002). Accordingly, SISP enables organisations to focus on achieving business benefits from IT investments.

Numerous studies agree that SISP is one of the most important IT management activities (Bechor et al., 2010; Earl, 1993; Gottschalk, 2001; Grover and Segars, 2005; Kearns, 2006; Teo, 2009; Teo and Ang, 2000; Peppard and Ward, 2016), undertaken with a clear understanding of business strategy and an overall sense of direction with respect to what the organisation is trying to achieve from its IT resources (Bhattacharjya and Venable, 2006; Peppard and Ward, 2016; Piccoli, 2008). Thus, SISP has continuously been identified as and remained among one of the top issues facing senior executives over the past twenty years (Brancheau et al., 1996; Kappelman et al., 2013, 2014; Luftman and Derksen, 2012; Luftman et al., 2006, 2009). The next section outlines important factors that lead to successful SISP in organisations.

2.4. SISP Success Factors

SISP is a planning process, which requires the involvement of various stakeholders (Earl, 1993; Piccoli, 2008) and a consideration of infrastructure (McNurlin et al., 2009), environmental trends and risks both inside and outside of the organisation (Newkirk et al., 2008 Salmela et al., 2000). If SISP is to be successfully conducted, various factors that are essential for SISP in the context of organisational IT need to be considered in order to realise the anticipated benefits from IT investments (Bechor et al., 2010; Wallace, 2013). SISP is therefore a multifaceted activity involving the analysis of both internal and external environments, a broad range of managerial, system and technological components and how all of these components impact on the organisation (Arora and Rahman, 2016; Bechor et al., 2010; Premkumar and King, 1992). There are important factors that underpin SISP success (Cassidy, 2006; Gottschalk, 1999a; Ward and Peppard, 2002). The following sections discuss factors for SISP success.

2.4.1. Top management participation and support

Top management participation and support refer to the degree to which chief executive officers (CEOs), chief financial officers (CFOs) or chief technology officers (CTOs), of an organisation are interested in, participate in, and support SISP and other IS-related efforts (Raghunathan and Raghunathan, 1988; Ragu-Nathan et al., 2004; Stemberger et al., 2011). Top management participation and support is required for SISP to secure funding and to provide strategic direction (Kearns, 2006; Lederer and Sethi, 1992), as well as to help the whole SISP effort to ensure achievement of business goals in the organisation (Basu et al., 2002; Khan et al., 2013; Teo et al., 1997). If top management supports the planning process, the business goals of the organisation and subsequent changes are reflected in IS plan, which makes the strategic IS planning more useful (Hann and Weber, 1996; Kearns, 2006). Thus, with top management participation and support, business and corporate objectives in the organisation are more likely to have a greater focus on IS planning for greater effectiveness (Brown, 2004; Byrd et al., 1995; Elbanna, 2013; Khan et al., 2013).

The impact of top management participation and support for SISP success has been investigated in SISP theory, which was initiated by Lederer and Salmela (1996) and extended by Brown (2004). Further, a number of authors (Doherty et al., 1999; Hann and Weber, 1996; Ragu-Nathan et al., 2004) have developed a comprehensive model of SISP for hypothesising the direct effects of top management support on SISP success derived largely from the SISP theory. In SISP theory, the role of top management participation and support is viewed as one of the primary inputs needed to ensure that appropriate level of investments are made in the SISP process in terms of information, people, time and money (Lederer and Salmela, 1996; Ragu-Nathan et al., 2004). Top management is focused on business goals for which SISP is needed (Brown, 2004; Hann and Weber, 1996; Philip, 2009).

Teo and Ang (2001) classify three phases of SISP, including the launching phase, the plan development phase and the implementation phase to examine the variables causing IS planning problems over the three phases. According to their result, failure to seek top management participation and support causes the most serious problems associated with SISP effort in all three phases (Kearns, 2006; Teo and Ang, 2001). Without top management participation and support, there is risk of a continuous business and IT gap within the organisation (Stemberger et al., 2011); thus, as a result, the SISP can develop issues in the analysis, design and development of the selected IT system (Salmela et al., 2000) and restricted return on IT investment (Oh and Pinsonneault, 2007). For such reasons, many authors (Basu et al., 2002; Elbanna, 2013; Kearns, 2006; Teo and Ang, 2001) have suggested that to avoid these problems, top management participation and support is an important SISP success factor.

Top management provides feedback and guidance (Hochstein et al., 2005; Iden and Eikebrokk, 2015) and regular updates (Hovelja et al., 2010) to members involved in SISP, based on the managerial perspectives of business opportunities and IT assets required for business success (Byrd et al., 2006; Kearns, 2006; Teo and King, 1997; Stemberger et al., 2011). The participation and support of top management in SISP facilitates awareness to all managers and employees of the importance of SISP, thus making SISP a strategic activity in the organisation (Jitpaiboon et al., 2010; Kearns, 2006; Mirchandani and Lederer, 2014a; Raghunathan and Raghunathan, 1988).

With top management participation and support in SISP, the involvement of different departments and employees in the organisation for sharing their opinions and views on IT requirements becomes a possibility (Lee and Pai, 2003; Lin, 2006; Mirchandani and Lederer, 2014a). This encourages organisational commitment and minimises resistance from employees in the organisation (Lederer and Sethi, 1992; Mirchandani and Lederer, 2012). Better IT investment decisions (Jarvenpaa and Ives, 1991; Jitpaiboon et al., 2010; Kearns, 2006) and adequate budget and resource allocation for SISP (Arora and Rahman, 2016; Elbanna, 2013; Young and Jordan, 2008) are achieved when top management has a vested interest in greater team work as an integral component of the SISP (Mentzas, 1997; Basu et al., 2002).

Hence, top management participation and support is an important success factor for SISP (Aladwani, 2001; Basu et al., 2002; Byrd et al., 2006; Elbanna, 2013; Jitpaiboon et al., 2010; Khan et al., 2013; Kearns, 2006; Philip, 2009; Premkumar and King, 1994; Raghunathan and Raghunathan, 1988; Teo and Ang, 2001; Teo et al., 1997; Young and Jordan, 2008).

Earlier studies (Aladwani, 2001; Premkumar and King, 1992, 1994; Segars et al., 1998; Thong et al., 1996) have confirmed top management participation and support is an essential organisational variable for assessing IS planning effectiveness based on monitoring and timely feedback of planning outcomes. Other authors (Brown, 2004; Byrd et al., 1995; Hann and Weber, 1996; Kearns, 2006; Lin, 2006; Mirchandani and Lederer, 2012; Teo and King, 1997) are of the opinion that the more participation and support of top management in SISP, the better the alignment of IS strategies and business strategies from SISP that is achieved.

The discussion of the literature above indicates that top management participation improves the planning process with the IS investment focused on business objectives. The effect of top management participation and support in SISP ranges from managerial decisions to feedback and an update for the planning process. It helps adequate allocation of resources for SISP, and improves all employees' awareness of the importance of SISP and their involvement. With top management participation and support, organisations are enabled to achieve better IS planning effectiveness and business and IT alignment. Therefore, top management participation and support is a factor for SISP success.

2.4.2. Effective communication and knowledge sharing between business and IT stakeholders

During the SISP activity, the organisation's business and IT information and knowledge, such as opinions, skills and experience (Sarmento, 2005) need to be well communicated, integrated and shared between all involved in SISP (Lee, 2001; Pai, 2006; Yeh et al., 2011). SISP stakeholders and groups within the organisations have different tacit and explicit information and knowledge (Lee and Bai, 2003) as well as the information and knowledge that is typically created and sustained through communication among the stakeholders (Lientz, 2010). Communication supports information sharing (Clark et al., 2000) and knowledge sharing (Pai, 2006; Yeh et al., 2011) which is required for SISP. SISP has been recognised as the planning process that requires discussion, clarification, negotiation and mutual understanding between business and IT stakeholders in the planning activity (Lee and Pai, 2003; McNurlin et al., 2009; Piccoli, 2008).

Communication and knowledge sharing between business and IT stakeholders during SISP increases the level of collaboration (Aldehayyat, 2011; Campbell et al., 2005) and interpersonal relationships (Hatzakis et al., 2005; Yeh et al., 2011) between all participants. It helps to identify risks and opportunities (Cassidy, 2006) and reduces organisational resistance regarding the SISP task (Bhattacharjya and Venable, 2006; Lee and Bai, 2003). Further, communication enables both business and IT stakeholders to have a clear understanding of the organisation's knowledge and strategies, and the strategic role of IT (Johnson and Lederer, 2005; Luftman, 2000) as well as collective action to find out how IT can help the organisation to achieve its objectives (Pearlman and Baker, 2005; Preston and Karahanna, 2009).

However, employees from the two sectors normally find it difficult to communicate and share their knowledge due to the culture gap (Brown, 1992; Kovacic, 2004), individualism and the hierarchical structure in the organisation (Constant et al., 1994; Kovacic, 2004). Insufficient communication and knowledge sharing between the business and IT sector could diminish the impact of the organisation's social interaction and have a negative effect on potential SISP success by interrupting effective decision-making (Bassellier and Benbasat, 2004; Zhang et al., 2005). Thus, a lack of communication and knowledge sharing can result in stakeholders' serious resistance to the implementation of a strategic plan and the accompanying changes (Philip, 2009; Teo and Ang, 2001).

Communication and knowledge sharing enables organisations to achieve strategic and operational level objectives of SISP (Ramanujam and Venkatraman, 1987; Segars and Grover, 1999; Yeh et al., 2011) based on improved commitment (Aldehayyat, 2011), interaction (Lee and Bai, 2003; Premkumar and King, 1994) and partnership (Byrd et al., 2006; Teo et al., 1997) between business and IT stakeholders. It also helps achieve mutual trust and credibility of IS/IT among all planning participants (Campbell et al., 2005; Preston and Karahanna, 2009; Reponen, 1993). Communication and knowledge sharing reduces risks of uncertainty (Segars and Grover, 1999; Song, 2001; Yeh et al., 2011). Prior studies (Campbell et al., 2005; Pai, 2006; Philip, 2007, 2009; Teo et al., 1997) have suggested that the more communication and knowledge sharing between business and IT stakeholders, the better for SISP success. Hence, communication and knowledge sharing support successful SISP (Earl, 1993; Gutierrez et al., 2009; Pai, 2006; Segars and Grover, 1998).

High levels of consistency for SISP based on constant communication and frequent meetings among planning participants lead to realising IS planning effectiveness (Elbanna, 2008; Lee and Bai, 2003; Pai, 2006; Premkumar and King, 1994) because this supports a continuous assessment and revision of strategies (Aldehayyat, 2011; Segars et al., 1998) and a need to adapt quickly to unexpected changes in the internal and external organisational environment (Cassidy, 2006; Das et al., 1991). Other studies (Campbell et al., 2005; Gutierrez et al., 2009; Johnson and Lederer, 2005; Pai, 2006; Preston and Karahanna, 2009; Reich and Benbasat, 2000) suggest that effective communication and knowledge sharing between stakeholders involved in SISP has a positive effect on the alignment of IS strategies with business strategies.

The literature discussed above indicates that effective communication and knowledge sharing during the SISP process increases the level of collaboration and interrelationship between business and IT stakeholders based on their understanding and mutual trust regarding SISP. It also helps organisations to achieve strategic and operational level directions and objectives of SISP by adapting to unanticipated changes and reducing uncertainty so that improved IS planning effectiveness and business and IT alignment is realised. Hence, effective communication and knowledge sharing between business and IT stakeholders is a success factor for SISP.

2.4.3. The impact of the internal and external environment

The internal environment for SISP is made up of internal business and IT factors (Pant and Hsu, 1999; Premkumar and King, 1994; King, 2009). Internal business factors typically comprise organisational culture, size (Lederer and Salmela, 1996; Wallace, 2013) and business objectives, strategies, structures and values (Earl, 1993; McNurlin et al., 2009). Further, they include internal value chains and competencies that affect SISP in the organisation (Pant and Hsu, 1999; King, 2009). These internal factors positively affect SISP success by providing organisations with an understanding of current and future business change-related opportunities in the organisation (Hung et al., 2016; Newkirk et al., 2009; Raghunathan and Raghunathan, 1991). The means to measure and prioritise business processes, strategies and key assets (people, budget and time) (King, 2009), IT related budget and skills (Pant and Hsu, 1999; Kearns, 2007), current IT infrastructure (Lederer and Salmela, 1996), IT maturity (Earl, 1993; Lientz, 2010) and an application portfolio of existing systems (Wallace, 2013) are better assessed. An understanding of internal IT factors helps generate IS strategies that are responsive to continuous changes in the organisation (Bhattacharjya and Venable, 2006; Newkirk and Lederer, 2006; King, 2009). These internal factors support organisations to plan IS/IT according to their internal business during SISP (Earl, 1993; Kearns, 2007; Peppard and Ward, 2016). Brown (2004) argues that there is a direct and positive relationship between internal factors for SISP and successful planning outcomes of SISP.

The external environment for SISP is divided into external business factors and external IT factors (Pant and Hsu, 1999; Raghunathan and Raghunathan, 1991; King, 2009). External business factors include competitors' actions, customer preferences, government legislation and supplier trends that may affect IS-related issues (Benamati and Lederer, 2001; Chi et al., 2005; Lederer and Salmela, 1996; Xue et al., 2008). External business factors indicate the economic, industrial and competitive climate in which the organisation operates (Newkirk and Lederer, 2006; Piccoli, 2008). Furthermore, external IT factors include IT trends and technology opportunities (Pant and Hsu, 1999; King, 2009), and the utilisation of IT by customers, competitors and suppliers (Peppard and Ward, 2016). Through carefully monitoring these external factors during SISP, organisations are able to monitor the changes in external business and IT factors (Newkirk et al., 2008; Ramanujam and Venkatraman, 1987). This enables organisations to include innovation and flexibility in IS plans by their adaptation to the external environment (Salmela and Spil, 2002; Mirchandani and Lederer, 2012). The external environmental uncertainty considered during SISP also helps organisations to think through the alignment of IS strategies with business strategies (Chi et al., 2005; Kearns and Lederer, 2004; Mirchandani and Lederer, 2012; Mohdzain and Ward, 2007) by adequately evaluating their business and IT strengths and weaknesses.

However, McNurlin et al. (2009) claim that achieving SISP success by considering cultures, experiences and skills of the organisation and the external factors has become not only more important but also more difficult. It is due to most organisations adhering to a traditional management and planning framework without adequately considering various key internal and external factors and functions in the organisation (Newell and David, 2006; Roberto et al., 2006). The majority of organisations in Australia have also experienced the impact of volatile environmental changes, and there have been some cases of organisational issues (i.e., either through liquidation or takeover) caused by an insufficient adaptation and response to changing environments (Hubbard et al., 2015).

Earlier literature (King, 2009; Mirchandani and Lederer, 2012; Newkirk et al., 2008) has addressed the issue of an organisation needing to recognise the importance of both internal and external environmental factors during SISP. It is through considering these factors that organisations are better able to adequately plan present and future information demands as well as realise operational objectives and strategies (Brown, 2004; Chi et al., 2005; Newkirk et al., 2008). The consideration of internal and external environments enables organisations to achieve a successful outcome of SISP based on improved IS planning effectiveness (Kearns, 2007; Premkumar and King, 1994; Raghunathan and Raghunathan, 1991) and greater alignment of business and IT objectives and processes (Bhattacharjya and Venable, 2006; Brown, 2004; Mentzas, 1997; Mirchandani and Lederer, 2012; Newkirk and Lederer, 2006).

The above discussion suggests that as an effect of considering the internal and external business and IT environment during SISP, organisations are better able to understand business changes and opportunities to effectively measure and prioritise the business processes and key assets for adapting and responding to the environment. Another positive effect is that organisations are in a better IS planning effectiveness, and business and IT alignment. Therefore, the impact of the internal and external environment is a success factor for SISP.

2.4.4. Adequate resources for SISP

Resources needed for SISP typically include people (Goodhue et al., 1988; King and Teo, 2000; Lientz, 2010; Piccoli, 2008), financial resources (Cassidy, 2006; Harris, 1995; Lee and Hsu, 2009; Premkumar and King, 1991), IT-related resources (Lederer and Salmela, 1996; Newkirk and Lederer, 2007) and time (Papke-Shields et al., 2002; Peppard and Ward, 2016; Premkumar and King, 1992; Ramanujam and Venkatraman, 1987).

Human resources encompass the participation of top management, business managers, IT professionals and end-users (McNurlin et al., 2009; Peppard and Ward, 2016; Teo and Ang, 2001). SISP is people-based (Premkumar and King, 1991) therefore people's skills and experiences are essential for the success of SISP (King, 2009; Lee and Hsu, 2009; Sambamurthy et al., 1993). External consultants are also required for SISP (Teo and Ang, 2001) due to the insufficiency of internal capabilities in IT knowledge and skills in the organisation (Peppard and Ward, 2016). Thus, human resources focus on people-oriented concerns, such as administrative support, help-desk facilities and end-user support requirements (Mirchandani and Lederer, 2004, a, b; Lientz, 2010). Financial resources comprise project-related costs, such as selecting business staff and IT staff (Hubbard et al., 2015; Lee and Hsu, 2009; Premkumar and King, 1991) and budget for training to utilise IS/IT by users in the organisation (Rondeau et al., 2010). IT-related resources include particular information technologies, applications and software operation support, hardware, network, operating systems (Lederer and Salmela, 1996; Mirchandani and Lederer, 2004, a, b) and security (Newkirk and Lederer, 2007; Lientz, 2010). Time typically indicates length of time required for SISP (Papke-Shields et al., 2002; Peppard and Ward, 2016; Premkumar and King, 1992, 1994), which has been known to range from one to as many as five years duration (Premkumar and King, 1994).

An organisation's business plan and mission (McNurlin et al., 2009; Wallace, 2013) that determine and guide how IT is to be managed and used are regarded as essential resources for SISP (Brown, 2004; Kearns and Lederer, 2007; Lederer and Salmela, 1996; Lee and Hsu, 2009). However, the success of SISP has been hindered in budget limitation or resource allocation issues (Bhattacharjya and Venable, 2006; Cerpa and Verner, 1998; Philip, 2009; Tukana and Weber, 1996). One of the major challenges organisations face is how to allocate the required managerial time and financial resources; thus it has a negative effect on the degree of the SISP success (Chi et al., 2005; Grover and Segars, 2005; Newkirk and Lederer, 2006). This indicates that if organisations do not allocate important resources during SISP, undertaking SISP might delay or slow down the improvement of strategic planning tasks (Kim and Mauborgne, 2003; Lientz, 2010) and fail to address organisational objectives and needs (Mirchandani and Lederer, 2014b).

Adequate resources for SISP help achieve successful outcomes of SISP comprising effective business and IT planning (Batra et al., 2016; Brown, 2004; Cassidy, 2006; Gottschalk, 1999b; Mirchandani and Lederer, 2014b). If SISP is adequately resourced, this positively leads to the achievement of IS planning effectiveness (Mirchandani and Lederer, 2014b; Newkirk and Lederer, 2007; Raghunathan and Raghunathan, 1991; Ramanujam and Venkatraman, 1987). Premkumar and King (1992, 1994) also argue that adequate resources for SISP support the quality of inputs, such as the key participants: financial and IT resources in the planning, so that improves the level of IS planning effectiveness (Goodhue et al., 1998; Batra et al., 2016). Other studies (Baker et al., 2011; Huang, 2010; Kearns and Sabherwal, 2006; Newkirk and Lederer, 2007) argue that adequate resources for SISP enable organisations to better improve the alignment of business and IT goals and strategies by taking advantage of opportunities for the strategic use of IT (Premkumar and King, 1991). Brown (2004) further supports that there is a positive relationship between the allocation of resources and the level of alignment of IS objectives with business objectives.

The above literature discussion indicates that resources required for SISP are people, financial and IT resources, and time. Adequate resources for SISP helps organisations attain successful outcomes of SISP by improving the level of IS planning effectiveness and business and IT alignment. Thus, the adequate allocation of resources for SISP is a success factor for SISP.

2.4.5. Organisational learning

Organisational learning enables organisations to generate, maintain and transfer their important information and processes to members leading to an efficient execution of their tasks in the IS planning (Argote, 2005; Hovelja et al., 2010). It also helps organisations to judge the merits and risks of proposed projects and to create concrete procedures for measuring the effectiveness of the plan (Argote and Miron-Spektor, 2011; Peppard and Ward, 2016; Sharma and Yetton 2007). In the context of SISP, organisational learning is regarded as a central component and an integral part of effective SISP (Amrollahi et al., 2014; Huysman et al., 1994) especially due to uncertainty in internal and external environments (Mintzberg et al., 2005). Organisational learning has continued to be a focus in SISP studies. However, despite the importance of organisational learning in SISP, an assessment of its success based on its impact has not been addressed in the studies on SISP (Lee and Bai, 2003; Otim et al., 2009; Peppard and Ward, 2004).

Based on organisational learning, the role of knowledge and knowledge-based processes (Bhatt and Grover, 2005), information acquisition, information dissemination, shared interpretation and organisational memory, including stored experience or information (Peppard and Ward, 2016; Tippins and Sohi, 2003), are the central focus in the strategic planning process (Otim et al., 2009). It encourages increasing the organisation's problem-solving capacity and its behaviour in ways that lead to improved performance at the individual, team and organisational levels (Bhatt and Grover, 2005). Organisations with a background in organisational learning are likely to improve the likelihood of SISP success based on enhanced leadership (Audy and Lederer, 2000) and collaboration (Kang and Santhanam, 2003; Newkirk and Lederer, 2006; Sabherwal et al., 2009) of SISP participants, and understanding organisational and environmental changes and trends in the organisation (Audy and Lederer, 2000; Sabherwal et al., 2009; Newkirk et al., 2009; Otim et al., 2009). Organisational learning also facilitates information and shared vision sharing (Argote and Miron-Spektor, 2011; Peppard and Ward, 2016) by taking into account past experiences, procedures and routines associated with SISP in the organisation (Amrollahi et al., 2014; Huysman et al., 1994; Olfman and Pitsatorn, 2000; Segars and Grover, 1998). Organisational learning at the planning stages helps form an adequate understanding of changes in the external environment and the expected solutions to potential issues (Gottschalk, 1999a; Palanisamy, 2005; Otim et al., 2009). Hence, organisational learning is an important factor for successful SISP (Amrollahi et al., 2014; Audy and Lederer, 2000; Grover and Segars, 2005; Huysman et al., 1994; Reponen, 1998).

Organisational learning has a positive effect on the achievement of a successful SISP outcome that better aligns IS strategies and business strategies (Newkirk and Lederer, 2007; Newkirk et al., 2009; Segars and Grover, 1998) through the analysis of internal operations, and the adaptation of internal and external changes during SISP (Newkirk and Lederer, 2006; Sabherwal et al., 2009). It also helps in the achievement of greater levels of alignment between IS goals and business goals by assisting an organisation to learn about the business and to think in terms of how to better utilise IT to improve the effectiveness of the planning processes (Teo and King, 1997).

The discussion of the literature above indicates that organisational learning during SISP helps organisations create, share and transfer information and knowledge regarding SISP to members within the organisation. It also facilitates cooperation and leadership of SISP participants based on better understanding of environmental and organisational changes and trends. As well, it positively leads to the realisation of a better business and IT alignment for improving the effectiveness of the planning processes. Thus, organisational learning is a success factor for SISP.

According to the literature review, SISP success typically depends on various essential factors, including top management participation and support, effective communication and knowledge sharing between business and IT stakeholders, considering the impact of internal and external environment, adequate resources for SISP, and organisational learning. The factors discussed above are important for SISP success because they all positively influence the SISP outcome for IS planning effectiveness (Aladwani, 2001; Elbanna, 2008; Kearns, 2007; Mirchandani and Lederer, 2014b; Pai, 2006; Premkumar and King, 1994; Raghunathan and Raghunathan, 1991; Segars et al., 1998; Teo and King, 1997) and business and IT alignment (Brown, 2004; Campbell et al., 2005; Huang, 2010; Kearns, 2006; Mirchandani and Lederer, 2012; Newkirk et al., 2009; Preston and Karahanna, 2009; Reich and Benbasat, 2000; Sabherwal et al., 2009).

As already stated in Chapter One (see p. 4), the identified success factors for SISP are regarded as antecedents for successful outcomes of SISP. Thus, the term, antecedents, will be interchangeably used as factors that are necessary for undertaking SISP successfully in this context. In the following section, there are two dimensions required for the successful outcomes of SISP, including IS planning effectiveness and business and IT alignment, that are discussed.

2.5. Successful Outcomes of SISP

The successful outcomes of SISP are IS planning effectiveness (Aladwani, 2001; Elbanna, 2008; Kearns, 2007; Mirchandani and Lederer, 2014b; Pai, 2006; Premkumar and King, 1994; Segars et al., 1998) and business and IT alignment (Brown, 2004; Campbell et al., 2005; Mirchandani and Lederer, 2012; Newkirk and Lederer, 2007; Reich and Benbasat, 2000; Sabherwal et al., 2009).

2.5.1. IS planning effectiveness

IS planning effectiveness refers to the assessment of how well the IS planning has met the objectives of the organisation (King, 1988). Premkumar and King (1991, 1992) also consider how IS planning effectiveness is regarded as a direct measure of the fulfilment of the planning objectives at the planning level, which are the outcome of IS planning. Thus, a common way to evaluate IS planning effectiveness is to assess the level of the achievement of key objectives (Holsapple and Sena, 2005).

Assessing IS planning effectiveness requires the involvement and communication of members of each of the stakeholder groups (Rondeau et al., 2010; Wang and Chen, 2006), a consideration of the recommendations of an IS planning consultants (Wang and Chen, 2006) and of internal and external criteria including objectives of planning systems and best practice in planning (Houben et al., 1999; Papke-Shields et al., 2002, 2006) to improve quality in the evaluation of IS planning effectiveness. If the objectives are fulfilled, it is expected that this will make it possible to demonstrate the progress of the performance of IS planning and function that has been achieved, hence to improve organisational performance (Mirchandani and Lederer, 2014b). Since each organisation has different IS requirements, there are various characteristics of the organisation and its external environments that need to be considered to assess IS planning effectiveness and to improve the quality of the planning (Baker, 1995; Papke-Shields, 2002, 2006; Premkumar and King, 1994; Wang and Tai, 2003). Therefore, IS planning effectiveness is a way to measure the successful outcome of SISP according to how well a set of multiple important planning dimensions (Baker, 1995; Mirchandani and Lederer, 2014b; Raghunathan and Raghunathan, 1991; Ramanujam and Venkatraman, 1987) or characteristics (Osman et al., 2013; Segars and Grover, 1998, 2005; Silvius and Stoop, 2013) of the organisation are achieved and connected. A summary of the study on the dimensions or characteristics influencing IS planning effectiveness is presented in Table 2.4.

Table 2.4. Dimensions or characteristics affecting IS planning effectiveness

Dimensions or characteristics	Authors
The degree of internal and external environments	Aladwani (2001); Baker (1995); Grover and Segars (2005); Kearns and Lederer (2004); Raghunathan and Raghunathan (1991); Ramanujam and Venkatraman (1987); Silvius and Stoop (2013)
The extent of the use of resources	Goodhue et al. (1988); Osman et al. (2013); Papke-Shields et al. (2002, 2006); Premkumar and King (1991, 1992, 1994); Ramanujam and Venkatraman (1987)
Communication and participation between business and IT planners	Aladwani (2001); Baker (1995); Grover and Segars (2005); Kearns and Lederer (2004); Osman et al. (2013); Papke-Shields et al. (2002, 2006); Premkumar and King (1991, 1992, 1994); Ramanujam and Venkatraman (1987); Silvius and Stoop (2013)
Link/integration between business and IS planning	Premkumar and King (1992, 1994); Raghunathan and Raghunathan (1991) Ramanujam and Venkatraman (1987); Segars et al. (1998)
Time horizon of planning	Premkumar and King (1991, 1992, 1994)

Table 2.4 above indicates that dimensions for IS planning effectiveness range from the degree of internal and external environments, the extent of resources, communication and participation between business and IT members to link/integration between business and IT planning. Thus, the attainment of IS planning effectiveness in an organisation is not only about improving its ability to adapt to changing circumstances by reflecting independent planning characteristics (Otim et al., 2009; Segars et al., 1998), but also about realising its objectives by aligning business and IT planning (Papke-Shields et al., 2002, 2006).

IS planning effectiveness enables organisations to improve IT-based capabilities (Lee and Pai, 2003; Ramanujam and Venkatraman, 1987) through facilitating an organisational understanding of business and IT goals and strategies, and their related technologies (Otim et al., 2009; Wang and Tai, 2003). Further, IS planning effectiveness encourages enhancing flexibility (Baker, 1995; Papke-Shields et al., 2002, 2006; Srinivasan and

Swink, 2015) through timely feedback (Philip, 2009; Premkumar and King, 1994) as well as adapting and responding to market needs and unanticipated organisational and environmental changes (Papke-Shields et al., 2002, 2006; Raghunathan and Raghunathan, 1991; Segars and Grover, 1998).

The discussion of the literature above indicates that IS planning effectiveness is the assessment of how well IS planning has met objectives of the organisation. There are multiple planning characteristics or dimensions that need to be considered, which ranges from internal and external environments and communication and participation between business and IT people to organisational resources and time. These dimensions also need to be well aligned with each other to improve IS planning effectiveness. When the IS planning effectiveness is fulfilled, it encourages organisations to facilitate IT-based capabilities and flexibility. Therefore, IS planning effectiveness is a dimension for measuring the successful outcomes of SISP.

2.5.2. Business and IT alignment

Business and IT alignment refers to the extent to which the organisation's IT mission, objectives and plans support the organisation's business strategy (Reich and Benbasat, 1996). It is also defined as the harmonisation of IS/IT goals, strategies and processes with the objectives, strategies and processes of the business enterprise for gaining the same targets (Teo, 2009). The outcome of business and IT alignment include improved IS effectiveness and efficiency, and the full exploitation of IS/IT in the organisation as well as the optimisation of organisational resources at the global level (Karimi, 1988), so that it is regarded as an important measure of IS planning effectiveness (Newkirk et al., 2008; Silvius and Stoop, 2013). Thus, business and IT alignment is regarded as the most critical component or one of the key aspects for successful SISP (Chen et al., 2010; Doherty et al., 1999; Earl, 1993; Hirschheim and Sabherwal, 2001; Lee et al., 2005; Maharaj and Brown, 2015; Reich and Benbasat, 2000; Segars and Grover, 1999; Teo, 2009).

As an outcome or success measure of SISP, there are a wide range of factors affecting business and IT alignment. For example, Luftman et al. (1999) discuss the five important factors that improve the level of business and IT alignment, including senior executive support for IT; IT that is involved in strategy development; IT that understands the business, business and IT collaboration; well-prioritised IT projects and IT that exhibits leadership (Luftman et al., 1999). A summary of the study on factors influencing business and IT alignment is presented in Table 2.5.

Table 2.5. Factors affecting business and IT alignment

Factors affecting business and IT alignment	Authors
Participation, commitment and support of top (senior) management such as the CEO, CIO and CFO as well as other departmental managers	Pyburn (1983); King and Teo (1997); Luftman et al. (1999); Teo and Ang (1999); Burn and Szeto (2000); Chan (2002); Lee et al. (2005); Kearns and Sabherwal (2006, 2007)
Communication, interaction and knowledge sharing between business and IT people based on a clear understanding on business and IT objectives and strategies	Pyburn (1983); Broadbent and Weill (1993); Bhattacharjya and Venable (2006); Johnson and Lederer (2010); Luftman et al. (1999); Maharaj and Brown (2015); Teo and Ang (1999); Chan (2002); Lee et al. (2005)
A consideration of internal and external environment and market needs	Burn and Szeto (2000); Chan et al. (2006); Kearns and Lederer (2003, 2004)

The above table indicates that in order to realise successful business and IT alignment, organisations need to consider various important factors that positively affect business and IT alignment. This ranges from the participation and communication of top management and the communication and interaction between business and IT managers to a consideration of the internal and external environment for linking an organisation's business and IS missions, priorities and strategies.

The alignment of IS/IT goals with business goals facilitates IT-enabled organisational capabilities, such as establishing the priorities and activities of the IS function and the business unit (Chan, 2002) and evaluating and matching IT investment with business objectives (Duhan, 2007; Tallon et al., 2000). It also includes enhancing coordinated deployment of resources, such as IS/IT, human and other capital resources (King and Teo, 2000) to underpin IT activities in current and future market environments (Sanchez and Heene, 2004). Therefore, business and IT alignment allows organisations to attain organisational capabilities (Kearns and Sabherwal, 2006) through providing an effective basis for making decisions on organisational resources (Hirschheim and Sabherwal, 2001; King and Teo, 2000; Sanchez and Heene, 2004) and exploiting new strategic opportunities in the organisation (Avison et al., 2004; Duhan, 2007; Johnson and Lederer, 2010).

Business and IT alignment provides IT infrastructure flexibility for quickly responding to changes in the environment, and customer and market requirements (Broadbent and Weill, 1993; Tallon, 2007; Tallon and Pinsonneault, 2011) as well as for making effective strategic directions and decisions to react to new opportunities in the organisation (Avison et al., 2004; Chan et al., 2006; Sabherwal and Chan, 2001). By focusing on business and IT alignment, organisations are able to enhance core IS competencies (Reich and Benbasat, 2000), such as IT functions, people and skills, and technology scope of the organisation (Avison et al., 2004; Bhatt, 2009; Chan, 2002). The achievement of IS competencies based on business and IT alignment helps organisations determine the adequate role of IT functions, improve technical expertise and leadership that attempt to leverage IT for strategic objectives (Luftman et al., 1999; Papp, 2001; Teo and King, 1997) and achieve collaboration between people (Chan, 2002).

The literature discussed above indicates that as one of the key aspects for successful SISP, business and IT alignment combines and incorporates business and IT goals and strategies for effective use of IT and resources in the organisation. There are a number of factors, including the participation of top management, communication and interaction between business and IT people, and a consideration of the internal and external environment that need to be taken into account for business and IT alignment. If business and IT alignment is successfully achieved, this enables organisations to improve organisational capabilities by enhancing coordinated deployment of resources, to improve IS competencies by determining the role of IT functions and refine technical expertise, and to improve IT infrastructure flexibility by quickly reacting and responding to customer and market requirements. Thus, business and IT alignment is the outcome of successful SISP.

The impact of SISP success, which covers organisational capabilities, IS competencies and IT infrastructure flexibility is discussed in the next section.

2.6. The Impact of SISP Success

The following section discusses three dimensions relating to the impact of SISP success, which comprise organisational capabilities (Amit and Schoemaker, 1993; Duhan, 2007; Grant, 1996), IS competencies (King, 2009; Peppard et al., 2000; Peppard and Ward, 2004) and IT infrastructure flexibility (Byrd and Turner, 2000; Duncan, 1995; Tallon, 2009).

2.6.1. Organisational capabilities

Organisational capabilities refer to a firm's capacity to combine and deploy resources, such as financial and physical assets (e.g., property, plant and equipment, and human capital), knowhow and information-based processes of the firm to gain a desired goal and sustainable competitive advantage (Amit and Schoemaker, 1993). Organisational capabilities are also defined as a firm's ability to combine, integrate and reconfigure specialised information, processes, resources and structures in the firm to repeatedly perform a productive task for creating competitive advantage and value (Grant, 1996). In the increasing turbulence of the external business environment, organisational capabilities are regarded as the basis for strategy formulation (Grant, 1996).

Organisational capabilities from earlier IS/IT-focused studies comprise the progress of organisational knowledge and processes (Andreu and Ciborra, 1996; Reich and Benbasat, 2000), the interaction and optimisation of business and IT investments, and resources (Sanchez and Heene, 1997; Ravichandran and Lertwongsatien, 2005; Peppard and Ward, 2004) and the prioritisation and development of an IS system which supports strategic goals of the organisation (Segars et al., 1994). Organisational capabilities in an organisation also encompass the achievement of flexibility (Sanchez, 1995; Segars et al., 1994) by responding to changing industry circumstances (Amit and Schoemaker, 1993), IT leadership for knowledge management (Tippins and Sohi, 2003), IT project management (Feeny and Willcocks, 1998) and information resource management (Duhan, 2007). In particular, organisational capabilities are typically attained from the alignment of IS plans and strategies with business plans and strategies (Duhan, 2007; Grant, 1996; Peppard and Ward, 2004; Reich and Benbasat, 2000; Segars et al., 1994). Therefore, the alignment is regarded as the essence of organisational capabilities (Grant, 1996; Segars et al., 1994).

According to Earl (1993) and Segars and Grover (1998), successful SISP through aligning business strategies with IT strategies is associated with improving capabilities in the organisation, including problem identification, environmental scanning and an ability to react to change. Earlier studies (Bechor et al., 2010; Grover and Segars, 2005; Teo, 2009) maintain that SISP in organisations is typically undertaken to achieve business objectives and strategies as well as to sustain a competitive advantage based on the progress of organisational capabilities (Andreu and Ciborra, 1996; Segars et al., 1994).

The literature discussed above indicates that organisational capabilities are the ability of an organisation to gain a desired objective and sustainable competitive advantage by combining and reconfiguring its resources and information. Organisational capabilities positively affect optimising and prioritising the organisation’s human, financial and IT resources and information-based processes, which are achieved from business and IT alignment. SISP is generally conducted to attain business objectives and strategies by improved organisational capabilities. Thus, organisational capabilities are a dimension to measure the impact of SISP success.

2.6.2. IS competencies

IS competencies refer to an organisation's ability of IS function (Teo and King, 1997) and role to support its procedures, structures and technologies as well as to explore the potential impact of IT (Peppard et al., 2000) that attempt to leverage IT for strategic purposes. IS competencies are also defined as a complex and sophisticated bundle of procedures and technologies rather than a single, discrete procedure or technology (Hamel and Prahalad, 1994) to identify and perform an IT task properly (King, 2009).

IS competencies from earlier IT-focused studies include improved business deployment, external networks, technology leadership, process adaptiveness and IT infrastructure (Sambamurthy and Zmud, 1994). They also comprise the progress of interrelationships between business and IT functions and structures in the organisation (Peppard and Ward, 2004) and careful interactions between business and IT groups to be undertaken in a project at a minimal cost (Gupta et al., 1997; McGrath et al., 1995; Peppard and Ward, 2004). IS competencies in an organisation help effective management of main IT assets, such as a highly competent IT and human resource, and a reusable technology base (Ross et al., 1996), and they improve a close partnership between business and IT management in the organisation (Peppard et al., 2000). IS competencies encourage organisations to better assign responsibility to the IS function for creating information value (Peppard et al., 2000) and for facilitating both managerial IT skills and technical IT skills (Bhatt, 2009; Feeny and Willcocks, 1998; Mata et al., 1995). They also lead to a determination of the extent to which IT opportunities are incorporated in business strategy to deliver measurable business benefits from IT investment and deployment (Bhatt, 2009; Peppard and Ward, 2004) normally achieved from the alignment of IS strategies with business strategies (Bhatt, 2009; Gupta et al., 1997; Peppard et al., 2000; Teo and King, 1997). Previous studies (Bhatt, 2009; King, 2009) have claimed that successful SISP, which aligns IS goals and business goals, contributes to improving the organisation's past and potential core IS competencies. Peppard and Ward (2004) also emphasise that it is essential for organisations to achieve IS competencies. This is because an organisation's IT abilities obtained by successful SISP are normally assessed by IS competencies (Peppard and Ward, 2016).

The above discussion indicates that IS competencies form an organisation's ability and role of IS functions, procedures, structures and technologies for leveraging and using its IT for strategic objectives. IS competencies help effective management of main IT assets, adequate interrelationships between business and IT functions and structures, a close partnership between business and IT management, and improved IT skills in the organisation. IS competencies are typically achieved from the alignment of IS strategies with business strategies. An organisation's IS abilities obtained from successful SISP are also assessed by IS competencies. Therefore, IS competencies are a dimension for measuring the impact of SISP success.

2.6.3. IT infrastructure flexibility

IT infrastructure flexibility is defined as the ability of IT infrastructure to easily and quickly scale and evolve in accordance with the needs of the market (Byrd and Turner, 2000; Duncan, 1995). It is also defined by Tallon (2009) in terms of hardware, software, networks and technical skills to generate a tighter fit between business and IT strategy. IT infrastructure flexibility is commonly conceptualised with applications and data, network and telecommunications, and platforms that access and share in and between organisations (Broadbent et al., 1999a; Duncan, 1995). Thus, IT infrastructure flexibility consists of IT connectivity, IT compatibility, data transparency application functionality, technology management, and management of business knowledge and technical skills (Byrd and Turner, 2000).

In earlier IS/IT-related literature about IT infrastructure flexibility, the focus is on the improvement of an organisation's ability to constantly sense and explore customer and marketplace enrichment opportunities (Gottschalk, 2007; Upton, 1994). The achievement from IT infrastructure flexibility encourages organisations to secure both diversity in strategic responses and rapid shifts from one strategy to another in order to exploit new opportunities for realising a competitive advantage (Palanisamy, 2005; Sanchez, 1995; Weill et al., 2002). A combination of tight business and IT alignment and flexible IT infrastructure allows organisations to use IT in ways that satisfy their strategic goals while developing greater awareness of how IT can help them react faster to changing markets (Tallon and Pinsonneault, 2011).

One of the SISP goals in organisations is to merge speed with flexibility by moving quickly to broaden strategic outcomes for the organisation (McNurlin et al., 2009). In particular, Broadbent et al. (1999b) suggest that the alignment of information and IT needs into the planning process is related to the progress of IT infrastructure for ensuring strategic business flexibility, such as responding to changes and trends of the marketplace rapidly (Tallon and Pinsonneault, 2011); the identification and capture of synergies across business units; and the sharing of information across products, services, locations and companies (Broadbent et al., 1999b). Tallon (2009) has also identified that there is a positive relationship between business and IT alignment with SISP success serving as a moderator and IT infrastructure flexibility. Successful SISP encourages organisations to deal with their business and IT changes more flexibly in the face of uncertainties and risks (Bhatt, 2009; Tallon, 2009).

The literature discussed above indicates that IT infrastructure flexibility is the ability of IT infrastructure to quickly scale and evolve according to the needs of the market. The focus of IT infrastructure flexibility is to react faster to changing markets and to secure both diversity in strategic responses and rapid shifts from one strategy to another for exploiting new opportunities, which are typically attained from business and IT alignment. Successful SISP based on business and IT alignment enables organisations to deal with their business and IT changes more flexibly in the face of uncertainties and risk based on improved IT infrastructure. Therefore, IT infrastructure flexibility is an impact of SISP success.

2.7. The Research Model

What has been recognised is that in the last two decades, SISP has emerged as an important IS/IT management activity in organisations (Bechor et al., 2010; Earl, 1993; Doherty et al., 1999; Grover and Segars, 2005; Kappelman et al., 2013; Maharaj and Brown, 2015). Successful SISP enables organisations to change business environments and to enhance organisational performance and competitive advantage through making long-term decisions and planning strategically (Cassidy, 2006; Lientz, 2010) and through managing their IS/IT investment effectively (Piccoli, 2008; Zwass, 2009). In order to undertake SISP successfully, organisations need to take multiple planning perspectives at many levels (Bechor et al., 2010; Peppard and Ward, 2016) since each organisation pursues different economic, environmental and organisational contexts and features (McNurlin et al., 2009). It has also been argued that SISP success depends on a function of various factors (Gottschalk, 1999a; Peppard and Ward, 2016; Philip, 2009). Hence, organisations need to consider possible 'antecedents' as factors that lead to successful SISP.

If organisations appropriately consider taking possible antecedents into account with the extensive perspective, they will be more likely to build their IS/IT investment in the long-term (Bechor et al., 2010; Lientz, 2010) as well as utilise their resources more strategically (Philip, 2009; Peppard and Ward, 2016). Considering various antecedents is essential, because each of them have a positive influence on successful outcomes of SISP by facilitating IS planning effectiveness (Grover and Segars, 2005; Tallon, 2009; Wang and Tai, 2003) and business and IT alignment (Reich and Benbasat, 2000; Teo, 2009). Further, successful SISP attained by considering various antecedents will play an important role in improving organisational capabilities (Duhan, 2007; Grant, 1996), IS competencies (King, 2009; Peppard and Ward, 2004; Teo and King, 1997) and IT infrastructure flexibility (Gottschalk, 2007; Tallon, 2009). It will be the impact of SISP success obtained from the consequences of successful SISP. Its impact will be more likely to enable organisations to implement successful IT implementation and use for sustaining organisational performance and competitive advantage (Bechor et al., 2010; Cassidy, 2006; Grover and Segars, 2005; Peppard and Ward, 2016; Wallace, 2013).

Earlier studies on SISP have individually explored management issues, participation and communication of business and IT stakeholders, impact of environmental factors and SISP resources in relation to SISP success. However, to date, there has been a dearth of research that extensively employs the influence of SISP success factors as antecedents for improving SISP's successful outcomes and the impact of SISP success in organisations. Further, although there has been a high diffusion and use of leading IT technologies across all industries, to date there has been little SISP research that has provided an extensive understanding of antecedents, and the relationship between antecedents and the impact of SISP success undertaken in South Korean context.

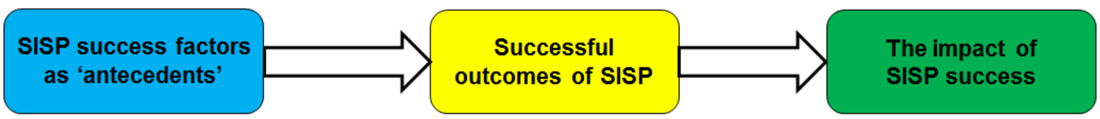
Based on the theoretical background, three key constructs have been proposed in this study, which are SISP success factors as antecedents, the successful outcomes of SISP and the impact of SISP success with its measuring dimensions. Table 2.6 provides the description of all constructs identified from the literature.

Table 2.6. Specification of the domain of the constructs

Domain	Construct	Description	References
SISP success factors as 'antecedents'	Top management participation and support (TMPS)	The overall degree to which top management of the organisation is interested in, participates in, and supports SISP and IS-related efforts.	Basu et al., 2002; Elbanna, 2013; Kearns, 2006; Philip, 2007, 2009; Ragu-Nathan et al., 2004
	Effective communication and knowledge sharing between business and IT sectors (ECKS)	The overall effort of business and IT sectors in an organisation to communicate and share their ideas and information with each other to undertake and realise an effective SISP process.	McNurlin et al., 2009; Pai, 2006; Preston and Karahanna, 2009; Piccoli, 2008; Yeh et al., 2011
	The impact of the internal and external environment (IEE)	The activity of an organisation to examine and identify important business and IT factors or issues regarding SISP undertaking by considering situations inside and outside the organisation.	Chi et al., 2005; Kearns, 2007; King, 2009; Newkirk et al., 2008; Wallace, 2013;
	Adequate resources for SISP (ARS)	The activity of an organisation to adequately allocate and invest various resources necessary for SISP process, such as financial, human and technical resources to lead its effective undertaking.	Brown, 2004; Kearns and Lederer, 2000; Philip, 2007, 2009; Rondeau et al., 2010; Peppard and Ward, 2016
	Organisational learning (OL)	The activity of an organisation to learn overall processes that result in the creation of new knowledge and structures vital to SISP. The activity to explain to all users of the organisation the expected changes and solutions to potential issues followed by the process.	Argote, 2005; Bhatt and Grover, 2005; Hovelja et al., 2010; Otim et al., 2009; Peppard and Ward, 2004; Reponen, 1998
Successful outcomes of SISP	IS planning effectiveness (ISPE)	The assessment of SISP approach in meeting intended goals for both the deployment of IT and the role of the IT function in the organisation.	King, 1988; Premkumar and King, 1994; Holsapple and Sena, 2005; Mirchandani and Lederer, 2014b; Papke-Shields, 2002, 2006
	Business and IT alignment (BITA)	The extent to which the mission, objectives and plans contained in the business strategy are closely linked, shared and supported by the IT mission, objectives and plans.	Chan, 2002; Earl, 1993; Maharaj and Brown, 2015; Reich and Benbasat, 1996, 2000; Teo, 2009
The impact of SISP success	Organisational capabilities (Orcap)	The ability of the firm to combine and reconfigure its resources and processes to gain a desired goal and sustainable competitive advantage.	Amit and Schoemaker, 1993; Duhan, 2007; Grant, 1996; Peppard and Ward, 2004; Teo, 2009
	IS competencies (IScom)	An organisation's ability in the areas of IT function, impact and role to support the organisation's procedures, structures and technologies that attempt to leverage IT for strategic purposes	King, 2009; Peppard et al., 2000; Teo and King, 1997
	IT infrastructure flexibility (ITIF)	H/W, S/W, networks and technical skills to generate tighter fit between business and IT strategies to move quickly and to broaden strategic experiments	Bhatt, 2009; Broadbent et al., 1999a; Byrd and Turner, 2000; Duncan, 1995; Tallon, 2009

From the literature discussed above, the application of various success factors of SISP as antecedents leads to the successful outcomes of SISP, such as IS planning effectiveness (Aladwani, 2001; Elbanna, 2008; Kearns, 2007; Mirchandani and Lederer, 2014b; Pai, 2006; Premkumar and King, 1994; Segars et al., 1998) and business and IT alignment (Brown, 2004; Campbell et al., 2005; Gutierrez et al., 2009; Mirchandani and Lederer, 2012; Newkirk and Lederer, 2007; Teo, 2009). In particular, business and IT alignment is regarded as an essential measure of IS planning effectiveness (Newkirk et al., 2008; Silvius and Stoop, 2013). In other words, if organisations attain improved IS planning effectiveness through considering various antecedents, they are likely to realise better business and IT alignment. The successful outcomes of SISP encourage organisations to improve organisational capabilities (Amit and Schoemaker, 1993; Duhan, 2007; Grant, 1996), IS competencies (King, 2009; Peppard et al., 2000; Peppard and Ward, 2004) and IT infrastructure flexibility (Duncan, 1995; Gottschalk, 2007; Tallon, 2009) for realising sustainable organisational performance and competitive advantage from their IT investment and implementation. The research model that describes the relationship between antecedents and the impact of SISP success is shown in Figure 2.1.

Figure 2.1. The research model for the relationship between antecedents and the impact of SISP success



The next section presents a selection of suitable theory for guiding the development of a research model for examining the antecedents that affect the successful outcomes of SISP and the impact of SISP success in South Korean organisations.

2.8. Research Theory

A theory is a coherent set of general concepts, used as principles to explain the apparent relationships of certain observed phenomena (Zikmund et al., 2012). The key goal of using a theory in a study is to describe the phenomenon of interest and its relationships; it explains how, why and when the phenomenon happens; it predicts what will happen in the future; and it provides a basic foundation for intervention and operations (Bryman and Bell, 2011; Neuman, 2011).

Since this study will examine SISP antecedents for SISP's successful outcome and observe the relationship between antecedents and the impact of SISP success, this study is guided by integrating two organisational theories: contingency theory and the theory of dynamic capabilities.

Contingency theory refers to the idea that there is no best way to organise something in order to maximize organisational performance, to lead an organisation or to make decisions (Donaldson, 2001). An alignment between the organisation and contingency variables gained from both the internal and external situation of the organisation is required to create a close association between the contingencies and the organisational characteristics (Donaldson, 2001; Doty et al., 1993). There are three key ideas of the contingency theory suggested by Morgan (2007). These ideas are comprised as follows: (1) there is no universal or one best way to manage and organise an organisation or to make decisions for achieving higher performance, (2) the design of an organisation and its subsystems should balance and satisfy with internal requirements and fit with the environmental situations, and (3) management should especially be concerned with achieving alignments between the environments and its subsystems (Morgan, 2007).

Much of contingency theory research has studied organisational structure (Donaldson, 1996; Lawrence, 1993). There have been contingency theories in accordance with many different organisational characteristics, such as human resource management (Delery and Doty, 1996), leadership (Fiedler, 1967) and strategic decision-making processes (Frederickson, 1984). Contingency variables typically comprise some that are within the organisation and some that are outside it. Therefore, it includes characteristics of the environment, including uncertainty (i.e., environmental and technological change, innovation and environmental instability) (Donaldson, 2001), organisational size (Child, 1975) and organisational strategy (Chandler, 1962). Moreover, contingency theory has been diversely employed and tested in the IS research.

Sabherwal and King (1992) utilise a contingency approach to observe the relationship between contextual factors and decision process factors for strategic planning for IS and strategic use of IS applications. Hence, employing the contingency theory can provide valuable insights into the relationship of external environment, organisational structure and IS maturity with the decision process determining potentially formed strategic IS applications. The two authors characterise the contextual factors as three variables: the external environment (heterogeneity, dynamism and hostility), the organisational structure (centralisation and formalisation) and the IS function (IS maturity). Decision process factors were also characterised as five variables: analysis, planning, politics, top management influence and IS influence. Through the survey of 81 US large organisations, this study reveals that the external environment and IS function influence a decision-making process. Earlier literature has also identified that top management support is an important variable in contingency theory that directly influences SISP success (Brown, 2004; Lederer and Salmela, 1996; Thong et al., 1996) through IS planning usefulness (Elysee, 2014).

Kearns and Lederer (2004) use contingency theory as the foundation of their study to identify a relationship between two industry contexts (environmental uncertainty and information intensity) and IT focus (dependence on IT and SISP) for improving competitive advantage. This is because organisations need to find an adequate fit among contingency variables, including environment, strategy, technology and size. Through the survey of US 161 firms and structural equation modelling, this study reveals that environmental uncertainty and information intensity affect positively and importantly both business dependence on IT and two SISP practices, including IT participation in business planning and the alignment between business plans and IS plans. Moreover, the result confirms that there is a significant difference between industry types and environmental uncertainty. Thus, the foundation of this study, based on contingency theory, implies that IT dependence and SISP have a positive effect on improving the use of IT for competitive advantage.

Bechor et al. (2010) propose a conceptual framework based on contingency theory to hypothesise a relationship between two variables (SISP key success factors and SISP success) that are moderated by a contingency variable, including a SISP approach and SISP context. Through the survey of 172 American CIOs the study confirms that the combination of the contingency variable is identified to have a moderating effect on the key relationship between SISP KSFs and SISP success. It also identifies that to maximise long-term success of SISP, it is vital to have three-way associations between

SISP's KSFs, the SISP approach and the SISP context. The framework of this study is based on contingency theory; thus it helps to identify and enable and understanding of the various SISP dimensions and their impact on SISP success.

From the synthesis of the literature review, it is recognised that SISP in the current business and IT environment is an important task that enables organisations to achieve their goals and strategies (Earl, 1993; Yeh et al., 2011) based on improved IS planning effectiveness (Otim et al., 2009; Papke-Shields et al., 2002; Segars et al., 1998) and business and IT alignment (Newkirk et al., 2008; Teo, 2009) from their IT investment. Further, there are no universal approaches or methodologies for undertaking successful SISP due to the different cultures, business directions, objectives and strategies of every organisation (Lee and Hsu, 2009; McNurlin et al., 2009).

Antecedents of SISP created by considering various internal and external factors in the organisation, whether partial or whole, result in achieving successful outcomes of SISP (Tallon, 2009; Teo and Ang, 2001; Peppard and Ward, 2016) that facilitate the level of IS planning effectiveness (Elbanna, 2008; Kearns, 2007; Mirchandani and Lederer, 2014b; Premkumar and King, 1994; Segars et al., 1998) and business and IT alignment (Brown, 2004; Mirchandani and Lederer, 2012; Newkirk and Lederer, 2007; Reich and Benbasat, 2000; Teo, 2009). Further, improved outcomes attained from the successful SISP are expected to provide organisations with higher impact and to sustain competitive advantage and organisational performance in organisations. Therefore, to establish the relationship between the successful outcomes of SISP and the impact of SISP success, this relationship analysis has been guided by the theory of dynamic capabilities.

The concept of ‘dynamic capabilities’ was developed and introduced by Teece et al. (1997) in order to address the shortcoming of the resource-based view (RBV). Due to RBV’s static nature of the models utilised for analysis, it was difficult to explain fully how organisations can gain competitive advantage in the current markets described by uncertainty and rapid change (Grant et al., 2010). Dynamic capabilities are defined as the ability of the organisation to integrate, build and reconfigure its internal and external competencies, including organisational skills, resources and IT functional capabilities to address and match the requirements of a rapidly changing environment (Teece et al., 1997). Further, Eisenhardt and Martin (2000) maintain that dynamic capabilities are a set of specific and identifiable processes or organisational and strategic routines, including integration and reconfiguration of resources within the organisation, strategic decision making for enhancing strategic moves, alliances and acquisitions of new resources from external sources, product development and knowledge creation to drive superior performance and competitive advantage. The theory of dynamic capabilities has been diversely employed and tested in the IS research.

Rindova and Kotha (2001) indicate that the attainment of dynamic capabilities based on the alignment and integration of the organisation’s form, strategic initiatives and key resources improves strategic flexibility as well as providing continuous transformation as a critical mechanism for renewing competitive advantage in an e-business environment. Daniel and Wilson (2003) also apply a dynamic capabilities approach to investigate a set of dynamic capabilities that are essential for innovative or integrative aspects of e-business transformation. Integration of resources and reconfiguration strategies enable organisations to enhance rapid strategic decision-making, to accept the need for strategic change, and to design the value proposition and service process to the e-business domain

(Daniel and Wilson, 2003), thus maintaining and sustaining competitive advantage by proactively responding to changes in the environment (Grant et al., 2010; Wade and Hulland, 2004).

Teece (2007) proposes the extensive framework based on dynamic capabilities theory to help managers in organisations understand the grounds of long-term organisational success as well as describe relevant strategic considerations and priorities to maximise organisational performance. According to the identified framework, specific tangible and intangible assets in the organisation need to be continuously aligned and realigned based on both individual capacities and enterprise procedures for leaning, sensing and seizing opportunities in order to achieve competitive advantage. Further, Duhan (2007) argues that in order to deliver improved organisational performance and competitive advantage as well as to exploit strategic opportunities, business and IT planning needs to be well aligned with the organisation's strategic goals and logic.

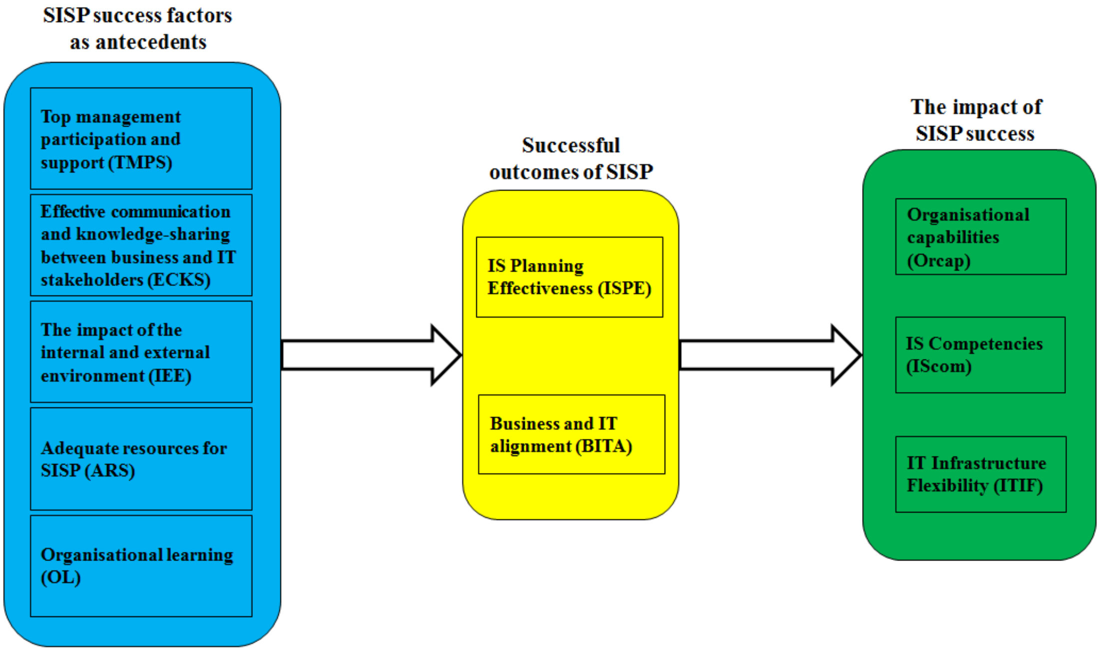
In dynamic capabilities theory, organisational learning provides the basis for obtaining competitive advantage in dynamic environments (Pettus, 2001). Internally generated learning could help create a competitive advantage as well as increase the potential of collaboration (Bhatt and Grover, 2005; Teece et al., 1997), due to new knowledge and resources or additional resources produced by organisational learning as a key source of competitive advantage (Grant et al., 2010). Further, deliberate organisational learning helps create changes in the functional level competencies (Zollo and Winter, 2002). Business and IT alignment enables organisations to facilitate and maintain the relevance of the organisations' visions and strategic goals while pursuing dynamic capabilities that derive from formulating business strategies for exploiting IT systems (Grant et al., 2010). Proven dynamic capabilities based on improved alignment of business and IT strategies are valuable, because competitive advantage is typically established from them (Baker et al., 2011).

For such reasons, a dynamic capabilities approach has been traced empirically to build and sustain a competitive advantage of organisations (Bhatt, 2009; Bhatt and Grover, 2005). This implies that without such stable dynamic capabilities formed by the rearranging, reconfiguring and recombining of the organisation's resources and processes as well as its functional level competencies, competitive advantage in organisations might not be achieved, or it might erode quickly (Grant et al., 2010).

From the synthesis of the literature review, it can be seen that the successful outcomes of SISP result in providing a higher impact in the organisation based on improved organisational capabilities (Duhan, 2007; Grant, 1996), IS competencies (King, 2009; Peppard et al., 2000) and IT infrastructure flexibility (Byrd and Turner, 2000; Tallon, 2009). The impact aims to support organisations in their realisation of sustainable organisational performance and competitive advantage from successful IT implementation based on the adaptation, integration and recombination of their internal and external resources, skills and functional competencies effectively and quickly (Duhan, 2007; Lee, 2001; King, 2009; Peppard et al., 2000; Tallon, 2009).

As shown in Figure 2.1, arrows indicate that one or more antecedents will lead to one or all dimensions of the successful outcomes of SISP. Further, each dimension of the successful outcomes of SISP will lead to one or more of the impacts of SISP, which needs to be confirmed by research, but is yet to take place. Thus, in order to establish the relationship between antecedents and the impact of SISP success, the relationship analysis between antecedents and the successful outcomes of SISP is guided by contingency theory. The relationship analysis between the successful outcomes of SISP and the impact of SISP success is also guided by the theory of dynamic capabilities. Hence, as stated above, the research model in Figure 2.1 is extended to reflect the label of the main constructs and their contents as shown in Figure 2.2.

Figure 2.2. The extended theoretical framework for the relationship between antecedents and the impact of SISP success



The relationship in Figure 2.2 indicates that the more organisations engage with potential antecedents of SISP, the more likely they are to achieve a successful SISP outcome based on business and IT strategic alignment and IS planning effectiveness. This will lead to the achievement of organisational capabilities, IS competencies and IT infrastructure flexibility for realising improved competitive advantage and organisational performance.

2.9. Conclusion

This chapter reviews the related literature about the diffusion and use of IT and SISP in South Korean organisations. The literature review presented in this chapter explains the importance of SISP for IT investments. It then discusses the factors that lead to the successful outcomes of SISP of IS planning effectiveness and business and IT alignment. The successful outcomes of SISP are then elaborated to present improvements in organisational capabilities, IS competencies and IT infrastructure flexibility as the impact of SISP success, which are important for improved organisational performance and competitive advantage. Such a review highlights a better understanding of the importance of SISP to improve the level of successful SISP and the impact of SISP success. This chapter shows how, based on the review, a research model and theory was proposed to provide a basic foundation of the relationships. The next chapter discusses the research design used to establish and test the relationship between SISP antecedents for the successful outcomes of SISP and the impact of SISP.

CHAPTER 3 Research Methodology

3.1. Introduction

This chapter explains and justifies the research design adopted in this study to address the research question: *What is the relationship between antecedents of SISP on SISP success, and what is the impact of SISP success on South Korean organisations?* It commences by introducing the research paradigm, followed by a discussion of the research methodologies and methods selected for this study. It justifies the research design for this study such as sample population, sampling technique, sample size and respondent selection criteria as well as reliability and validity. Section 3.7 specifies the ethical issues germane to this study and the ethical considerations that guide this study. Finally, section 3.8 concludes this chapter with a brief summary

3.2. Research Paradigms

A research paradigm is defined as "a way of examining social phenomena from which particular understandings of these phenomena are gained and explanations attempted" (Saunders et al., 2009, p. 118). A research paradigm serves to describe how the world works, how the knowledge is selected from the world, what types of questions are to be asked and what methodologies are to be adopted in answering these questions (Neuman, 2011; Saunders et al., 2009).

There are three primary categories for classifying the research paradigms introduced by Creswell (2009). These are positivism, interpretivism and pragmatism. In particular, positivism and interpretivism have often been claimed as the dominant philosophy of business research and IS research (Adam and Healy, 2000; Mingers, 2001; Saunders et al., 2009). These categories have affected a researcher's ontological, epistemological and methodological standing (Lincoln and Guba, 2003) and there are some important differences among research paradigms, as presented Table 3.1.

Table 3.1. Overview of key research paradigm

Concepts	Assumptions/Questions to ask	Paradigm	
		Positivist	Constructivist
Ontology	What is the nature of reality?	Realism	Relativism
Epistemology	How do I know the world?	Dualist/objectivist; Findings true.	Transactional; Subjectivist (Interpretivist); Created findings.
Methodology	What are the best means for gaining knowledge about the world?	Empirical; Experimental; Manipulative; Verification of hypothesis; and Quantitative methods.	Hermeneutic; Dialectical; and Qualitative methods.

Source: Lincoln and Guba (2003)

According to Bryman and Bell (2011, p. 15), positivism is "an epistemological position that advocates the application of the methods of the natural sciences to the study of social reality and beyond." Positivism typically focuses on observations and the object of enquiry is considered to exist and act independently of scientists and their activity. It is also dependent on facts which can be measured (Lincoln and Guba, 2003). Hence, positivism is called postpositivist research, empirical science and post-positivism (Creswell, 2009). Also, this position stresses quantitative data collections – examples are experiments and surveys that include research questions and hypotheses in order to remove bias and to test or to justify empirically (Cavana et al., 2001; Johnson and

Onwuegbuzie, 2004). Thus, this is a *deductive* type of reasoning, where the quality of criteria relies on internal as well as external *validity*, *reliability* and *objectivity* (Bryman and Bell, 2011; Creswell, 2009; Neuman, 2011).

On the other hand, interpretivism is "an ontological position that asserts that social phenomena and their meanings are continually being accomplished by social actors" (Bryman and Bell, 2011, p. 22). It is often referred to as *constructionism* and combined with *interpretivism* (Crotty, 1998). According to Creswell (2009), interpretivists hold the assumption that individuals seek to understand the world that they live and work in. The understanding of the world enables individuals to establish *subjective* meanings of their personal, cultural and historical experiences that are directed toward certain objects or things (Creswell, 2009). Interpretive research typically includes a detailed and rich description, and it is written directly and somewhat informally (Neuman, 2011). This type of reasoning is *inductive* and based on trustworthiness and authenticity, with the interpreter generating meaning from the data collected in the field (Johnson and Onwuegbuzie, 2004; Lincoln and Guba, 2003). Thus, interpretivism is associated with an approach to qualitative research (Bryman and Bell, 2011; Creswell, 2009; Crotty, 1998).

However, positivism and interpretivism each has its own strengths and weaknesses. Positivist research has been criticised for failing to handle the meaning of systems of people (such as their beliefs and feelings). This has been seen as the mean weakness of this position, along with the fact that it omits the subjective involvement that researchers have with their research (Cavana et al., 2001). On the other hand, criticism of interpretivist research is at that it is too subjective and focused on local, short-term events (Creswell, 2009). This indicates that to undertake research effectively, a researcher needs to choose an adequate paradigm that he/she wants to deliberate.

Another position on paradigms comes from the pragmatists. Pragmatism as a paradigm arises out of actions, consequences and situations rather than antecedent conditions (as in positivism) (Creswell, 2009). The pragmatic maxim or method indicates that the current meaning, or instrumental, or provisional truth value of an expression is to be determined by the experiences of belief in, or use of, the expression in the world (Murphy, 1990). Thus, the bottom line of pragmatism is that research approaches should be mixed in ways that offer the best opportunities for answering important research questions (Johnson and Onwuegbuzie, 2004). The next subsection discusses research methodologies based on the research paradigm.

3.3. Overview of Research Methodologies

A research methodology refers to a strategic blueprint which involves the collection, organisation, and integration of the research data for producing the research outcomes (Creswell, 2009; Neuman, 2011). There are four key issues that need to be addressed in the process of selecting a research methodology. These issues are (1) what the questions to be answered are, (2) what the relevant data are, (3) how to collect the data, and (4) how to analyse the data (Sekaran and Bougie, 2010). A research methodology enables the researcher to complete the research project with proper guidance by providing an execution plan for the researcher to effectively achieve the research goal as well as supporting the researcher to complete the research project within the limited resources and time (Creswell, 2009).

Qualitative and quantitative research methodologies are commonly used in a research project (Adam and Healy, 2000; Neuman, 2011). A qualitative methodology follows the interpretivist paradigm for discovering and understanding how individuals respond to a social phenomenon in details (Creswell, 2009; Saunders et al., 2009). It focuses more on the description of a scenario using words rather than the quantification of a phenomenon in the collection and analysis of the research data (Bryman and Bell, 2011). The collected data is analysed to identify the patterns and to interpret those patterns (Sekaran and Bougie, 2010). The interpretations made in this manner lead to the generation of a theory (Creswell, 2009; Williams, 2007). Examples of qualitative methods include interview, case study, action research and ground theory (Leedy and Ormrod, 2005; Saunders et al., 2009). Since qualitative methodology uses textual data for data collection and analysis, quantitative predictions are difficult to make, and hypotheses and theories are difficult to test. It also typically requires a longer time to collect and analyse the data in comparison to quantitative research. Also, the personal biases and habits that researchers bring to the research are more are more likely to influence the results (Johnson and Onwuegbuzie, 2004). Thus, qualitative methodology has an issue on generalisation, replication and transparency because it is too subjective (Bryman and Bell, 2011).

A quantitative research methodology follows a positivist paradigm for confirming the theory proposed by the researcher on a certain phenomenon that is based on the collection of numerical data (Saunders et al., 2009). Therefore, a quantitative research methodology is described as the analysis of theory's relationship to research that is considered to be *deductive* as well as having an *objectivist* conception of social reality (Bryman and Bell, 2011). This methodology focuses more on how the collection and analysis of the research data is quantified (Bryman and Bell, 2011; Sekaran and Bougie, 2010). Such a method typically adopts inference analysis and statistical analysis for drawing meaningful conclusions from the research (Creswell, 2009; Williams, 2007). Examples of quantitative methods include surveys, experiments and forecasting (Leedy and Ormrod, 2005; Neuman, 2011; Zikmund et al., 2013). Since quantitative methodology stresses how the collection and analysis of data is quantified in order to objectively measure reality (Bryman and Bell, 2011), the local populations' understandings may not be reflected by the researcher's constructs (categories), and the produced knowledge may be too abstract and common to directly apply to particular contexts, environments and individuals (Bryman and Bell, 2011; Johnson and Onwuegbuzie, 2004). Further, since this methodology focuses more on theory or hypothesis testing instead of on the development of a theory or hypothesis, the researcher may be in danger of overlooking phenomena (Johnson and Onwuegbuzie, 2004). Therefore, given that their deductive approach stresses detailed planning (Neuman, 2011), quantitative researchers need to take into account issues of design, measurement prior to data collection and analysis.

3.4. The Researcher's Philosophical Standing for This Study

So as to consider the advantages and weaknesses of both the interpretivist (qualitative) and positivist (quantitative) approaches, the philosophical standing of the researcher to meet objectives of this study is to apply pragmatism and a sequential mixed methods approach procedure.

Pragmatism is attached to research practice, along with positivism and interpretivism, and it is considered as *the third paradigm* (Teddlie and Tashakkori, 2009) by helping to shed light on how research approaches are fruitfully mixed for answering important research questions (Johnson and Onwuegbuzie, 2004). As a philosophical underpinning for mixed methods studies, pragmatism is regarded by Tashakkori and Teddlie (2003), Venkatesh et al. (2013) as a means of concentrating attention on the research issue in a social science research and of applying pluralistic methodologies to derive knowledge about the research issue.

The mixed methods approach collects or analyses data inductively and deductively from both qualitative and quantitative approaches, or techniques, bringing them into a single research study (Creswell, 2009; Tashakkori and Teddlie, 2003; Venkatesh et al., 2013). Mixed methods research provides a richer, contextual basis for interpreting and validating results (Adam and Healy, 2000; Benbasat, et al., 1987; Williams, 2007). Furthermore, it enables the researcher to gain a holistic understanding of a matter of concern through harmonising perspectives on the same phenomena or relationships and minimising the weaknesses of each into single research studies (Teddlie and Tashakkori, 2003, 2009; Venkatesh et al., 2013). Therefore, by combining both the qualitative and quantitative approaches, mixed methods research increases the robustness of results (Williams, 2007; Yin, 2009). The research findings are strengthened by triangulation (Benbasat, et al., 1987; Teddlie and Tashakkori, 2009; Venkatesh et al., 2013).

A sequential mixed methods research approach (Creswell, 2009; Venkatesh et al., 2013) is recognised as the approach whereby the researcher strives to enlarge on the findings of one methodology with another. The primary objective of a sequential mixed methods research is to increase abundance to the overall study by leveraging the findings from the study first undertaken to inform the subsequent study (Venkatesh et al., 2013). In this context, this approach includes starting with a qualitative interview for exploratory objectives and, as a follow-up, administering a quantitative survey method that has a large sample. Thus, this approach enables the researcher to generalise results to a population (Creswell, 2009; Teddlie and Tashakkori, 2009; Venkatesh et al., 2013).

There are two key reasons why the sequential mixed methods research is adopted for this study. First, there have been few studies that observe the importance of considering various antecedents for successful outcomes of SISP and the relationship between antecedents and the impact of SISP success in the context of South Korea. A qualitative approach has potential advantages in the case where a concept or phenomenon needs to be understood because of a dearth of study regarding the concept or phenomenon (Leedy and Ormrod, 2005). Hence, the first qualitative phase provides an abundant depiction and understanding of the nature of the phenomenon (Eisenhardt, 1989). Further, the qualitative phase provides the development of a theoretical framework with a research hypothesis for the relationship between antecedents and the impact of SISP success to explore this phenomenon in greater detail. The qualitative approach is used to guide the quantitative approach by providing a hypothesis and aiding measurement (Johnson and Onwuegbuzie, 2004; Williams, 2007). Second, the quantitative phase is beneficial for increasing the generalisability of the framework and the hypotheses being proposed in regards to the relationship between antecedents and the impact of SISP success in this research, since these hypotheses are based on the perceptions of a larger population (Creswell, 2009; Saunders et al., 2009; Teddlie and Tashakkori, 2009). Therefore, in this study, a sequential mixed methods approach, including interviews as the qualitative approach and surveys as the quantitative approach, is employed for addressing the research issue.

3.5. Research Design

The objective of this study was to apply a sequential design that would then be used to undertake a qualitative approach (an interview) to allow the researcher to gain accurate and in-depth information on SISP antecedents, the successful outcomes of SISP and the impact of SISP success in organisations. The qualitative approach would also enable the researcher to establish a conceptual framework with a research hypothesis to be tested and validated. A quantitative approach (a survey) then helped the researcher to test the framework and hypotheses with a large sample that enabled results to be generalised to results to a population. Therefore, the sequential research design was anticipated to improve the triangulation of data and to develop a deeper understanding of a phenomenon (Neuman, 2011; Venkatesh et al., 2013). The following section discusses the research design for the two approaches.

3.5.1. The first phase: The qualitative study

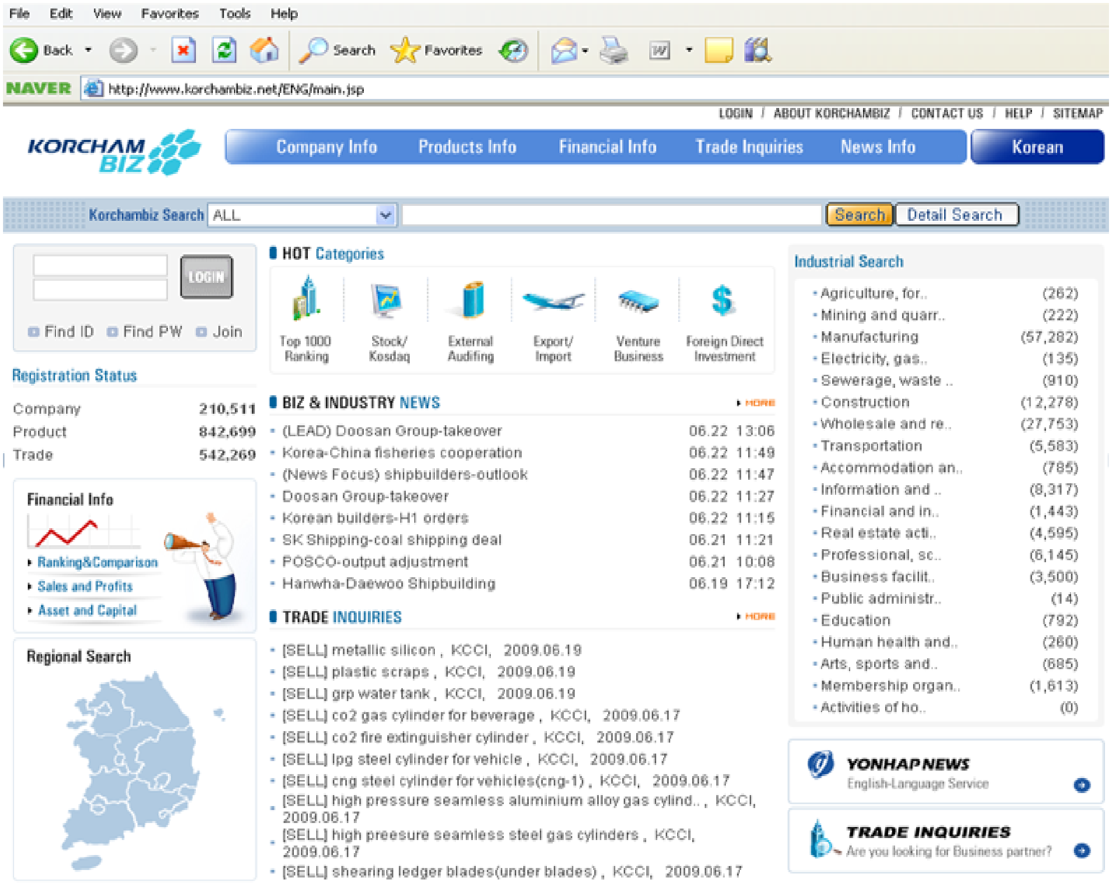
This study was first conducted via the qualitative research methodology. A qualitative approach enables the researchers to deal with complex and/or sensitive issues subjectively, answering questions regarding 'how' and 'why' issues, and obtaining other valuable information regarding the issues (Benbasat et al., 1987; Hair et al., 2003; Yin, 2009). Another feature of this approach was that it enabled in-depth information based on interviews or case studies to be obtained, which offered insights on how hypotheses could be generated or how theories could be built (Benbasat et al., 1987; Eisenhardt, 1989; Johnson and Onwuegbuzie, 2004; Venkatesh et al., 2013).

A qualitative study on the influence of SISP antecedents for successful outcomes of SISP and an understanding on the impact of SISP success was explored inductively via interviews with four business managers and four IT managers from four South Korean organisations. The qualitative study allowed the researcher to clarify and confirm the constructs identified from the literature to be applicable in the South Korean context as well as to develop the conceptual model and research hypotheses for the quantitative research.

3.5.1.1. Sample Population

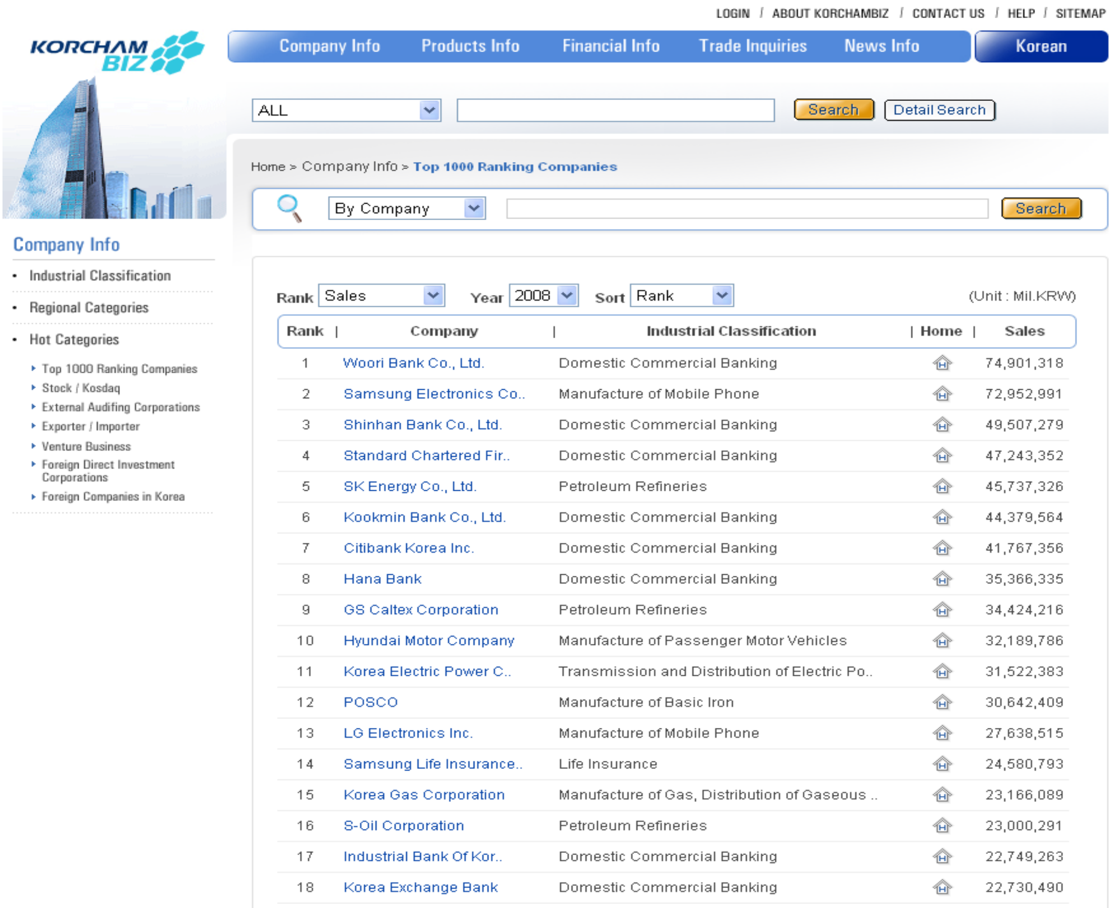
Once the decision to sample has been made, researchers need to first identify the sample population. The sample population refers to the specific or complete group relevant to the research project that the researcher has identified (Neuman, 2011; Zikmund et al., 2013). This study utilised a sample whose population was comprised of organisations listed on KORCHAMBIZ (Website: www.korchambiz.net/ENG/main.jsp), which is based on total sales and assets as presented Figure 3.1.

Figure 3.1. The main page of KORCHAMBIZ



The KORCHAMBIZ is a website that is managed and operated by the Korea Chamber of Commerce and Industry (KCCI). The KCCI is the nation's largest private economic organisation. The number of organisations on the list are 1,000 based on total sales and assets, and they are comprised of a relatively homogeneous group that possesses more than AUS $200 million of the total sales and more than 300 full-time employees as presented in Figure 3.2. Further, the list includes other meaningful information, such as names of CEOs, main business areas, company addresses, and Internet homepages that provide high credibility, generalisation and representativeness suggested by Bryman and Bell (2011), Creswell (2009) and Zikmund et al. (2013).

Figure 3.2. The information of top 1000 organisation in KORCHAMBIZ



Rank	Company	Industrial Classification	Home	Sales
1	Woori Bank Co., Ltd.	Domestic Commercial Banking		74,901,318
2	Samsung Electronics Co..	Manufacture of Mobile Phone		72,952,991
3	Shinhan Bank Co., Ltd.	Domestic Commercial Banking		49,507,279
4	Standard Chartered Fir..	Domestic Commercial Banking		47,243,352
5	SK Energy Co., Ltd.	Petroleum Refineries		45,737,326
6	Kookmin Bank Co., Ltd.	Domestic Commercial Banking		44,379,564
7	Citibank Korea Inc.	Domestic Commercial Banking		41,767,356
8	Hana Bank	Domestic Commercial Banking		35,366,335
9	GS Caltex Corporation	Petroleum Refineries		34,424,216
10	Hyundai Motor Company	Manufacture of Passenger Motor Vehicles		32,189,786
11	Korea Electric Power C..	Transmission and Distribution of Electric Po..		31,522,383
12	POSCO	Manufacture of Basic Iron		30,642,409
13	LG Electronics Inc.	Manufacture of Mobile Phone		27,638,515
14	Samsung Life Insurance..	Life Insurance		24,580,793
15	Korea Gas Corporation	Manufacture of Gas, Distribution of Gaseous ..		23,166,089
16	S-Oil Corporation	Petroleum Refineries		23,000,291
17	Industrial Bank Of Kor..	Domestic Commercial Banking		22,749,263
18	Korea Exchange Bank	Domestic Commercial Banking		22,730,490

All organisations in the KORCHAMBIZ list are consistently introducing and utilising large scale IT systems, such as ERP, CRM, SCM and KMS for achieving and managing their businesses effectively (Hong and Hwang, 2011; NIA, 2013; NIPA, 2012). Most organisations have a specific department to implement and operate their IT system. It is assumed that the list of the organisations have a higher probability of undertaking SISP prior to implementing their IT systems. Thus, the sampling population is the most useful approach to use in both the qualitative interview and the quantitative survey.

3.5.1.2. *Sampling Method and Unit of Analysis*

In this study, a simple random sampling technique was utilised as sampling method to select the sample. According to Bryman and Bell (2011), the simple random sampling is the most fundamental form of probability sample. It ensures that each element or unit in the population being studied has an equal possibility to be included in the sample (Bryman and Bell, 2011). Hence, this technique does not require any extra actions or steps for the researcher to split the population into subpopulations prior to a selection of members of the population at random (Neuman, 2011).

Both a business manager and an IT manager who have experience in SISP and IT-related projects were the adequate respondents for selection in this case from the list of KORCHAMBIZ. This was due to SISP being a multifaceted task that needs to be well-organised, managed and understood by a number of parties, such as top management, business and IT managers, and frequently outside stakeholders (Lee and Pai, 2003; Teo and Ang, 2001; Ward and Peppard, 2016). They have a responsibility for the decision-making on the establishment and management of business and IT goals and strategies, and the implementation of IT system (Khan et al., 2013; Lientz, 2010; Yeh et al., 2011). Moreover, the business groups and the IT groups might have different perspectives on the SISP that they want to achieve and pursue (McNurlin et al., 2009) Therefore, the business manager and IT manager included the unit of analysis in this research.

3.5.1.3. *Data Collection*

The qualitative data was collected via a semi-structured interview tool utilising open-ended questions. This was mainly achieved by gathering the most important ideas and perspectives of the participants based on a list of questions on the topic to be covered, which is commonly called as an interview guide (Bryman and Bell, 2011). In order to formulate and design a list of interview questions for this study's interview guide, the researcher consulted the relevant existing literature (Warren, 2001). The main objective of the interview is to obtain information from one or some situations which are alike to the researcher's problem situation (Leedy and Ormrod, 2005; Zikmund et al., 2013). There are several reasons why the semi-structured interview is selected in this study. First, the interview typically investigates appropriate questions that account for the phenomenon under study; thus it provides the researcher with high levels of flexibility to question the participants strategically (Hair et al., 2003; Sekaran and Bougie, 2010; Yin, 2009). It also helps gain in-depth or rich answers and information based on its natural context from respondents (Benbasat et al., 1987; Bryman and Bell, 2011). This means that the semi-structured interview enables the interviewer to use defined dimensions, and at the same time to investigate the interviewee about particular factors within the themes of the study (Sekaran and Bougie, 2010). Therefore, the employment of semi-structured interviews based on open-ended questions was selected as the main method to discover multiple truths among participants.

The interview tool was comprised of seven sections: (1) a profile of the organisation and the interviewee, (2) SISP in the organisation, (3) antecedents essential for SISP in the organisation, (4) outcomes obtained by successful SISP in the organisation, (5) the impact of SISP success in the organisation, (6) the relationship between antecedents and impact of SISP success and (7) other comments on the organisation's SISP process. Accordingly, this interview tool enabled the researcher to enhance the reliability and standardisation of this study (Yin, 2009). The face-to-face interviews were performed in a sequential way according to the order of the questions listed, and the researcher attempted to obtain as much direct information as possible from the interviewees (see Appendix A for the interview tool). However, whenever the answer was not sufficient, the researcher took extemporaneous and speedy action to ask for further information, as recommended by Myers and Newman (2007). For example, the researcher tried to induce the interviewees to offer an adequate answer by indirect questioning. Without mentioning the identified factors, the researcher asked them 'What do you think of this?', 'Why is it important?', and 'How does it affect your organisation?'.

The eight interviews for the data collection were all undertaken at a meeting room or a conference room in the organisation. Each interview took around one hour on average. During the interview, the full conversation was recorded with the authorisation of the respondents. Prior to the interview beginning, each interviewee read the consent form and signed the agreements. The consent form made it clear that participants should not be identified as a result of the interviews; participants were allowed to withdraw and/or reject to answer any questions at any time; and the private and confidential nature of the information, and also the participants' anonymity, were to be strictly maintained. The form also noted that it was imperative that all digital copies and transcripts of the interviews were securely stored and managed for five years following the completion of the thesis; and the identity of participants in this research project was to be disclosed only if the participant gave consent.

All the interviewees were Korean; thus the interviews were conducted in the Korean language. In order to analyse the interview data, the researcher compiled Korean transcripts and the transcripts of the personal interviews were checked with the interview tapes to ensure accuracy of the interview data. After writing up each interview, the researcher sent the completed Korean transcripts to all the interviewees to avoid misinterpretation and to request their feedback and final confirmation. Thereafter, the researcher translated the Korean transcripts into English for analysing the interview data.

3.5.1.4. Pilot Interview

After gaining ethics approval from the university, three pilot interviews were undertaken with three colleagues who are conducting IT-related research in the School of Business IT and Logistics at RMIT University. The pilot interviews were undertaken as the final preparation for data collection prior to the eight interviews. The three pilot test interviewees were also academics of IS/IT-related schools in their home country, such as Indonesia, Malaysia and Vietnam; thus they understood the interview content and were able to respond from a developing countries perspective, which ensured the validity for the current study. The pilot interview was performed with the English interview tool prior to the translation of the English interview tool into Korean. The purpose of the pilot interview was to test the logistics of the field inquiry, such as the intended data collection plan and the time needed to collect data. The pilot interview helped the researcher to refine data collection plans and the content of the research questions, as suggested by Yin (2009). Therefore, there were some research questions added up and there were some minor changes for wording of the questions to progress to the interview satisfactorily. For example, 3B in Question 3 was new added. Question 5 was moved to Question 6, and Question 6 was moved to Question 5 and the new question 5B was added. Furthermore, there were several changes in the wording of questions. For instance, in Question 3, ‘This section focuses on … effective SISP process’ was changed to ‘This section focuses on … successful SISP process. In Question 4, ‘This question focuses on discovering a success that your organisation has achieved after undertaking SISP’ was changed to ‘This question focuses on identifying outcomes that your organisation has successfully achieved from the SISP undertaking’. In Question 5, ‘This question focuses on … has obtained after developing and implementing SISP’ was changed to ‘obtained after undertaking SISP successfully’ (see Appendix A for the main interview). After the changes were made, the interview tool was assessed by the three pilot interviewees as easy to read; the questions were clear and concise in their meaning and relevant to what the researcher was seeking information about. The English interview tool was then translated to Korean.

3.5.1.5. Interviews

The researcher first conducted two interviews with a large South Korean organisation, which was located in Sydney Australia. Due to globalisation, a number of South Korean organisations operate their business in many countries around the world (Hong and Hwang, 2011). Moreover, regardless of whether the large organisations operated out of their own or other countries, they used the same IT system to manage and share all information effectively (NIA, 2013). This became the main reason for the researcher conducting two interviews with an organisation located in Sydney. Thereafter, six interviews were undertaken with three large organisations located in Seoul, South Korea.

After the eight interviews, the researcher found that all the information the participants provided encompassed the data required in each question. As well, there were similar answers and instances reported over and over again without new findings being identified in the subsequent groups. The researcher stopped adding more interviews since the researcher judged that theoretical saturation had been reached (Eisenhardt, 1989; Glaser, 1992; Morse, 1995). Thus, from each of the four large organisations, two managers – a business manager and an IT manager – were interviewed; in total, eight interviews were conducted.

Eight interviews embedded in three types of business fields – banking, manufacturing and wholesale – were undertaken to investigate perceptions and experiences of SISP antecedents for SISP's successful outcome and the impact of SISP success. These three industry fields were selected as the business transactions and management as well as operational processes for each of these fields highly depends on the implementation of an advanced IT system. Regardless of the business fields, most large organisations in South Korea have implemented and used highly advanced IS/IT systems in both their head office and overseas branches to execute their business more effectively (Kim and Lee, 2010; NIPA, 2012). Furthermore, during the last decade, SISP has mainly been adopted in large organisations, prior to IT implementation, to realise business potential and to make an early and effective return on investment (ROI) (Cho and Cho, 2005; NIA, 2008). Thus, it was assumed that the organisations and business fields listed in the KORCHAMBIZ have a higher probability of undertaking SISP prior to implementing their IT systems.

To undertake the interview in Australia, the researcher first connected to a website of KOTRA (Korea Trade-Investment Promotion Agency: www.kotra.or.kr/KBC/melbourne/KTMIUI010M.html) to identify how many large organisations were now operating their business in Australia within the KORCHAMBIZ company list (see Figure 3.2). According to the information of KOTRA, there were 38 large organisations currently running their businesses as shown in Figure 3.3. Among the 38 organisations, the researcher randomly selected 10 organisations that were located in Sydney, Australia. The researcher then emailed the organisation with a copy of the invitation letter and the interview tool with the consent form or, alternatively, the researcher phoned to find whether the organisation would be prepared to participate in the interview. The researcher received a positive answer from relevant officials of one organisation – the CEO and IT manager of Organisation A – who were prepared to undertake an interview. Before the researcher went to Sydney for the interview, the researcher forwarded again the interview question to the agreed interviewees to allow them to prepare for the interview. The researcher also searched the organisation's web-sites to understand the key roles and tasks of the interviewees.

Figure 3.3. The information of large organisations operating businesses in Australia from KOTRA

After completing the interview in Sydney, the researcher then went South Korea to undertake the rest of the six interviews. Every procedure of the six interviews conducted in South Korea was exactly the same as that of the two interviews performed in Sydney. The researcher randomly selected 40 organisations from the 1000 samples and then emailed the invitation letter and the interview question with the consent form or phoned to find eligible interviewees. Among the chosen 40 organisations, a business manager and an IT manager of three organisations were interested in undertaking the interview. More detailed information on the organisations and interviewees is shown in Chapter Four.

3.5.1.6. *Data Analysis*

Due to many different forms of analysis available, the process of data analysis needs to appropriately reconstruct and represent the data into an identifiable reality obtained from participants in the study (Creswell, 2009) and to make it possible to interpret the meaning of the data (Neuman, 2011). The qualitative data analysis undertaken in this research was a non-mathematical analytical approach; thus, this involved the researcher examining the meaning of the manners and words of the participants (Zikmund et al., 2013). Therefore, in this respect, the researcher employed Creswell's (2009) six-step qualitative data analysis for the analysis and interpretation of the qualitative data. The six steps were as follows: (1) to organise and prepare the data for analysis, (2) to read through all the data to create a general idea, (3) to code the data, (4) to use the coding data to create a description of the setting or people as well as categories or themes for analysis, (5) to represent the description and themes in the qualitative narratives, and (6) to interpret the meaning of the data.

At the completion of each interview session, the interview was transcribed. According to Bernard et al. (2016), the process involved for transcribing research data comprises listening to a recorded interview; following this, the researcher converts the voice conversation into a text document. Hence, in qualitative research, it is essential for the researcher to have a complete transcript interview from each audio-taped interview, because it is the first stage in making initial judgments of the data and implementing a systematic analysis of qualitative research (Bernard et al., 2016). The researcher transcribed the recorded interviews, which were conducted in the Korean language. All the transcribed interviews were carefully translated from Korean into English. During the translation, the researcher repeated the translation several times to maintain the accuracy of transcriptions. Thereafter, a professional translator who understood Korean and English checked the transcriptions to ensure their accuracy.

The next stage for the transcription was the coding, which describes the process of looking into and identifying germane themes that have appeared from the qualitative data, and then to label the data with the applicable codes for the relevant themes (Bernard et al., 2016). In this thesis, the main objective of coding at this stage was to generate initial views from the research data that was raw and unstructured, and to draw the attention of a commonality within a data set (Bryman and Bell, 2011). This step enabled the researcher to investigate the content of the interview statements. The aim here was to identify the key categories and themes (Bernard et al., 2016; Neuman, 2011).

As a start, all the interview transcriptions were printed in preparation for the coding and the analyses. Then, the printed transcriptions were checked and read several times in their entirety. This enabled the researcher to identify the data that addressed the research questions and to start the process of data coding. A manual hand coding technique was the coding process employed in this thesis. This enabled the researcher to obtain a more intimate understanding of the coded data and to provide creativity and flexibility (Flick, 2009).

Thereafter, the data was analysed utilising a thematic analysis. A thematic analysis in qualitative research is typically applied to confirm the basic concepts that have been found from the research data. The analysis is also conducted to describe the phenomenon under study (Bernard et al., 2016). In this study, the thematic analysis that was employed was based on what Braun and Clarke (2006, p. 87) recommended as the six phases of thematic analysis: "(1) familiarising myself with my data, (2) generating initial codes, (3) searching of themes, (4) reviewing themes (5) defining and naming themes and (6) producing the report." In the first phase, the researcher transcribed each of the eight interviews to present a general sense of patterns from the interview data. The researcher also read these eight transcribed documents several times to become familiar with the data. The researcher then established the primary themes in the collected interview data, including SISP in organisations, antecedents, the successful outcomes, the impact of SISP success and the relationship between antecedents and the impact of SISP success. The key themes were also defined and categorised as their subthemes. The themes and subthemes were reviewed to check whether they could suitably work in relation to the entire data set. After the completion of all phases, the researcher was able to gather all data relevant to the analysis prior to producing the report.

For the coding for the interview, the hand coding technique was applied to encourage the researcher to feel more engaged with the interview data and to obtain a good understanding of the interview for the analysis. Furthermore, the researcher employed the paper-based approach to improve the level of creativity and flexibility to create preliminary coding ideas (Neuman, 2011). Table 3.2 presents an example to display how the researcher produced the themes related to the issues influencing the antecedents, the successful outcomes of SISP and the impact of SISP success during the SISP undertaking.

Table 3.2. The example of coding for data analysis

Main theme	Sub theme	Interview
Antecedents	Top management participation and support	*It should be natural for top management to have a high interest in and expectation of the process, as it invested plenty of money and time to undertake it successfully*. (the CEO in Organisation A)
	Effective communication and knowledge sharing between the business and IT stakeholders	*Communication and knowledge sharing between business and IT sectors enabled the organisation to improve the alignment of business and IT goals and strategies, and adequate HR, costs and time allocation at the planning stage.* (the ITM in Organisation B)
	The impact of the internal and external environment	*The benchmarking enabled us to establish a more advanced process and IT system that kept up with other rivals in the field. It encouraged an effective alignment of business and IT processes based on an understanding of the present business and IT environments and trends.* (the BM in Organisation C)
	Adequate resources for SISP	*In the current project, the bank set up a three year plan for the SISP and IT project to be completed. All resources were well allocated and arranged into planning stages. Thus, we expected to provide better customer services by aligning and standardising the existing process and system.* (the ITM in Organisation D)
	Organisational learning	*Many members in the organisation had a doubt about why it has to be done and they did not want to take the time to understand and utilise the newly implemented process and system. However, the learning enabled business members to understand the importance of IS/IT for business execution and the attainment of its objectives, and vice versa.* (The ITM in Organisation A)
	Active partnership between members of the organisation and an external vendor	*If we have a plan to undertake an IT-related project with an outside company in the future, the outside company who has capabilities, leadership and partnership level will be considered as a first priority.* (the ITM in Organisation B) *To complete the project successfully, outside vendors need to first build a supportive environment for working with an organisation. Further, the client needs to have an ability to effectively manage and supervise the vendors*. (the BM in Organisation C)

Table 3.2. The example of coding for data analysis (Continued)

Main theme	Sub theme	Interview
Successful outcomes of SISP success	IS planning effectiveness	*The factors we considered encouraged us to improve usefulness of the planning by properly identifying organisational-wide IT architecture and business processes*. (the ITM in Organisation A) *By considering the factors mentioned above, the organisation enabled various departments to define business and IT processes clearly and to harmonise their directions and requirements effectively.* (the BM in Organisation B)
	Business and IT alignment	*Based on the successful planning, we could achieve effective alignment of business and IT goals and strategies.(the ITM in Organisation A)* *As a result, it helped us to attain successful business and IT alignment based on the standardised business and system architecture*. (the ITM in Organisation C) *Considering the identified factors enabled us to achieve a high level of alignment of business and IT processes, and architectures*. (the BM in Organisation D)
The impact of SISP success	Organisational capabilities	*Due to the successful SISP, the organisation could reconfigure overall resources in the organisation and upgrade overall business and IT structures in accordance with its business goals and strategies*. (the ITM in Organisation A) *The successful SISP enabled us to arrange and structure business and IT processes and resources in a proper way; thus to diagnose and predict the current situations and to decrease wastage of redundant resources*. (the BM in Organisation C)
	IS competencies	*Successful SISP facilitated communication and knowledge sharing about the processes and resources between business and IT sector as well as improved consensus and harmonisation of the two sectors regarding the processes and resources*. (the ITM in Organisation B) *The successful SISP encouraged the bank's members to enhance communication and knowledge sharing on overall business and IT processes. Thus we were encouraged to improve its ability to build future-oriented objectives, plans and strategies as well manage effective use of its resources*. (the BM in Organisation D)
	IT infrastructure flexibility	*The successful SISP enabled the organisation to react and respond the internal and external changes, issues and trends correctly and swiftly.Thus, we are now able to make prompt decision-making and improve efficiency of allocation of HR and other resources*. (the BM in Organisation B) *The successful SISP enabled to set up decision-making and planning for business execution more rapidly in real-time and to review and upgrade our organisation's overall process and system in a more effective way*. (the ITM in Organisation C)

After the analysis of the qualitative data, the findings of the interviews were utilised to identify constructs found in the literature review as well as to develop hypotheses and the conceptual framework for the relationship between antecedents and the impact of SISP success to be validated in the survey. The next phase, which is the quantitative research design of the study, is discussed in the next section.

3.5.2. The second phase: The quantitative study

The researcher conducted a quantitative methodology as the next stage of data collection for this study. The quantitative methodology is the collection of numerical data and is deductive (Bryman and Bell, 2011). Research findings from the quantitative methodology are predictive and confirming based on the distinct variables, hypothesis, numerical data and statistical analyses that inform this approach (Creswell, 2009; Neuman, 2011). The quantitative methodology also comprises the collection of data and represents the results from a large number of respondents or population (Polonsky and Waller, 2011). Hence, a quantitative methodology is advantageous in surveying and experimentation (Leedy and Ormrod, 2005).

A quantitative survey was selected as the next stage of the data collection method for this research. This choice was made because a survey is a useful method for collecting data from a large sample (Neuman, 2011; Zikmund et al., 2013). This phase was conducted to test the conceptual framework proposed in Chapter 4, which was established from the literature review and the qualitative study.

3.5.2.1. Sample Population and Sampling Technique

A sample is defined as "a subset of the population" (Hair et al., 2003, p. 266) and the population is described as “the full set of cases from which a sample is taken” (Saunders et al., 2009, p. 212). Sampling refers to “the process of selecting a sufficient number of elements from the population” (Hair et al., 2003, pp. 266-267). Sampling includes any procedure that draws a conclusion from measurements of a portion of the population, (Zikmund et al., 2013). In social science research, feasibility and cost constraints make it impractical to study the entire population (Hair et al., 2003; Zikmund et al., 2013). Thus, selecting a representative sample from the population of interest is essential for better observation and analysis (Dillman et al., 2009).

As with the qualitative study, the population for the sample utilised in this quantitative study was comprised of organisations listed on KORCHAMBIZ, which is based on total sales and assets. The sampling population encouraged me to make estimations of all the organisations in a defined population with statistical precision (Dillman, et al., 2009).

A simple random sampling technique was also used to select the sample in this study. In probability sampling, the simple random sampling is known as the most fundamental form (Bryman and Bell, 2011; Hair et al., 2003), in which each element or member in the population has a known and equal possibility of being included as a subject (Leedy and Ormrod, 2005; Zikmund et al., 2013). This indicates that this technique does not need to spilt the population into subpopulations and/or take any additional steps prior to selecting elements or members of the population at random (Neuman, 2011). Thus, simpleness and ease of use are well-known as the major benefits of simple random sampling (Zikmund et al., 2013).

In this study, the researcher determined whether the organisation utilised a large scale of IT systems such as ERP, SCM and KMS and whether the organisation was operating their businesses globally. Hence, the researcher randomly selected a business manager and an IT manager who were experienced in a SISP and IT related project from each selected organisation. Before the questionnaire was circulated, an investigation of annual reports and websites in each organisation was undertaken to identify whether the selected organisation had advanced IT systems and operated their business on a global basis. Moreover, through the invitation letter for the survey, the respondents were provided with an option not to join or to refuse to participate in the survey at any point.

3.5.2.2. Sample Size

The sample size creates the representativeness of the sample for generalisability (Hair et al., 2003). The basic rule for confirming the sample size is typically "the larger the sample, the better" (Leedy and Ormrod, 2005, p. 207). However, the decision for defining sample size is not straightforward; there is no one definitive answer and it depends on several considerations that need to be taken into account, such as availability of time and resources, the need for precision, a non-response (Bryman and Bell, 2011; Dillman et al., 2009), the type of population, the research objective and the type of instruments used (Hair et al., 2003; Saunders et al., 2009; Zikmund et al., 2013).

In order to analyse the survey data by using a structural equation modelling (SEM), a minimum of 100 samples need to be collected, and a sample size of more than 200 are required for a meaningful and accurate result (Hoyle, 1995; Loehlin, 2004). Since this study includes the analysis on a difference of perspective of the relationship between antecedents and the impact of SISP success about business managers and IT managers using moderating effect, more than 200 samples, such as a minimum of 100 samples for business managers and a minimum of 100 samples for IT managers were needed to adequately undertake the multiple group analysis by using SEM. Thus, being able to determine the more suitable sample size is an essential stage for selecting the right technique for data analysis. In this study, the formula (presented below) suggested by Lind et al. (2005) was used to determine a suitable sample size.

$$\boxed{n = p(1\text{-}p)(\frac{z}{E})^2}$$

According to Lind et al. (2005), 'n' denotes sample size, 'p' implies population, 'z' indicates t-value for confidence interval and 'E' signifies sampling error. In this study, the percentage of confidence level is set as 99% (z = 2.58). Further, this study sets the percentage of population and the margin of error as 50% (p = 0.5) and 0.05 (E = 0.05) respectively. Based on the above calculation, this study is expected to require a sample size of approximately 665 organisations. However, the return rates (or response rates) in the current survey are typically very low (Bryman and Bell, 2011; Dillman et al., 2009; Hair et al., 2003). This suggests that the researcher might need more sample sizes than those gained from the general calculation formula. Hence, considering the low response rate in the current survey, it would be suitable to choose a sample size of 700 organisations from the populations to undertake an effective statistical analysis and obtain credible results. After the initial distribution (in early April 2014), a number of follow-up efforts were implemented to encourage responses. These efforts were fulfilled both by phone and email from mid-June until early July 2014.

3.5.2.3. Respondent Selection Criteria

As with the qualitative study, the target population for this quantitative study consisted of a business manager such as middle and senior manager or CEO, and an IT manager including a CIO who had experience with SISP and an IT related project in an organisation. This was due to both the business manager and IT manager understanding the information requirements and capabilities offered by SISP as well as being responsible for important decision-making, such as the technical and financial approval of IT investment regarding SISP and an IT project. Therefore, with their combined experience and knowledge on SISP and an IT project, the business and IT manager were suitable respondents for the survey.

3.5.2.4. Data Collection

The survey data was collected via a structured survey tool using close-ended questions with a business manager and an IT manager from South Korean large organisations. The primary objective of the survey is to generalise and learn about a large population by surveying a sample of that population (Leedy and Ormrod, 2005; Zikmund et al., 2013), hence identifying and observing interferences about several characteristics from the population, including attitudes, beliefs, opinions and past or present behaviours (Hair et al., 2003; Neuman, 2011).

The survey tool was comprised of six sections: (1) an interviewee profile, (2) a business profile, (3) SISP in the organisation, (4) antecedents of SISP in the organisation, (5) the successful outcomes of SISP in the organisation and (6) the impact of SISP success in the organisation. Therefore, the survey was performed in a sequential way according to the order of the questions listed (see Appendix B for the survey tool).

During the period of April to mid-August 2014, the data collection of the survey was conducted. The researcher conducted the survey by email and post. The researcher did not undertake it online, principally because most large organisations possess highly advanced spam filtering systems, and the researcher could not be sure whether the invitation letter and questionnaire would reach their destination. Further, the researcher did not have names of the potential participants or departments, only the location and name of the organisations, so the researcher first needed to email or phone the organisations to find the relevant department and people. For these reasons, the researcher decided not to use the online survey, but to select various other means to improve the response rate within the fixed period. Moreover, the 1,000 organisations in the KORCHAMBIZ list were comprised of a relatively homogeneous group that possessed more than AUS $200 million of the total sales and more than 300 full-time employees. Therefore, the organisations that had more than AUS $200 million of total sales and 300 full time employees were selected for the survey.

In terms of classifying and confirming acceptable industries from the list of the targeted organisations for the survey, the researcher categorised these industries into seven industry fields. These encompassed: (1) manufacturing, (2) banking, finance and insurance, (3) electricity, electronic, IT and telecommunications, (4) construction, (5) cargo, logistics, shipping and transport, (6) services (i.e., consulting, education, health and publication etc.), (7) wholesale and retail trade, and (8) others. According to the Korean standard industrial classification in the Statistics Korea (http://kssc.kostat.go.kr/ksscNew_web/ekssc/main/main.do#), there are 21 industries categorised by a specific business field. Most of the 1,000 organisations presented in the list of KORCHAMBIZ are mainly operating their business within the seven industry fields illustrated above.

To conduct the survey, the researcher first selected large organisations randomly, but equally distributed across the sample population from the list of KORCHAMBIZ and sent an email or phoned the organisations to find eligible respondent(s) who were involved in SISP and to obtain the survey participation agreement from them. After gaining the agreement from the respondents, the researcher distributed the questionnaire with the invitation letter to the participants via email or post. If the approved respondent who the researcher had contacted was a business manager, the researcher then asked the respondent whether it was possible to circulate or inform an IT manager who participated in SISP and vice versa. Thereafter, the researcher contacted the potential respondent(s) to enquire about the survey participation. Further, the completed survey was collected from the contact of each selected respondent of the organisation after one week.

3.5.2.5. Generating Items to Measure the Research Constructs

Based on the constructs found in the literature review and phase one of the research – the qualitative research – this study generated items for each construct which is consistent with those discussed in the IT management and SISP related literature. The survey tool (see Appendix B) had six primary sections. Sections one to three comprised demographic data. Also, sections four to six included empirical measurements on three key constructs – antecedents, the successful outcomes of SISP and the impact of SISP success. A five-point Likert scale was employed for each question in each construct that ranged from one labelling 'no extent at all' to five that indicate 'very high extent'. Table 3.3 displays the measurement items for antecedents, the successful outcomes of SISP and the impact of SISP along with their source.

Table 3.3. Items of each construct for this study

Items of the constructs and Question
TMPS 1: TM was knowledgeable about the strategic potential of IS/IT, the organisation's IS/IT assets and opportunities, and the competitor's use of IS/IT **TMPS 2**: TM perceived and understood SISP as an important activity/source or long-term investment for implementing IS/IT systems of the organisation **TMPS 3**: TM was actively involved/participated in decision-making or project meetings for SISP **TMPS 4**: While undertaking SISP, TM communicated and shared his/her knowledge with CIO and CFO formally or informally **TMPS 5**: TM appropriately allocated and prioritised financial and human resources as well as the time horizon vital for SISP **TMPS 6**: TM monitored/post-audited on the results of SISP
ECKS 1: A variety of people from the business and IT sectors participated in SISP with high interest **ECKS 2**: Those from the business and IT sectors properly understood their working environment while undertaking SISP **ECKS 3**: Those in the business sector who participated in SISP possessed proper IS/IT knowledge and those in the IT sector had suitable business knowledge **ECKS 4**: While undertaking SISP, business and IT sectors maintained open lines of oral/written communication with each other based on their close relationship with each other **ECKS 5**: Business and IT sectors shared with each other their knowledge, know-how, work experience and expertise, which encompassed emerging technologies, technological advancement in the industry, changes in business conditions, customer needs, and the strategies and tactics of their competitors **ECKS 6**: Business and IT sectors assisted each other to identify common goals/objectives, problems and opportunities regarding SISP **ECKS 7**: Project members of SISP properly communicated and shared their information and knowledge with external vendors
IEE 1: While undertaking SISP, the organisation considered and reviewed its internal business environments, including current business goals, strategies, resources, and processes, as well as its inherent culture **IEE 2**: While undertaking SISP, the organisation considered and reviewed its external business environments, including the economic, industrial and competitive climate in which the organisation operates, such as economic, social, political, legal, and ecological factors **IEE 3**: While undertaking SISP, the organisation considered and reviewed its internal IS/IT environments, including the current IS/IT perspective in the business, its maturity, business coverage and contribution, skills, resources and technological infrastructure **IEE 4**: While undertaking SISP, the organisation considered and reviewed its external IS/IT environments, including technology trends and opportunities, and the use of IS/IT by others, especially customers, competitors and suppliers

Table 3.3. Items of each construct for this study (Continued)

ARS 1: While undertaking SISP, human resources from business and IT sectors, and external vendors (i.e., consultants and system developers) with suitable understanding of the organisation's business-IT goals and strategies were appropriately allocated and invested **ARS 2**: Financial funds for undertaking SISP, performing organisational learning, and IS/IT systems' implementation and maintenance were properly allocated and invested **ARS 3**: Top management supported the resource investments necessary for the SISP and provided active participation in and strategic awareness of IS/IT **ARS 4**: While undertaking SISP, communication, consensus and partnership between people of the business and IT sectors regarding the resource allocation were suitably arranged and performed undertaken
OL 1: Project members learned about the scope and goals of the SISP, and the organisation's mission and purpose, key issues and internal and external environments **OL 2**: Project members were trained in the SISP methodology that the organisation intended to introduce **OL 3**: End-users received extensive on-the-job learning/training on why the organisation should undertake the SISP process; the importance of the process; its difference from the previous one; and its benefits etc. **OL 4**: The organisation provided learning/training opportunities or supports regarding SISP and IS/IT systems to end-users internally and externally on a regular basis **OL 5**: To encourage the organisational learning, the organisation provided incentives (i.e., awards or promotion etc.) for end-users
APMEV 1: While undertaking SISP, the external vendors had a good relationship with various parties (i.e., CEO, project team and end-users) **APMEV 2**: The external vendors showed active commitment and participation while undertaking SISP **APMEV 3**: The external vendors properly understood the organisation's culture, objectives and structures to undertake SISP of the organisation **APMEV 4**: While undertaking SISP, the external vendors had a predisposition to communicate and share their expertise, information, knowledge and resources with members of the organisation based on integrity (performed with honesty) and trust **APMEV 5**: The external vendors had relevant and suitable project experience, management skills and techniques for undertaking the task **APMEV 6**: The external vendors have maintained long-term partnership with the organisation following the project
ISPE 1: Improved decision-making, support and understanding of top management for better assessment investment regarding IS/IT planning and implementation **ISPE 2**: Better appreciation of the role of IS/IT and improved collaboration between members in the organisation **ISPE 3**: Better implementation of organisational architecture based on appropriate alignment of business-IT objectives, plans and strategies **ISPE 4**: Increased efficiency of business operation and user satisfaction with IS/IT services **ISPE 5**: Better planning and control of human, software and hardware resources **ISPE 6**: Greater contribution to organisational performance and competitive advantage of the organisation by exploiting IS/IT opportunities
BITA 1: Communication and knowledge sharing between business and IT sectors regarding SISP (i.e., exchange of ideas or information on the organisation's long-term strategies and plans, business-IT environments and so on) **BITA 2**: Connection and integration between business planning and IS/IT planning (i.e., aligning IS/IT capabilities, goals, issues, missions, resources, HR skills and strategies with business ones) **BITA 3**: Adaptation of IS objectives to organisational change; and adaptation of technology to strategic change **BITA 4**: Identification of IT-related opportunities to support strategic direction of the organisation **BITA 5:** Assessment and management of the strategic importance of the organisation's overall technologies, including enterprise architecture (EA), H/Ws, S/Ws and databases)

Table 3.3. Items of each construct for this study (Continued)

Orcap 1: Ability to identify key problem areas **Orcap 2**: Ability to identify new business opportunities **Orcap 3**: Ability to align IS/IT strategy with organisational strategy **Orcap 4**: Ability to understand the organisation's business and IT requirements **Orcap 5**: Flexibility to adapt to and forecast unanticipated changes and crises **Orcap 6**: Ability to gain coordination and communication between the business sector and IS/IT sector regarding new ideas, information and knowledge, to improve decision-making **Orcap 7**: Ability to foster organisational learning
IScom 1: Ability to identify and evaluate the implications of IS/IT-based opportunities as an integral part of business strategy formulation, and (re)define the role and scope of business and IS/IT in the organisation **IScom 2**: Ability to manage, reengineer and translate the business strategy into processes, information and systems investments and change plans that matched the business priorities with proper knowledge and skills **IScom 3**: Ability to manage, reengineer and translate the business strategy into long-term information architectures, technology infrastructure and resourcing plans that enabled the implementation of the strategy with proper knowledge and skills **IScom 4**: Ability to maximise the benefits realised from the implementation of IS/IT investments through effective use of information, applications and IT services **IScom 5**: Ability to deploy human, H/W and S/W resources in order to implement and operate business-IS/IT solutions, which exploited and improved the capabilities of business and technology **IScom 6**: Ability to create and maintain a necessary information, technology, resource and supply chain etc.
ITIF 1: Ability to quickly respond to consumers' demands, environmental conditions, organisational technology needs and emerging market trends **ITIF 2**: Ability to swiftly provide optimised products/services for customers **ITIF 3**: Ability to react to resource allocation needs in the organisation and new products/services launches by competitors **ITIF 4**: Ability to expand into new regional or international markets **ITIF 5**: Ability to adopt and (re)design new business processes and technologies for quick delivery and to produce better, faster and cheaper products/services **ITIF 6**: Ability to review and switch partners or suppliers in order to maintain lower costs and secure better partnership with partners/suppliers

Table 3.3 above indicates that the three constructs for antecedents, the successful outcomes of SISP and the impact of SISP success were measured using multiple items. For instance, antecedents had six constructs, comprising TMPS, ECKS, IEE, ARS, OL and APMEV, and each construct was measured by some items, such as TMPS (six items), ECKS (seven items), IEE (four items), ARS (four items), OL (five items) and APMEV (six items). The successful outcomes of SISP had two constructs with multiple items such as ISPE (six items) and BITA (five items). Similarly, the impact of SISP had three constructs, which were Orcap, IScom and ITIF, and they had seven items, six items and six items respectively. All the items of the constructs were derived from existing studies.

3.5.2.6. Pilot Survey

Before the start of the main survey, a pilot study was undertaken to test the reliability of the constructs and items that were included in the questionnaire, which was based on the proposed conceptual framework. Further, prior to the execution of the pilot study, traditional validity checks, such as face validity and peer review, were administered by three academics who had experience in building and managing survey questionnaires.

After the validity checks, the researcher then sent an email or phoned 20 large organisations in South Korea to gain the pilot participation agreement. There were 13 respondents (six business managers and seven IT managers) from eight organisations interested in the pilot study. Prior to the pilot survey, the researcher explained to the respondents that the pilot survey was undertaken in English and that the objective of this study was to measure the clarity and user friendliness of the questions. All respondents understood the objective and agreed to undertake the pilot survey in English. Thus, the pilot study was undertaken by email with the 13 managers, and they were asked to perform the pilot study. Table 3.4 presents the position of the respondents and their experience in SISP.

Table 3.4. The position of respondents and their experience in SISP

Position	Number	SISP experience (years)	Number
CEO/CIO	1	Less than 5 years	5
Chief/Senior Manager	5	Between 5 and 9 years	2
Manager	6	Between 10 and 14 years	5
Assistant manager	1	More than 15 years	1
Total	13	**Total**	13

The above table 3.4 indicates that the position of the respondents and their experience in SISP were varied, ranging from CEO to senior and assistant manager as well as their experience ranging from 5 to 15 years duration. The pilot test helped the researcher check and confirm the internal consistency of the items and the measuring constructs, ensuring Cronbach's Alpha test as displayed in Table 3.5. According to Hair et al. (2010), an alpha value is typically regarded as a high level of reliability when it is between 0.8 and 0.9.

Table 3.5. The reliability test for the questionnaire using Cronbach's Alpha

Constructs	No of Items	Means	Cronbach's Alpha
TMPS	6	3.567	.853
ECKS	7	3.514	.889
IEE	4	3.275	.840
ARS	4	3.375	.851
OL	5	3.220	.887
APMEV	6	3.417	.846
BITA	5	3.550	.913
ISPE	6	3.657	.917
Orcap	7	3.513	.890
IScom	6	3.583	.852
ITIF	6	3.383	.857

As shown in the above table, the internal reliability of all constructs established in the questionnaire was adequate and trustworthy for the main survey and further statistical analysis, because Cronbach's Alpha value for all constructs exceeded the ideal value, which is 0.8. Moreover, before the main survey was distributed, the questionnaire was slightly corrected based on the feedback received from the pilot study. For example, a capital letter which is 'Organisation' in the title of section D, E and F was changed to a lower-case letter 'organisation'. An item 'others' was added in Question 2 of Section A and in Question 1 of Section B. Underlining was also added in the important point, such as Do not fill both fields in Question 1 of Section A, Please tick all items in Question 3 of Section C, and Please read and tick all the items in Section D, E and F.

The data collection took place in South Korea. It was imperative that the questionnaire, which was translated from English to Korean, was accurate and that it retained the precise sense and meaning of the responses. Thus, the questionnaire was then translated from English into Korean as suggested by Douglas and Craig (2007) to make certain that South Korean respondents better understood the questions as well as being able to facilitate and support the response rate required for the study. The invitation letter and the survey questionnaire (see Appendix B) were also translated. A Korean professional translator who was familiar with both Korean and English grammar translated and then cross-checked these documents. Taking into account the complexities of both Korean and English grammar, careful consideration was given to these complexities during this stage. This was to make sure that the meaning was consistent between the Korean and English versions of the questionnaire.

3.5.2.7. Main Survey

After completing the pilot survey and the translation of the questionnaire to Korean, the researcher sent an email or phoned the selected large organisations in South Korea to first find eligible respondents and ask the survey participation agreement to them. Between April and mid-August 2014, the researcher sent an email or a hard copy of the questionnaire with the invitation letter at the email address or workplace of the agreed respondents. The researcher received 317 usable respondents and the total response rate was 45.3% (317/700).

Among the 317 usable samples, business managers represented 47.3% (150/317) and IT managers 52.7% (167/317). According to the survey result, almost half the respondents' industries were in manufacturing (49.2%), followed by banking, finance and insurance (12%), electricity, electronic, IT and telecommunications (9.8%), services (8.5%), wholesale and retail trade (7.6%), construction (6.9%), cargo, logistics, and transport (5%) and others (0.9%) respectively. Over half the respondents (55.8%) had about five years' experience in SISP and IT-related projects and they worked in the role of assistant manager (49.5%). One third of the respondent organisations (30.3%) had less than 500 employees; however 16.1% of organisation had more than 5,000 employees. Table 3.6 shows the summary of the profiles on the respondents' industry sector as well as the number of employees in the respondents' organisation identified in the survey.

Table 3.6. The summary of the respondents' industry field and the number of employees in the respondents' organisation

Industry sector or the respondents' organisation	Manufacturing	82	74	156 (49%)
	Banking, finance and insurance	23	15	38 (12%)
	Construction	12	10	22 (6%)
	Cargo, logistics, shipping and transport	8	8	16 (5%)
	Electricity, electronic, IT and telecommunication	15	16	31 (10%)
	Services	15	12	27 (9%)
	Wholesale and retail trade	10	14	24 (8%)
	Others	2	1	3 (1%)
Number of employees in the respondents' organisation	Less than 500 employees	43	53	96 (30%)
	Between 501 and 1,000 employees	39	43	82 (26%)
	Between 1001 and 3,000 employees	36	25	61 (19%)
	Between 3,001 and 5,000 employees	18	9	27 (9%)
	More than 5,001 employees	31	20	51 (16%)

3.5.2.8. Data Analysis

The questionnaire was constructed based on the theoretical concepts of measurement theory. The qualitative findings also encouraged the dimensions to be explored for the conceptual framework with research hypotheses to be tested and validated. In order to analyse the quantitative data in this study, PASW statistics version 21 (formally SPSS statistics) and AMOS version 21 were utilised. PASW was first utilised to analyse the demographic profile of the respondents through the inputting, storing and screening of the collected data to address the missing values, outliers, kurtosis, skewness, normality, linearity and exploratory factor analysis (EFA) with the reliability test. After completing the analysis of the demographic data and EFA, the reliability and validity tests through confirmatory factor analysis (CFA) were used again to validate the constructs and the conceptual framework utilising structural equation modelling (SEM). The CFA was conducted via AMOS.

Hair et al. (2010) explain that SEM is a statistical technique allowing the researchers to analyse separate relationships for each of a set of dependent variables. It is typically categorised by two key components: (1) the measurement model and (2) the structural model. The measurement model enables the researcher to utilise variables for a single independent or dependent variable, and the structural model, known as the path model, relates to independent to dependent variables (Hair et al., 2010). Furthermore, SEM employs confirmatory factor analysis (CFA) to assess the measurement model and to examine the measurement variable used to measure the theoretical constructs (Hair et al., 2010). Hence, SEM allows the researcher to hypothesise a model that attempts to explain casual relationships among multiple variables and to validate such relationships at the same time (Byrne, 2010). It also enables the researcher to estimate the relationship between the observed and unobserved (latent) variables available in the theoretical model (Hair et al., 2010).

This study had three unobserved constructs that included the antecedents, the successful outcomes of SISP and the impact of SISP success. Each of the three unobserved constructs was comprised of some observed constructs (the antecedents had six observed constructs, the successful outcomes of SISP had two observed constructs and the impact of SISP success had three observed constructs). Hence, a SEM technique was utilised in this study to test the relationship among those constructs in the proposed theory and to generalise the results to a large population. The detailed information on data analysis in the survey is presented in Chapter Five.

3.6. Reliability and Validity

3.6.1. Definition of reliability and validity

Neuman (2011) maintains that reliability and validity should be important issues in all measurement: in social theory, not only are constructs frequently ambiguous but they are diffuse; also, they are not directly observable. Although reliability and validity have a different sense of meaning in qualitative and quantitative research, the two terms are important for building the veracity and the credibility, or the believability, of the findings (Bryman and Bell, 2011; Neuman, 2011).

Reliability is defined as “an indicator of a measure’s internal consistency” (Zikmund et al., 2013, p. 301). It is also referred to “dependability or consistency”, which indicates that “the same thing is repeated or recurs under the identical or very similar conditions” (Neuman, 2011, p. 208), so the consistency is regarded as the key to perceive reliability (Zikmund et al., 2013). However, validity is defined as “the accuracy of a measure or the extent to which a score truthfully represents a concept” (Zikmund et al., 2013, p. 303). It refers to “how well an idea fits with actual reality”, so suggests “truthfulness” (Neuman, 2011, p. 208).

In qualitative research, reliability means consistency or dependability utilising various kinds of methods such as interviews, participation, photographs and document studies in the process of steadily writing down observations in relation to the researcher's study (Neuman, 2011). Validity in qualitative research indicates truthfulness (Neuman, 2011) by connecting between a construct and the data (Guba and Lincoln, 1994). Therefore, qualitative researchers are more interested in offering a truthful description of social life that is a faithful account of the experiences of people being studied rather than attempting to match an abstract concept to empirical data (Bryman and Bell, 2011; Neuman, 2011).

However, reliability in quantitative research is commonly associated with maintaining consistency problems about a measure of a concept (Bryman and Bell, 2011). In order to solve the problems, quantitative researchers are more interested in the question of whether a measure is firmly planned based on a concept or not (Bryman and Bell, 2011). Further, in relation to validity, there is a concern about how well an index (a suit of indexes) established to evaluate a concept measures that concept (Bryman and Bell, 2011). It focuses more on how well definitions of an index for a measure engage with each other conceptually and operationally and is connected with attaining the correctness or truthfulness of the conclusions generated from a study (Neuman, 2011). Therefore, measurement validity is basically applicable to quantitative research and is valuable to explore for a measure of social concepts or scientific definitions (Bryman and Bell, 2011).

3.6.1. Reliability and validity of the questionnaire

Newman and Benz (1998) observe that a qualitative methodology normally has the potential for increased validity as the research questions can guide what methods are selected. Thus, the methods used to answer the research questions must be appropriate if the research results are to be of any value. In this qualitative study, the interview data was recorded under the approval of the respondents and note taking was made during the interview for the analysis; thus the weakness of each could be counterbalanced by the strengths of the others.

This study used two types of validity checks for the measurement items with the aim of ensuring both validity and reliability in the quantitative survey. The validity checks included content validity and construct validity. Content validity is "the degree that a measure covers the domain of interest" (Zikmund et al., 2013, p. 304). It is also described as a special type of face validity and a critically intuitive process (Bryman and Bell, 2011; Neuman, 2011). Content validity is typically made by addressing how well the content of a definition exemplifies a measure (Neuman, 2011). In this study, sixty-two indicators (or items) representing eleven constructs were employed to measure the relationship between antecedents and the impact of SISP success. Furthermore, all of the measurement items of each construct were adapted from the literature. Prior to the pilot study, an examination of the questionnaire was executed by three academics to ensure and justify the content validity of the instrument.

Construct validity refers to "how well the indicators of one construct converge or how well the indicators of different constructs diverge" (Neuman, 2011, p. 213). It typically deals with how consistently various indicators work (Neuman, 2011) if the measure reliably evaluates and truly signifies a unique concept (Zikmund et al., 2013). The key goal of using construct validity is to identify whether or not a variable identified for a study can be confirmed as a genuine construct (Kline, 2010). Hence, it deals with the accuracy of measurement by providing how successfully item measures obtained from a sample denote the real score that presents in the population (Hair et al., 2010).

The study applied the SEM technique to test the relationship between the constructs in the proposed conceptual framework. SEM is “a family of statistical model that seeks to explain the relationships among multiple variables” (Hair et al., 2010, p. 616). It also allows the researcher to examine construct validity (Kline, 2010) and to test a series of theoretical relationships among the measured variables and latent constructs as well as between some latent construct included in the analysis (Hair et al., 2010). Thus, SEM is regarded as the most appropriate and efficient multivariate technique by combining aspects of factor analysis and multiple regression (Hair et al., 2010). There are two construct validity assessments to be tested in this study: convergent and discriminant validity.

Convergent validity refers to “the extent to which indicators of a specific construct converge or share a high proportion of variance in common” (Hair et al., 2010, p. 669) and discriminate validity refers to “the extent to which a construct is truly distinct from other constructs” (p. 687). The test for convergent validity and discriminate validity was conducted based on the following three stages recommended by Lewis et al. (2005): (1) test for each individual factor model, (2) test for the higher order model (whenever appropriate), and (3) test for the full measurement model.

In this study, for measuring the convergent validity of a construct, AMOS was used to assess a combination of the following measures: goodness of fit (GOF), squared multiple correlation (SMC), standardised factor loadings (SFL), average variance extracted (AVE) and construct reliability (CR) based on the recommendation of Hair et al. (2010) and Straub et al. (2004). Discriminant validity is assessed to make sure that the scale is sufficiently different from other similar concepts to be distinct (Hair et al., 2010, p. 126) and to provide evidence that a construct is unique and captures some phenomena that other measures do not (p. 687). Discriminant validity is measured by comparing AVE estimates for each factor with the squared estimated correlation between these constructs (Hair et al., 2010). Discriminant validity is also supported when the AVE estimates for two factors are greater than the squared correlation between two factors (Hair et al., 2010; Straub et al., 2004).

In particular, prior to establishing the convergent and discriminate validity, exploratory factor analysis (EFA) is performed to investigate and identify whether a theoretical construct is a uni- or multidimensional factor (Lewis et al., 2005) as well as to ensure items areee appropriately inter-correlated to produce representative items (Straub et al., 2004). Furthermore, for identifying measure purification, a reliability assessment utilising Cronbach's Alpha was conducted to remove unnecessary items from further statistical procedures suggested by Hair et al. (2010) and Straub et al. (2004). Cronbach's Alpha is considered as the most common and widely utilised measure for assessing internal consistency of the entire scale (Hair et al., 2010). In general, a Cronbach's Alpha value greater than a threshold of 0.7 is highly preferred, but as a rule of thumb, an alpha value range of 0.6 can be acceptable and used in exploratory research (Hair et al., 2010). In this study, the above recommended procedures enabled the researcher to identify and delete the unnecessary items in order to improve the overall quality of a construct.

More detailed information on the validity and reliability of the questionnaire relating to the survey analysis is addressed and discussed in Chapter Six.

3.7. Ethical Considerations

The researcher thoroughly complied with the ethics guidelines of RMIT to undertake this study. The study was classified under the Negligible and Low Risk Research and approved by the Business College Human Ethics Advisory Network (BCHEAN) at RMIT University. Both the interview and survey question stick to the strict guidelines that are set by the Ethics Committee in the university. The researcher was granted approval to undertake the interview and the survey in large organisations of South Korea in May 2013. The code of ethics for professionals in the social sciences has been adopted in this study. Prior to the start of the qualitative interview and quantitative survey, all participants were briefed about the goal and nature of the study, and the participants voluntarily agreed to participate. For example, the invitation letter for both the interview and the survey, as presented in Appendices A and B, noted that the interview and the survey were voluntary. Privacy and confidentiality were guaranteed by clear statements. The invitation letter informed the respondents that their identification was not required, and that the collected data would be properly handled and stored to ensure security for a certain period of time (five years).

3.8. Conclusion

This chapter explains and justifies the research design for this study. It shows how pragmatism is the underlying philosophy that guides this study. It describes the mixed methods approach that was employed to examine and validate the proposed conceptual framework. A discussion of the simple random sampling technique used to select an appropriate sample is described. The interview and survey strategy that was chosen as the best data collection methods is presented. The chapter also shows how a thematic analysis and SPSS with SEM were utilised to analyse the qualitative and quantitative data. The qualitative interview is discussed in the following chapter.

CHAPTER 4 Antecedents of SISP for the Successful Outcomes of SISP and the Impact: The Qualitative Study

4.1. Introduction

This chapter is a discussion of findings from the qualitative study on SISP antecedents for the successful outcomes of SISP and the impact of SISP success. Data was collected by semi-structured interviews. The findings discussed were based on a thematic analysis of eight interview responses.

The interview tool (see Appendix A) consisted of seven main sections: (1) the profile of the organisation and the interviewee, (2) SISP in the organisation, (3) antecedents essential for SISP in the organisation, (4) outcomes obtained by successful SISP in the organisation, (5) the impact of SISP success in the organisation, (6) the relationship between antecedents and impact of SISP success and (7) other comments on the organisation's SISP process. The following section 4.2 offers an overview of the organisations and the interviewees. Section 4.3 (subsection 4.3.1 to 4.3.6) presents the results of the eight interviews. This description is followed by an analysis of the interviews under the main themes and their subheadings. After the analysis, section 4.4 describes the research model that was proposed with hypotheses for the survey based on the interview results and concludes this chapter with a brief summary in the section 4.5.

4.2. An Overview of the Organisations and Interviewees

The four selected organisations were classified into three industries: the wholesale industry (Organisation A), the manufacturing industry (Organisation B and C) and the banking industry (Organisation D) as shown in Table 4.1. For reasons of confidentiality, the names of the participating organisations were not identified; therefore the names of the organisations were identified as Organisation A, B, C and D.

Table 4.1. Selection of organisations and interviewees for the interview

	Organisation A	Organisation B	Organisation C	Organisation D
Location	Sydney, Australia	Seoul, South Korea	Seoul, South Korea	Seoul, South Korea
No. of Interviewees	2 interviewees	2 interviewees	2 interviewees	2 interviewees
Primary Interviewees (Quoted as)	Chief Executive Officer (CEO)	Business Manager (BM)	Business Manager (BM)	Business Manager (BM)
	IT Manager (ITM)	IT Manager (ITM)	IT Manager (ITM)	IT Manager (ITM)

All of the selected organisations have long utilised various *web-based IT systems*[4] to appropriately manage global networks and to effectively execute their businesses all around the world. The IT systems operated by the organisations during the time the researcher undertook this study comprised of:

- Enterprise Resource Planning (ERP), the main IT system for effective management and transparent support of overall businesses and transactions;

[4] A web-based system is one in which the primary user interface is provided through web pages which are accessed on a standard web browser. Monitoring conditions, running reports, changing set-points, changing schedules, receiving and responding to alarms, downloading updated control programs and graphics – all the typical activities an operator may do on a day-to-day basis – are handled through a browser. Web-based systems can provide more access, more flexibility, more interoperability, and can provide these benefits over a wider area than conventional control system.
Source: http://www.automatedbuildings.com/news/sep02/articles/stom/stom.htm (Retrieved on 23.09.2015)

- Customer Relationship Management (CRM) for reinforcing a relationship between the corporation and its customers;
- Supply Chain Management (SCM) and Advanced Planning and Scheduling (APS) for efficient administrative control and management of the distribution of the sources and goods;
- Knowledge Management System (KMS) for communicating and sharing information and knowledge among members; and
- Enterprise Information Portal (EIP) for providing analysed, integrated and managed information to end-users.

Each selected organisation had an affiliated IT company with a Chief Information Officer (CIO) to deal with all IT-related tasks. The IT affiliated company had a responsibility for the customisation and standardisation of the implemented systems as well as for the overall maintenance and operation of the systems. All organisations also understood the importance of SISP and undertook the SISP process prior to IT implementation. Annually, they spent considerable amounts of money (more than AUD three to five Million) to manage and upgrade overall system functions and frameworks as well as business and IT processes.

Throughout this chapter, the researcher refers to the manager who is the Chief Executive Officer as the CEO; the researcher refers to the Business Manager as BM and the IT Manager as ITM. The CEO and all managers brought to the interview more than ten years' experience in the SISP and IT implementation project. They all assumed responsibility for the decision-making related to the establishment and management of business and IT goals, and strategies and the implementation of overall IT systems. The profile of the selected interviewees, covering their role and responsibility, their academic qualification and their work experience in SISP and IT-related project is summarised in Table 4.2.

Table 4.2. The profile of the selected interviewees

<table>
<tr><th>Organisation</th><th>Interviewees (Quoted as)</th><th>Interviewee's role and responsibility, qualification and work experience in SISP and IT system implementation project</th></tr>
<tr><td rowspan="2">Organisation A</td><td>CEO</td><td>• Manages all businesses in the Australia branch of the organisation;
• Bachelor of Business and Economics and MBA; and
• Over 15 years' experience regarding SISP and IT projects in the head-office.</td></tr>
<tr><td>ITM</td><td>• Manages and supervises the internal business and IT processes, and systems in the Australian branch of the organisation;
• Bachelor of Computer Science, Master of Information Systems; and
• More than 10 years' working experience (5 years' experience in SISP and IT projects in the Australian branch of the organisation).</td></tr>
<tr><td rowspan="2">Organisation B</td><td>BM</td><td>• Manages and supervises the business and IT process of the organisation, strategic business and information planning, budget management, and manages and supervises IT projects;
• Bachelor of Electronic Engineering with a minor in Business Administration; and
• 14 years' working experience in SISP and process innovation projects (2 years in the organisation).</td></tr>
<tr><td>ITM</td><td>• IT system development, operation and maintenance;
• Bachelor of Information and Communication Engineering; and
• 10 years' working experience in SISP and IT project in the organisation.</td></tr>
<tr><td rowspan="2">Organisation C</td><td>BM</td><td>• Overall planning related to SISP and IT system, select, manage and supervise outsourcing companies for IT projects and collect business requirements from end-users;
• Bachelor of Biotechnology, MBA; and
• More than 12 years' working experience in IT-related projects (5 years' experience in the organisation).</td></tr>
<tr><td>ITM</td><td>• Develops, manages and operates the entire IT systems of the organisation;
• Bachelor of Computer Science, Master of Technology Management; and
• More than 10 years' working experience in SISP and IT projects (3 years' experience in the organisation)</td></tr>
<tr><td rowspan="2">Organisation D</td><td>BM</td><td>• Plans and implements overall business directions, goals and strategies regarding marketing, management and IT operation of the organisation;
• Bachelor of Computer Science, MBA and;
• 20 years' working experience regarding SISP and IT projects in the organisation.</td></tr>
<tr><td>ITM</td><td>• Develops, manages, maintains and operates all IT systems of the Bank;
• Bachelor of Computer Science and;
• More than 10 years' working experience in the organisation (5 years' working experience in SISP and IT system projects).</td></tr>
</table>

As presented in Table 4.1, all interviewees had a sound knowledge of both business and IT processes, and had adequate SISP experience.

The next section addresses the analysis of the interview data categorised by the primary themes and their subthemes.

4.3. The Analysis of the Interview Data

4.3.1. SISP in the organisation

In order to identify and understand the situation of SISP in the organisation, three main questions were asked of the interviewees. These questions centred around the time when the organisation first introduced SISP, what the primary objectives of SISP were, and how often the organisation reviewed the SISP.

4.3.1.1. The First Introduction of SISP in the Organisation

It was identified from the interview results that the first starting period of SISP in four organisations was diverse. However, all interviewees well recognised the importance of SISP for generating mid- and long-term roadmap for business and IT processes and structures; thus they highlighted that the organisations undertook the SISP prior to the IT implementation.

Both interviewees in Organisation A answered that the SISP of Australian organisation was established prior to IT implementation when the branch started a new business in 2005. The SISP of the head office in South Korea, however, had already been developed more than 15 years previously. Both the CEO and ITM also stressed the relationship between SISP and the IT system in the organisation, and the importance of SISP:

> "*The SISP and IT system in the head office in South Korea and the branch in Australia is exactly the same. That is one of the key reasons why we conducted SISP to effectively implement and manage the IT system without any failures*."

The two interviewees from Organisation B noted that the organisation first undertook a SISP in the year 2000, and the focus of the process was limited to building a short-term budget on a yearly basis because organisation did not establish a mid- and long-term plan from the SISP. However, they emphasised the difference of the focus of new SISP recently conducted in 2010:

> "*The new SISP focused more on alignment (BM and ITM), integration (ITM) and standardisation (BM and ITM) of business and IT processes, and structures into the new implemented IT system according to the mid and long-term roadmap over the next three years."*

Both the BM and the ITM in Organisation C highlighted that the organisation started a systematic SISP in 2006 prior to the implementation of an IT system, and recently initiated a project for a globalised SISP and IT implementation from 2009. In particular, the ITM encapsulated the view of both interviewees in his comment to explain the differences between SISP in 2006 and 2009:

> "*The globalised SISP and IT project was divided into four stages and each phase of the project was performed each year*."

Both interviewees in Organisation D answered that the organisation first conducted a SISP prior to IT system implementation in the early 1990s, and the business processes and IT systems had been regularly updated. The two managers also explained a new project referred to as the next generation SISP and IT implementation, which started in 2010. They focussed on the importance of the project:

> "*The key purpose of the project was to fully upgrade current business and IT processes and systems in order to keep pace with globalisation and advances in technologies.*"

As indicated by the above, the introduction year of SISP in South Korean organisations was different for each organisation. For example, SISP's time of introduction in the wholesale industry (2005 in the branch of Australia, but the beginning of 1990 in the head-office of South Korea) and the banking industry (the beginning of 1990) got off to a comparatively quicker start than the manufacturing industry (the beginning of 2000 in Organisation B and 2006 in Organisation C). SISP in the organisations was undertaken to establish a mid- and long-term roadmap as well as to upgrade business and IT processes and structures prior to IT implementation. This indicates that South Korean organisations well understood the importance of SISP. The primary objectives of SISP the eight interviewees stated in described in the following section.

4.3.1.2. The Primary Objectives of SISP

The eight interviewees answered that the organisations undertook SISP with apparent objectives. Some of these objectives were shared in common with the other organisations. For example, improving prompt and transparent decision-making was something all interviewees acknowledged as an objective, and enhancing communication and knowledge sharing with all members throughout the organisation was identified by six managers (the BM in Organisation B, C and D, and the ITM in Organisation A, B and D). It was also indicated by five interviewees (the BM in Organisation B, C and D, and the ITM in Organisation B and C) that maintaining consistency and unity of business management and support in all companies located at home and abroad was achieved by resolving and upgrading existing inefficiencies and differences in the processes and structures. Further, two business managers in Organisation A and D commented that obtaining accurate and reliable information and data for managing and operating businesses and for providing the best customer services was one of the main SISP objectives.

In particular, six out of eight interviewees (the BM in Organisation B and C, and all ITMs) stressed the importance of business and IT alignment as the primary objective. The answer indicates that the organisations considered the business and IT alignment as a key foundation for the SISP task. The ITM in organisation C explained:

> "*The business and IT alignment encouraged the organisation to make a specific objective for promoting automation of business management, operation and transactions.*"

The ITM in Organisation D stressed the importance of business and IT alignment:

> "*The banking industry should grasp various desires and requirements of customers accurately and provide information and services to all customers quickly. Therefore, the alignment of data and information is very important for providing better services*."

From the information gathered in the interviews, it is clear that the organisations had clear objectives for conducting SISP, and some of those were similar to each other. In particular, most organisations considered the alignment of business and IT processes and structures as the main objective of SISP. The identified objectives are summarised in the following:

- An alignment, integration and standardisation on their overall business and IT processes and structures;
- Facilitating prompt and transparent decision-making;
- The progress of effective communication and sharing ideas and information with all members of the organisation;
- Resolving and upgrading existing inefficiency and issues on the planning processes for providing improved management support and customer satisfaction/services;
- Obtaining accurate and reliable information and data for managing and operating businesses;
- Maintaining consistency and unity of business management in all companies located at home and abroad; and
- Promoting automation of business management, operation and transactions.

4.3.1.3. The Frequency of SISP Review

All organisations undertook a review on SISP, but the frequency with which they reviewed a SISP differed among them. Both the CEO and the ITM in Organisation A answered that the organisation regularly held meetings with staff from an external consulting firm to check and monitor the overall process and IT system, but there was no fixed time and period for their review. The ITM encapsulated the view of both interviewees in his comment:

> "*We normally performed the review each year*."

Both interviewees in Organisation C and D stated that the organisation had carried out the review for the SISP and IT system once a year on average. They gave the researcher a similar answer that the organisation typically checked and complemented the existing process by reflecting the present IT issues or trends in the review as well as establishing its overall IS planning for the following year based on its results. Both the BM and the ITM in Organisation C stated:

> "*After the review, we normally publish a report called 'Annual Plans for IT'*".

The BM in Organisation D also noted:

> "*In the review, we usually set up a roadmap for mid and long-term plans.*"

Both managers in Organisation B stated that the review on the SISP was conducted at least every two or three years to improve overall capability of business processes and the IT system. However, the BM answered that there were works that needed to be done every year, such as a systematic check and monitoring of the implemented process and IT system, and collecting additional opinions on the process and system from members. In particular, the ITM emphasised the importance of the shorter period of review:

> "*As the review will encourage prioritising the importance of members' demands on the process and system as well as reassessing the present processes effectively.*"

As indicated by the above, all four organisations undertook a review on SISP, but the frequency of their reviews differed from each other, ranging from no fixed period or once a year to every two or three years. During the review, the organisations typically checked and monitored the overall process and system as well as identified emerging issues, requirements and trends.

In summary, this section presented an overview of SISP in the selected four organisations in South Korea based on three questions. According to the findings, it was clear that all interviewed organisations officially undertook SISP prior to IT implementation. It was also identified that although at the first time of SISP introduction, the key objectives and the frequency of SISP review varied according to each industry and organisation, the organisations well recognised the importance of SISP, and established appropriate goals and a review period suitable for the organisation. The following section discusses SISP antecedents as factors essential for successful SISP in the organisations.

4.3.2. Factors essential for successful SISP in the organisation

With extensive experience involving SISP and IT-related projects in the organisation in general, the eight managers shared their thoughts on SISP. Prior to the interview, it was explained to the interviewees that antecedents refer to factors that are essential for successful SISP in the organisation. After the explanation, all eight interviewees were asked the question: 'What essential antecedents were considered in the organisation to undertake successful SISP?' Their responses on antecedents were varied.

4.3.2.1. Factor 1: Top management participation and support

All managers interviewed answered that top management participation and support played a vital role in attaining successful SISP in the organisations. Four interviewees, such as three BMs (CEO) in Organisation A, B and D, and one ITM in Organisation A particularly regarded this factor as the most important factor for successful SISP. The BM in Organisation B and C specifically explained that the participation and support of top management was the strongest way to lead all members to well recognise the necessity of the task. Four interviewees (The CEO in Organisation A and C, and the ITM in Organisation C and D) also gave a similar explanation of the reason that top management is the key person who invests money, time and other resources regarding SISP. Without their approval and support, SISP and IT-related project would have not been successfully performed.

Among four organisations, there were two organisations (Organisation A and C) that experienced high participation and support of top management with their appropriate recognition about SISP. The two ITMs in Organisation A and C commented that top management strongly recognised that it is critical for the organisation to implement an IT system based on adequate planning to effectively manage their business operations and to maximise its performance. Hence, both managers in Organisation C stated that the top management group brought an open-mind and positive thinking to the SISP and IT project based on an adequate understanding of its necessity and significance. The ITM further explained:

> "*They did not have any fear of changes on our business processes and systems, as top management and board members had already obtained advice and information from the best consulting firms.*"

On the other hand, the managers in Organisation B and D stated that top management did not have an adequate understanding and interest on the SISP in its early stage. Thus, the four managers responded that it was essential for the project team to find a way to increase top management's interest in and understanding of the importance of SISP and IT projects. The two interviewees in Organisation B highlighted top management's doubts on why SISP was essential and how it could facilitate the efficiency of business management (the BM), and what the difference was between the existing processes and new processes (the ITM). Both managers in Organisation D gave a similar answer:

> "*Top management had a conservative approach and planned to spend a large amount of human resources, money and time for the SISP although the bank has long introduced and utilised a number of IT systems*."

In order to inform top management of the necessity and importance of SISP, the project team of two organisations performed a special project to facilitate the interest of top management. The ITM in Organisation B highlighted that the project team conduct an analysis on advantages and disadvantages of the existing processes and systems for a year to enable the top management group to realise the importance of the new planning process and IT project. Both managers in Organisation D also stressed that the project team executed benchmarking studies on the current situations and trends of SISP and IT system in the main domestic and foreign organisations to improve the interest of top management. The BM specifically reflected both managers' view in the following comment:

> "*We also undertook case studies on the process and system of the same industry independently. The effort enabled the project team to obtain a large scale of investment regarding the project from top management. Top management also encouraged all members to have a high interest and support in the project.*"

Four interviewees (the BM in Organisation B and C, and the ITM in Organisation A and D) commented that improved top management participation and support played an essential role in leading all members in the organisations to actively communicate, collaborate and share their knowledge and opinions with the project team. Hence, top management participation and support enabled the organisations to enhance the level of SISP success by establishing adequate business and IT objectives and strategies (the BM in Organisation A and B, and the ITM in Organisation A, C and D) and effective alignment business and IT processes (the BM in Organisation B and C, and the ITM in Organisation C and D).

The above data identified in the interviews makes it clear that top management participation and support is an essential factor in South Korean organisations, positively affecting overall IT investment and decision making about SISP, and improving communication and collaboration between business and IT members. It also plays an important role in successful SISP by supporting the attainment of business and IT objectives, and the alignment of business and IT processes.

4.3.2.2. Factor 2: Effective Communication and Knowledge Sharing between Business and IT Stakeholders

It was identified from the interviews that all interviewees agreed that communication and knowledge sharing was an essential factor for successful SISP. Most IT managers (3 out of 4 ITMs) in Organisation B, C and D, and one BM in Organisation C stressed this factor to be the most essential one. In particular, the CEO in Organisation A stated that this factor is important because it enables an organisation to foster an understanding of business and IT goals and strategies relating to SISP success.

The eight managers answered that in the past SISP and IT project, the communication and knowledge sharing level between business and IT stakeholders was not very high. The reasons varied with the organisation. Four interviewees (the BM in Organisation B and D, and the ITM in Organisation A and B) pointed out that most members' passive attitude and uncooperative habits resulted in a poor understanding of the requirements the business sector proposed and vice versa. Both managers in Organisation D stated that the participation of business members was relatively lower than that of IT members in the past IT-related project; thus it meant that the past project was somewhat deficient in collaborative behaviours. Further, both the BM and the ITM in Organisation B and C considered the top-down approach, where the top management group takes a leading role in making decisions about future planning, as the main reason of poor communication and knowledge sharing between business and IT stakeholders. The BM in Organisation B and C and the ITM in Organisation C stated that the top-down manner is intrinsic to most South Korean organisations, particularly in the manufacturing industry. Further, the managers in Organisation B specifically stressed that the top-down approach based on an external vendor did not allow the various departments an opportunity to raise concerns, offer opinions, or be listened to.

Four managers (the BM in Organisation B and C, and the ITM in Organisation B and D) highlighted that poor communication and knowledge sharing made it difficult for the project team to achieve a consensus on clear directions and priorities for business and IT goals and strategies. Three interviewees (the CEO in Organisation A, and the ITM in Organisation B and C) also pointed out that it resulted in an ineffective alignment of business and IT processes, and structures.

However, all of the interviewed managers answered that during the current SISP task, the organisations focused more on reducing gaps of opinions and perspectives between departments, and promoting understanding of the importance of SISP and IT project by effective communication and knowledge sharing between business and IT stakeholders. Thus, five managers (the BM in Organisation B, C and D and the ITM in Organisation B and D) answered that effective communication and knowledge sharing enabled the organisations to improve overall planning effectiveness through adequately allocating and distributing HR, costs and time at the planning stage. Moreover, six interviewees (the BM [CEO] in Organisation A, B and C, and the ITM in Organisation B, C and D) stated that it enabled the organisations to achieve effective business and IT alignment by establishing clear directions and priorities for business and IT goals and strategies. In particular, it was revealed by three interviewees (the BM in Organisation B and C, and the ITM in Organisation D) that there was a relationship between overall planning effectiveness attained by communication and knowledge sharing, and business and IT alignment. This implies that the achievement of IS planning effectiveness encouraged the organisations to facilitate an overall level of business and IT alignment. The ITM in Organisation C commented:

> "*The project team focused more on encouraging business members to understand IT's objectives and strategies, and vice versa. Therefore, it became possible to achieve the level of business and IT alignment by improving overall planning efficiency.*"

The above data analysis makes it clear that effective communication and knowledge sharing enabled South Korean organisations to undertake successful SISP through minimising gaps between business and IT stakeholders and helping appropriate allocation of HR, budgets and time for the planning. It also confirms that this enabled the organisations to enhance an overall level of planning effectiveness and to realise an effective business and IT alignment.

4.3.2.3. Factor 3: The Impact of the Internal and External Environment

It was found from the interview data that all interviewees put forward that one of the important factors to undertake SISP successfully was considering internal and external environmental factors in their organisations. All managers of four organisations stated that the organisations undertook benchmarking studies about other companies or the industry to appropriately understand internal and external circumstances and trends as well as to analyse strengths and weaknesses (or advantages and disadvantages) of business processes and the IT system. In particular, the interviewees in Organisation A, C and D commented that they undertook benchmarking studies with a major consulting company. However, Organisation B independently undertook the studies to increase members' recognition about the current business and IT situations and trends and to decrease potential issues that resulted from high dependence on an external vendor. The BM and the ITM stated:

> "*In the past, we depended highly on all IT-related projects to external vendors without appropriate participation of internal members. Thus it caused some issues, just as the difficulty of building a mid- or long-term roadmap suits the organisation (ITM) and creates disharmony in the business and IT processes (BM).*"

It was revealed that an effective understanding of internal and external situations and trends based on the benchmarking studies helped the organisations improve the level of planning effectiveness (or usefulness). It led to an attainment of advanced business and IT architectures and processes (the BM in Organisation A, C and D, and the ITM in Organisation C and D) and the building of effective business and IT goals and plans (the BM in Organisation B, and the ITM in Organisation A and B). It was also affirmed by six managers (the BM in Organisation B and C, and all ITMs) that establishing effective business and IT architectures and plans by understanding about internal and external situations and trends enabled the organisations to improve the level of business and IT alignment. Furthermore, additional answers were given by some interviewees, which suggested that this effort enabled business and IT members to become more aware of change management and risk management (the ITM in Organisation C) and to improve their understanding on the importance and necessity of the new process and IT project (the BM and ITM in Organisation D). It also motivated top management to change their conservative mindset (the ITM in Organisation D).

The above data identified in the interviews supported the view that it is important for organisations in South Korea to appropriately understand the internal and external environments to conduct successful SISP by recognising the current issues and trends as well as to analysing strengths and weaknesses of their business processes and systems. It was also identified that the effort encouraged them to improve an overall level of planning effectiveness (or usefulness) and realise an effective alignment of business and IT processes and structures.

4.3.2.4. Factor 4: Adequate Resources of SISP

It was identified from the interview data that four interviewees in Organisation B and D regarded adequate resources for SISP in terms of budget, people and time to be an important factor to undertake SISP successfully. The four managers highlighted that in the past SISP and IT project, it was not easy to adequately allocate resources, due to top management's poor interest and conservative approach to SISP (Organisation B and D), and the high level of dependence on the external vendor of all IT-related tasks (Organisation B). The ITM in Organisation B further commented:

> "*The vendor tried to perform the project according to its procedure and did not engage members of the organisation who were involved in the project. Thus the internal members could not properly understand whether all resources were well allocated for the project or not.*"

Hence, two managers in Organisation B highlighted that the organisation experienced various unexpected issues, including increased budgets and missed deadlines. The BM noted that as the organisation lost its original goals and strategies, the effectiveness of business and IT processes was reduced. The ITM also reflected both managers' views in the following comment:

> "*Subsequently, the business and IT processes became poorly aligned and less efficient.*"

However, the four interviewees highlighted that in the current SISP and IT project, the budget, people and time were adequately allocated and arranged into planning stages based on careful consideration, so they indicated that the organisation could complete the SISP and IT project successfully. Thus they answered that the adequate allocation of people, budget and time encouraged the organisations to enhance overall planning effectiveness (the BM and the ITM in Organisation B) and to realise improved business and IT alignment (all interviewees). In particular, there was a difference of perspective on the adequate allocation of resources for SISP between business and IT managers. For example, the BM in Organisation B indicated that adequate resource allocation was possible due to open communication and knowledge sharing between business and IT members and departments, but the ITM in Organisation B stressed the importance of top management's interest and support as the primary reason for allocating proper resources. The ITM continued to state:

> "*Their continuous interest and support during SISP enabled the project team to decrease the total duration of time for SISP by three to four months without the involvement of any outside vendors.*"

The above data analysis identified in the interviews supported the view that it is vital for South Korean organisations to adequately allocate people, costs and time into planning stages to conduct SISP successfully. It was also confirmed that the adequate resources for SISP enabled the organisations to improve overall planning effectiveness and to realise improved business and IT alignment.

4.3.2.5. Factor 5: Organisational Learning

Seven managers, except for the CEO in Organisation A who was interviewed, answered that a factor for completing the SISP and IT project successfully was for all members of the organisation to regularly engage in organisational learning. It was similarly indicated by five interviewees in Organisation A, B and D that organisational learning did not produce satisfactory results of SISP and IT project in the past due to the learning not being compulsory. As another reason, the ITM in Organisation A stated most members displayed a passive attitude towards, and little interest in, the learning. He highlighted that many members in the past had a doubt about why it had to be done and they did not want to take the time to understand the newly implemented process and system. That is, most of them did not want any changes. Further, the BM in Organisation B commented that high dependence on an external vendor in relation to the IT-related project was another reason for insufficient learning. He stated:

> "*In the past, the organisation was dependent on external vendors for almost everything related to the IT project, so there was no organisation-wide training about the process, and the system had not been properly arranged and managed to help end-users effectively.*"

However, it was identified by all the interviewed managers that in the current SISP and IT project, the organisations recognised the importance of organisational learning; thus they compulsorily undertook the learning regarding the SISP and IT system both online and offline. The learning encouraged members in the organisations to enhance an interest and understanding of the organisation's business and IT processes. As well, it improved an awareness of the impact and importance of SISP and IT system for business management, given that it was based on improved understanding on external environments and trends. In particular, several interviewees commented that it helped all members well recognise changes of business management and improve their sense of responsibility (the ITM in Organisation B) and facilitate communication and cooperation between different departments (the BM in Organisation B and the ITM in Organisation C and D). All interviewees emphasised that organisational learning enabled the organisations to realise successful SISP by building proper business and IT objectives and strategies (Organisation D) and effective business and IT alignment (Organisation A, B and C). In particular, the ITM in Organisation B stated:

> "*To accelerate organisational learning, the participation level of each employee on the learing is scheduled to reflect employees' performance assessment by linking the personnel management system.*"

The above data analysis found in the interviews is clear on the view that the compulsory learning during SISP and IT project enables South Korean organisations to achieve successful SISP. It was also confirmed that improving awareness of the influence of SISP and IT, understanding external situations and trends, and promoting collaboration on the task by organisational learning plays an important role in realising improved business and IT alignment.

4.3.2.6. Factor 6: Active Partnership between Members of the Organisation and an External Vendor

It was identified from the interviews that six interviewees in Organisation B, C and D highlighted the active partnership between members of the organisation and an external vendor to be an important factor to undertake successful SISP. They all stressed that it is essential for the external vendor to have a proper capability and to have experience, leadership and a knowledge level. This includes a comprehensive understanding of the client's industry and the industry's business and IT processes to conduct SISP successfully. In particular, some managers (the BM in Organisation B, and the ITM in Organisation B and D) explained that the partnership with an external vendor for SISP was very important for the manufacturing and banking industry in South Korea, as most organisations in the industry are highly dependent on external specialists to undertake their IT-related project. They indicated that this is because most of them did not have the appropriate knowledge, experience and human resources to independently lead and maintain the project involving a large scale of expenses and time.

The interviewees of all three organisations I interviewed answered that they had hired the nation's top business consulting company and IT system vendor to conduct the project successfully under the belief that the vendor would be able to help them find a way to maximise the business efficiency in the long term. However, they indicated that the organisation experienced delays in the project and additional expense and time were incurred. Also, there were many cases of trial and error due to limited understanding and knowledge of the industry field and business cultures and processes (the BM and the ITM in Organisation C and D), poor communication and collaboration with the project team who consisted of various departmental members (all interviewees) and adherence to a top down approach by the vendor (the BM and the ITM in Organisation B and D). It was also identified by four managers in Organisation B and D that these issues caused an insufficient alignment of business and IT processes and an unsatisfactory level of planning success. Therefore, this became the main reason for replacing the external vendor with a new one in the early stage (Organisation C), and the vendor's project leader and team members with others in the middle stage (Organisation D) to complete the project successfully. Further, the issues made Organisation B undertake the new SISP by peopling its task force team members without any outside vendors. The following reason was given:

> "*We have strongly recognised that the internal human resources are the people who know the organisation best and who know the importance of SISP and IT implementation better than any others (BM). Moreover, most project team members already possessed various experiences of SISP and IT project inside and outside the organisation (ITM). Hence, adequate use of both top-down and bottom-up procedure during SISP enabled us to enhance planning efficiency (ITM) and to realise better alignment of business and IT processes (BM and ITM).*"

Hence, it was stated by some interviewees that an adequate knowledge, leadership and collaboration level (the ITM in Organisation B and D) needed to be considered as a first priority to complete the SISP and IT-related task successfully. In this regard, the

BM in Organisation C stressed the importance of the client organisation's ability to build a supportive environment for working with an external vendor as well as the ability to effectively manage and supervise them during the project.

The above data analysis identified in the interviews is evident that since most of South Korean organisations do not have proper capabilities and human resources to conduct the SISP and IT-related project independently, active partnership between members of the organisation and an external vendor is vital for achieving successful SISP. It was also confirmed that the partnership between internal members and an external vendor enabled the organisations to improve the level of planning success and business and IT alignment and reduced additional costs and time, and many cases of trial and error.

In summary, the interview results in this section found that there were six antecedents considered as an important factor for successful SISP in four selected South Korean organisations, as presented in Table 4.3:

Table 4.3. Antecedents identified in selected South Korean organisations

Identified antecedents	Number of interviewees answered
Top management participation and support	All eight interviewees
Effective communication and knowledge sharing between business and IT stakeholders	All eight interviewees
The impact of internal and external environment	All eight interviewees
Adequate resources for SISP	Four interviewees in Organisation B and D
Organisational learning	Seven interviewees except for CEO in Organisation A
Active partnership between members in the organisation and external vendors	Six interviewees in Organisation B, C and D

According to the result of the interviews, there was a difference of view on the most important antecedent between business and IT managers. For example, the business managers focused more on the level of top management participation and support as the most important antecedent for successful SISP, whereas the IT managers paid more attention to effective communication and knowledge sharing between business and IT stakeholders as the most important antecedent. All interviewees also stressed that each antecedent enabled the organisations to attain successful SISP by improving planning effectiveness and realising business and IT alignment. The following section discusses successful outcomes of SISP obtained by considering various antecedents in the South Korean organisations.

4.3.3. Outcomes obtained by successful SISP in the organisation

The interviewees provided the researcher with various antecedents that the organisations considered conducting for successful SISP. In this regard, this question was asked: 'What outcomes have your organisation achieved by the successful SISP?' Based on their extensive experience, the interviewees highlighted that the consideration of antecedents enabled the organisations to undertake successful SISP by achieving two main outcomes, such as IS planning effectiveness, and business and IT alignment.

The first outcome described by seven interviewees was the attainment of IS planning effectiveness. It was commented by some managers that the identified antecedents the organisation considered encouraged them to communicate well and collaborate between business and IT sectors during SISP and IT project (the BM in Organisation C and D, and the ITM in Organisation A and D). Three interviewees (the BM in Organisation C and D, and the ITM in Organisation C) also commented that the antecedents became the trigger for facilitating the members' recognition on the impact of SISP and IT project, and the importance of considering internal and external environments. Therefore, the identified antecedents encouraged the organisations to better harmonise business and IT directions, and opinions and requirements (the BM in Organisation D, and the ITM in Organisation B) as well as to reduce differences and gaps between business and IT members (the ITM in Organisation C and D), hence to attain improved IS planning effectiveness.

The second outcome commented on by all interviewees was the progress of business and IT alignment. It was identified by five interviewees (the BM in Organisation B, C and D, and the ITM in Organisation B and D), who stated that the consideration of antecedents enabled the organisations to realise improved business and IT alignment by establishing standardised business and IT goals and strategies. The achievement of business and IT alignment also enabled the organisations to well define organisational-wide business and IT architecture and structure to create synergies between the companies located all around the world (the BM in Organisation B, C and D, and the ITM in Organisation B and D). Thus, five interviewees (the BM in Organisation B and D, and the ITM in Organisation A, C and D) emphasised that the most important outcome obtained from the identified antecedents was the achievement of business and IT alignment.

It was identified by all interviewees except for the CEO in Organisation A that there was a relationship between IS planning effectiveness and business and IT alignment. They commented that the antecedents considered encouraged the organisations to improve overall IS planning effectiveness; as a result, it led to the realisation of an improved alignment of business and IT processes and structures. In particular, two managers indicated that the relationship would be the key point for assessing the success of SISP and IT project (the ITM in Organisation C) and measuring the standard of SISP success (the ITM in Organisation D).

In summary, this section has presented the successful outcomes obtained from antecedents in South Korean organisations. The data analysis revealed that the consideration of the identified antecedents enabled the organisations to improve overall level of planning effectiveness by harmonising business and IT directions and requirements as well as to realise effective business and IT alignment by clearly defining standardised business and IT processes. Hence, it was identified that IS planning effectiveness, and business and IT alignment are essential dimensions for the successful outcomes of SISP gained from the consideration of various antecedents in South Korean organisations. Further, it was identified that the attainment of improved IS planning effectiveness contributes to realising effective business and IT alignment. The next section discusses the impact realised from successful SISP in the organisation.

4.3.4. The perceived impact from successful SISP in the organisation

The eight interviewees discussed two dimensions: IS planning effectiveness and business and IT alignment related to successful outcomes of SISP gained from the consideration of various antecedents. In this regard, all interviewees were asked this question: 'What impact has your organisation gained from the successful SISP?' The answers offered by the interviewees, in regard to the impact obtained, were similar in each organisation, and the impact was mainly classified into three things.

The first impact, as stated by eight interviewees, was an adequate combining, integrating, reconfiguring and standardising of overall business and IT processes, resources and structures. All interviewees emphasised this impact was the most important one gained from the successful SISP. Some managers indicated that as a consequence of the structured and upgraded processes and structures, the organisations could successfully implement IT system (the BM in Organisation A) and improve an effective management of IT assets and technologies (the BM in Organisation B). Furthermore, the BM in Organisation C stated:

> "*The successful SISP enabled us to arrange and structure business and IT processes and resources in an adequate way; thus we could diagnose and predict the current situations and decrease wastage of unnecessary resources.*"

A second impact that South Korean organisations realised from successful SISP was the facilitation of members' understanding about the potential effect, opportunities and role of IT. The impact was confirmed by four interviewees (the BM (CEO) in Organisation A and D, and the ITM in Organisation B, C). Improving consensus, interaction and partnership between business and IT members on overall IT functions and skills was also identified by six interviewees (the BM (CEO) in Organisation A, C and D, and the ITM in Organisation A, B and D) as a second impact. Several interviewees indicated that this impact encouraged the organisation to successfully implement IT system by improving an ability of business responsibility (the BM in Organisation C) as well as IT procedures and technology leadership (the BM (CEO) in Organisation A and C, and the ITM in Organisation A and D).

A third impact realised from successful SISP was improving an ability of flexible business and IT processes and structures by adapting, diagnosing and responding to its internal and external changes and trends promptly. The impact was put forward by six interviewees (the BM in Organisation B and D, and all ITMs). This impact enabled the organisation to effectively implement IT system by predicting the issues and trends in the industry promptly (the BM in Organisation B and D, and the ITM in Organisation C and D). It also helped implement a successful IT system by improving response speed for decision-making and business support (the BM in Organisation B and D, and the ITM in Organisation B, C and D) and reducing unnecessary resources and uncertainty (the BM in Organisation B, and the ITM in Organisation A, B and D).

Everyone except the ITM in Organisation A emphasised that based on these impacts realised from the successful SISP, the organisations enhanced sustainable competitive advantage and organisational performance, and create added value against competitors based on the successful implementation of the IT system. The BM in Organisation B replied that according to the result of in-house investigation, both the function and quality of SISP and IT system are far ahead of other competitors in the field. Further, the ITM in Organisation B emphasised the virtualisation of IT system functions achieved by the impact:

> "*Owing to the successful SISP, all the IT systems comprising database, network and storage as well as about 300 applications were virtualised successfully in accordance with the organisation's goals and strategies. It is now improving the level of performance in the organisation.*"

The interviewees in Organisation C explained that the advancement of automation and efficiency for business management realised by these impacts now lead to the industry's improvement and created a synergy effect of business management in the organisation. In particular, the BM in Organisation D stressed:

> "*We have invested a large amount of resources and time into the SISP and IT project. Hence, it is natural for us to obtain all the identified impacts from successful SISP and IT project to improve organisational performance and secure competitive advantage against competitors.*"

In summary, this section presented the impact realised from successful SISP in South Korean organisations. The data analysis identified in the interviews indicates that the impacts obtained from successful SISP divide into three things: a combining and reconfiguring of business and IT processes and resources; an improved understanding of the potential impact and role of IT, and the interaction between business and IT sectors; and an improved ability to build flexible business and IT processes and structures by adapting and responding to internal and external changes and trends. As a consequence of the impact, the four South Korean organisations have improved sustainable competitive advantage and organisational performance in their field and industry. The following section discusses the relationship between antecedents and impact of SISP success in the organisation.

4.3.5. The relationship between antecedents and impact of SISP success in the organisation

The findings derived from the interview clearly demonstrated the antecedents that were essential for SISP, the outcomes obtained from successful SISP and the impact realised from SISP success in the South Korean organisations. Considering the importance of antecedents, the successful outcomes of SISP and the impact of SISP, as discussed in this section there was a question the interviewees were asked to answer about the relationship between antecedents and the impact of SISP success.

All interviewees agreed there was a relationship between antecedents and the impact of SISP. They generally gave a similar answer to the question about whether the antecedents made it possible for the organisations to attain a successful outcome of SISP, and whether the SISP success then helped them improve the impact for realising sustainable competitive advantage and organisational performance by realising a better IT system. The CEO in Organisation A answered that the consideration of various antecedents was effective for improving the possibility of SISP success, and that the impact realised from SISP success would encourage the organisation to implement a more effective IT system than that of other competitors. The ITM in Organisation A also gave the researcher an answer similar to that of the CEO and emphasised the importance of considering antecedents for sustaining organisational performance and competitive advantage. Moreover, two managers in Organisation B indicated that the antecedents, the successful outcomes of SISP and the impact of SISP success had an inseparable relationship with each other and needed to be considered at the same time. In particular, the BM provided the reasoning for this view:

> "*Because realising as many advantages as possible from successful SISP is the main goal why every organisation invests plenty of money, resources and time.*"

The BM in Organisation C mentioned that by considering various antecedents there was a high possibility of achieving successful SISP and improving the impact, as most antecedents the organisation attempted to identify were shortcomings that should be remedied for SISP success. In agreement with the BM, the ITM in Organisation C stressed that the relationship between antecedents and impact of SISP success was just like two sides of a coin. Further, two interviewees in Organisation D highlighted that during the project, the organisation has always attempted to find and reflect possible factors and issues to increase the likelihood of the project success and the impact. The ITM explained that the process could be successfully implemented when the various antecedents were considered. This encouraged the interviewees to provide as many impacts as possible for implementing an IT system more effectively. Further, the BM stressed:

> "*This is the main reason why we invested a large scale of resources, such as human resources, budget, and time.*"

In summary, this section offered information on the relationship between antecedents and the impact of SISP success in the selected South Korean organisations. The data analysis identified in the interviews implies that considering various antecedents made it possible for the organisations to attain a successful outcome of SISP, and SISP success helped them improve the impact for a sustainable organisational performance and competitive advantage by implementing a successful IT system. Hence, it was identified that there is a relationship between antecedents and the impact of SISP success.

The following section discusses other comments made by the interviewees about the organisation's SISP process in the South Korean organisations.

4.3.6. Other comments on the organisation's SISP process

The researcher asked the eight interviewees: 'Is there anything else you would like to add on to the organisation's SISP?' All interviewees the researcher interviewed agreed that the organisations had undertaken the SISP successfully; thus there were not any other factors they wanted to add on SISP. However, some interviewees suggested a comment. The CEO in Organisation A emphasised an adequate understanding and open-minded view of end-user groups in relation to the necessity of SISP and IT system. The BM in Organisation B and C also highlighted the importance of business members' awareness of SISP and IT, and their improved participation for enhancing a general consensus on SISP and IT's objectives and strategies. The BM also stressed that it was important to set a clear direction and scope for the SISP. Furthermore, the ITM in Organisation B indicated the necessity for considering security functions for the overall application, database, network and system in the future SISP.

In summary, the interview results in this section confirmed that although SISP in each organisation has been successfully undertaken, several interviewees suggested several comments needed to be considered for achieving better SISP in the future as shown in Table 4.4.

Table 4.4. Other comments that need to be considered for the organisation's SISP

Identified comments	Number of interviewees answered
An adequate understanding and open-minded view of end-user groups regarding the necessity of SISP and IT system	The CEO in Organisation A
The importance of business members' awareness of SISP and IT, and their improved participation for SISP	The BM in Organisation B and C
The need for considering security functions for the overall application, database, network and system	The ITM in Organisation B

The interviewees' comments identified in the above table indicate that organisational members' ability to show an appropriate understanding and open-mindedness about SISP, and business members' more active participation were still required and were essential for building a clear direction and scope for SISP objectives and strategies.

The importance of security functions for applications and systems was also mentioned as an important comment that needed to be considered for successful SISP in the future.

The following section proposes the conceptual model and research hypotheses based on the results of the interview in the South Korean organisations.

4.4. Conceptual Framework and Development of Research Hypotheses

On the basis of the interview findings, a thematic analysis of distinct data regarding antecedents, the successful outcomes of SISP and the impact of SISP success in South Korean organisations was undertaken. The interviewees who participated in this interview answered that there were a number of antecedents that the South Korean organisations identified and reflected to undertake SISP successfully as shown in Table 4.5.

Table 4.5. A summary of the cross-case comparison of antecedents in the selected South Korean organisations

		Organisation A		Organisation B		Organisation C		Organisation D	
		CEO	ITM	BM	ITM	BM	ITM	BM	ITM
Antecedents of SISP **(*: Most important)**	TMPS	√*	√*	√*	√	√	√	√*	√
	ECKS	√	√	√	√*	√*	√*	√	√*
	IEE	√	√	√	√	√	√	√	√
	ARS			√	√			√	√
	OL		√	√	√	√	√	√	√
	APMEV			√	√	√	√	√	√

- TMPS: Top Management Participation and Support
- ECKS: Effective Communication Knowledge Sharing
- IEE: The Impact of the Internal and External Environment
- ARS: Adequate Resources for SISP
- OL: Organisational Learning
- APMEV: Active Partnership between Members in the organisation and an External Vendor

The above table suggests that the eight interviewees in four identified South Korean organisations considered three antecedents, such as top management participation and support, effective communication and knowledge sharing, and the impact of the internal and external environment as vital for successful SISP. In particular, four respondents (the BM [CEO] in Organisation A, B and D, and the ITM in Organisation A) stressed top management participation and support as the most important antecedent, but the other four interviewees regarded effective communication and knowledge sharing as the most important antecedent. Adequate resources for SISP were also identified by four interviewees in Organisation B and D as essential for successful SISP. Everyone but the CEO in Organisation A highlighted that organisational learning was an essential antecedent. In particular, there was an antecedent identified essential for SISP success, which was active partnership between members in the organisation and an external vendor. The six interviewees in Organisation B, C and D pointed out that the partnership with an external vendor is necessary in the South Korean context to complete SISP successfully. All interviewees answered that the consideration of identified antecedents enabled the organisations to achieve successful outcomes of SISP by improving overall planning effectiveness and business and IT alignment.

According to earlier studies (Bechor et al., 2010; Wallace, 2013; Ward and Peppard, 2002), if SISP is to be conducted successfully, various factors need to be considered. Within the context of organisational IT, it is important to recognise the anticipated benefits from IT investment. Furthermore, it has been argued that a set of multiple factors needed to be appropriately considered for improving IS planning effectiveness (Baker, 1995; Mirchandani and Lederer, 2014b; Papke-Shields et al., 2002; Silvius and Stoop, 2013), and aligned these with each other to identify new opportunities and key issues (Chen et al., 2010; Luftman et al., 1999; Maharaj and Brown, 2015; Reich and Benbasat, 2000; Teo, 2009). This indicates that the attainment of the successful outcomes of SISP depends on considering various SISP antecedents. Furthermore, the more organisations attempt to consider the antecedents during SISP, the more they are likely to realise the successful outcomes of SISP. Based on the interview result, the following primary hypotheses 1 and 2, and their subsidiary hypotheses are derived:

H1: SISP antecedents positively improve IS planning effectiveness.

H1a: Top management participation and support have a positive effect on IS planning effectiveness.

H1b: Effective communication and knowledge sharing have a positive effect on IS planning effectiveness.

H1c: The impact of internal and external environment has a positive effect on IS planning effectiveness.

H1d: Adequate resources for SISP have a positive effect on IS planning effectiveness.

H1e: Organisational learning has a positive effect on IS planning effectiveness.

H1f: Active partnership between members of the organisation and an external vendor has a positive effect on IS planning effectiveness.

H2: SISP antecedents positively improve business and IT alignment.

H2a: Top management participation and support have a positive effect on business and IT alignment.

H2b: Effective communication and knowledge sharing have a positive effect on business and IT alignment.

H2c: The impact of internal and external environment has a positive effect on business and IT alignment.

H2d: Adequate resources for SISP have a positive effect on business and IT alignment.

H2e: Organisational learning has a positive effect on business and IT alignment.

H2f: Active partnership between members of the organisation and an external vendor has a positive effect on business and IT alignment.

The interviewees all responded to the question about the outcomes gained from successful SISP by identifying the antecedents as presented in Table 4.6.

Table 4.6. A summary of the cross-case comparison of the successful outcomes of SISP in the selected South Korean organisations

		Organisation A		Organisation B		Organisation C		Organisation D	
		CEO	ITM	BM	ITM	BM	ITM	BM	ITM
The successful outcomes of SISP	ISPE			√	√	√	√	√	√
	BITA	√	√	√	√	√	√	√	√

- BITA: Business and IT Alignment
- ISPE: IS Planning Effectiveness

As presented in the above table, it was revealed that by considering various antecedents the organisation were able to achieve SISP success by effectively harmonising business and IT directions and requirements, and clearly defining standardised business and IT processes and structures. That is, the successful outcomes of SISP were realised by the advancement of IS planning effectiveness and business and IT alignment, which were answered by six and eight interviewees respectively. In particular, five managers (the BM in Organisation B and D, the ITM in Organisation A, C and D) emphasised that business and IT alignment was the most important outcome gained from the identified antecedents. Further, seven interviewees commented that the attainment of improved IS planning effectiveness contributed to realising effective business and IT alignment.

Therefore, it was identified that the two dimensions were important for measuring the successful outcomes of SISP and there was a relationship between IS planning effectiveness and business and IT alignment in South Korean context.

According to prior studies, the outcome of business and IT alignment include improved IS effectiveness and efficiency, and the full exploitation of IS/IT in the organisation as well as the optimisation of organisational resources at the global level (Karimi, 1988), so that it was regarded as an important measure of IS planning effectiveness (Newkirk et al., 2008; Silvius and Stoop, 2013). This suggests that the more organisations achieve IS planning effectiveness, the more they are likely to attain business and IT alignment. Hence, the following hypothesis 3 is proposed:

H3: IS planning effectiveness has a positive effect on business and IT alignment.

All eight interviewees of four South Korean organisations who joined in the interview answered that the successful outcomes of SISP provided the organisation with the means of realising various impacts in order to implement an IT system successfully and enhance sustainable competitive advantage and organisational performance. There were three main impacts that the organisations realised from the successful SISP. These impacts were:

- Harmonising, rearranging, recombining, reconfiguring, re-establishing, renewing, restructuring and upgrading overall business and IT processes, resources and structures in the organisation (all interviewees);
- Improved understanding of the potential impact, role and opportunities of IT

with all members as well as improved interaction and consensus between business and IT sectors about the IT functions and skills (the BM (CEO in Organisation A, C and D, and all ITMs); and

- Building and implementing flexible business and IT functions, processes and structures by adapting and responding rapidly to internal and external changes, issues and trends (the BM in Organisation B and D, and all ITMs).

It has been discussed that if organisations undertake SISP successfully, they are more likely to achieve improved organisational capabilities by better combining, integrating and reconfiguring their processes, resources and structure to achieve a productive task (Duhan, 2007; Grant, 1996; Grover and Segars, 2005). IS competencies are more likely to demonstrate an enhanced ability to assess the impact and role of IT to design and deploy IT successfully (King, 2009; Peppard et al., 2000; Peppard and Ward, 2004). IT infrastructure flexibility is more likely to benefit from effective adaptation to unanticipated organisational and environmental changes and trends (Broadbent et al., 1999; Tallon, 2009; Weill et al., 2002). This indicates that the successful outcomes of SISP enables organisations to realise the strategic implementation of IT and to sustain organisational performance and competitive advantage based on improved organisational capabilities, IS competencies and IT infrastructure flexibility. Therefore, based on this argument, the following hypotheses 4 and 5 as well as their subsidiary hypotheses are proposed:

H4: IS planning effectiveness has a positive effect on the successful impact of SISP.

H4a: IS planning effectiveness has a positive effect on improved organisational capabilities.

H4b: IS planning effectiveness has a positive effect on improved IS competencies.

H4c: IS planning effectiveness has a positive effect on improved IT infrastructure flexibility.

H5: Business and IT alignment has a positive effect on the successful impact of SISP.

H5a: Business and IT alignment has a positive effect on improved organisational capabilities.

H5b: Business and IT alignment has a positive effect on improved IS competencies.

H5c: Business and IT alignment has a positive effect on improved IT infrastructure flexibility.

The above hypotheses derived from the qualitative interview and existing literature are included in the conceptual model of the relationship between antecedents and the impact of SISP success as shown in Figure 4.1.

Figure 4.1. The conceptual framework for the survey

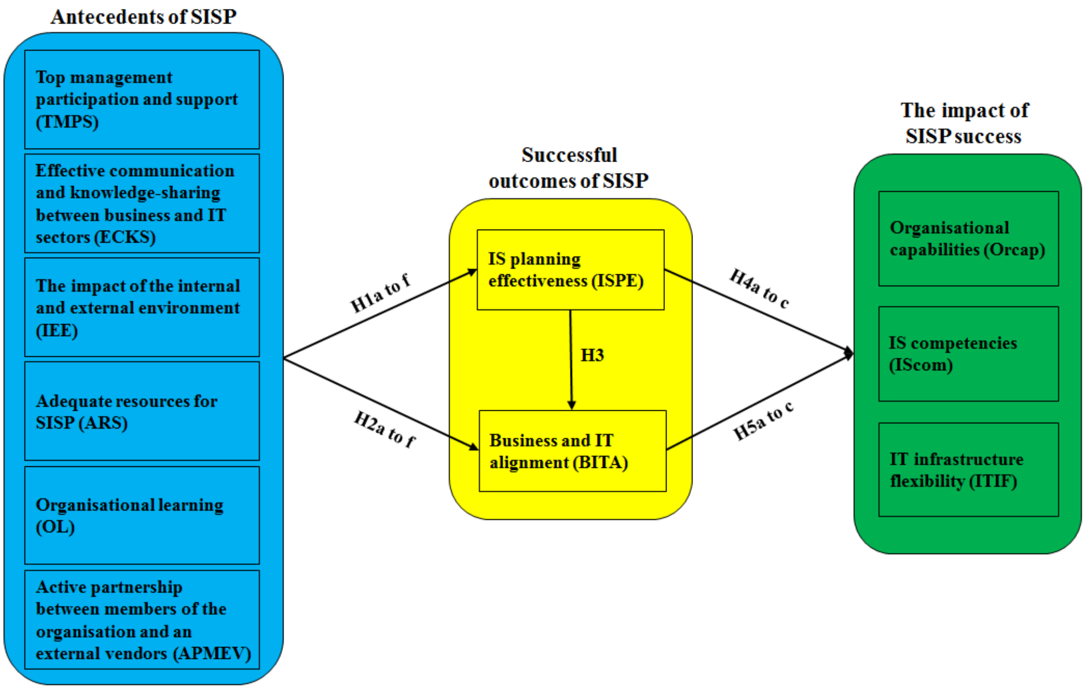


Figure 4.1 presents the conceptual framework for the survey by applying six identified antecedents, two dimensions for the successful outcomes of SISP and three dimensions for the impact of SISP success. The more organisations engage with potential SISP antecedents, the more likely they are to achieve the successful SISP outcomes of IS planning effectiveness and business and IT alignment. If organisations attain improved IS planning effectiveness, they are likely to realise a better business and IT alignment. The successful outcomes of SISP then leads to realising the impact of SISP success by improving organisational capabilities, IS competencies and IT infrastructure flexibility for successful IT implementation. This indicates that one or more SISP antecedents will lead to one or both successful outcomes of SISP. Moreover, each dimension that achieves successful SISP outcomes will lead to realising one or more impact of SISP, which are organisational capabilities, IS competencies and IT infrastructure flexibility.

4.5. Conclusion

This chapter concentrates on the empirical results of eight face-to-face interviews. The semi-structured interview tool with its open-ended question format was employed as a technique for the interview. In order to undertake the interview, a business manager and an IT manager experienced in SISP and IT-related project were selected from each of the four organisations. The main focus of the interview was to create a rich picture of the antecedents essential for SISP success as well as dimensions for the successful outcomes of SISP and the impact of SISP success, thus to confirm the constructs for the quantitative survey. The interview findings were also offered to support the initial research model presented in Chapter 2 and to propose the conceptual framework with research hypotheses. The following chapter describes how the quantitative survey was conducted in order to validate the conceptual model proposed in this chapter and to empirically test the hypotheses.

CHAPTER 5 Data Examination and Demographic Data of the Survey

5.1. Introduction

Chapters 5 and 6 address the quantitative component of the study as the next stage of the mixed method approach taken in this thesis. As discussed in the previous chapter, the eight interviews were first undertaken to identify the research constructs found from the literature, to find more factor(s) that can be relevant to South Korean organisations as antecedent(s) and to establish a conceptual model about the relationship between antecedents and the impact of SISP success. A survey was employed to test and validate the research hypotheses and the conceptual model. Thus, these two chapters deal with the procedures regarding the quantitative survey and its analysis.

The remainder of this Chapter consists of two sections. The following section addresses the procedure of data examination and preparation, such as data screening and cleaning, assessing missing data and testing for outliers, multicollinearity and normality as well as testing for non-response bias and common method bias. Based on the result of data examination and preparation, Section 5.3 presents a demographic profile of respondents, organisations and SISP in organisations.

5.2. Data Examination and Cleaning

Prior to multivariate analysis with SEM/Analysis of MOment Structure (AMOS), it is important to investigate and understand the fundamental properties of the data (Straub et al., 2004); as the important preliminary step. This encourages the essential statistical requirements to be met and for errors to be minimised (Hair et al., 2010). The goal of data examination and cleaning is to prevent the model estimation from failing and the fitting programs from crashing (Kline, 2010). Therefore, in order to create meaningful conclusions utilising SEM, it is important to undertake data screening procedures for adequately applying and preparing the data set in the study. The procedures consist of assessing missing data, outliers and normality as well as testing non-respondent bias and common method bias.

5.2.1. Data screening and cleaning

The survey data of this study were collected from organisations in South Korea using a paper-based questionnaire (the details of the questionnaire are seen in Appendix C). The questionnaire was also handed out by email and post to the 700 organisations that were chosen from the large organisations presented in the list of the KORCHAMBIZ. After the initial distribution (in early April 2014), several follow-up efforts to improve the response rate were performed both by email and by phone from mid-June until early July 2014.

After a three-month period (from April until June 2014), 220 responses were received (a 31.4% return rate) and during the rest of the period (from July to mid-August 2014), 103 responses were received (a 14.7% return rate). Thus, 323 responses (154 responses from business managers and 169 responses from IT managers) were received that were intended to be used for further analysis, and the total response rate was 45.3% (317/700). When the data was entered into SPSS, great care was taken to prevent data-entry error;

for this goal, each variable was appropriately defined and labelled, and all entries were well checked and verified case-by-case in order to improve the overall level of accuracy regarding the data entry procedure.

5.2.2. Assessing missing data

After the data screening and cleaning, missing data was then checked as the next vital step in this study. Missing data refers to "where valid values on one or more variables are not available for analysis" (Hair et al., 2010, p. 42). It typically comes from "errors in data collection or data entry or from the omission of answers by respondents" (Hair et al., 2010, p. 34). The issues of missing data have a negative effect on data analysis and the reduction of sample size available for analysis; thus this causes the generalisability of the results (Hair et al., 2010; Kline, 2010). In order to efficiently deal with the issue of missing data, this study employed a four-step process recommended by Hair et al. (2010, pp. 44-54) to check missing data and provide available remedies; this meant that that researcher checked to "(1) determine the type of missing data, (2) determine the extent of missing data, (3) diagnose the randomness of the missing data processes and (4) select the appropriate imputation method." The detailed procedures of the four steps are further discussed below.

The first step of examining the missing data is to determine the types of missing data comprised in the dataset. There are two types of missing data introduced by Hair et al. (2010): these are (1) ignorable missing data, where the missing data are expected and part of research design (i.e., skip patterns or not applicable option), so this does not require any particular remedies; and (2) non-ignorable missing data, in which the causes and impacts of missing data are not suitably known and identified, so the missing data cannot be easily predicted and needs systematic missing data analysis. In this study, the survey instrument used a 5-point Likert scale to collect responses. It also did not include any non-applicable option and skip pattern. All the missing data in this study occurred due to non-response by the respondents. Therefore, the missing data proved to be 'not ignorable' meaning that a systematic analysis for remedying the data was necessary.

Determining the extent of missing data was conducted as the second step since it was identified that the missing data were not ignorable. Assessing the extent and patterns of missing data helps the researcher arrange "(1) the percentage of variables with missing data for each case, and (2) the number of cases with missing data for each variable" (Hair et al., 2010, p. 47). If the extent of missing data per variable or case was high, the researcher can delete cases and/or variables to decrease the level of missing data. If the extent of missing data per variable or case was low enough, the researcher can employ any specific imputation techniques for remedies without concern for bias in the results of the study (Hair et al., 2010). Hence, the overall extent of the missing data in this study was calculated to identify how many cases with missing data and missing variables that the sample data have and to delete the missing data and variable in a specific case.

According to the result of the examination, 285 missing data points out of 29,716 data points (approx. 0.96%) were identified. Among 323 cases, 303 cases (approx. 93.8%) had no missing data and 20 cases (approx. 6.2%) had missing data as shown in Table 5.1. Further, there were 43 variables that had missing data from 92 variables in total.

Table 5.1. The result of missing data analysis

Case No	Total number of variables	Total number of missing variables	% of missing	Comment
1	92	3	3.3%	Not deleted
2	92	7	7.6%	Not deleted
3	92	2	2.2%	Not deleted
4	92	4	4.4%	Not deleted
5	92	5	5.4%	Not deleted
6	92	4	4.4%	Not deleted
7	92	5	5.4%	Not deleted
8	92	4	4.4%	Not deleted
9	92	2	2.2%	Not deleted
10	92	6	6.5%	Not deleted
11	92	8	8.7%	Not deleted
12	92	5	5.4%	Not deleted
13	92	9	9.8%	Not deleted
14	92	7	7.6%	Not deleted
15	92	32	34.8%	Deleted
16	92	36	39.1%	Deleted
17	92	43	46.7%	Deleted
18	92	28	30.4%	Deleted
19	92	42	45.7%	Deleted
20	92	33	35.9%	Deleted

As described in Table 5.1, the total number of missing data ranged from 2 to 43, and the percentage of missing ranged from 2.2% to 46.7%. This indicates that some cases and/or variables that had high levels of missing data needed to be deleted. According to a rule of thumb recommended by Hair et al. (2010, pp. 47-48), "missing data under 10 percent for an individual case or observation can generally be ignored, except when the missing data occurs in a specific non-random fashion, and variables with as little as 15% missing data are candidates for deletion."

Based on the above criteria, a decision was made to eliminate six cases with over 10% user-missing data, but the 14 cases with less than 10% user-missing were not deleted in the dataset. The missing data on all 14 cases were also below the 10% threshold, so none of these variables was deleted. As a result, 317 responses remained available (150 responses for business managers and 167 responses for IT managers). This reveals that the remaining data was 303 cases that had no missing value, and 14 cases that had less than 10% of missing data. The actions outlined in Step 3 were then taken to ascertain whether or not the extent of missing data needed to be corrected with suitable remedies.

The third step in handling non-ignorable missing data was to diagnose the randomness of the missing data process. Hair et al. (2010) and Tabachnick and Fidell (2013) argue that the randomness that occurs during the assessment of missing data is characterised as two levels: missing data at random (MAR) and missing completely at random (MCAR). MAR refers to "data that are missing randomly within subgroups, but differ in levels between subgroups" (Hair et al., 2010, p. 49). For example, in this study, the missing values of 'antecedents' were dependent on respondents who were business managers and IT managers, but not on the antecedents themselves. If data are MAR, the pattern of missing data is predictable from other variables (Tabachnick and Fidell, 2013). Thus, MAR needs special methods to accommodate a non-random component and to define the factors that determine the subgroup and the varying levels between groups (Hair et al., 2010).

However, MCAR is called "a higher level of randomness" (Hair et al., 2010, p. 49). For example, MCAR happens in this study if the observed variables of 'antecedents' are truly a random sample of all antecedent values, without any underlying process that lends bias to the observed data. Therefore, in MCAR, it is difficult to discriminate the cases with missing data from cases with complete data (Hair et al., 2010) and to suitably predict the distribution of missing data (Tabachnick and Fidell, 2013). With MCAR, it is also possible to be accommodated any type of missing data remedy as the pattern of the missing data does not have any potential bias (Hair et al., 2010).

To diagnose the level of randomness, the independent t-test is utilised to compare and determine whether or not there is a statistical difference in the mean scores between the two groups (i.e., assumed no missing data and assumed missing data) on a given variable suggested by Hair et al. (2010). The t-test results are shown in Table 5.2:

Table 5.2. The result of independent sample t-test

Construct	t	p (sig< 0.05)	Mean difference	Std error difference
Mean of top management participation and support (TMPS)	-0.41	**0.11**	0.00	0.046
Mean of effective communication and knowledge sharing (ECKS)	-1.08	0.00	0.00	0.042
Mean of the impact of internal external environment (IEE)	-0.30	0.00	0.00	0.018
Mean of adequate resources for SISP (ARS)	-0.45	0.02	0.00	0.034
Mean of organisational learning (OL)	0.03	0.00	0.00	-0.002
Mean of active partnership between members in the organisation and external vendor (APMEV)	0.07	0.02	0.00	-0.006
Mean of IS planning effectiveness (ISPE)	0.10	0.04	0.00	-0.001
Mean of business and IT alignment (BITA)	0.01	0.02	0.00	-0.009
Mean of organisational capabilities (Orcap)	0.37	0.04	0.00	-0.023
Mean of IS competencies (IScom)	0.07	0.01	0.00	-0.004
Mean of IT infrastructure flexibility (ITIF)	0.14	0.04	0.00	-0.012
Mean of SISP objective	-0.47	**0.05**	0.00	0.038
Mean of SISP importance	0.26	0.03	0.00	-0.015

According to the results in Table 5.2 above, there were only two variables that had a significant difference between the two groups, including the mean of TMPS and SISP objective (see bold digit). Among the research model constructs, only one variable – TMPS – was identified as MAR (SISP objective was not a part of the research model construct but it was a part of demographic statistics). The remaining 12 variables had no significant difference between the two groups. Hence, the pattern of missing data was identified as MCAR, not as MAR.

The final step was to choose a suitable imputation method for handling and remedying the missing data in the analysis. If there are only a few cases that have missing data, one procedure for handling missing data is to simply remove the cases with them and it is regareded as one of the good alternatives (Tabachnick and Fidell, 2013). However, if missing data are scattered throughout cases and variables, the missing data could be treated by imputation. Imputation is "the process of estimating the missing value based on valid values of other variables and/or cases in the sample" (Hair et al., 2010, p. 50). The key decision of the imputation is mainly dependent on whether the missing data are MAR or MCAR (Hair et al., 2010).

Since the missing data of this study were identified as MCAR, there are a number of possible remedies for MCAR data (Hair et al., 2010): these comprise the listwise and pairwise method for imputation using only one valid data, and other imputation methods that use replacement values, such as hot and cold desk imputation, case substitution, mean substitution and regression imputation. Among the identified imputation methods, this study utilised the EM (expectation maximisation) imputation method, which creates the best possible estimates of the missing data and produce estimations closest to the parameter values (Hair et al., 2010). Moreover, this method is available for randomly missing data by forming the original distribution of missing values (Tabachnick and Fidell, 2013) and a matrix for unbiased estimation of correlation or covariance about a missing data (Hair et al., 2010). The EM method is normally available in SPSS, hence SPSS 21 was utilised for the EM imputation of the missing data in this study. After running the EM imputation in SPSS, a new data sheet with the inputted missing values was created, and the inputted values was then used as the complete dataset to undertake further analysis.

5.2.3. Testing for outliers

Outliers refer to "observations with a unique combination of characteristics identifiable as distinctly different from the other observations" (Hair et al., 2010, p. 64). Moreover, Byrne (2010, p. 105) defines outliers as "cases whose scores are substantially different from all others in a particular set of data." According to Tabachnick and Fidell (2013), there are several reasons for the occurrence of outliers, including incorrect data entry, failure to specify missing data, observation error and instrument error. Hence, outliers need to be accommodated, deleted or explained by utilising solid statistics procedures (Kline, 2010). In general, there are two types of outliers identified, such as univariate and multivariate according to the number of variables (or characteristics) considered (Byrne, 2010; Hair et al., 2010). Since this study has 64 variables (items) and employs multivariate analysis using structural equation modelling tool, multivariate outlier test was undertaken. Multivariate outliers need to be utilised when the extreme values or the pattern of scores are two or more variables (Kline, 2010; Tabachnick and Fidell, 2013).

To detect and identify a multivariate outlier, D^2/df (Mahalanobis distance divided by degrees of freedom) was conducted. Mahalanobis distance refers to "the distance of a case from the centroid of the remaining cases where the centroid is the point created at the intersection of the means of all the variables" (Tabachnick and Fidell, 2013, p. 74). As a common approach for the detection of multivariate outliers, D^2 method measures each observation's distance in standard deviation units (or multidimensional space) from the mean centre of all observations by providing a set of scores for one case and the sample means for all variables (Byrne, 2010; Hair et al., 2010). If higher D^2 values are detected, the values need to be deleted from the general distribution of observations in this multidimensional space (Hair et al., 2010). Further, degrees of freedom *(df)* refers to "the number of bits of information available to estimate the sampling distribution of the data after all model parameters have been estimated" (Hair et al., 2010, p. 613), and the D^2 measure allocated by the number of variables comprised ($D2/df$) is nearly distributed as a *t*-value (Hair et al., 2010).

Although conservative levels of significance (i.e., .005 or .001) are typically suggested as the threshold value to label an outlier, there is no consensus on a threshold level for the D^2/df measure. However, according to a rule of thumb recommended by Hair et al. (2010, pp. 66-67), it can be designated as possible outliers, if observations that have a D^2/df value beyond 2.5 in small samples (less than 80 samples) and beyond 3 or 4 in large samples (more than 200 samples).

This study has 317 cases, so the D^2/df threshold value of 3.0 was set to detect outliers. Following the recommendation of Hair et al (2010), D^2/df was performed to identify the presence of multivariate outliers in the dataset (317 cases by 62 metric variables). According to the results as presented in Table 5.3, there were no cases identified as an outlier because the maximum D2/df threshold was 2.57 in case number 314. Thus, no cases were dropped and all the 317 samples remained for further analysis in this study.

Table 5.3. The test result of outlier

Case	D^2	D^2/df (df=43)	Case	D^2	D^2/df (df=43)
314	110.40612	2.57	303	85.32925	1.98
299	109.85166	2.55	308	84.32167	1.96
310	107.78999	2.51	262	83.87742	1.95
170	101.83351	2.37	271	83.64265	1.95
222	98.94103	2.30	107	81.49597	1.90
289	95.45463	2.22	300	80.11008	1.86
267	95.06281	2.21	256	79.0721	1.84
114	91.68187	2.13	315	79.00636	1.84
317	91.16126	2.12	147	78.83577	1.83
148	86.794	2.02	193	78.80026	1.83

5.2.4. Testing for normality

Normality refers to "the shape of the data distribution for an individual metric variable and its correspondence to the normal distribution" (Hair et al., 2010, p. 71). It is also regarded as the most basic assumption in multivariate analysis and the benchmark for statistical methods based on the utilisation of F and t statistics (Hair et al., 2010). If the variation gained from the normal distribution is satisfactorily large, all the results of statistical tests will turn out to be invalid (Byrne, 2010; Hair et al., 2010). Moreover, underlying multivariate analyses and tests, including SEM/AMOS and their statistical outcomes, is established by the assumption whether or not each variable and all linear combinations of the variables are normally distributed (Hair et al., 2010; Tabachnick and Fidell, 2013). Thus, prior to the achievement of any analysis of data, it is essential to check out that this criterion of multivariate normality has been met (Byrne, 2010).

Normality of variables is typically assessed by either statistical or graphical methods, and the shape of any distribution is described by two types of components, including kurtosis and skewness (Byrne, 2010; Hair et al., 2010; Tabachnick and Fidell, 2013).

Kurtosis refers to “the peakedness or flatness of the distribution compared with the normal distribution”, whereas skewness is commonly used to describe “the balance of the distribution” (Hair at al., 2010, p. 71). Kurtosis is associated with the distribution that is either too tall (or peaked) or too flat, but skewness is linked to the distribution being unbalanced and shifted to one side (i.e., left or right) or centred or symmetrical with the same shape on both sides (Hair et al., 2010; Tabachnick and Fidell, 2013). In a variable, it is possible for there to be a significant kurtosis, skewness, or both (Tabachnick and Fidell, 2013). If a distribution is normal, the values of skewness and kurtosis are given values of zero. If values are above or below zero, the values represent departures from normality (Hair et al., 2010; Tabachnick and Fidell, 2013).

In general, kurtosis values above zero (positive) denote a peaked distribution; whereas kurtosis values below zero (negative) indicate a distribution that is too flat (Hair et al., 2010). Non-normal kurtosis typically creates an undervaluation of the variance of a variable (Tabachnick and Fidell, 2013). On the other hand, if there is an unbalanced distribution identified, it is skewed. A positive skewness typically indicates that there is a distribution shifted to the left with a long right tail, whereas a negative skewness signifies there is a distribution shifted to the right with a long left tail (Hair et al., 2010; Tabachnick and Fidell, 2013).

In particular, although there are conservative alpha levels (i.e., 0.01 or 0.001) used to measure the significance of kurtosis and skewness, the impact of violation on kurtosis and skewness is dependent upon the sample size. This is due to the fact that standard errors for both skewness and kurtosis can reduce and the null hypothesis can be rejected with larger samples (Hair et al., 2010; Tabachnick and Fidell, 2013). If the sample size is 30 or less, the normality issues can have a huge impact on the results. However, for sample sizes of 200 or more, these same effects may disappear or become reduced (Byrne, 2010; Tabachnick and Fidell, 2013). Therefore, in most cases, if the sample sizes become large, the researcher is less concerned about non-normal variables (Hair et al., 2010).

As a rule of thumb recommended by Hair et al. (2010) for assessing the skewness and kurtosis values based on statistical tests, the distribution is regarded as normal if the critical values measured by *z*-distribution are ±2.58 (.01 significance level) and ±1.96, which corresponds to a .05 error level. Further, a critical value between within ± 3 for measuring the skewness (Byrne, 2010; Kline, 2010; Tabachnick and Fidell, 2013) and a value within ± 10 for measuring the kurtosis in a dataset are considered acceptable (Kline, 2010, p. 63). These ranges of values are required for the data to be considered as normally distributed. The results of the statistical test of normality in the study are displayed in Table 5.4 below:

Table 5.4. The results of normal distribution test (Skewness and Kurtosis)

Item	Mean	Std. Deviation	Skewness	Kurtosis	Item	Mean	Std. Deviation	Skewness	Kurtosis
TMPS1	3.55	.835	-.359	.149	ISPE1	3.74	.683	-.156	.276
TMPS2	3.59	.836	-.539	.432	ISPE2	3.80	.711	-.229	-.072
TMPS3	3.34	.944	-.259	-.083	ISPE3	3.86	.681	-.117	-.204
TMPS4	3.48	.840	-.418	.470	ISPE4	3.83	.709	-.065	-.384
TMPS5	3.50	.855	-.228	.107	ISPE5	3.76	.698	-.085	-.233
TMPS6	3.33	.838	-.355	.446	ISPE6	3.79	.692	-.379	.591
ECKS1	3.69	.770	-.460	.645	BITA1	3.95	.694	-.165	-.312
ECKS2	3.64	.761	-.114	-.087	BITA2	3.96	.695	-.287	.331
ECKS3	3.55	.804	-.262	-.034	BITA3	3.83	.701	-.465	.724
ECKS4	3.65	.800	-.144	-.229	BITA4	3.86	.693	-.037	-.430
ECKS5	3.63	.771	.044	-.452	BITA5	3.85	.726	-.259	.169
ECKS6	3.67	.760	-.094	-.341	Orcap1	3.95	.656	-.282	.263
ECKS7	3.65	.812	-.696	.837	Orcap2	3.79	.690	-.459	.751
IEE1	3.61	.845	-.225	-.212	Orcap3	3.85	.706	-.044	-.439
IEE2	3.49	.899	-.300	-.182	Orcap4	3.87	.652	-.273	.270
IEE3	3.63	.849	-.285	-.034	Orcap5	3.78	.777	-.206	-.344
IEE4	3.64	.833	-.392	.287	Orcap6	3.84	.719	-.412	.512
ARS1	3.47	.781	-.401	-.048	Orcap7	3.55	.792	-.518	.485
ARS2	3.45	.756	-.066	-.119	IScom1	3.79	.653	-.166	.017
ARS3	3.47	.798	-.006	-.065	IScom2	3.81	.648	-.217	.139
ARS4	3.48	.798	-.016	-.257	IScom3	3.79	.727	-.201	-.169
OL1	3.52	.794	-.401	.380	IScom4	3.77	.747	-.103	-.376
OL2	3.43	.830	-.231	-.153	IScom5	3.81	.696	-.116	-.217
OL3	3.41	.847	-.172	-.095	IScom6	3.74	.718	-.346	.078
OL4	3.29	.877	-.140	-.076	ITIF1	3.71	.774	-.353	.084
OL5	3.17	.911	-.236	-.328	ITIF2	3.80	.772	-.181	-.390
APMEV1	3.36	.927	-.542	.130	ITIF3	3.72	.758	-.190	-.027
APMEV2	3.31	.947	-.556	.135	ITIF4	3.57	.791	-.285	.260
APMEV3	3.25	.943	-.259	-.040	ITIF5	3.77	.765	-.261	-.212
APMEV4	3.29	.970	-.463	-.050	ITIF6	3.59	.739	-.324	.111
APMEV5	3.36	.940	-.567	.193					
APMEV6	3.19	.933	-.510	.140					

According to the results of the skewness and kurtosis measures on the critical ratio for all 62 metric variables in the above Table 5.4, all values for the variables fell within the range of the rigorous level of -1 to +1 for skewness, and met the proposed level of -1 to +1 for kurtosis. As already indicated above, the underestimation of variance with positive kurtosis reduces with larger sample sizes (more than 200. This study has 317 samples in total). The results confirmed that multivariate non-normality did not exist in the data set, and all variables were hence considered to be normally distributed without any deletion of cases from the data set.

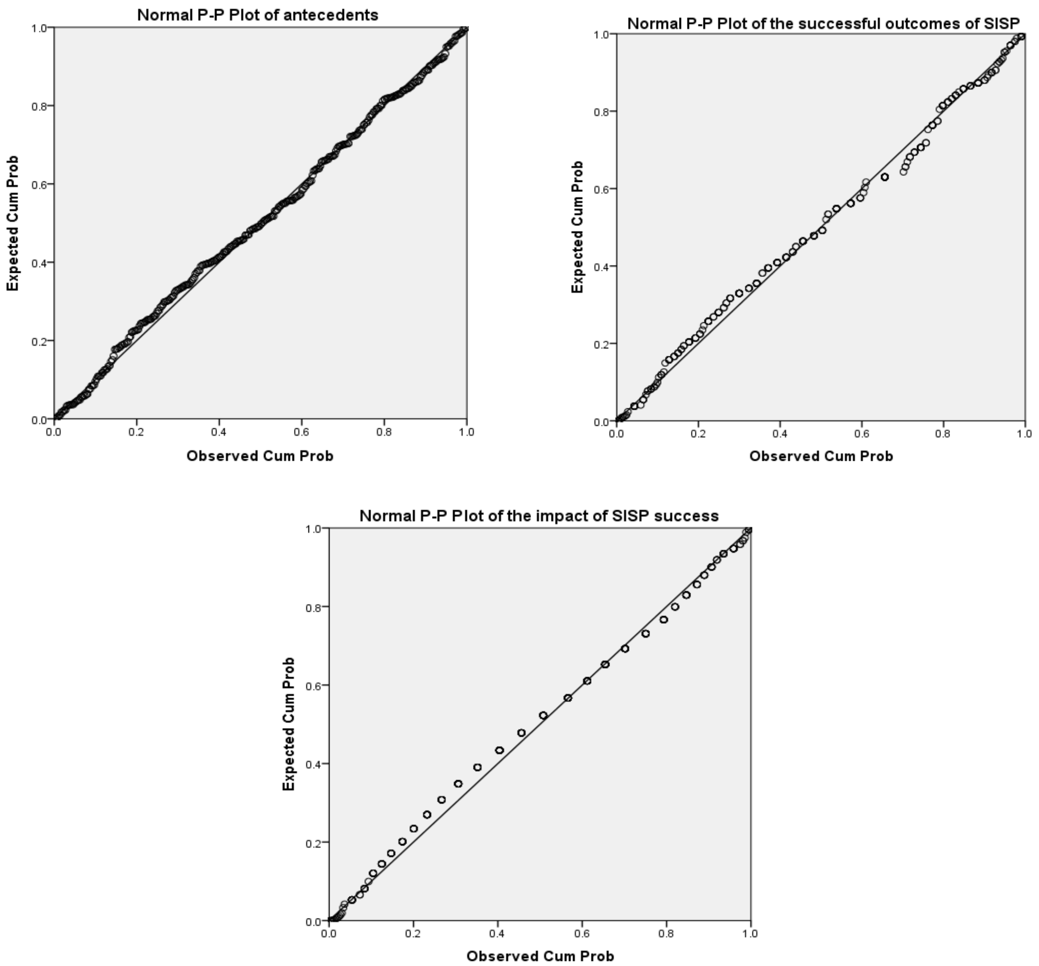
5.2.5. Testing for linearity

The assumption of linearity starts with identifying whether or not "there is a straight-line relationship between two variables (or where one or both of the variables can be combinations of several variables)" (Tabachnick and Fidell, 2013, p. 83). In particular, the linearity is dependent on an assumption on how well the casual relationship between independent and dependent variable is normally distributed and linearly related (Hair et al., 2010). If the linearity test is omitted, the actual strength of the relationship can be underestimated and the generalisability of the findings can be limited (Field, 2009). Therefore, the test for linearity is an important requirement to conduct factor analysis procedures (Hair et al., 2010).

The most basic way to measure the linearity is to explore "scatterplots of the variables and to identify any non-linear patterns in the data" (Hair et al., 2010, p. 76). If the variables are linearly related with normal distribution, the scatterplot is appeared as oval-shaped. If one of the variables is non-normal, the scatterplot between this variable and the other is not oval (Tabachnick and Fidell, 2013). Another way is to test a simple regression analysis and to observe the residuals, because residuals typically represent the unknown portion of the dependent variable (Hair et al., 2010).

Figure 5.1 shows the result of the regression analysis that displays the normal P-P plot of items for antecedents, the successful outcomes of SISP and the impact of SISP success. According to the outputs, it was confirmed that there were linear relationships between the dependent and independent variables existing in each level of the model as well as the distribution being normal. Therefore, the scatter plots between independent and dependent variables did not show any non-linear relationships.

Figure 5.1. Normal P-P plot of antecedents, the successful outcomes of SISP and the impact of SISP success



Furthermore, the statistical test for linearity was undertaken using the ANOVA test in SPSS to analyse the correlation matrices between the two variables. If all the significant values for deviation are greater than 0.05, this implies that the relationship is considered to be linear. According to the result of ANOVA test (see Appendix D), all the values for deviation were greater than 0.05. Thus, the linearity of the data in this study was valid.

5.2.6. Testing for multicollinearity

Multicollinearity arises from “the situation where two or more variables are so highly correlated that they both essentially represent the same underlying construct” (Byrne, 2010, p. 168). Multicollinearity is considered as issues with a correlation matrix that happen when variables are too highly correlated (Tabachnick and Fidell, 2013). If the two variables are highly correlated (i.e., more than 0.90), then multicollinearity issue is occurred. In this study, item-item correlations were calculated between all items to measure multicollinearity. Correlation coefficients of items for the three variables are presented in Appendix E. There were no items exceeding more than 0.9. Therefore, no multicollinearity issue was identified.

5.2.7. Testing for non-response bias

Non-response bias refers to “the mistake one expects to make in estimating a population characteristic based on a sample of survey data in which, due to non-response, certain types of survey respondents are under-represented” (Berg, 2010, p. 3). In general, there is a certain amount of nonresponse that always occurs in most surveys, since not every addressed participant returns the questionnaire. Therefore, non-response bias through mailed surveys has been recognised to be a serious concern (Dillman et al., 2009).

Velcu (2010) argues that performing a non-response bias test is important to facilitate the external validity of the survey and to identify whether or not the reported results reveal bias. One of the basic methods for testing non-response bias is to compare for a difference between early responses and late responses for the means of all variables for the two samples by assuming late respondents seem to be similar to non-respondents. If there are no significant differences identified between early and late respondents, this reveals that non-response bias is less likely to have occurred (Berg, 2010; Velcu, 2010). For testing non-response bias, the independent sample t-test was used to compare the ‘early’ respondents against ‘late’ respondents.

In the study, non-response bias was estimated based on the average mean of antecedents, the mean of the successful outcomes of SISP and the mean of the impact of SISP success of those participants who responded earlier and later. Early responses denoted responses received in between the first delivery of the questionnaire by e-mail and post, and the first reminder. Late responses were considered to be rest of the returned usable questionnaires received after the first reminder. There were 218 early responses (68.8%) and 99 late responses (31.2%). The received responses was then classified into two sub-samples to perform a two-sample independent t-test, including the first 60 responses (19%) as the first sub-sample and the last 60 responses (19%) as the second sub-sample. Table 5.5 presents the results of the independent samples t-test by comparing the two responses:

Table 5.5. The results of independent samples t-test

Construct	t	df	p (Sig)	Mean			Std. error difference
				Early	Late	Diff.	
Mean of antecedents	- 2.24	118	0.027	3.37	3.58	0.213	0.095
Mean of the successful outcomes of SISP	- 2.78	118	0.006	3.78	3.99	0.218	0.078
Mean of the impact of SISP success	- 1.54	118	0.126	3.68	3.80	0.119	0.077

The results of Table 5.5 show that there was no significant difference identified between earlier and later responses for the mean value of all three selected constructs. Hence, this finding indicates that although there was a non-response bias found in this study, the impact of non-response bias was not regarded a significant issue to inhibit generalisation from the sample to the population.

5.2.8. Testing for common method bias

Common method bias (also well recognised as common method variance) refers to “a variance that is attributable to the measurement method rather than to the construct of interest” (Podsakoff et al., 2003, p. 879). As one of the basic causes of measurement error, common method bias is a problem in a survey, because it often leads to invalid conclusions about the relationships between variables by the inflation or deflation of the findings (Craighead et al., 2011; Podsakoff et al., 2003). Hence, common method bias is generally considered as one of the most often cited concerns among IS scholars (Malhotra et al., 2006; Straub et al., 2004).

In general, it is possible for researchers to employ practical remedies to minimise the potential impact of common method bias about the findings of their study. A number of authors (Craighead et al., 2011; Malhotra et al., 2006; Podsakoff et al., 2003) agree that Harman’s single-factor test is the most commonly utilised statistical remedy for assessing and controlling common method bias across all fields. In this single-factor test, all of the items and variables in a study are under the control of exploratory factor analysis (EFA) (Craighead et al., 2011; Malhotra et al., 2006). Through examining the unrotated factor solution, it determines the number of factors important to explain the variance in the variables (Podsakoff et al., 2003). Common method bias is assumed to occur “if (a) a single factor will emerge from factor analysis or (b) one general factor will account for the majority of the covariance among the measure” (Podsakoff et al., 2003, p. 889). Furthermore, this test is now becoming common in confirmatory factor analysis (CFA) as an alternative to EFA to test the hypothesis that a single factor can explain all of the variance in the data (Craighead et al., 2011; Malhotra et al., 2006; Podsakoff et al., 2003). Table 5.6 shows the results of EFA, which used the unrotated principle components analysis:

Table 5.6. The results of the common method bias test

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	19.722	31.809	31.809	19.722	31.809	31.809
2	4.941	7.970	39.779	4.941	7.970	39.779
3	3.392	5.471	45.251	3.392	5.471	45.251
4	2.289	3.691	48.942	2.289	3.691	48.942
5	1.897	3.060	52.002	1.897	3.060	52.002
6	1.769	2.853	54.855	1.769	2.853	54.855
7	1.555	2.508	57.363	1.555	2.508	57.363
8	1.317	2.125	59.488	1.317	2.125	59.488
9	1.280	2.065	61.553	1.280	2.065	61.553
10	1.112	1.794	63.347	1.112	1.794	63.347
11	1.066	1.720	65.066	1.066	1.720	65.066
12	1.034	1.668	66.735	1.034	1.668	66.735
13	.928	1.498	68.232			
14	.889	1.434	69.666			
15	.840	1.355	71.021			
16	.810	1.307	72.327			
17	.752	1.213	73.540			
18	.725	1.169	74.708			
19	.703	1.133	75.842			
20	.679	1.095	76.937			
21	.648	1.045	77.982			
22	.630	1.016	78.998			
Extraction Method: Principal Component Analysis						

The result of Table 5.6 shows that the EFA created 22 factors with an eigenvalue greater than 1. These items explain the total variance of 78.998%. The leading (i.e., number 1) factor accounted for 31.8% of the variance in the measures. This means that one single factor did not occupy a larger portion of the variance in the measures (less than 50%). Further, no single factor emerged to signify the variance among all the measurement items. Thus, these results reveal that common method bias in this study does not seem to be a major issue for correcting the interpretation of the research results.

5.3. Overview of the survey data

This section discusses the demographic attributes of the responding organisations that participated in this study. The section comprises three sub-sections that profile the following: the respondents, the organisations, and the strategic information systems planning (SISP) in the organisations. These profiles provide background information on the respondents who responded to the survey and the organisations that responded to the survey.

5.3.1. Demographic profile of respondents

The profiles of the respondents that participated in the survey are shown in Table 5.7. The profiles comprise the respondents' working field, working department and position. They also include how long the respondents have worked in the industry; how long they have worked in the organisation; and how long they have been involved in SISP and IT-related project:

Table 5.7. Profile of respondents

		IS/IT field	Business field	Frequency
Working field	IS/IT field	167	-	167
	Business field	-	150	150
Total		167 (53%)	150 (47%)	317 (100%)
Working department or team	Strategy and planning	13	25	38 (12%)
	Accounting and finance	1	22	23 (7%)
	Consulting and outsourcing	5	2	7 (2%)
	Organisational management and support	2	97	99 (31%)
	Marketing and sales	0	3	3 (1%)
	System analysis, integration and standardisation	43	0	43 (14%)
	IS/IT programming, operation and maintenance	103	1	104 (33%)
Total		167	150	317 (100%)
Position	Director	2	1	3 (1%)
	Chief/Senior manager	51	22	73 (23%)
	Manager	52	32	84 (26%)
	Assistance manager	62	95	157 (50%)
Total		167	150	317 (100%)
Working experience in this industry	Less than 5 years	38	81	119 (38%)
	Between 5 and 9 years	44	28	72 (22%)
	Between 10 and 14 years	46	28	74 (23%)
	More than 15 years	39	13	52 (17%)
Total		167	150	317 (100%)
Working experience in the organisation	Less than 5 years	67	96	163 (51%)
	Between 5 and 9 years	40	26	66 (21%)
	Between 10 and 14 years	27	19	46 (15%)
	More than 15 years	33	9	42 (13%)
Total		167	150	317 (100%)
Experience in SISP and IS/IT implementation project	Less than 5 years	66	111	177 (56%)
	Between 5 and 9 years	51	19	70 (22%)
	Between 10 and 14 years	26	12	38 (12%)
	More than 15 years	24	8	32 (10%)
Total		167	150	317 (100%)

This table shows the working field of the respondents. Out of the 317 respondents that replied to the survey and passed the data examination and preparation test, 167 respondents (53%) were working in IS/IT field, while 150 respondents (47%) were working in the business field. In terms of the respondents' working department or team, the biggest group in the IS/IT field came from IS/IT programming, operation and maintenance (103 respondents), and system analysis, integration and standardisation (43 respondents). However, in the case of the business field, the biggest group comprised of organisational management and support (97 respondents), strategy and planning (25 respondents), and accounting and finance (22 respondents).

In term of the respondents' position, the majority of respondents held the position of assistance manager (50%), followed by manager (26%), chief/senior manager (23%) and director (1%). The numbers of the three positions of the respondents in the IT field who answered the questionnaire were spread evenly (62 as assistant manager, 52 as manager and 51 as chief/senior manager respectively). However, in the case of the business field, the major group to answer the questionnaire was that of assistant manager (95 respondents). Regarding the respondents' working experience in their industry, 38% of the respondents had less than five years' experience in the industry, while 23%, 22% and 17 of the respondents had working experience between 10 and 14 years, between five and nine years, and more than 15 years in their industry respectively.

Of the 317 respondents, the majority (51%) had worked less than five years in the current organisation, while 21% 15% and 13% of the respondents had worked between five and nine years, between 10 and 14 years, and over 15 years' working experience in the current organisation respectively. Finally, in terms of the respondents' experience in SISP and IT project, more than half of the respondents (56%) answered that they had experienced less than five years on the project. The amount of time respondents had experienced in the project comprised between five and nine years (22%), between 10 and 14 years (12%), and more than 15 years (10%).

5.3.2. Demographic profile of organisations

Table 5.8 summarises the profile of the organisations provided by the respondents. The profile presented in the Table comprises the organisations' industry sector, the number of employees in the organisation and the organisations' annual turnover.

Table 5.8. Profile of organisations

		IS/IT field	Business field	Frequency
Industry sector or the organisation's primary business	Manufacturing	82	74	156 (49%)
	Banking, finance and insurance	23	15	38 (12%)
	Construction	12	10	22 (6%)
	Cargo, logistics, shipping and transport	8	8	16 (5%)
	Electricity, electronic, IT and telecommunication	15	16	31 (10%)
	Services	15	12	27 (9%)
	Wholesale and retail trade	10	14	24 (8%)
	Others	2	1	3 (1%)
Total		167	150	317 (100%)
Number of employees in the organisation	Less than 500 employees	43	53	96 (30%)
	Between 501 and 1,000 employees	39	43	82 (26%)
	Between 1001 and 3,000 employees	36	25	61 (19%)
	Between 3,001 and 5,000 employees	18	9	27 (9%)
	More than 5,001 employees	31	20	51 (16%)
Total		167	150	317 (100%)
The organisation's annual turnover	Less than AUD 10 million (approx.)	9	9	18 (6%)
	Between AUD 10 and 50 million (approx.)	35	52	87 (28%)
	Between AUD 50 million and 100 million (approx.)	44	40	84 (26%)
	Between AUD 100 and 300 million (approx.)	34	26	60 (19%)
	More than AUD 300 million (approx.)	45	23	68 (21%)
Total		167	150	317 (100%)

Table 5.8 shows the industry sector in the organisations. The biggest industry sector is manufacturing (49%), followed by banking, finance and insurance (12%), electricity, electronic, IT and telecommunication (10%), services (9%), wholesale and retail trade (8%), construction (6%), cargo, logistics, shipping and transport (5%) and other (1%) respectively.

In terms of the number of employees in the respondents' organisation, one-third of the organisations (30%) had less than 500 employees, 26% of the organisations had between 501 and 1,000 employees, and 19% of the organisations had between 1,001 and 3,000 employees. Furthermore, the organisations that possessed more than 5,001 employees numbered 16%, followed by the organisations that had between 3,001 and 5,000 employees, which numbered 9%. In this study, the total number of employees equalled the sum of the employees working in both domestic and foreign companies, as most large organisations of South Korea currently manage and operate their business globally.

Finally, regarding the annual turnover of the respondents' organisations, the annual turnover of 90% of the organisations exceeded AUD 10 million. The biggest group came made an annual turnover of between AUD 10 and 50 million (28%, 87 organisations), followed by three groups who, respectively, made an annual turnover of between AUD 50 and 100 million (26%, 84 organisations), more than AUD 300 million (21%, 68 organisations), and between AUD 100 and 300 million (19%, 60 organisations). The smallest group, however, comprised only 19 organisations (6%) and recorded an annual turnover of less than AUD 10 million.

5.3.3. Demographic profile of SISP in the organisations

Table 5.9 illustrates the ways that SISP is undertaken in the respondents' organisation: these ways are normally classified as formal and informal. Of the 317 organisations, 76% of them (242 organisations) conducted their SISP process in a formal way, while 24% (75 organisations) undertook SISP in an informal way. Table 5.9 presents this information in relation to the respondents' industry sector and business and IT field:

Table 5.9. SISP in the organisation (Formal way vs. Informal way)

Industry sector	SISP undertaking		Frequency
	Formal way	Informal way	
Manufacturing	123	33	156 (49%)
Banking, finance and insurance	32	6	38 (12%)
Construction	16	6	22 (6%)
Cargo, logistics, shipping and transport	12	4	16 (5%)
Electricity, electronic, IT and telecommunication	21	10	31 (10%)
Services	19	8	27 (9%)
Wholesale and retail trade	17	7	24 (8%)
Others	2	1	3 (1%)
Total	**242 (76%)**	**75 (24%)**	**317 (100%)**
IT/IS field	129	38	167 (53%)
Business field	113	37	150 (47%)
Total	**242 (76%)**	**75 (24%)**	**317 (100%)**

Table 5.10 presents the involvement of organisations undertaking SISP. It shows that within these organisations, various groups participated in SISP. More than 60% of the respondents (63%, 199 organisations) commented that the top management group (i.e., CEO, CIO and CFO) participated in the organisation's SISP, while the remaining 37% of the respondents (118 organisations) commented that the top management group did not participate in the SISP process.

The participation rate of business and IT managers involved in SISP was much higher than that of the top management group. 87% of business managers and 96% of IT managers were involved in the organisation's SISP. When asked about the involvement of the end-user group, 200 respondents (63%) answered that the end-user group participated during the SISP. However, the participation of the external consultant or vendor group rated slightly lower than that of other groups, with 188 respondents (59%) confirming the external consultant or vendor's participation within the organisation during the SISP.

Table 5.10. Involvement in SISP undertaking

	Top management group		Frequency
	Yes	No	
IS/IT field	105	62	167 (53%)
Business field	94	56	150 (47%)
Total	199 (63%)	118 (37%)	317 (100%)
	Department manager of business field		**Frequency**
	Yes	**No**	
IS/IT field	143	24	167 (53%)
Business field	132	18	150 (47%)
Total	275 (87%)	42 (13%)	317 (100%)
	IT team and IT manager		**Frequency**
	Yes	**No**	
IS/IT field	165	2	167 (53%)
Business field	141	9	150 (47%)
Total	306 (96%)	11 (4%)	317 (100%)
	End-user group		**Frequency**
	Yes	**No**	
IS/IT field	103	64	167 (53%)
Business field	97	53	150 (47%)
Total	200 (63%)	117 (37%)	317 (100%)
	External consultant or vendor group		**Frequency**
	Yes	**No**	
IS/IT field	99	68	167 (53%)
Business field	89	61	150 (47%)
Total	188 (59%)	129 (41%)	317 (100%)

Table 5.11 provides a detailed descriptive frequency table of the primary objective of SISP in organisations. Eight objectives were proposed, which were designed to elicit an answer from the respondents. As presented in the Table, all the respondents recognised these objectives as critical and the response rate exceeded more than 50 percent (only including the sum of the rate of high extent and very high extent in each objective). Thus, the result clearly expresses the main reason why many organisations undertake SISP prior to IS/IT implementation.

Table 5.11. The primary objective of SISP in organisations

	No extent at all	Low extent	Neutral	High extent	Very high extent	Frequency
	1. To maximise and upgrade the overall function, efficiency and performance of IS/IT systems					
IS/IT field	4	3	26	77	57	167 (53%)
Business field	1	4	32	77	36	150 (47%)
Total	5 (2%)	7 (3%)	58 (18%)	154 (48%)	93 (29%)	317 (100%)
	2. To improve overall processes and structures by alignment, integration and standardisation					
IS/IT field	3	7	31	76	50	167 (53%)
Business field	1	4	43	76	26	150 (47%)
Total	4 (1%)	11 (4%)	74 (23%)	152 (48%)	76 (24%)	317 (100%)
	3. To enhance communication and knowledge sharing among all users of the organisation					
IS/IT field	3	6	55	79	24	167 (53%)
Business field	0	3	56	64	27	150 (47%)
Total	3 (1%)	9 (3%)	111 (35%)	143 (45%)	51 (16%)	317 (100%)
	4. To promote automation of overall business management and transactions etc.					
IS/IT field	2	5	39	80	41	167 (53%)
Business field	1	0	33	91	25	150 (47%)
Total	3 (1%)	5 (2%)	72 (22%)	171 (54%)	66 (21%)	317 (100%)
	5. To enhance effectiveness and promptness of business support and decision-making					
IS/IT field	4	4	22	93	44	167 (53%)
Business field	0	1	37	79	33	150 (47%)
Total	4 (1%)	5 (2%)	59 (19%)	172 (54%)	77 (24%)	317 (100%)
	6. To maintain consistency and unity of management for companies in home and aboard					
IS/IT field	11	15	57	62	22	167 (53%)
Business field	10	14	51	61	14	150 (47%)
Total	21 (7%)	29 (9%)	108 (34%)	123 (39%)	36 (11%)	317 (100%)
	7. To obtain competitive advantage by facilitating customer services and improving customer satisfaction					
IS/IT field	4	10	42	81	30	167 (53%)
Business field	2	7	55	64	22	150 (47%)
Total	6 (2%)	17 (5%)	97 (31%)	145 (46%)	52 (16%)	317 (100%)
	8. To build mid- and long-term planning and provide a roadmap for business management and overall IS/IT systems					
IS/IT field	1	10	37	81	38	167 (53%)
Business field	1	7	48	78	16	150 (47%)
Total	2 (1%)	17 (5%)	85 (27%)	159 (50%)	54 (17%)	317 (100%)

Of the eight objectives, the top four were to enhance effectiveness and promptness of business support and decision-making (78%); followed by the objectives to maximise and upgrade the overall function, efficiency and performance of IS/IT systems (77%) to promote automation of overall business management and transactions etc. (75%); and to improve overall processes and structures by alignment, integration and standardisation (72%). The remaining four objectives were to build mid- and long-term planning and provide a roadmap for business management and overall IT systems (67%); to gain competitive advantage through enhancing customer services and customer satisfaction (62%); to enhance communication and knowledge sharing among all members (61%); and to maintain consistency and unity of management for companies in home and aboard (50%).

Finally, as Table 5.12 shows, in the review of SISP in the respondents' organisation, almost two-thirds of the respondents (65%, 206 respondents) answered that the organisation undertook the SISP whenever it needed. 26% (85 respondents) replied that the organisation conducted the SISP at least once a year, while only 5% and 4% (14 and 12 respondents) of the organisation undertook the SISP twice a year and once every two to three years respectively.

Table 5.12. The review of SISP in organisations

Review / Industry	Once a year at least	Twice a year	Once every 2-3 years	Undertaken as needed	Frequency
Manufacturing	42	6	5	103	156 (49%)
Banking, finance and insurance	7	2	3	26	38 (12%)
Construction	5	3	2	12	22 (6%)
Cargo, logistics, shipping and transport	4	0	1	11	16 (5%)
Electricity, electronic, IT and telecommunication	9	2	0	20	31 (10%)
Services	11	0	1	15	27 (9%)
Wholesale and retail trade	5	1	0	18	24 (8%)
Others	2	0	0	1	3 (1%)
Total	**85 (26%)**	**14 (5%)**	**12 (4%)**	**206 (65%)**	**317 (100%)**
IS/IT field	50	8	7	102	167 (53%)
Business field	35	6	5	104	150 (47%)
Total	**85 (26%)**	**14 (5%)**	**12 (4%)**	**206 (65%)**	**317 (100%)**

5.4. Conclusion

This chapter comprises data examination and cleaning, and an overview of the survey data. The data examination and cleaning described in the first part of this chapter was conducted to examine missing data, outliers, normality with linearity, multicollinearity, non-respondent bias and common method bias as well as to provide a profile of the respondents. Through the missing value analysis, six cases were deleted because these cases had more than 10% of user-missing data.

The following Table 5.13 presents the summary of the data examination and cleaning stages. It describes the changes made to the total cases in my study as a result of these stages being undertaken and the changes of the total cases by undertaking the stages.

Table 5.13. Summary of data examination and cleaning

Step	Action	Total cases
Data entry and screening (5.2.1)	No samples were deleted	323
Missing data analysis (5.2.2)	Six samples were deleted because of more than 10% user-missing data	317
Testing for outliers (5.2.3)	No case was dropped. The maximum D2/df threshold was 2.57 (less than 3.0) in case 314	317
Testing for normality (5.2.4)	Skewness and kurtosis were within the range of -1 to +1	317
Testing for linearity (5.2.5)	The distribution of scores was normal by assessment of the scatter plots. The deviation for linearity in the data was valid according to the ANOVA test	317
Testing for multicollinearity (5.2.6)	No multicollinearity item was identified by correlation coefficients	317
Testing for non-response bias (5.2.7)	From the result of independent sample t-test, there was no significant difference between earlier and later responses	317
Testing for common method bias (5.2.8)	It did not seem to be a major concern for the EFA.	317

This chapter also presents an overview of the survey data, covering the demographic profile of respondents' working field, department, position and working experience. Further, it includes a demographic profile of the organisations' industry sector, the number of employees and the annual turnover as well as a demographic profile of SISP in organisations, including formal SISP versus informal SISP, involvement of people in SISP, the primary goals of SISP and the review of SISP.

The next chapter addresses the instrument validation and measurement model by describing how the EFA and CFA were utilised to ensure and validate whether the established measurement instrument was both valid and reliable as well as to test the research hypotheses of the proposed research framework. Further, it describes how the instrument validation and measurement model was tested and it reports the result of the moderating effect regarding the relationship between antecedents and the impact of SISP success by using a multiple group analysis of business and IT managers.

CHAPTER 6 Instrument Validation and Measurement Model

6.1. Introduction

Regarding the second part of the survey, this chapter discusses the instrument validation and the measurement of the model utilised in this study based on an analysis of EFA and CFA. This study also uses structural equation modelling (SEM) in order to test and validate the measurement model. The first section of this chapter starts with the assessment of content validity and reliability. It presents the assessment of construct validity by using EFA. Moreover, it assesses measurement models of the three main constructs, such as antecedents of SISP, the successful outcomes of SISP and the impact of SISP success by using CFA/AMOS with the validation of congeneric and full measurement model of the constructs as well as their reliability, convergent validity and discriminant validity. Thus, this section includes the basic concept of structural equation modelling (SEM) and its assessment and analysis. Section 6.3 provides the result of the structural model validity and the hypothesis testing. The overview and result of multiple group analysis is addressed in Section 6.4. Finally, the chapter concludes with a brief summary and discussion, as presented in Section 6.5.

6.2. Instrument Validation and Measurement Model

According to Straub et al. (2004), the issue of an adequate validation of the instruments has continued to be emphasised in IS positivist (or quantitative) research, and the issue of consistency in IS research is still one of the most important scientific issues.

If there is no stable instrument validation for data collection that is the basis of the findings and interpretations, the systematic basis of the work can be vulnerable to many challenges (Straub et al., 2004). Thus, the instrument validation of the study is important because IS research is one of the dynamic and ever-growing fields.

A valid and reliable measure typically allows the collected data to be objective. It also allows for the statistical conclusions gained from the statistical analysis to be made more stable and unbiased by the minimising of measurement errors, hence improving generalisation (Gefen et al., 2000). There are two primary properties of the measure that the researcher should address to undertake this work adequately, such as validity and reliability (Field, 2009; Hair et al., 2010). Validity is related to "whether an instrument actually measures what it sets out to measure", and reliability is linked with "whether an instrument can be interpreted consistently across different situations" (Field, 2009, p. 11).

The main goal of this section is to describe methodologies that are essentially required for the validity and reliability of the measurement instrument recommended by Hair et al. (2010), Lewis et al. (2005) and Straub et al. (2004). It also provides a description of how content, constructs, convergent and discriminant validity, and internal consistency reliability are assessed. The validity of the instrument is then measured through both exploratory factor analysis and confirmatory factor analysis.

6.2.1. Content validity

Content validity is defined as "the degree to which items in the instrument reflect the content universe to which the instrument will be generalised" (Boudreau et al., 2001, p. 5). It refers to "the assessment of the correspondence of the variables to be included in a summated scale and its conceptual definition" and is also known as "face validity" (Hair et al., 2010, p. 125). The purpose of content validity is to make sure that the selection of scale items comprises past empirical issues with theoretical and practical considerations (Hair et al., 2010).

Since content validity is an issue of representation (Straub et al., 2004), it subjectively evaluates the correspondence between the questionnaire items and the concept based on the literature review, expert judges, pre-tests or other means (Hair et al., 2010). Therefore, content validity considers how suitably the questionnaire items pull in a representative manner from all of the ways to measure the content of a given construct (Straub et al., 2004). Both pre-tests and pilot tests were frequently employed to assess content validity (Boudreau et al., 2001). Pre-testing of the questionnaire refers to "a first attempt to get empirical feedback from a highly controlled sample to assess the appropriateness of the original instrument", and the pilot test is undertaken after pre-testing and refers to "a dress-rehearsal of the instrument with a small sample" (Lewis et al., 2005, p. 392). The results of both the pre-test and pilot test need to be reviewed and proper amendments need to be produced based on the feedback or observations of the respondents (Lewis et al., 2005). In order to conduct this study, the content validity was ensured through:

- Existing literature in Chapter Two being reviewed in depth and, where appropriate, research constructs with a theoretical framework being created and adapted by considering the interview findings undertaken prior to developing the instrument;

- A number of items on the construct being initially defined by the literature review and the interview results.
- Undertaking a validity check through using face validity and peer review to assess the representative of the items to the construct. The validity check was conducted with three experts in the university. All the experts were in academia, and they had an experience (more than 10 years) in questionnaire design relating to strategic planning in the university; and
- Conducting a pilot survey with 13 respondents of eight organisations to purify the instrument and modify the wording of some contents based on suggestions prior to the administration of the final questionnaire survey.

The procedures mentioned above suggest that the instrument created for this study had suitable adequate content validity.

6.2.2. Measure of reliability

After content validity of the questionnaire was assured, the next procedure is to check the reliability of measurements on the questionnaire scale. Reliability is “an assessment of the degree of consistency between multiple measurements of a variable” (Hair et al., 2010, p. 125). Moreover, it refers to “a measure (or in this case questionnaire) should consistently reflect the construct that it is measuring” (Field, 2009, p. 673). Reliability normally deals with a consistency issue of measurement(s) within a construct (Straub et al., 2004). Therefore, it is essential for the researcher to measure the variables being used and to select the variable with higher reliability (Hair et al., 2010).

The analysis of reliability is concerned with the internal consistency of a measurement instrument. The most frequently utilised statistic for assessing the internal reliability is Cronbach's Alpha, which measures the coefficient of internal consistency for each of the construct (factors) (Field, 2009; Hair et al., 2010; Lewis et al., 2005; Straub et al., 2004). The Cronbach's Alpha value typically ranges from 0 to 1. As a rule of thumb, if the alpha value is more than 0.7, it is then regarded as an ideal value but the value of 0.6 can be considered acceptable for exploratory research. Furthermore, the item-to-total correlation should be more than 0.5 (Hair et al., 2010). Hence, based on the argument, the Cronbach's Alpha threshold for this study was set at 0.70. Table 6.1 below shows the result of the reliability measure using Cronbach's Alpha:

Table 6.1. The result of reliability measure

Construct	Item	Cronbach's Alpha based on standardised items	Item-scale	Cronbach's Alpha if item deleted
Top management participation and support (TMPS)	TMPS 1	.900	.726	.883
	TMPS 2		.753	.879
	TMPS 3		.767	.877
	TMPS 4		.701	.887
	TMPS 5		.745	.880
	TMPS 6		.683	.889
Effective communication and knowledge sharing between business and IT stakeholders (ECKS)	ECKS 1	.886	.657	.871
	ECKS 2		.703	.866
	ECKS 3		.661	.871
	ECKS 4		.719	.863
	ECKS 5		.690	.867
	ECKS 6		.674	.869
	ECKS 7		.629	.875
The impact of internal and external environment (IEE)	IEE 1	.885	.737	.856
	IEE 2		.710	.867
	IEE 3		.774	.841
	IEE 4		.774	.842
Adequate resources for SISP (ARS)	ARA 1	.877	.692	.859
	ARA 2		.731	.844
	ARA 3		.767	.830
	ARA 4		.752	.836
Organisational learning (OL)	OL 1	.850	.660	.818
	OL 2		.714	.804
	OL 3		.682	.812
	OL 4		.633	.825
	OL 5		.612	.832

Table 6.1. The result of reliability measure (Continued)

Construct	Item	Cronbach's Alpha based on standardised items	Item-scale	Cronbach's Alpha if item deleted
Active partnership between members of the organisation and an external vendor (APMEV)	APMEV 1	.938	.797	.929
	APMEV 2		.835	.925
	APMEV 3		.825	.926
	APMEV 4		.833	.925
	APMEV 5		.828	.926
	APMEV 6		.776	.932
IS planning effectiveness (ISPE)	ISPE 1	.834	.548	.818
	ISPE 2		.616	.805
	ISPE 3		.625	.803
	ISPE 4		.597	.809
	ISPE 5		.617	.805
	ISPE 6		.636	.801
Business and IT alignment (BITA)	BITA 1	.804	.613	.758
	BITA 2		.587	.766
	BITA 3		.589	.766
	BITA 4		.582	.768
	BITA 5		.568	.773
Organisational capabilities (Orcap)	Orcap 1	.838	.512	.826
	Orcap 2		.668	.802
	Orcap 3		.566	.818
	Orcap 4		.613	.812
	Orcap 5		.616	.810
	Orcap 6		.598	.813
	Orcap 7		.553	.822
IS competencies (IScom)	IScom 1	.860	.608	.844
	IScom 2		.637	.839
	IScom 3		.663	.834
	IScom 4		.669	.833
	IScom 5		.671	.833
	IScom 6		.659	.835
IT infrastructure flexibility (ITIF)	ITIF 1	.847	.633	.820
	ITIF 2		.597	.827
	ITIF 3		.676	.812
	ITIF 4		.644	.818
	ITIF 5		.655	.816
	ITIF 6		.561	.834

This table clearly shows that the Cronbach's Alpha value of all constructs were over 0.8 (i.e., the lowest alpha value was 0.804 in BITA), which exceeded the set-up threshold (0.70) for the study. Further, all items with an item-to-total correlation passed over the threshold (0.5) (the lowest item-to-total scale correlation was 0.512 in Orcap 1). This indicates that no items of the constructs were deleted as the value of Cronbach's Alpha if the items deleted on each item were lower than Cronbach's Alpha based on the standardised items. If an item of the constructs was deleted, the value of

Cronbach's Alpha can be dropped down to the initial Cronbach's Alpha value. After completing the process, the research instrument remained at 62 items from 11 constructs.

6.2.3. Overview of construct validity based on factor analysis

In the previous section, both the content validity of the measurement instrument and its reliability were confirmed. This section is concerned with a factor analysis in order to assess the construct validity of the research instrument by examining the underlying structure among the items of the measurement model. Construct validity is "the extent to which a set of measured items actually reflects the theoretical latent construct those items are designed to measure" (Hair et al., 2010, p. 686). Factor analysis is "an interdependence technique whose primary purpose is to define the underlying structure among the variables in the analysis" (Hair et al., 2010, p. 94).

Factor analysis typically offers the ways for examining the structure of the correlations or interrelationships among a number of variables (i.e., test items and questionnaire responses) through suggesting that those variables can be assessing aspects of the same underlying dimension within the data (Field, 2009; Hair et al., 2010). This implies that if the researcher wants to reduce the number of variables from a data set, the dimensions can lead to building new combined measures. Therefore, factor analysis is valuable in developing and measuring theories (Tabachnick and Fidell, 2013), because it achieves parsimony by "explaining the maximum amount of common variance in a correlation matrix using the smallest number of explanatory constructs" (Field, 2009, p. 629). A number of researchers (Byrne, 2010; Field, 2009, Hair et al., 2010; Lewis et al., 2005;

Straub et al., 2004; Tabachnick and Fidell, 2013) have agreed that there are two basic types of factor analyses, including exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Both the EFA and CFA examine the co-variation among a set of observed variables to gain information about the underlying latent variables (Byrne, 2010)

6.2.4. Assessment of construct validity through exploratory factor Analysis (EFA)

As a standard statistical technique for evaluating measurement models, the term EFA refers to "a class of procedures that include centroid, principal components, and principal (common) factor analysis methods that differ in their statistical criteria used to derive factors" (Kline, 2010, p. 116). EFA is typically considered for the state where relations between the observed and latent variables are unknown or uncertain. Moreover, it deals with how, and the extent to which, the observed variables are produced by the underlying latent factors. In EFA, the primary concern is strength of the regression paths obtained from the factors to the observed variables (called as the factor loadings) (Byrne, 2010; Hair et al., 2010). Therefore, the EFA is essential in the early stages of research if the researcher does not have prior knowledge or an understanding that the items measure the intended factors (Byrne, 2010; Tabachnick and Fidell, 2013). This is due to EFA is not needing a priori hypotheses on factor-indicator correspondence or the number of factors (Kline, 2010).

The main point of EFA is to investigate the constructs independent of the theoretical connections (Straub et al., 2004). Exploratory factor analysis also needs to be used to empirically originate the initial set of factors for the construct (Lewis et al., 2005). The strength of factor analysis depends on "finding patterns among groups of variables" (Hair et al., 2010, p. 102). The conceptual framework in this study was made up of three constructs: antecedents, the successful outcomes of SISP and the impact of SISP success. Thus, EFA were separately conducted for each of the three constructs.

In order to undertake effective EFA, adequate sample size needs to be first considered. As a rule of thumb recommended by Hair et al. (2010), the sample size should be 100 or larger as well as the sample must have more observations than variables. Minimum cases-per-variable ratio should meet 5:1, but the more acceptable sample size is cases-per-variable ratio of 10:1 (Hair et al., 2010). In this study, the measurement model was composed of a total of 62 variables with a total sample size of 317, which antecedents of 32 variables, the successful outcomes of SISP had 11 variables and the impact of SISP success had 19 variables (see Table 5.13). Thus, the sample size of this study was within the cases-to-variable ratio of 5:1-10:1, which satisfies the requirement for EFA.

After the cases-to-variable ratio was checked and identified, the Kaiser-Meyer-Olkin measure of sampling adequacy (KMOMSA) and Bartlett's test of sphericity (BTOS) for the three EFA models was then tested, as presented in Table 5.14. Hair et al. (2010) recommend that the index of KMOMSA generally ranges from 0 to 1 and the measure of KMOMSA should be more than 0.5 to be acceptable. Further, the BTOS should be less than 0.5 to be statistically significant and the statistically significant BTOS means that "sufficient correlations exist among the variables to proceed" (Hair et al., 2010, p. 105). The outcome in Table 5.14 below shows that the KMO test met an acceptable range, which is more than 0.8. The BTOS result (0.00) also presents that the overall inter-correlations assumptions were satisfied.

Table 6.2. The result of KMOMSA and Barlett's test

Construct	No of items	Case-to-variable ratio	KMOMSA	Barlett's test (sig.)	Requirement met? (Y/N)
Antecedents of SISP	32	10:1	.936	0	Y
The successful outcomes of SISP	11	29:1	.906	0	Y
The impact of SISP success	19	17:1	.930	0	Y

After the appropriateness of the data for factor analysis was determined, the next step was to extract the factors by using the following rules and procedures:

1) Principal component analysis

In this study, the factors were extracted by using principal component analysis (PCA). PCA is a multivariate technique for observing the linear components of a single set of variables (Field, 2009). The PCA is concerned with analysing interrelationships among a large number of variables (Hair et al., 2010). It is also related to "establishing which linear components exist within the data and how a particular variable might contribute to that component" (Field, 2009, p. 638). The main objective of PCA is "to summarise patterns of correlations among observed variables and to reduce a number of observed variables to a smaller number of factors" (Tabachnick and Fidell, 2013, p. 612). If the PCA is used, factor analysis produces summated scales with an objective basis (Hair et al., 2010); thus, generalisation of the results is improved by an empirical estimate of the structure of the variables considered (Field, 2009).

2) *Set of the eigenvalue threshold*

In general, the latent root criterion is the most commonly utilised technique by simply applying either components analysis or common factor analysis (Hair et al., 2010). With component analysis, each variable should be greater than a value of 1 to the total eigenvalue to be considered significant. If not, the variable is considered insignificant and is thus ignored (Hair et al., 2010). Based on this argument, the eigenvalue for each variable was set greater than a value of 1.

3) *Rotation method*

A rotational method was next employed to offer the most appropriate interpretation of the variables under examination by providing simple and meaningful factor solutions. The rotation means exactly "what it implies" (Hair et al., 2010, p. 113). According to Field (2009) and Hair et al. (2010), rotation of the factors facilitates the interpretation level by decreasing some of the uncertainties that frequently go with unrotated factor solutions. There are two types of rotation, including an orthogonal factor rotation and an oblique factor rotation (Field, 2009; Hair et al., 2010; Tabachnick and Fidell, 2013). For factor rotation, this study utilised Varimax rotation method. Varimax is recognised as the most commonly and easily used orthogonal factor rotation methods by focusing on simplifying the columns in a factor matrix (Hair et al., 2010; Tabachnick and Fidell, 2013). The purpose of Varimax rotation is to make factors simpler by maximising the variance of the loadings within factors across variables, by simplifying the interpretation of factors (Field, 2009; Tabachnick and Fidell, 2013). Hence, the Varimax is known as a good general approach for a variance-maximisation and recommended as a default option in statistical programs (Field, 2009; Hair et al., 2010; Tabachnick and Fidell, 2013).

4) Factor loadings

In order to interpret factors, an adequate decision regarding the factor loadings needs to be considered. Factor loadings are "the correlation of each variable and the factor" (Hair et al., 2010, p. 112) and the key to understanding the nature of a particular factor. Thus, factor loadings are regarded as the ways of interpreting how well each variable plays a critical role in defining each factor (Field, 2009; Hair et al., 2010). Statistical tests of significance for factor loadings need to be attained in a conservative way and the test results can differ from sample sizes (Field, 2009; Hair et al., 2010). In general, factor loadings of 0.55 and above are significant in a sample size of 100. However, if the sample size is less than 50, a higher factor loading (.75) is required for ensuring significance. Further, as a rule of thumb, all factor loadings of 0.30 can be accepted as having practical significance if the sample size is more than 350 (Field, 2009; Hair et al., 2010). This indicates that factor loadings of 0.50 or more are generally accepted necessary for practical significance, and the sample size should be 100 or larger to be appropriately assessed. Considering the above argument, factor loadings for the factor was set as the threshold value of 0.5, because this study has a sample size of 317. If there are items with factor loadings of less than 0.5 found, the items were then deleted for further analysis.

Appendix F provides the three EFA models. First, the model of antecedents produced six variables with several items. These consisted of top management participation and support (TMPS, 6 items), effective communication and knowledge sharing between business and IT stakeholders (ECKS, 7 items), the impact of internal and external environments (IEE, 4 items), organisational learning (OL, 5 items), adequate resources for SISP (ARS, 4 items) and active partnership between members of the organisation and an external vendor (APMEV, 6 items). Second, the model of the successful outcomes of SISP produced two variables with several items. Business and IT alignment (BITA) had five items and IS planning effectiveness (ISPE) had six items. Finally, the model of the impact of SISP success produced three variables: organisational capabilities (Orcap), IS competencies (IScom) and IT infrastructure flexibility (ITIF). The three variables comprised of seven items for Orcap, six items for IScom and six items for ITIF respectively.

According to a summary of the final EFA output (see Appendix F), no items were dropped from the EFA procedure, since factor loadings for all items satisfied the criteria of factor loadings. Therefore, all the items of the eleven constructs loaded as expected on their constructs. Most of the items had significant factor loadings (more than 0.60). The result established an initial specification of the measurement model in this study. Based on the confirmed EFA results, the following section discusses the further tests that were conducted for construct validity through CFA via the use of AMOS.

6.2.5. Assessment of construct validity through confirmatory factor analysis (CFA)

The previous section described how the EFA examined the data to provide information about how many factors were required to explain the data, and how well the number of factors and loadings were determined from the offered statistical method. The next procedure outlined shows how the validity of a measurement model can be tested using confirmatory factor analysis (CFA) and SEM. CFA is typically regarded as a way of "testing how well measured variables represent a smaller number of constructs" (Hair et al., 2010, p. 670).

CFA is used to test the measurement model, which displays how adequately measured variables combine to represent constructs. The main advantage of CFA is to identify how logically measured variables logically represent constructs in a theoretical model through providing a confirmatory test of measurement theory. Then, the measurement theory is combined with a structural theory to fully specify a SEM model (Hair et al., 2010). This indicates that CFA cannot be adequately achieved without a measurement theory. If the results of CFA are integrated with construct validity tests, it is possible for the researcher to gain a better understanding of the quality of the measures (Hair et al., 2010; Kline, 2010). Therefore, CFA is a tool that enables researchers to "either confirm or reject our preconceived theory" (Hair et al., 2010, p. 671).

Structural equation modelling (SEM) is "a technique that allows separate relationships for each of a set of dependent variables" (Hair et al., 2010, p. 19) by providing two key components: the structural model and the measurement model. The structural model denotes the path model connecting independent to dependent variables, whereas the measurement model indicates variables (or indicators) for a single independent or dependent variable (Hair et al., 2010). The CFA through structural equation modelling is typically complicated; thus it requires additional software packages, such as AMOS, EQS, LISREL and Mplus (Byrne, 2010; Hair et al., 2010; Kline, 2010; Tabachnick and Fidell, 2013).

One of the key goals of CFA/SEM is to measure the construct validity of a proposed measurement theory by dealing with the accuracy of measurement (Hair et al., 2010). There are two primary types of assessments for the construct validity in CFA/SEM: convergent validity and discriminant validity (Hair et al., 2010; Lewis et al., 2005; Straub et al., 2004). If a good indication of construct validity is provided, it enables the researcher to improve confidence in the item measures obtained from a sample (Hair et al., 2010). Thus, this section discusses an overview of the convergent validity and discriminant validity as well as how the measurement model validity; also, model diagnostics and re-specification are assessed.

6.2.5.1. Convergent Validity

In CFA/SEM, convergent validity refers to the extent to which "the items that are indicators of a specific construct should converge or share a high proportion of variance in common" (Hair et al., 2010, p. 686). There are ways available to measure the relative amount of convergent validity among item measures. First, factor loadings, which determine the size of the factor loading, need to be considered important. In general, high convergent validity indicates that loadings on a factor are high and the loadings converge or meet on the common point; thus all factor loadings need to be statistically significant (Hair et al., 2010). A good rule of thumb suggested by Hair et al. (2010) and Kline (2010) is that standardised loading estimates should be .5 at a minimum, and ideally .7 or higher.

Second, average variance extracted (AVE) is considered essential for measuring convergent validity. The AVE is "the mean variance extracted for the items loading on a construct" (Hair et al., 2010, p. 687) and it is also known as a summary indicator of convergence. The AVE value is calculated as the total of all squared standardised factor loadings (or squared multiple correlations) divided by the number of items; thus it is recognised as "the average squared completely standardized factor loading or average communality" (Hair et al., 2010, p. 687). As a rule of thumb, an AVE of .5 or higher is regarded as having adequate convergence.

Third, in a CFA model, the squared multiple correlations (SMC) for each measured variable need to be considered. The SMC refers to "the extent to which a measured variable's variance is explained by a latent factor" (Hair et al., 2010, p. 685) and the SEM model normally displays the SMC by signifying how well an item measures a construct. This indicates that if the value of the SMC is high, the item explains the construct much better (Byrne, 2010; Kline, 2010; Tabachnick and Fidell, 2013). Further, the SMC is referred to as a communality or as variance extracted (Hair et al., 2010). Despite its importance, there has been no consensus on an acceptance value of the SMC. According to Hair et al. (2010) and Holmes-Smith (2007), a SMC value of 0.5 with a standardised loading of 0.7 suggests that the item reflects the construct very well. A SMC of between 0.3 and 0.5 is also regarded as an acceptable measure of the construct, but the value of SMC below 0.3 should be deleted (Holmes-Smith, 2007).

Finally, construct reliability (CR) needs to be considered as an important indicator of convergent validity. The CR refers to the "measure of reliability and internal consistency of the measured variables representing a latent construct" (Hair et al., 2010, p. 669).

In order to assess the CR, coefficient alpha (Cronbach's Alpha) is commonly utilised as an applied estimate (Hair et al., 2010; Lewis et al., 2005; Straub et al., 2004). According to the rule of thumb recommended by Hair et al. (2010), a CR of .7 or higher suggests good reliability. However, if there are other sufficient indicators to a model's construct validity, then the CR between .6 and .7 may be acceptable.

6.2.5.2. Discriminant Validity

Discriminant validity is "the extent to which a construct is truly distinct from other constructs" (Hair et al., 2010, p. 687). High discriminant validity offers proof for how unique a construct is and how adequately a construct explains some phenomena that other measures do not (Hair et al., 2010). In general, there are two common tests for assessing the discriminant validity in CFA. The first test is to measure whether the correlation between any two constructs is equally fixed as one construct. This indicates that for discriminant validity to be supported, the model fit of the two constructs should be significantly different from that of one construct (Hair et al., 2010). However, this test does not offer strong evidence of discriminant validity, so the second test – which compares the average variance-extracted (AVE) values for any two constructs with the square of the correlation estimate between these two constructs – is utilised as being more effective (Hair et al., 2010). For the discriminant validity to be supported, the value of AVE should be higher than the squared correlation estimate. If the test result does not produce any issues, it offers good evidence of discriminant validity (Straub et al., 2004; Hair et al., 2010).

6.2.5.3. *Assessing Measurement Model Validity*

After the measurement model is specified and the estimation technique is ready, the next step in SEM/AMOS is to test the validity of the measurement model by establishing acceptable levels of goodness-of-fit (GOF) for the measurement model (Byrne, 2010). The GOF indicates "how well the specified model reproduces the observed covariance matrix among the indicator items (i.e., the similarity of the observed and estimated covariance matrices)" (Hair et al., 2010, p. 646). Based on the set GOF measures, it is available for the researcher to test the hypothesised model and to determine the extent to which it is reliable with the data (Hair et al., 2010; Kline, 2010). If GOF is adequate, the model is accepted with confirming the plausibility of postulated relations among variables; otherwise, the relations is rejected (Byrne, 2010).

There are a number of alternative measures available in SEM/AMOS. Each GOF measure is unique and the measures are commonly classed into three groups: absolute measures, incremental measures, and parsimony fit measures (Byrne, 2010; Hair et al., 2010; Kline, 2010). Prior to the discussion on the values of any GOF measure, chi-square ($\chi2$) should be considered, since it is "the fundamental measure of differences between the observed and estimated covariance matrices" (Hair et al., 2010, p. 647). With the $\chi2$ GOF test in SEM, however, it does not look for the traditional *p*-value associated with parametric statistical tests, which is a relatively large $\chi2$ value with a corresponding small *p*-value (less than 0.05), but it looks instead for a relatively small $\chi2$ value with a corresponding large *p*-value (more than 0.05). This is due to a small $\chi2$ value with a large *p*-value that indicates there is no statistically significant difference between the two matrices, so the proposed conceptual model being tested is not supported

(Hair et al., 2010). That is, although the chi-square is the basic statistical measure in SEM to quantify the differences between the covariance matrices, the actual assessment of GOF with a $\chi 2$ value is complex. Thus, there are a number of alternative goodness-of-fit measures utilised to assess the measurement model validity, including absolute fit indices and incremental fit indices recommended by Byrne (2010), Hair et al. (2010), Holmes-Smith (2007) and Kline (2010), as presented in Table 6.3.

Table 6.3. Category of GOF Indices

Categories	Statistics	Definition	Accepted threshold
Absolute fit indices	Chi-square ($\chi 2$) statistics	The difference between the observed and estimated covariance matrices. It depends on the sample size (*p*-value can be less meaningful)	Not used as the sole GOF measure, but p>0.05 in SEM
	Goodness-of-fit index (GFI)	Estimates the proportion of covariances in the sample data matrix explained by the model	≥ 0.90 is good ≥ 0.95 is better
	Root mean square error of approximation (RMSEA)	Measures that attempt to correct for the tendency of the $\chi 2$ GOF test statistic to reject models with a large sample or a large number of observed variables	≤ 0.08 is good
	Root mean square residual (RMR)	The average residual value derived from the fitting of the variance-covariance matrix for the hypothesised model to the variance-covariance matrix of the sample data	= 0 is perfect fit ≥ 0.05 is good
	Standardised root mean residual (SRMR)	The average value across all standardized residuals that ranges from zero to 1	≤ 0.08 or 0.1 is good
	Normed Chi-square	Simple ratio of $\chi 2$ to the degrees of freedom for a model	≥ 3.0 is good
Incremental fit indices	Normed fit index (NFI)	A ratio of the difference in the $\chi 2$ value for the fitted model and a null model divided by the $\chi 2$ value for the null model	It normally ranges between 0 and 1 ≥ 0.90 is good ≥ 0.95 is better
	Comparative fit index (CFI)	An improved version of the normed fit index (NFI)	
	Tucker-Lewis index (TLI)	Similar to the NFI, but it is actually a comparison of the normed chi-square values for the null and specified model	

Since the reporting of all GOF indices is often redundant, the researcher does not need to report all GOF indices, but multiple GOF indices need to be utilised to confirm rigour in the empirical assessment. According to the recommendation by Hair et al. (2010), to provide sufficient information to evaluate a model, the researcher needs to report at least one incremental index and one absolute index as well as the $\chi 2$ value, the degrees of freedom and the normed chi-square. Therefore, it was the intention of this study to use multiple GOF indices, including the chi-square, degree of freedom, normed chi-square, RMSEA, RMR, SRMR, CFI, IFI and TLI.

6.2.5.4. Model Diagnostics and Re-specification

According to Hair et al. (2010, p. 688), the primary objective of CFA is "to obtain an answer as to whether a given measurement model is valid." However, to appropriately address uncertain issues and to improve the level of measurement theory on the model test, added diagnostic information for model modification might be suggested. This is because model re-specification generally influences the underlying theory on which the model was formulated (Hair et al., 2010). However, the model modification needs to be conducted without severely damaging the theoretical integrity of a measurement model. Otherwise, it may cause a new measurement model and potentially need a new data sample (Hair et al., 2010). In general, most SEM programs provide two types of information that can be useful and easy to apply for model re-specification: these consist of standardised residuals and modification indices (Hair et al., 2010; Kline, 2010).

Residuals refer to "the individual differences between observed covariance terms and the fitted (or estimated) covariance terms; thus the better the fit, the smaller are the residuals" (Hair et al., 2010, p. 689). The standardised residuals are simply "the raw residuals divided by the standard error of the residual" (ibid, p. 689) without remaining affected by the actual measurement scale range. Hence, the unaffected measurement scale range makes the standardised residuals beneficial in diagnosing problems with a measurement model (Hair et al., 2010). Residuals can be either positive or negative. In general, it is not an issue if standardised residuals are less than |2.5|. However, if the residuals are greater than |4.0|, it might be suggested as a potentially unacceptable degree of error; thus one of the item related to a residual needs to be dropped (Hair et al., 2010). Furthermore, it may need some consideration if standardised residuals are between |2.5| and |4.0|, but it is not necessary to change the model.

As the second type of information for model re-specification, typical SEM output also provides modification indices (MIs). Modification indices reflect "the extent to which the hypothesised model is appropriately defined" (Kline, 2010, p. 86) and are "calculated for every possible relationship that is not estimated in a model" (Hair et al., 2010, p. 689). It is also conceptualised as a $\chi 2$ statistic with one degree of freedom (Kline, 2010). According to Hair et al. (2010), if the MIs are more than 4.0, the fit can be improved significantly by freeing the corresponding path to be estimated. If the corresponding path is freely estimated, the overall model $\chi 2$ value would be decreased. Although the MIs provide essential diagnostic information on the potential cross-loadings that exist, the researcher should not change the model by utilising only the MIs, since it might be inconsistent with the theoretical basis of CFA and SEM. Therefore, to obtain a more accurate CFA result, minor modification (i.e., less than 20% of the measured item's deletion) is required (Hair et al., 2010).

6.2.6. Developing the overall measurement model

In this study, the construct validity for the measurement model consisted of the three key constructs: the antecedents, the successful outcomes of SISP and the impact of SISP success. Thus, CFA was employed to individually assess the construct validity of the research constructs. In SEM, a measurement model is constrained by the model hypotheses. The constraints refer to “the set of fixed parameter estimates” (Hair et al., 2010, p. 607). When a measurement model is hypothesised to comprise several uni-dimensional constructs with all cross-loadings constrained to zero (or all fixed by zero) without any covariance between or within construct error variances, the measurement model is called as ‘congeneric’ (Hair et al., 2010; Holmes-Smith, 2007). Congeneric measurement models are typically considered to be sufficiently constrained to signify good measurement properties. If the congeneric measurement model adequately meets the requirements, this indicates that the hypothesised model has construct validity and is consistent with good measurement practice (Hair et al., 2010). Hence, the following section 6.2.7 to 6.2.9 consecutively discusses the congeneric measurement model and full measurement model for each of the three theorised variables.

6.2.7. Measurement model for the antecedents construct

6.2.7.1. Congeneric Measurement Model of TMPS

The construct of top management participation and support (TMPS) was hypothesised to comprise six items. The initial congeneric measurement model is shown in Figure 6.1. Further, Table 6.4 presents the result of statistics for the initial congeneric model of TMPS. According to the figure, all the SFL and SMC values of each item were more than the ideal acceptance level as suggested by Hair et al. (2010). The items in my study were more than 0.7 in SFL and more than 0.3 in SMC.

Figure 6.1. Initial congeneric model of TMPS

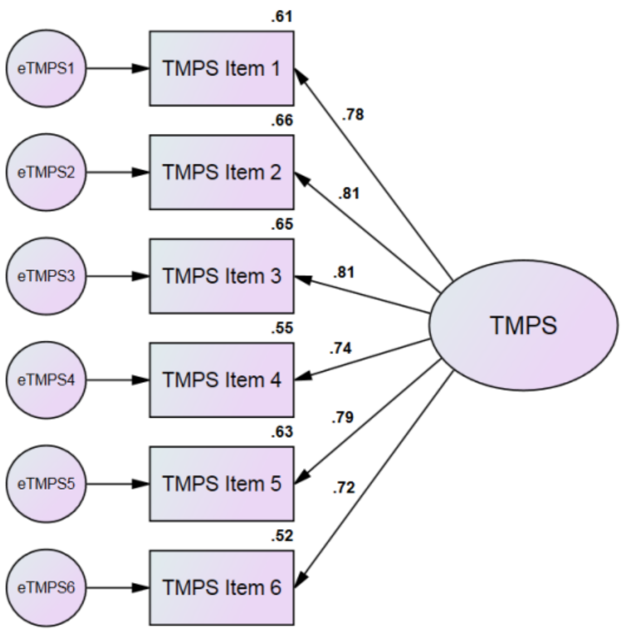


Table 6.4. The result of GOF statistics for initial congeneric model of TMPS

CMIN	61	CMIN/df	***6.748***	CFI	.952
df	9	RMSEA	***.135***	IFI	.952
p-value	***.000***	RMR	.028	NFI	***.944***
		SRMR	.039	TLI	***.920***

Item	Standard Estimate	Estimate	S.E	C.R	P	SMC
TMPS1	.783	.653	.041	16.085	***	.614
TMPS2	.810	.676	.040	16.899	***	.656
TMPS3	.808	.761	.045	16.841	***	.653
TMPS4	.740	.621	.042	14.827	***	.548
TMPS5	.791	.676	.041	16.317	***	.626
TMPS6	.721	.603	.042	14.299	***	.520

Model fit inadmissible (p-value, CMIN/df, RMSEA, NFI and TLI)

However, the result of GOF statistics in Table 6.4 revealed that the initial model had an inadmissible threshold value of the p-value, CMIN/df, RMSEA, NFI and TLI. That is, CMIN/df was 6.748, which is higher than the recommended value (CMIN/df ≥ 3), RMSEA at 0.135 was higher than the recommended value (RMSEA<0.08), and NFI and TLI were slightly lower than the recommended value (NFI and TLI ≥ 0.95). Moreover, the p-value was .000 (which does not mean 0, but is close to 0) that is lower than the recommended value (p>0.05).

The model was then re-examined with the use of the standardised residual covariance matrix and modification indices to determine the actual cause of the misfit, as shown in Table 6.4. According to the result of the standardised residual covariance, all the values of each item satisfied the suggested value (less than |2.5|) suggested by Hair et al. (2010). However, the covariance between TMPS1 and TMPS2 (1.595) was slightly higher than the other values. This was evident in the MIs, which showed that the discrepancy of the chi-square can fall by at least 12.711, if the regression weight for utilising TMPS1 to predict TMPS2 is treated as a free parameter. The chi-square can also decrease by 37.340 if the two items are co-varied. However, to ensure measurement uni-dimensionality, it is better to hold more items for measuring an assumed factor than to make co-vary items. Hence, the CFA model for TMPS was re-run individually without TMPS1 and without TMPS2.

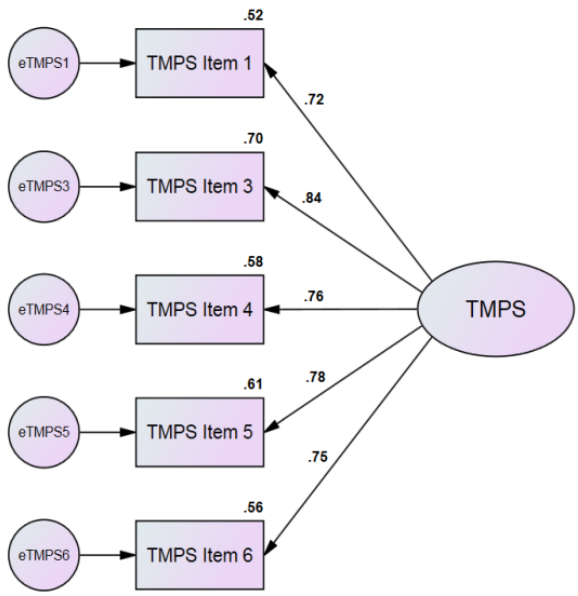
When deleting the item TMPS1, the GOF statistics of the p-value, CMIN/df, RMSEA and TLI, were improved to 0.024, 2.589, 0.071 and 0.980 respectively, but the p-value was not within the acceptable range (p>0.05). However, in the case of the deletion of TMPS2, the GOF result showed that all the threshold values of the p-value, CMIN/df, RMSEA, NFI and TLI were improved more so than in the case of the deletion of TMPS1, as presented in Table 6.5.

Table 6.5. The result of the final GOF statistics for congeneric model of TMPS (after deleting TMPS2)

CMIN	8.7	CMIN/df	***1.734***	CFI	.995
df	5	RMSEA	***.048***	IFI	.995
p-value	***.123***	RMR	.013	NFI	**.989**
		SRMR	.017	TLI	**.990**

All the unacceptable threshold values of the p-value, CMIN/df, RMSEA, NFI and TLI, were improved to the acceptable ranges of 0.123, 1.734, 0.048, 0.989 and 0.990 respectively. All the values of absolute fit indices and incremental fit indices were also improved. All the SFL and SMC values, which are more than 0.7 and 0.5 respectively, remained within the ideal ranges, as shown in Figure 6.2. Hence, all the GOF statistics were consistent with the recommended values, and the measurement model fitted the data well.

Figure 6.2. The final congeneric model of TMPS



6.2.7.2. Congeneric Measurement Model of ECKS

Effective communication and knowledge sharing between the business and IT stakeholders (ECKS) construct was theorised to have seven indicators. Figure 6.3 shows the initial congeneric measurement model for ECKS. The result of initial model's GOF statistics is also presented in Table 6.6.

Figure 6.3. Initial congeneric model of ECKS

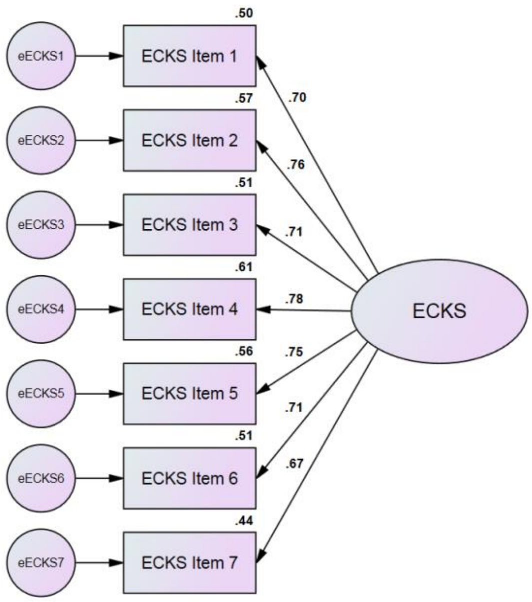


Table 6.6. The result of GOF statistics for initial congeneric model of ECKS

CMIN	67	CMIN/df	***4.672***	CFI	***.948***
df	14	RMSEA	***.109***	IFI	***.949***
p-value	***.000***	RMR	.026	NFI	***.936***
		SRMR	.042	TLI	***.923***

Item	**Standard Estimate**	**Estimate**	**S.E**	**C.R**	**P**	**SMC**
ECKS1	.704	.541	.039	13.726	***	***.495***
ECKS2	.757	.575	.038	15.190	***	.574
ECKS3	.713	.572	.041	13.964	***	.508
ECKS4	.779	.622	.039	15.829	***	.608
ECKS5	.745	.574	.039	14.851	***	.555
ECKS6	.711	.540	.039	13.925	***	.506
ECKS7	***.665***	.539	.042	12.735	***	***.442***
Model fit inadmissible (p-value, CMIN/df, RMSEA, CFI, IFI, NFI and TLI)						

The result in Table 6.6 above reveals that the GOF statistics of the initial model were unacceptable. This was because the p-value was outside the acceptable range and, also, because the absolute fit index (RMSEA: 0.109) and all the values of incremental fit indices were slightly lower than the recommended value (CFI, IFI, NFI and TLI $\geq$ 0.95). Further, the SMC value for ECKS1 and ECKS7 as well as the SFL for ECKS7 were slightly low, but they could be considered as an acceptable value. According to Holmes-Smith (2007), the SMC of an item between 0.3 and 0.5 might be weak, but it can be regarded as an adequate measure of the construct. As a rule of thumb, SFL should be more than 0.5 and ideally above 0.7, which suggests appropriate convergence (Hair et al., 2010). Hence, the model was re-examined using the standardised residual covariance and the MI to decide the actual cause of the misfit.

According to the inspection of the standardised residuals, all the values of each item satisfied the recommended value (less than |2.5|) so that they did not raise a serious issue. On the other hand, the covariance between ECKS6 and ECKS7 (2.082) was, relatively, slightly higher than all the other values. The MI outcome showed that the chi-square could fall by at least 12.123 if the regression weight for using ECKS7 to predict ECKS6 was treated as a free parameter; also, the chi-square could decrease from 67 to 23.550, if the two items were co-varied. As already stated in 5.4.7.1, a decision in this study was made to maintain more items to measure a given construct and not to co-vary items to ensure measurement uni-dimensionality. Therefore, the CFA model for ECKS was separately re-run without ECKS6 and without ECKS7.

The outcome of the GOF statistics following the deletion of the item ECKS7 is shown in Table 6.7. All the threshold values were improved, but the p-value (.000), CMIN/df

(4.132), RMSEA (.100) and TLI (.944) did not reach the acceptance range. Moreover, the GOF statistics after ECKS6 was deleted presented a much better result than the deletion of ECKS7, but the p-value (.000), CMIN/df (3.462) and RMSEA (.088) did not reach the acceptance range either, as is presented in Table 6.8. Hence, the model was re-examined by removing ECKS6.

Table 6.7. The result of GOF statistics for congeneric model of ECKS (after deleting ECKS7)

CMIN	37	CMIN/df	***4.132***	CFI	***.967***
Df	9	RMSEA	***.100***	IFI	***.967***
p-value	***.000***	RMR	.021	NFI	***.957***
		SRMR	.035	TLI	***.944***

Table 6.8. The result of GOF statistics for congeneric model of ECKS (after deleting ECKS6)

CMIN	31.159	CMIN/df	***3.462***	CFI	***.973***
Df	9	RMSEA	***.088***	IFI	***.973***
p-value	***.000***	RMR	.019	NFI	***.962***
		SRMR	.031	TLI	***.954***

The standardised residual covariance and the MI were re-investigated after confirming the deletion of ECKS6. According to the inspection of the standardised residuals, all the values of each item were satisfied with the recommended value (less than |2.5|) so that they did not raise a serious issue. However, the covariance between ECKS1 and ECKS2 (1.207) was slightly higher than all the other values. The MI outcome showed that the chi-square could fall by at least 5.673 if the regression weight for using ECKS1 to predict ECKS2 was treated as a free parameter; also, the chi-square could decrease from 67 to 12.540, if the two items were co-varied. Hence, the CFA model for ECKS was separately re-run without ECKS1 and ECKS2.

When deleting the item ECKS2, the GOF statistics of the p-value, CMIN/df, RMSEA and all the values of incremental fit indices were improved, but the p-value was not within the acceptable range (p>0.05), as shown in Table 6.9. However, in the case of the deletion of ECKS1, the GOF result showed that all the threshold values of the p-value, CMIN/df and RMSEA as well as all the incremental fit indices were improved, following the deletion of ECKS2, as presented in Table 6.10.

Table 6.9. The result of GOF statistics for congeneric model of ECKS (after deleting ECKS2 and ECKS6)

CMIN	13.891	CMIN/df	***2.778***	CFI	***.985***
df	5	RMSEA	***.075***	IFI	***.985***
p-value	***.016***	RMR	.016	NFI	***.976***
		SRMR	.026	TLI	***.969***

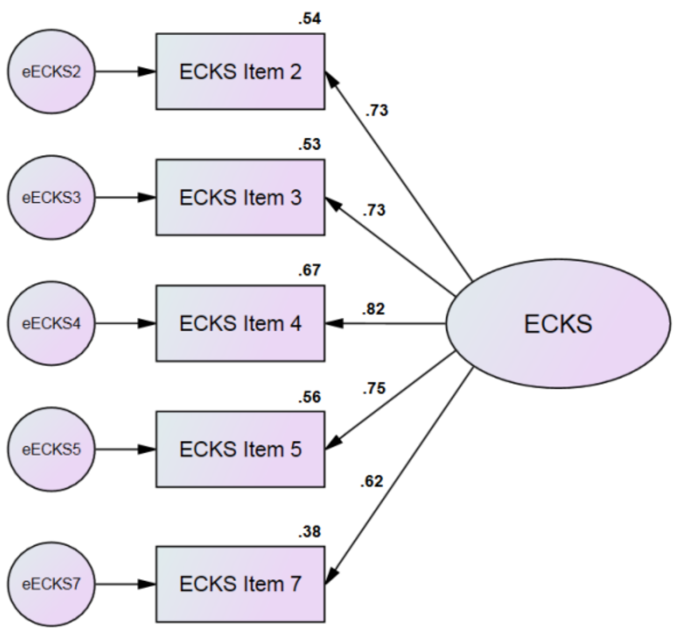
Table 6.10. The result of GOF statistics for congeneric model of ECKS (after deleting ECKS1 and ECKS6)

CMIN	10.440	CMIN/df	***2.088***	CFI	***.991***
df	5	RMSEA	***.059***	IFI	***.991***
p-value	***.064***	RMR	.013	NFI	***.983***
		SRMR	.021	TLI	***.982***

As shown in Table 6.10, the entire outcome was acceptable in terms of all selected fit indices. The threshold values of the p-value, CMIN/df and RMSEA were improved from 0.016 to 0.064 from 2.778 to 2.088 and from 0.075 to 0.059 respectively. All the threshold values of the incremental fit indices were also improved.

As presented in Figure 6.4, all the factor loadings except for ECKS7 were above 0.7. The factor loading of ECKS7 was 0.62, slightly lower than the ideal value of 0.7, but it could still be considered as an acceptable value, in accordance with the suggestions of Hair et al. (2010). The SMC values of five items – ECKS2, ECKS3, ECKS4 and ECKS5 – were above 0.50, whereas the SMC value of ECKS7 was 0.38. The value might appear to be lower than that of other items. However, the item can be regarded as an acceptable value, as recommended by Holmes-Smith (2007). Therefore, all the GOF statistics were consistent with the suggested values and the measurement model fitted the data well. Figure 6.4 shows the final congeneric model of ECKS.

Figure 6.4. The final congeneric model of ECKS



6.2.7.3. Congeneric Measurement Model of IEE

The initial model for the impact of the internal and external environment (IEE) consisted of four items, as presented in Figure 6.5. Moreover, the result of initial model's GOF statistics was displayed in Table 6.11. The result of GOF statistics pointed out that the threshold value of SFL and SMC in all items were more than ideal values and they were 0.7 and 0.5 respectively. However, the model fit was not admissible since the normed chi-square, RMSEA and TLI and p-value did not reach the recommended values.

Figure 6.5. Initial congeneric model of IEE

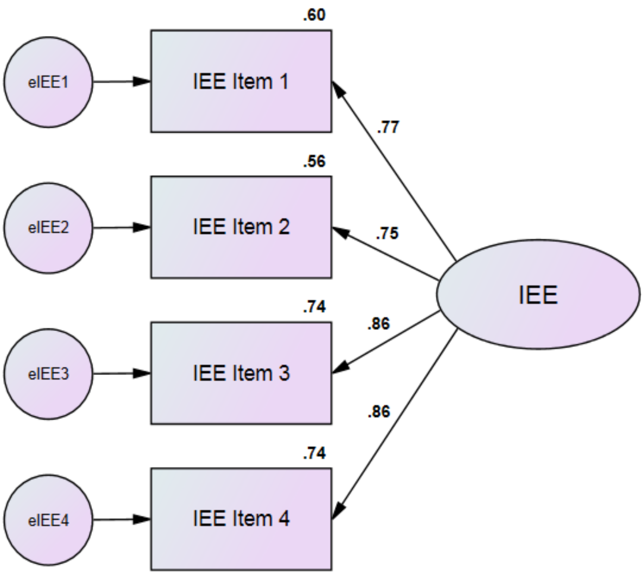


Table 6.11. The result of GOF statistics for initial congeneric model of IEE

CMIN	19	CMIN/df	***9.471***	CFI	.976
Df	2	RMSEA	***.164***	IFI	.976
p-value	***.000***	RMR	.023	NFI	.973
		SRMR	.030	TLI	***.928***

Item	**Standard Estimate**	**Estimate**	**S.E**	**C.R**	**P**	**SMC**
IEE1	.773	.652	.042	15.678	***	.598
IEE2	.745	.668	.045	14.877	***	.555
IEE3	.862	.731	.040	18.388	***	.744
IEE4	.860	.715	.039	18.314	***	.740
Model fit inadmissible (p-value, CMIN/df, RMSEA and TLI)						

In order to resolve the misfit, the standardised residual covariance and the MIs were inspected. According to the result of the standardised residual covariance test, all the standardised residuals were below the recommended value (less than |2.5|) so they did not suggest an issue. In addition, the MI result indicated that there were no issues in the regression weights, but there was an issue identified in the covariances between eIEF1 and eIEF2. Hence, the modification indices by the covariance between eIEF1 and eIEF2 were then calculated to gain a better-fitting model.

The modification indices typically used in the AMOS create the expected reduction in the overall model fit chi-square for each possible path, which can be additional to the model. Thus if the items were freed to be co-varied, the estimated approximate could then increase in the covariance (Byrne, 2010; Hair et al., 2010). As presented in Table 6.12, the covariance of eIEF2 with eIEF1was anticipated to be 0.082 if the model was re-specified with that covariance added and then the model was re-fitted. That model's chi-square test of overall fit should be 15.438 units, which is lower than the present model's value of 19. Further, it needs to be freed on one MI at a time to be co-varied, when the model is modified by using MI (Byrne, 2010).

Table 6.12. Modification indices (Covariances)

			M.I.	**Par Change**
eIEE2	<-->	eIEE1	15.438	.082

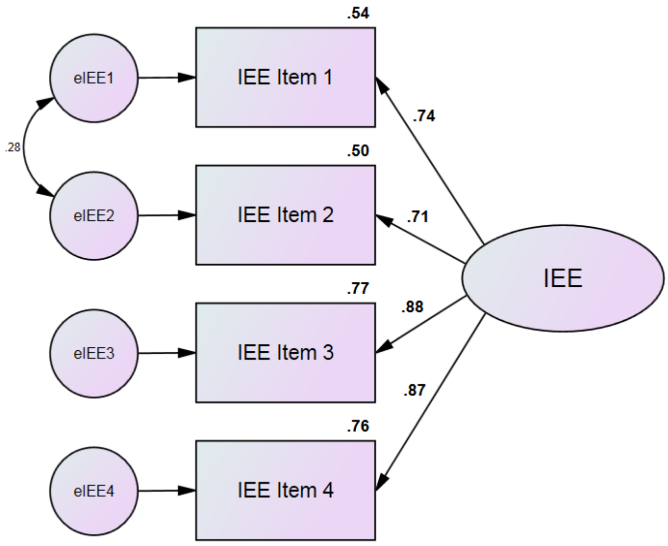
After the IEE construct was re-specified by correlating the residuals of the eIEE1 and eIEE2, the outcome of the inadmissible threshold values, including the p-value, CMIN/df, RMSEA and TLI, was greatly improved and reached the acceptable threshold range of 0.668, 0.184, 0.000 and 1.007 respectively, as shown in Table 6.13.

Table 6.13. The result of GOF statistics for congeneric model of IEE (after performing MI)

CMIN	.184	CMIN/df	***.184***	CFI	1.000
df	1	RMSEA	***.000***	IFI	1.001
p-value	***.668***	RMR	.002	NFI	1.000
		SRMR	.002	TLI	***1.007***

All the values of SMC and SFL remained within the ideal range, which are more than 0.5 and 0.7 respectively, as shown in Figure 6.6. That is, both the figure and the table present that the modified model had an acceptable fit, so this CFA mode was accepted.

Figure 6.6. The final congeneric model of IEE (after performing MI)



6.2.7.4. Congeneric Measurement Model of ARS

The initial model for appropriate resource allocation (ARS) construct comprised four items as shown in Figure 6.7. The result of GOF statistics of initial model gained from AMOS are displayed in Table 6.14.

Figure 6.7. Initial congeneric model of ARS

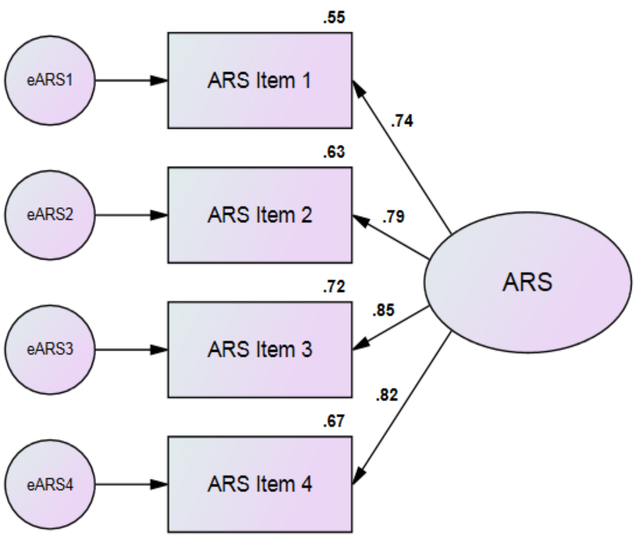


Table 6.14. The result of GOF statistics for initial congeneric model of ARS

CMIN	14	CMIN/df	***7.131***	CFI	.981
df	2	RMSEA	***.139***	IFI	.981
p-value	***.001***	RMR	.014	NFI	.978
		SRMR	.023	TLI	***.943***

Item	**Standard Estimate**	**Estimate**	**S.E**	**C.R**	**P**	**SMC**
ARS1	.739	.577	.039	14.606	***	.546
ARS2	.793	.598	.037	16.130	***	.629
ARS3	.850	.677	.038	17.843	***	.723
ARS4	.820	.653	.039	16.919	***	.672
Model fit inadmissible (p-value, CMIN/df, RMSEA and TLI)						

The initial model did not reach the acceptable range in terms of the p-value, normed chi-square, RMSEA and TLI. However, the threshold values of SFL and SMC in all items were more than 0.7 and 0.5, so the standardised residual covariance and the MIs were examined to find the cause of the misfit. The result of the standardised residual covariance test presented that as all the standardised residuals were below |2.5|, they did not suggest an issue. However, in the similar testing of the IEE construct, there was an issue in the covariances between eARA3 and eARA1 of the modification indices; thus the MI by the covariance between eARA3 and eARA1 as a free parameter was then calculated to obtain a better-fitting model, as displayed in Table 6.15.

Table 6.15. Modification indices (Covariances)

			M.I.	**Par Change**
eARS3	<-->	eARS1	6.889	-.041

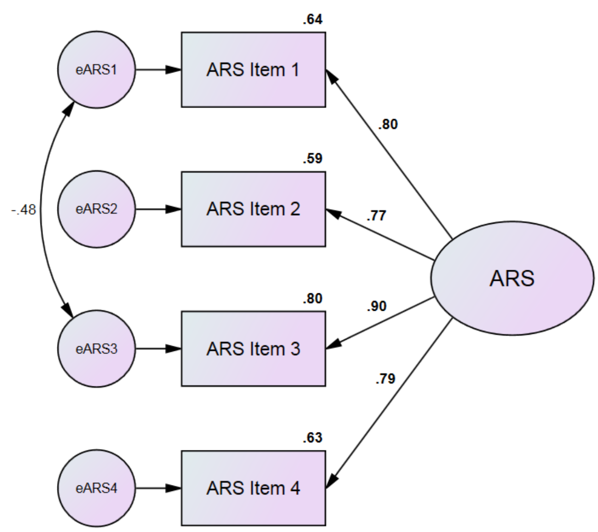
From the result of the MI values, the covariances of eARS3 with eARS1 were expected to be -0.041 if the model was re-fitted with that covariance added. That model's chi-square test of overall fit would then be 6.889 units, which was lower than the present model's value of 7.131. Hence, the ARS construct was re-specified by correlating the residuals of the eARS3 and eARS1. Table 6.16 below also presents the modified GOF statistics after MI was performed, and there was a great improvement in the inadmissible p-value (.000), CMIN/df (7.131) and RMSEA (0.139) to 0.865, 0.029 and 0.000 respectively.

Table 6.16. The result of GOF statistics for congeneric model of ARS (after performing MI)

CMIN	.029	CMIN/df	***.029***	CFI	1.000
df	1	RMSEA	***.000***	IFI	1.001
p-value	***.865***	RMR	.001	NFI	1.000
		SRMR	.001	TLI	***1.009***

All the SFL and SMC threshold values were more than ideal values of 0.7 and 0.5, as presented in Figure 6.8. This indicates that the modified model fitted the data well with all the measurement items, so this CFA model was accepted.

Figure 6.8. The final congeneric model of ARS (after performing MI)



6.2.7.5. Congeneric Measurement Model of OL

The initial model for the organisational learning (OL) construct was comprised of five items, and the model is displayed in Figure 6.9. The result of initial model's GOF statistics is also shown in Table 6.17.

Figure 6.9. Initial congeneric model of OL

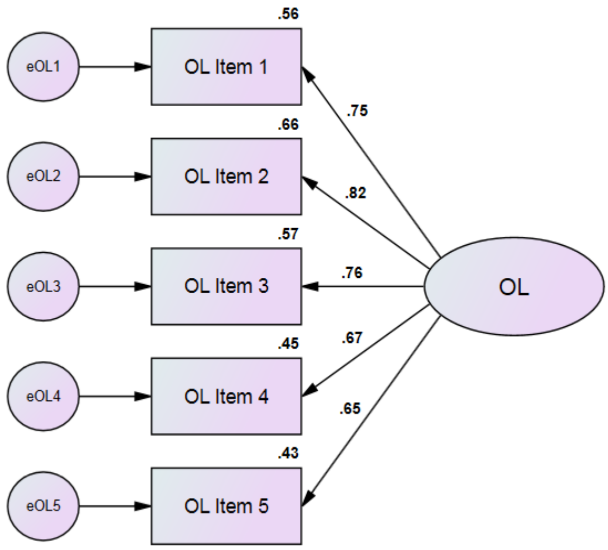


Table 6.17. The result of initial congeneric model of OL

CMIN	38	CMIN/df	***7.569***	CFI	***.949***
df	5	RMSEA	***.144***	IFI	***.949***
p-value	***.000***	RMR	.032	NFI	***.942***
		SRMR	.043	TLI	***.898***

Item	**Standard Estimate**	**Estimate**	**S.E**	**C.R**	**P**	**SMC**
OL1	.747	.592	.041	14.578	***	.557
OL2	.815	.675	.041	16.475	***	.665
OL3	.758	.641	.043	14.878	***	.574
OL4	***.670***	.586	.046	12.617	***	***.448***
OL5	***.654***	.595	.049	12.246	***	***.428***
Model fit inadmissible (p-value, CMIN/df, RMSEA, CFI, IFI, NFI and TLI)						

As revealed in Table 6.17, all the factor loadings were within the acceptable threshold range, even though the factor loadings of OL4 and OL5, which were 0.670 and 0.654 respectively, were slightly lower than the ideal value of 0.7. However, the values can still be considered acceptable in relation to those suggested by Hair et al. (2010). The SMC values of three items, OL1, OL2 and OL3, were above 0.50, whereas the SMC values of OL4 and OL5 were lower, at 0.448 and 0.428. However, these items could also be regarded as an acceptable value as suggested by Holmes-Smith (2007).

The proposed model did not fit the sample data in terms of the p-value, CMIN/df and RMSEA as well as all the incremental fit indices. The standardised residual covariance and the MI were thus scrutinised to find and fix the misfit. According to the outcome of the standardised residual covariance test, all the standardised residuals were less than |2.5|. This indicates that they did not suggest an issue, but, relatively, the covariance between OL4 and OL5 (1.563) was slightly higher than all the other values. The MI result indicated that the discrepancy of the chi-square could fall by at least 5.958, if the regression weight for using OL5 to predict OL4 was treated as a free parameter; also, the chi-square could decrease from 38 to 11.464 if the two items were co-varied. Therefore, the CFA model for OL was independently re-run without OL4 and without OL5.

The result of the GOF statistics after the deletion of the item OL5 is shown in Table 6.18. Most of the threshold values were improved, but the p-value (.000), CMIN/df (10.678) and the RMSEA (0.175) did not reach the acceptance range, and the range was rather increased from the proposed value. The TLI value was also rather decreased from 0.898 to 0.882. However, after the deletion of OL4, the GOF statistics showed a much better result than would have been the case if OL5 had been deleted. The results are presented in Table 6.19.

Table 6.18. The result of GOF statistics for congeneric model of OL (after deleting OL5)

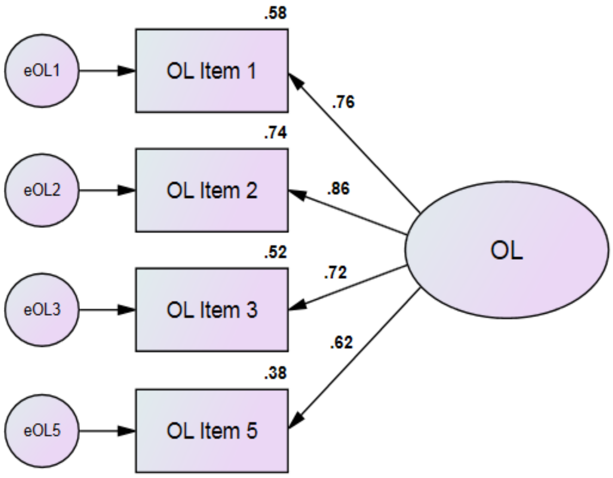
CMIN	21.357	CMIN/df	10.678	CFI	.961
df	2	RMSEA	***.175***	IFI	.961
p-value	***.000***	RMR	.027	NFI	.957
		SRMR	.038	TLI	***.882***

Table 6.19. The result of GOF statistics for congeneric model of OL (after deleting OL4)

CMIN	3.171	CMIN/df	***1.586***	CFI	***.997***
df	2	RMSEA	***.043***	IFI	***.998***
p-value	***.205***	RMR	.010	NFI	***.993***
		SRMR	.014	TLI	***.992***

As presented in Table 6.19, the entire result was admissible in terms of all selected fit indices. The threshold values of CMIN/df and RMSEA were greatly improved from 21.357 to 3.171 and from 0.175 to 0.043 respectively. The p-value was also changed from 0.0 to 0.205 and was within the acceptance threshold range, and other values of absolute fit indices and incremental fit indices were enhanced. All the factor loadings were more than 0.7. Although the factor loading of OL5 (0.62) may have fallen short of the ideal value 0.7, they could still be considered as an ideal value. The SMC values of OL1, OL2 and OL3 were above 0.50. The SMC value of OL5 was 0.38; this might appear to be low, but it could also be regarded as an acceptable value. Thus, the results from Table 5.31 point out that all the GOF statistics met the threshold value; the final congeneric model in Figure 6.10 was admissible by holding convergent validity.

Figure 6.10. The final congeneric model of OL (after deleting OL4)



6.2.7.6. Congeneric Measurement Model of APMEV

The initial CFA model for active partnership between members of the organisation and an external vendor (APMEV) construct included the four items as displayed in Figure 6.11. The result of the initial model's GOF statistics are also shown in Table 6.20.

Figure 6.11. Initial congeneric model of APMEV

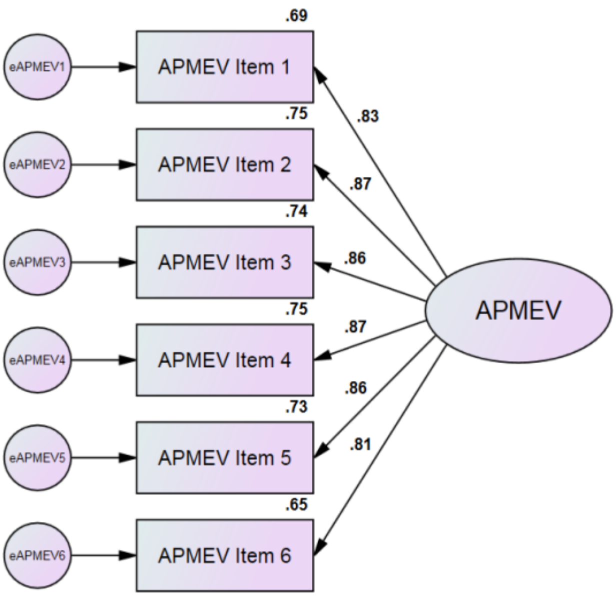


Table 6.20 The result of GOF statistics for initial congeneric model of APMEV

CMIN	42	CMIN/df	***4.367***	CFI	.979	
df	8	RMSEA	***.107***	IFI	.979	
p-value	***.000***	RMR	.020	NFI	.973	
		SRMR	.023	TLI	.965	
Item	**Standard Estimate**	**Estimate**	**S.E**	**C.R**	**P**	**SMC**
APMEV1	.831	.769	.043	17.922	***	.691
APMEV2	.865	.818	.043	19.109	***	.749
APMEV3	.859	.809	.043	18.889	***	.738
APMEV4	.866	.839	.044	19.135	***	.750
APMEV5	.856	.803	.043	18.766	***	.732
APMEV6	.805	.750	.044	17.063	***	.648
Model fit inadmissible (p-value, CMIN/df and RMSEA)						

As seen in Figure 6.11, all the factor loadings and the SMC values reached more than the ideal threshold ranges that were 0.7 and 0.5. However, the GOF statistics result revealed that the model of APMEV was inadmissible, as the value of the p-value (.000), CMIN/df (4.367) and RMSEA (0.107) were higher than the threshold value, therefore, raising a problem of convergent validity. Therefore, in order to decide and resolve the cause of the misfit, the standardised residual covariance and the MIs were inspected.

The result of the standardised residual covariance test showed that all the standardised residuals were below |2.5|, which indicates that they were not an issue. However, the covariance between APMEV1 and APMEV2 (0.850) was slightly higher relatively than all the other values. Moreover, the MI outcome showed that the discrepancy of the chi-square could fall by at least 5.330, if the regression weight for using APMEV1 to predict APMEV2 was treated as a free parameter; also, the chi-square could decrease from 42 to 19.281 if the two items were co-varied. Thus, the CFA model for APMEV was individually re-run without APMEV1 and APMEV2.

The result of the GOF statistics after the item APMEV2 was deleted is shown in Table

6.21. All the threshold values were improved within the acceptable ranges, but the p-value and RMSEA were below the acceptable threshold range. Although the GOF statistics result was much better after the item APMEV1 was deleted, the p-value (0.022) still did not reach the acceptable range, as is displayed in Table 6.22.

Table 6.21. The result of GOF statistics for congeneric model of APMEV (after deleting APMEV2)

CMIN	15.164	CMIN/df	3.033	CFI	.991
df	5	RMSEA	***.080***	IFI	.991
p-value	***.010***	RMR	.015	NFI	.987
		SRMR	.017	TLI	.983

Table 6.22. The result of GOF statistics for congeneric model of APMEV (after deleting APMEV1)

CMIN	13.144	CMIN/df	2.629	CFI	.993
df	5	RMSEA	***.072***	IFI	.993
p-value	***.022***	RMR	.013	NFI	.989
		SRMR	.015	TLI	.987

After the deletion of APMEV1, the standardised residual covariance and the MI were scrutinised again to resolve the actual cause of the misfit. According to the inspection of the standardised residuals, all the values of each item met the recommended value (less than |2.5|). The MI result also indicated that there were no issues in the regression weights, but there was an issue identified in the covariances between eAPMEV6 and eAPMEV5. Therefore, the modification indices by the covariance between eAPMEV6 and eAPMEV5 were then calculated to gain a better-fitting model. As shown in Table 6.23, the covariance of eAPMEV6 with eAPMEV5 was anticipated to be 0.046 if the model was re-specified with that covariance added and then the model was refitted. That model's chi-square test of overall fit should be 7.250 units, which is lower than the present model's value of 13.144.

Table 6.23. Modification indices (Covariances)

			M.I.	Par Change
eAPMEV6	<-->	eAPMEV5	7.250	.046

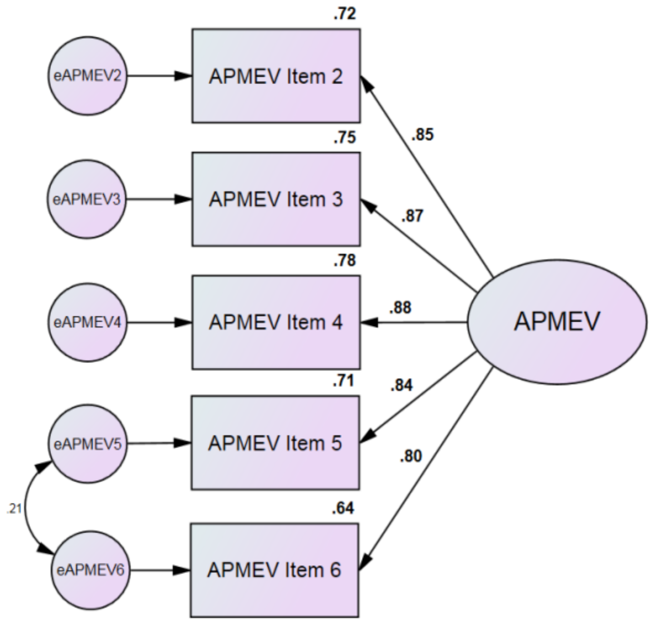
After the APMEV construct was re-specified by correlating the residuals of the eAPMEV6 and eAPMEV5, the outcome of the p-value (.377) was reached. The acceptable threshold range and other values of absolute fit indices and incremental fit indices were improved, compared to the result after APMEV1 had been deleted, as shown in Table 6.24.

Table 6.24. The result of GOF statistics for congeneric model of APMEV (after deleting APMEV1 and MI)

CMIN	4.217	CMIN/df	1.054	CFI	1.000
df	4	RMSEA	***.072***	IFI	1.000
p-value	***.377***	RMR	.007	NFI	.997
		SRMR	.008	TLI	1.000

All the factor loadings and the SMC value were more than the ideal values that were 0.7 and 0.5 respectively. This means that the final one-factor congeneric measurement model met all threshold GOF values and held convergent validity, so it was accepted. Figure 6.12 presents the final one-factor congeneric model of APMEV.

Figure 6.12. The final congeneric model of APMEV (after deleting APMEV2)



6.2.7.7. Full CFA Measurement Model of the Antecedents Construct

In the previous sections 6.2.7 (from 6.2.7.1 to 6.2.7.6), a description ahs been given of how the congeneric models of the six constructs that constitute the antecedents were independently tested and validated. All the six variables were then validated together to form the antecedents construct. The full CFA measurement model of the antecedents construct is presented in Figure 6.13. The test result of GOF statistics are also shown in Table 6.25.

Figure 6.13. **Full CFA measurement model of the antecedents construct**

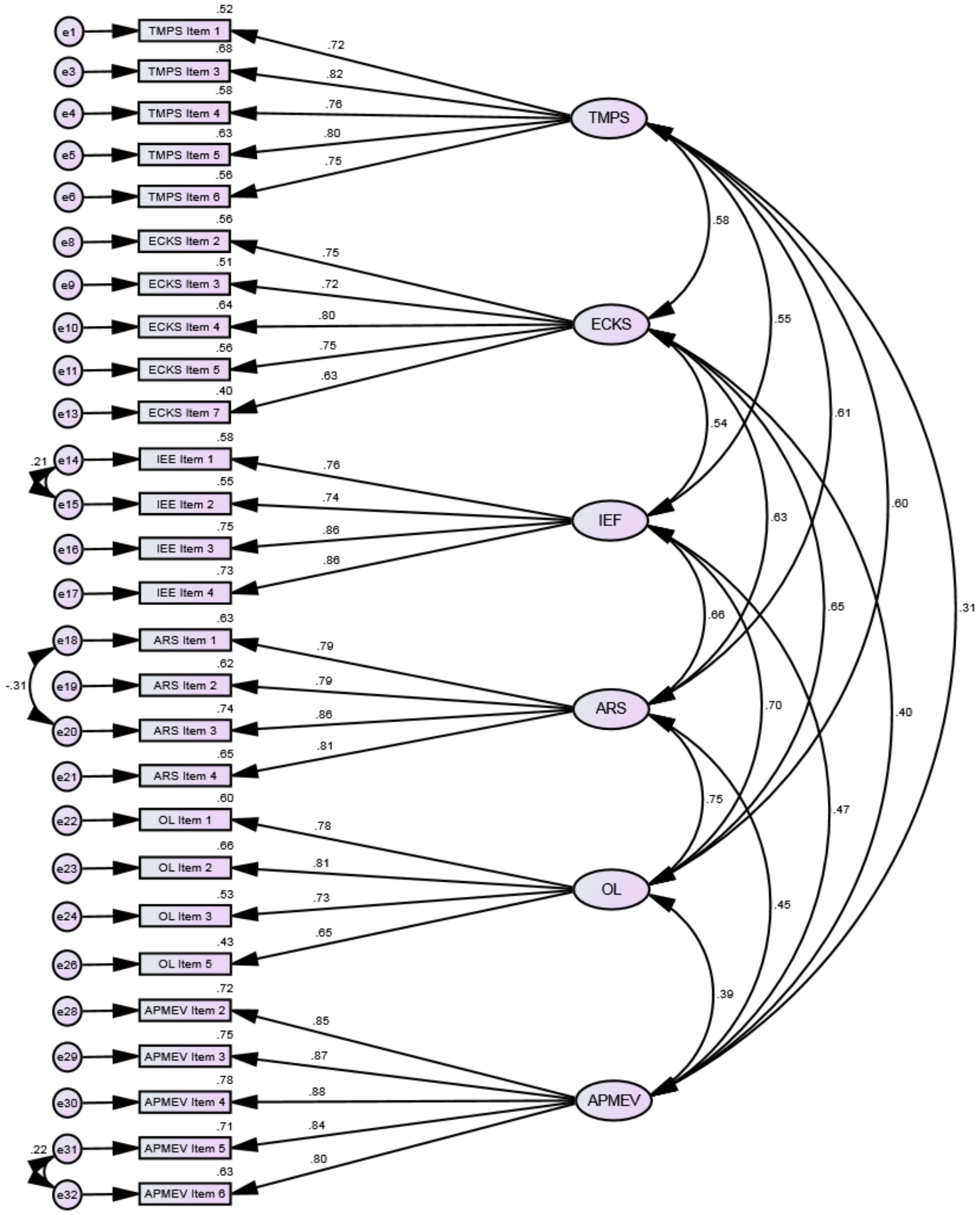


Table 6.25. The result of GOF statistics and other validity measures for the full CFA model of the antecedents construct

Construct	Item	CR[1]	AVE[2]	SFL[3]	SMC[4]	GOF Indices: Absolute	GOF Indices: Incremental	GOF Indices: Parsimony
TMPS	TMPS1	0.91	0.67	.722	.521	CMIN/DF = 1.843; RMSEA = .052; RMR = .036; SRMR = .048	CFI = .952; IFI = .953; ***NFI = .902; TLI = .945***	PCFI = .830; PNFI = .786
	TMPS3			.824	.679			
	TMPS4			.759	.576			
	TMPS5			.795	.632			
	TMPS6			.751	.564			
ECKS	ECKS2	0.90	0.65	.751	.564			
	ECKS3			.717	.513			
	ECKS4			.803	.645			
	ECKS5			.748	.559			
	ECKS7			***.632***	.400			
IEE	IEE1	0.91	0.72	.760	.578			
	IEE2			.741	.550			
	IEE3			.865	.748			
	IEE4			.857	.734			
ARS	ARS1	0.93	0.76	.791	.625			
	ARS2			.790	.624			
	ARS3			.862	.744			
	ARS4			.808	.652			
OL	OL1	0.87	0.63	.777	.604			
	OL2			.814	.663			
	OL3			.730	.534			
	OL5			***.653***	.427			
APMEV	APMEV2	0.94	0.74	.851	.725			
	APMEV3			.866	.750			
	APMEV4			.881	.776			
	APMEV5			.841	.708			
	APMEV6			.795	.632			

1. CR (ideally 0.7 or higher, but between 0.6 and 0.7 can be acceptable, as suggested by Hair et al. [2010])
2. AVE (0.5 or higher as suggested by Hair et al. [2010])
3. SFL (ideally 0.7 or higher, but more than 0.6 can be acceptable, as suggested by Hair et al. [2010])
4. SMC (ideally 0.5 or higher, but between 0.3 and 0.5 can be acceptable, as suggested by Holmes-Smith, 2007)

The outcome of GOF statistics, as shown in Table 6.25, indicated an acceptable fit in most of the fit indices, except in the case of the NFI and TLI related to the incremental indices, which at 0.902 and 0.945 respectively, were less than the threshold value of 0.950. However, Hair et al. (2010) and Holmes-Smith (2007) argue that CFI and TLI values above 0.90 are usually regarded as an acceptable value to describe that a model fits well. As one of the original incremental fit indices, NFI ranges between 0 and 1, and the NFI of 1 means that a model creates perfect fit (Hair et al., 2010). In general, the NFI needs to be proposed with the comparative fit index (CFI) and the sample size needs to considered (Bentler, 1990). However, of the two, the CFI should be the first index of choice (Bentler, 1990). In this study, the CFI (.952) suggests that the model fitted the data well in the sense that the hypothesised model explained the sample data properly. Thus, although slightly less than the NFI and TLI threshold value, the model fit was adequate.

The SFL values of all items were sufficiently high and above the ideal threshold value of 0.7, except for the two items: 0.632 in ECKS7 and 0.653 in OL5. However, above 0.6 of SFL could be regarded as an acceptable value for convergent validity, as suggested by Hair et al. (2010). The SMC values of all items were also above the ideal threshold value of 0.5, except for the two items: 0.400 in ECKS7 and 0.427 in OL5; however, the value between 0.3 and 0.5 is also regarded as an adequate measure of the construct (Holmes-Smith, 2007).

The result of Table 6.25 also reveals that all the fit indices were within the acceptable threshold ranges and the model's convergent validity assessed by the AVE (above 0.5) and CR (above 0.7) was supported. After establishing the model fit with convergent validity, an assessment of the discriminant validity was then achieved and its result is shown in Table 6.26. Since the AVE values in all cases are greater than the inter-factor squared correlation coefficients (Hair et al., 2010; Holmes-Smith, 2007), the discriminant validity was supported.

Table. 6.26. The result of discriminant validity of the full CFA model for the antecedents construct

	TMPS	ECKS	IEE	ARS	OL	APMEV
TMPS	**.67 (AVE)**	-	-	-	-	-
ECKS	.34	**.65 (AVE)**	-	-	-	-
IEE	.30	.29	**.72 (AVE)**	-	-	-
ARS	.37	.40	.43	**.76 (AVE)**	-	-
OL	.36	.42	.48	.57	**.63 (AVE)**	-
APMEV	.10	.16	.22	.20	.15	**.74 (AVE)**

6.2.8. Measurement model for the successful outcomes of SISP construct

The successful outcomes of SISP were hypothesised to include the following two first order factors: IS planning effectiveness (ISPE) and business and IT alignment (BITA). Therefore, this subsection discusses the CFA measurement model for each of the two construct individually.

6.2.8.1. Congeneric Measurement Model of ISPE

The initial congeneric model for the IS planning effectiveness (ISPE) construct was made up of six items, as shown in Figure 6.14. Table 6.27 also provides the results of GOF statistics.

Figure 6.14. Initial congeneric model of ISPE

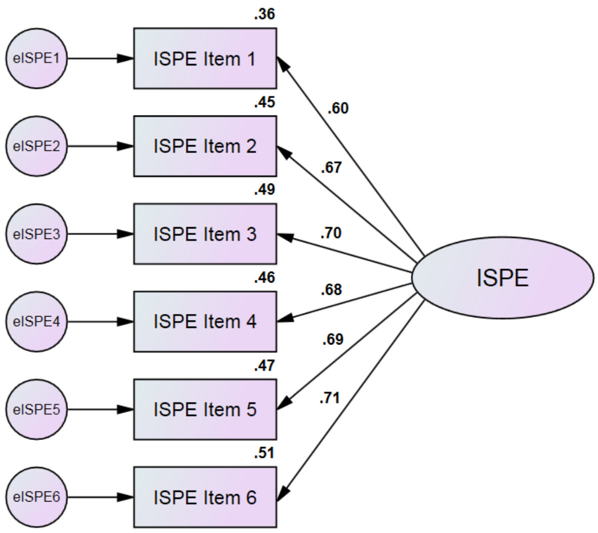


Table 6.27. The result of GOF statistics for initial congeneric model of ISPE

CMIN	44	CMIN/df	***4.859***	CFI	***.944***
df	9	RMSEA	***.111***	IFI	***.944***
p-value	***.000***	RMR	.023	NFI	***.931***
		SRMR	.047	TLI	***.907***

Item	Standard Estimate	Estimate	S.E	C.R	P	SMC
ISPE1	.600	.409	.038	10.828	***	.360
ISPE2	.672	.477	.038	12.471	***	.452
ISPE3	.697	.474	.036	13.077	***	.486
ISPE4	.676	.479	.038	12.575	***	.457
ISPE5	.689	.480	.037	12.880	***	.475
ISPE6	.714	.494	.037	13.504	***	.510
Model fit inadmissible (p-value, CMIN/df, RMSEA, CFI, IFI, NFI and TLI)						

According to Table 6.27, all the standardised factor loadings were more than 0.6; thus they were within the acceptable threshold ranges. The SMC values of six items were also within the admissible ranges between 0.3 and 0.5 as suggested by Holmes-Smith (2007). Most the GOF statistics comprising the p-value (0.000), CMIN/df (4.859) and RMSEA (0.111) as well as all the incremental fit indices did not reach the acceptable threshold ranges. Thus, to determine the reason of the misfit, the standardised residual covariance and the MIs were then examined.

Most of the standardised residuals were below |2.5|, which indicates that they did not suggest an issue, but the standardised residual between ISPE1 and ISPE2 was 2.565, which is above |2.5| that was 2.565. The MI result also showed that the discrepancy of the chi-square could fall by 16.119 if the regression weight for using ISPE1 to predict ISPE2 was treated as a free parameter; also, the chi-square could decrease from 44 to 27.322, if the two items were co-varied. Hence, the CFA model for ISPE was re-run individually, without ISPE1 and without ISPE2.

The result of the GOF statistics after ISPE1 had been deleted is shown in Table 6.28. All the GOF statistics were improved. Although the p-value fell short of the admissible threshold range (p>0.05), the p-value was increased to 0.027. However, as displayed in Table 5.29, the GOF statistics after ISPE2 had been deleted indicated a much better result than if the ISPE1 had been deleted instead.

Table 6.28. The result of GOF statistics for congeneric model of ISPE (after deleting ISPE1)

CMIN	12.608	CMIN/df	***2.522***	CFI	***.984***
df	5	RMSEA	.069	IFI	***.984***
p-value	***.027***	RMR	.013	NFI	***.975***
		SRMR	.027	TLI	***.969***

Table 6.29. The result of GOF statistics for congeneric model of ISPE (after deleting ISPE2)

CMIN	6.888	CMIN/df	***1.338***	CFI	***.996***
df	2	RMSEA	.033	IFI	***.996***
p-value	***.245***	RMR	.010	NFI	***.985***
		SRMR	.020	TLI	***.992***

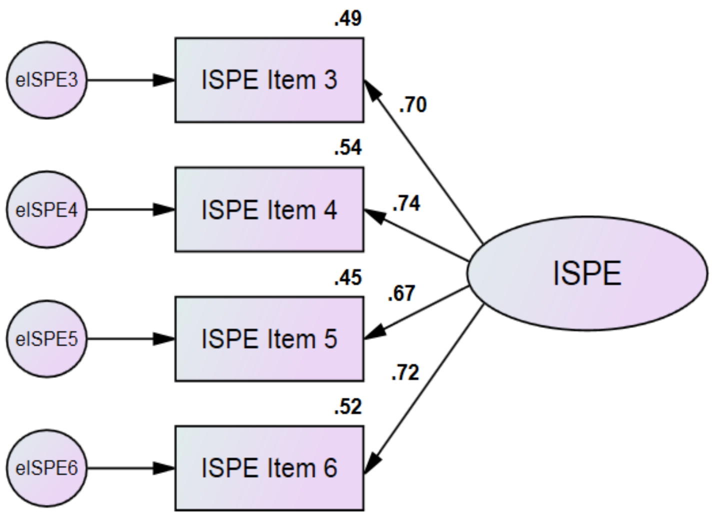
As presented in Table 6.29, the threshold values of the p-value, CMIN/df and RMSEA were improved from 0.027 to 0.245, from 2.522 to 1.338 and from 0.069 to 0.033 respectively. Furthermore, all the absolute fit indices and incremental fit indices were enhanced. However, the SFL and the SMC value of the ISPE1 were dropped to 0.54 and 0.29, which were below the acceptable range and needed to be deleted. Hence, the model was re-specified by eliminating ISPE1 and ISPE2. Table 6.30 shows the result of GOF statistics after both ISPE1 and ISPE2 were deleted. Compared with the result in which ISPE2 was deleted instead, most of the GOF statistics were improved. Although there was a slight difference in the p-value, CMIN/df, RMSEA and all the incremental fit indices, all the four indices were within the admissible ranges.

Table 6.30. The result of GOF statistics for congeneric model of ISPE (after deleting ISPE1 and ISPE2)

CMIN	3.184	CMIN/df	***1.592***	CFI	.997
df	2	RMSEA	.043	IFI	.997
p-value	***.204***	RMR	.008	NFI	.991
		SRMR	.016	TLI	.990

As presented in Figure 6.15, all the factor loadings, except for ISPE5, were within the ideal value of 0.7, but 0.67 in ISPE5 was close to the ideal value and could be considered as an acceptable value. The SMC values of ISPE4 and ISPE6 were within the ideal value of 0.5, and those of ISPE3 and ISPE5 were slightly lower than 0.5 – at 0.49 and 0.45 respectively – but they could also be regarded as the admissible value. Therefore, the final congeneric measurement model shown in Figure 6.15 fitted the data well in that it held convergent validity of all the items.

Figure 6.15. The final congeneric model of ISPE (after deleting ISPE1 and 2)



6.2.8.2. Congeneric Measurement Model of BITA

The initial model for the business and IT alignment (BITA) construct was comprised of five items, as shown in Figure 6.16. The result of corresponding GOF statistics is presented in Table 6.31. All the standardised factor loadings were above 0.6 and these were within the acceptable threshold range suggested by Hair et al. (2010). The SMC values of five items were within the admissible ranges of above 0.3 as suggested by Holmes-Smith (2007). All the GOF statistics were above the acceptable threshold ranges except for the p-value (0.023).

Figure 6.16. Initial congeneric model of BITA

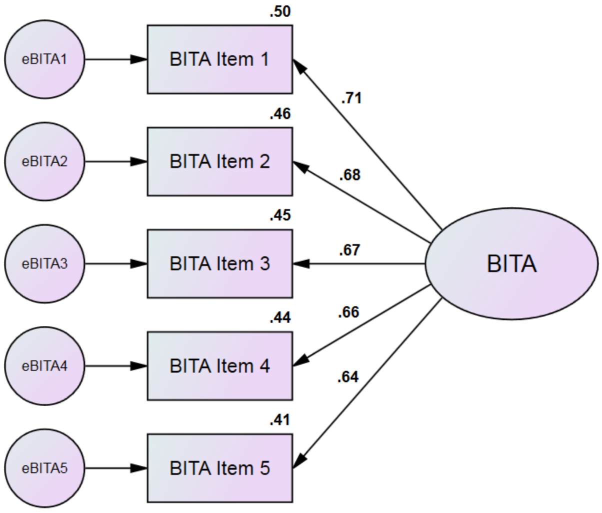


Table 6.31. The result of GOF statistics for initial congeneric model of BITA

CMIN	13	CMIN/df	2.608	CFI	.982	
df	5	RMSEA	.071	IFI	.982	
p-value	***.023***	RMR	.014	NFI	.971	
		SRMR	.029	TLI	.963	
Item	**Standard Estimate**	**Estimate**	**S.E**	**C.R**	**P**	**SMC**
BITA1	.709	.491	.038	12.980	***	.502
BITA2	.675	.468	.038	12.220	***	.456
BITA3	.672	.471	.039	12.158	***	.452
BITA4	.660	.457	.038	11.874	***	.435
BITA5	.641	.465	.041	11.469	***	.411
Model fit inadmissible (p-value)						

The standardised residual covariance and the MI were scrutinised to identify whether or not the model had a misfit. All the standardised residuals were less than |2.5|, which indicates that they did not suggest an issue, but the covariance between BITA1 and BITA2 (0.891) was, relatively, slightly higher than all the other values. The MI result only indicated that the chi-square could decrease from 13 to 5.116 if the two items were co-varied. Therefore, the CFA model for BITA was re-run independently without BITA1 and BITA2.

The outcome of the GOF statistics after the item BITA1 had been deleted is displayed in Table 6.32. All the threshold values were improved and the p-value was 0.273, which was also within the admissible threshold range ($p>0.05$). However, as shown in Table 6.33, the GOF statistics after BITA2 had been deleted showed a good result, which would not have been achieved if BITA1 had been deleted instead.

Table 6.32. The result of GOF statistics for congeneric model of BITA (after deleting BITA1)

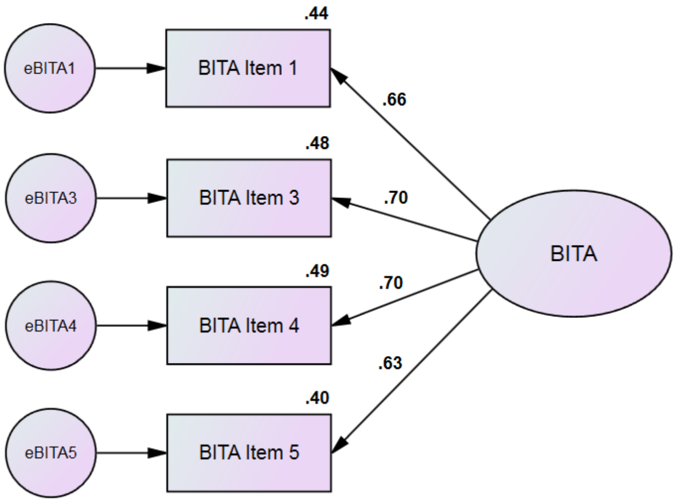
CMIN	2.6	CMIN/df	1.300	CFI	.998
Df	2	RMSEA	.031	IFI	.998
p-value	***.273***	RMR	.008	NFI	.991
		SRMR	.016	TLI	.994

Table 6.33. The result of GOF statistics for congeneric model of BITA (after deleting BITA2)

CMIN	1.0	CMIN/df	***0.511***	CFI	1.000
df	2	RMSEA	.000	IFI	1.003
p-value	***.600***	RMR	.005	NFI	.997
		SRMR	.010	TLI	1.010

As presented in Table 6.33, the threshold values of the p-value, CMIN/df and RMSEA were improved from 0.273 to 0.600, from 1.300 to 0.511 and from 0.031 to 0.000 respectively; additionally, all the absolute fit indices and incremental fit indices were enhanced. All the factor loadings fell slightly short of the ideal value of 0.7, but they were more than 0.6, which is still considered an acceptable value. Also, all the SMC values did not reach the ideal value of 0.5, and the SMC value of BITA5 was 0.40, which might appear to be low, but the SMC between 0.3 and 0.5 can be an adequate measure of the construct according to the recommendation of Holmes-Smith (2007). Thus, the final congeneric measurement model described in Figure 6.17 was admissible because it had an acceptable model fit and held convergent validity of all its items.

Figure 6.17. The final congeneric model of BITA (after deleting BITA2)



6.2.8.3. *Full CFA Measurement Model of the successful outcomes of SISP Construct*

As discussed in the previous sections 6.2.8 (from 6.2.8.1 to 6.2.8.2), the CFA models of the two constructs that constitute the successful outcomes of SISP were individually tested. The two constructs were then validated together to form the successful outcomes of SISP construct. The full CFA measurement model of the successful outcomes of SISP construct is presented in Figure 6.18. The result of corresponding GOF statistics with the convergent validity measures are also shown in Table 6.34.

Figure 6.18. Full CFA measurement model of the successful outcomes of SISP construct

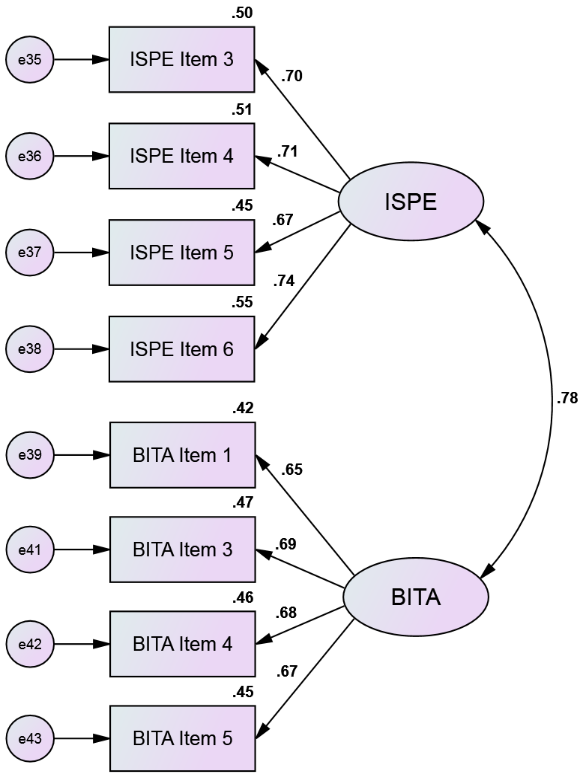


Table 6.34. The result of GOF statistics and validity measures for the full CFA model of the successful outcomes of SISP construct

Construct	Item	CR	AVE	SFL	SMC	GOF Indices		
						Absolute	Incremental	Parsimony
ISPE	ISPE3	.89	.67	.704	.496	CMIN/DF = .998; RMSEA = .000; RMR = .013; SRMR = .026	CFI = 1.000; IFI = 1.000; NFI = .977; TLI = 1.000	PCFI = .679; PNFI = .663
	ISPE4			.712	.507			
	ISPE5			.670	.450			
	ISPE6			.739	.546			
BITA	BITA1	.87	.63	.649	.421			
	BITA3			.687	.472			
	BITA4			.680	.463			
	BITA5			.771	.451			

The result of GOF statistics in Table 6.34 indicated an acceptable fit in all the fit indices. The SFL and SMC values of all items were within the acceptable threshold values that were above 0.6 and 0.3 respectively. Further, all the GOF fit indices were within the acceptable thresholds and the model's convergent validity was supported based on all factor loadings of SFL, AVE and CR, which were above 0.6, 0.5 and 0.7 respectively. After testing the model fit and convergent validity, an assessment of the discriminant validity was then achieved and its result is shown in Table 6.35. The results indicate that the discriminant validity was supported, as the AVE values in all cases are greater than the inter-factor squared correlation coefficients (Hair et al., 2010; Holmes-Smith, 2007).

Table 6.35. The result of discriminant validity of the full CFA measurement factor model for the successful outcomes of SISP construct

	ISPE	BITA
ISPE	**.67 (AVE)**	-
BITA	.60	**.63 (AVE)**

6.2.9. Measurement model for the impact of SISP success construct

The impact of SISP success was hypothesised to consist of the following three factors: organisational capabilities (Orcap), IS competencies (IScom) and IT infrastructure flexibility (ITIF). Hence, this section independently discusses the CFA measurement model for each of the three constructs factors.

6.2.9.1. Congeneric Measurement Model of Orcap

Figure 6.19 shows the initial model for the construct of organisational capabilities that is comprised of seven indicators. Table 6.36 also presents the results of GOF statistics for convergent validity measures.

Figure 6.19. Initial congeneric model of Orcap

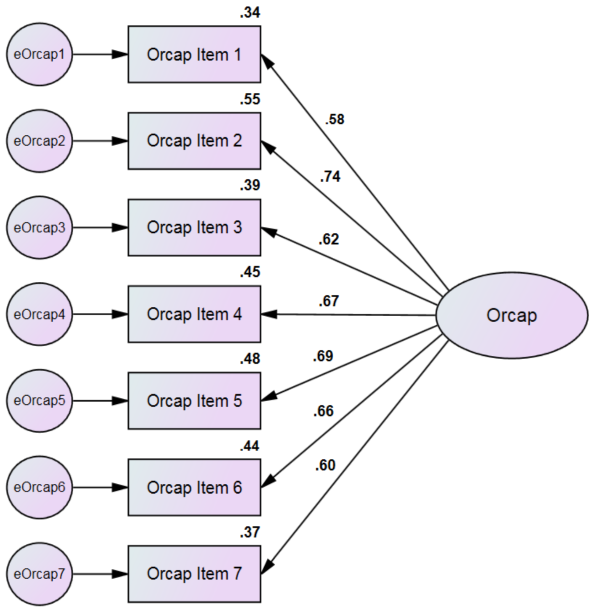


Table 6.36. The result of GOF statistics for initial congeneric model of Orcap

CMIN	42	CMIN/df	***3.000***	CFI	.959	
df	14	RMSEA	***.080***	IFI	.960	
p-value	***.000***	RMR	.021	NFI	***.941***	
		SRMR	.041	TLI	***.939***	
Item	**Standard Estimate**	**Estimate**	**S.E**	**C.R**	**P**	**SMC**
Orcap1	***.581***	.381	.036	10.460	***	.337
Orcap2	.744	.512	.036	14.349	***	.553
Orcap3	.621	.437	.039	11.350	***	.385
Orcap4	.669	.436	.035	12.477	***	.447
Orcap5	.690	.535	.041	12.978	***	.475
Orcap6	.662	.475	.039	12.306	***	.438
Orcap7	.605	.479	.044	10.993	***	.366
Model fit inadmissible (p-value, CMIN/df, RMSEA, NFI and TLI)						

The results of the GOF statistics in the Table 6.36 indicate an inadmissible model fit in the p-value, CMIN/df, RMSEA, NFI and TLI. All the SFL and the SMC values were also more than the suggested threshold ranges, except for the Orcap1. The SFL value of the Orcap1 was 0.581, which was below the recommended range (SFL>0.6). Thus, the proposed model was first re-specified by eliminating the Orcap1. Table 6.37 presents the outcome of GOF statistics after deleting Orcap 1.

Table 6.37. The result of GOF statistics for congeneric model of Orcap (after deleting Orcap1)

CMIN	20.432	CMIN/df	***2.270***	CFI	.980
df	9	RMSEA	***.063***	IFI	.980
p-value	***.015***	RMR	.017	NFI	***.965***
		SRMR	.031	TLI	***.967***

All the indices were greatly improved and reached the acceptable ranges, but the p-value was still out of the acceptable range (0.015). Therefore, the standardised residual covariance and the MI were scrutinised again to identify whether or not the model had a misfit. According to the inspection of the standardised residuals, all the values of each item satisfied the suggested value (below |2.5|). Further, the MIs result indicated that there were no issues in the regression weights, but there was an issue identified in the covariances between eOrcap5 and eOrcap3 so that the MIs by the covariance between eOrcap5 and eOrcap3 were then calculated to gain a better-fitting model. As shown in Table 6.38, the covariance of eOrcap5 with eOrcap3 was expected to be -0.057 if the model was re-specified with that covariance added and then the model was refitted. That model's chi-square test of overall fit should be 7.985 units, which is lower than the present model's value of 20.432.

Table 6.38. Modification indices (Covariances)

			M.I.	**Par Change**
eOrcap5	<-->	eOrcap3	7.985	-.057

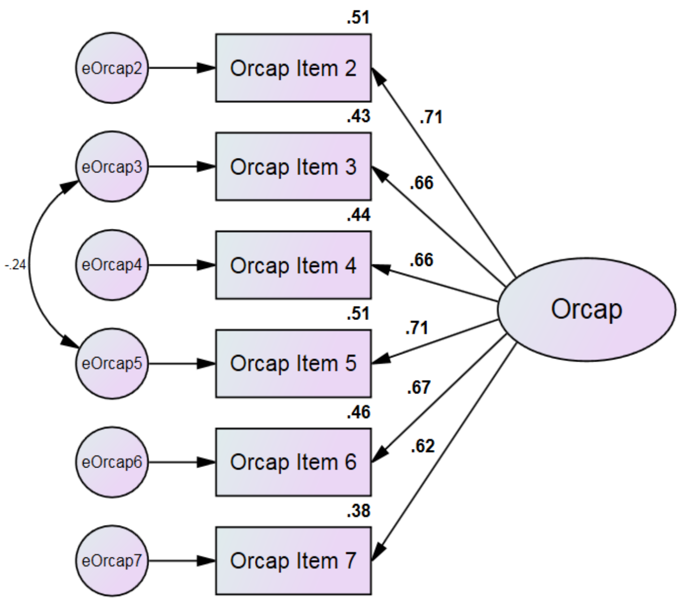
After the Orcap construct was re-specified by correlating the residuals of the eOrcap5 and eOrcap3, the outcome of the p-value (.270) was reached. As shown in Table 6.39, the acceptable threshold range as well as other values of absolute fit indices and incremental fit indices were improved, compared to the result after Orcap1 had been deleted.

Table 6.39. The result of GOF statistics for congeneric model of Orcap (after deleting Orcap1 and MI)

CMIN	9.930	CMIN/df	***1.241***	CFI	.997
df	8	RMSEA	***.028***	IFI	.997
p-value	***.270***	RMR	.012	NFI	***.983***
		SRMR	.022	TLI	***.994***

Thus, all the GOF indices satisfied the threshold set for a good model fit and the final congeneric measurement model in Figure 6.20 was admissible.

Figure 6.20. The final congeneric model of Orcap (after deleting Orcap1 and MI)



6.2.9.2. Congeneric Measurement Model of IScom

The initial construct of IS competencies (IScom) was proposed to include six items, as shown in Figure 6.21. The GOF statistics of the initial congeneric model of the IScom is presented in Table 6.40.

Figure 6.21. Initial congeneric model of IScom

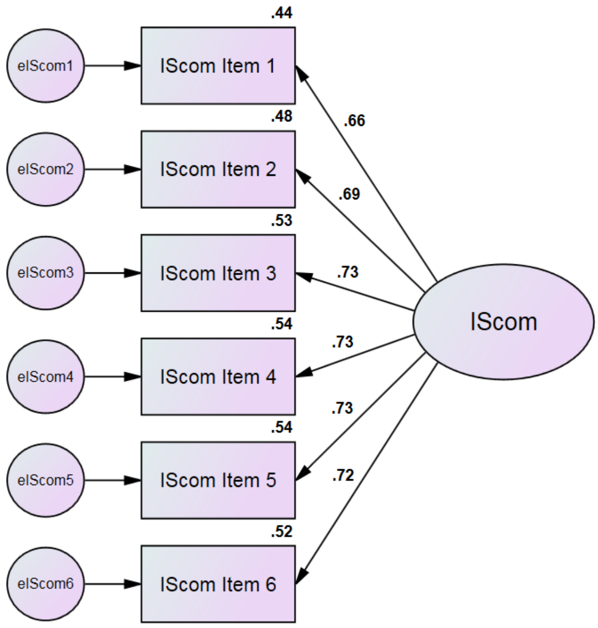


Table 6.40. The result of GOF statistics for initial congeneric model of IScom

CMIN	20	CMIN/df	2.177	CFI	.985	
df	9	RMSEA	.061	IFI	.986	
p-value	***.021***	RMR	.013	NFI	.974	
		SRMR	.027	TLI	.976	
Item	**Standard Estimate**	**Estimate**	**S.E**	**C.R**	**P**	**SMC**
IScom1	.660	.431	.035	12.414	***	.436
IScom2	.692	.448	.034	13.201	***	.479
IScom3	.728	.528	.037	14.117	***	.530
IScom4	.734	.548	.038	14.293	***	.539
IScom5	.734	.511	.036	14.289	***	.539
IScom6	.720	.516	.037	13.902	***	.518
Model fit inadmissible (p-value)						

All the GOF results presented in Table 6.40 were within the admissible threshold ranges, except for the p-value (0.021). All the SFL and the SMC values were also above the acceptable ranges, at more than 0.6 and between 0.3 and 0.5 respectively. Hence, the standardised residual covariance and the MI were scrutinised to identify whether or not the model had a misfit.

According to the result of the standardised residual covariance, all the values of each item satisfied the suggested value (less than |2.5|) suggested by Hair et al. (2010), but the covariance between IScom2 and IScom1 (0.989) was slightly higher than the other values. This was also evident in the MI, which showed that the discrepancy of the chi-square could fall by at least 2.600, if the regression weight for using IScom2 to predict IScom1 was treated as a free parameter. Furthermore, the chi-square could decrease by 5.074 if the two items were co-varied. Hence, the CFA model for IScom was re-run individually without IScom1 and IScom2 to ensure measurement uni-dimensionality.

When deleting the item IScom1, the GOF statistics of the p-value (0.152) reached the acceptable threshold range, and other values of absolute fit indices and incremental fit indices were improved as shown in Table 6.41. However, in the case of the deletion of IScom2, the GOF result revealed that all the threshold values of the p-value and other values of absolute fit indices and incremental fit indices were slightly better than the deletion of IScom1, as presented in Table 6.42.

Table 6.41. The result of GOF statistics for congeneric model of IScom (after deleting IScom1)

CMIN	8.069	CMIN/df	1.614	CFI	.995
df	5	RMSEA	.044	IFI	.995
p-value	***.152***	RMR	.010	NFI	.986
		SRMR	.020	TLI	.989

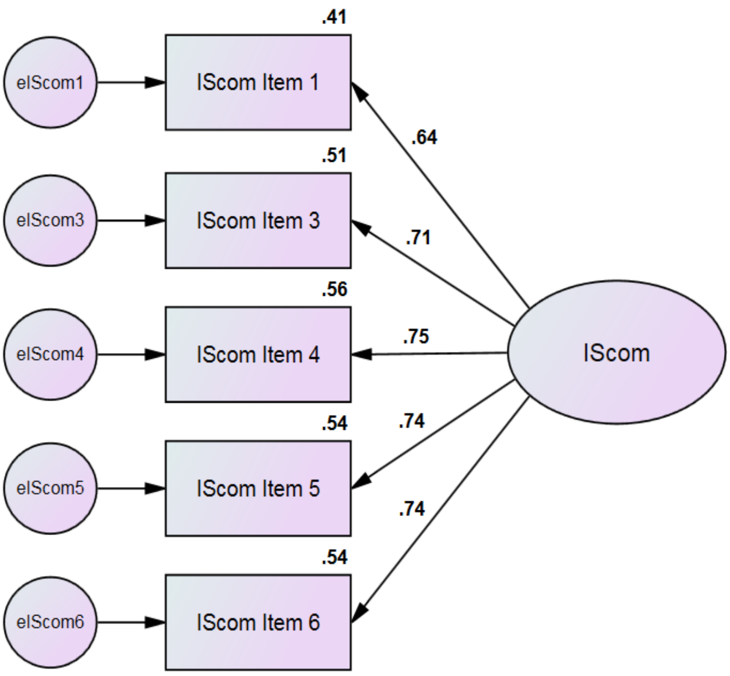
Table 6.42. The result of GOF statistics for congeneric model of IScom (after deleting IScom2)

CMIN	7.017	CMIN/df	1.403	CFI	.996
df	5	RMSEA	.036	IFI	.996
p-value	***.219***	RMR	.010	NFI	.988
		SRMR	.019	TLI	.993

All the factor loadings except for IScom1 (0.64) were above the ideal value of 0.7. In addition, all the SMC values except for IScom1 (0.41) reached the ideal value of 0.5.

Therefore, the results from Table 6.42 indicate that all the GOF indices met the threshold set for an acceptable model fit. The final congeneric measurement model of IScom shown in Figure 6.22 was also admissible with holding convergence validity of all its items.

Figure 6.22. The final congeneric model of IScom (after deleting IScom2)



6.2.9.3. Congeneric Measurement Model of ITIF

As shown in Figure 6.23, the initial congeneric model for the IT infrastructure flexibility (ITIF) construct consisted of six observed items. Table 6.43 presents the result of GOF statistics.

Figure 6.23. Initial congeneric model of ITIF

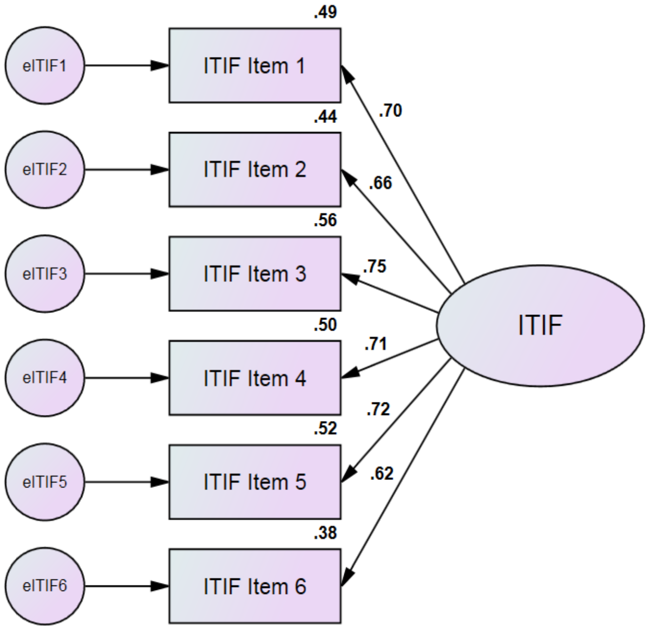


Table 6.43. The result of GOF statistics for initial congeneric model of ITIF

CMIN	34	CMIN/df	***3.736***	CFI	.963
df	9	RMSEA	***.093***	IFI	.964
p-value	***.000***	RMR	.023	NFI	.951
		SRMR	.040	TLI	***.939***

Item	**Standard Estimate**	**Estimate**	**S.E**	**C.R**	**P**	**SMC**
ITIF1	.701	.542	.041	13.316	***	.491
ITIF2	.661	.510	.041	12.346	***	.437
ITIF3	.749	.567	.039	14.557	***	.561
ITIF4	.705	.557	.041	13.427	***	.498
ITIF5	.720	.550	.040	13.800	***	.518
ITIF6	.619	.457	.040	11.357	***	.383
Model fit inadmissible (p-value, CMIN/df, RMSEA and TLI)						

All the GOF results described in the Table 6.43 were within the admissible threshold ranges, except for the p-value, CMIN/df, RMSEA and TLI. All the SFL values and the SMC values were also within the admissible threshold ranges of more than 0.6 and 0.3 respectively. In order to ascertain whether or not the model had a misfit, the standardised residual covariance and the MI were then examined.

The test result of the standardised residual covariance presented that all the standardised residuals were less than |2.5|. It indicates that this did not suggest an issue, but the covariance between ITIF1 and ITIF6 (-1.430) was slightly higher than all the other values relatively. The MI outcome also showed that the discrepancy of the chi-square could fall by at least 5.030 if the regression weight for using ITIF1 to predict ITIF6 was treated as a free parameter; also, the chi-square could decrease from 34 to 9.807, if the two items were co-varied. Thus, the CFA model for ITIF was individually re-run without ITIF1 and without ITIF6. The result of the GOF statistics after the item ITIF1 was deleted is presented in Table 6.44. All the threshold values of selected fit indices were improved within the admissible ranges, but the p-value was less than the acceptable range (0.018). However, when the item ITIF6 was deleted, the GOF statistics result was much better, as presented in Table 6.45.

Table 6.44. The result of GOF statistics for congeneric model of ITIF (after deleting ITIF1)

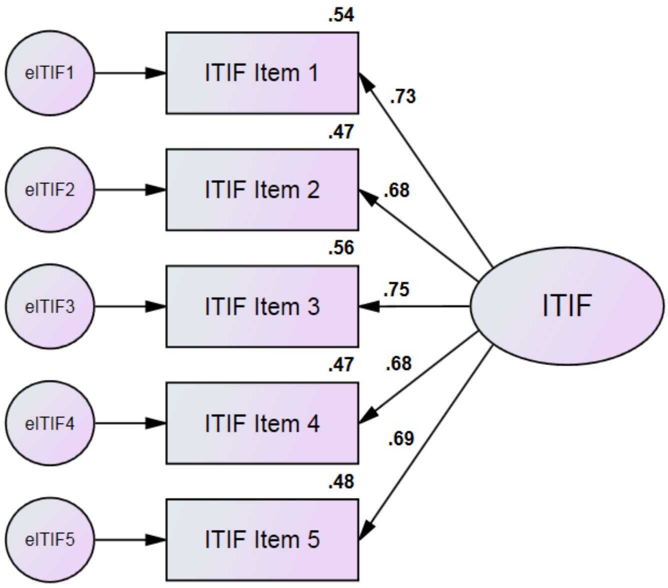
CMIN	13.584	CMIN/df	2.717	CFI	.983
Df	5	RMSEA	.074	IFI	.983
p-value	***.018***	RMR	.017	NFI	.973
		SRMR	.029	TLI	.965

Table 6.45. The GOF statistics for one-factor congeneric model of ITIF (after deleting ITIF6)

CMIN	8.799	CMIN/df	1.760	CFI	.993
df	5	RMSEA	.049	IFI	.993
p-value	***.117***	RMR	.013	NFI	.984
		SRMR	.021	TLI	.986

As shown in Table 6.45, all the GOF statistics results were greatly improved and within the acceptable ranges. For example, the p-value reached the admissible threshold range of 0.117 (p>0.05). The value of the CMIN/df and RMSEA was also enhanced to 8.799 and 0.117 respectively. Other values of absolute fit indices and incremental fit indices were improved, compared to the result if ITIF1 was deleted. All the SFL and the SMC values were also within the recommended values as they were more than 0.6 and 0.3 respectively. This indicates that the final one-factor congeneric measurement model satisfied all threshold GOF values and held convergent validity, so that it was accepted. Figure 6.24 shows the final one-factor congeneric model of ITIF.

Figure 6.24. The final congeneric model of ITIF (after deleting ITIF6)



6.2.9.4. Full Measurement Model of the Impact of SISP Success Construct

As described in sections 6.2.9 (from 6.2.9.1 to 6.2.9.3), the CFA models of the three constructs that established the impact of SISP success were separately tested. Further, the three constructs were then validated together to form the impact of the SISP success construct. The full CFA measurement model of the impact of SISP success construct is shown in Figure 6.25. The result of corresponding GOF statistics with convergent validity measures are also presented in Table 6.46.

Figure 6.25. Full CFA measurement model of the impact of SISP success construct

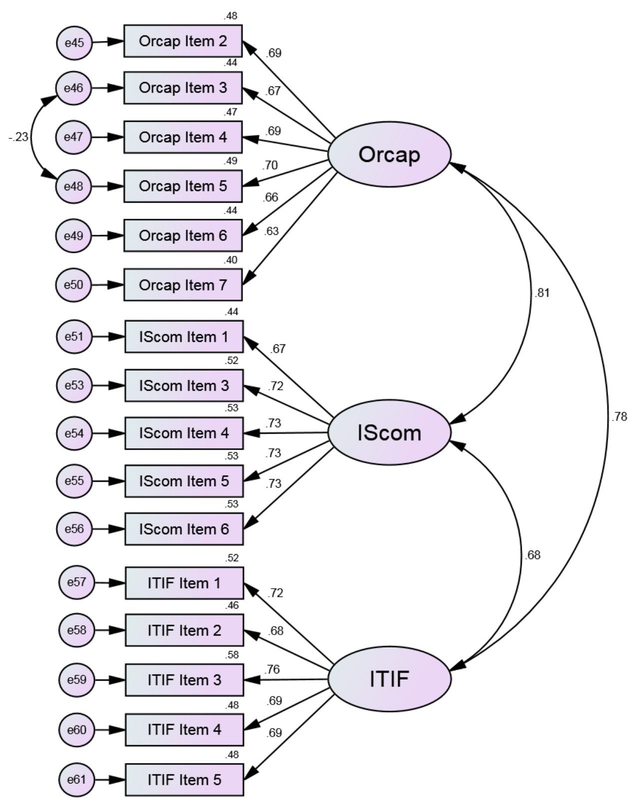


Table 6.46. The result of GOF statistics and validity measures for the full CFA model of the impact of SISP success construct

Construct	Item	CR	AVE	SFL	SMC	GOF Indices		
						Absolute	Incremental	Parsimony
Orcap	Orcap2	0.91	0.61	.691	.477	CMIN/DF = 1.610; RMSEA = .044; RMR = .020; SRMR = .037	CFI = .971; IFI = .971; ***NFI = .927***; TLI = .965	PCFI = .809; PNFI = .773
	Orcap3			.666	.443			
	Orcap4			.688	.474			
	Orcap5			.699	.488			
	Orcap6			.662	.438			
	Orcap7			.635	.403			
IScom	IScom1	0.91	0.68	.665	.442			
	IScom3			.723	.523			
	IScom4			.729	.531			
	IScom5			.729	.531			
	IScom6			.731	.535			
ITIF	ITIF1	0.89	0.63	.720	.519			
	ITIF2			.676	.458			
	ITIF3			.761	.580			
	ITIF4			.691	.478			
	ITIF5			.690	.476			

The outcome of GOF statistics, as presented in Table 6.46, indicated an acceptable fit in most of the fit indices, except in the case of the normed fit index (NFI), which was 0.927, below the threshold value of 0.950, but more than 0.9. In the NFI, 0.927 is considered as an acceptable value, as suggested by Hair et al. (2010) and Holmes-Smith (2007). Thus, although somewhat less than the NFI threshold value, the model fit could be considered adequate.

The SFL and the SMC of all items were within the acceptable threshold ranges, which were more than 0.6 and 0.3 respectively. The model's convergent validity based on the AVE (above 0.5) and the CR (above 0.7) was also supported. After establishing the model fit and convergent validity, the discriminant validity was then measured, and its result is presented in Table 6.47. In order to support the discriminant validity, the AVE values should be greater than the inter-factor squared correlation coefficients (Hair et al., 2010; Holmes-Smith, 2007). However, the AVE was smaller than the inter-factor squared correlation coefficients, so the discriminant validity was not supported.

Table 6.47. The result of discriminant validity of the full CFA measurement factor model for the impact of SISP success construct

	Orcap	IScom	ITIF
Orcap	**.61 (AVE)**	-	-
IScom	.62	**.68 (AVE)**	-
ITIF	.63	.49	**.63 (AVE)**

In order to identify the cause of the misfit, the standardised residual covariance and the MIs were inspected. There were no issues in the MIs and all the standardised residuals were below |2.5|, but the standardised residual covariance between Orcap4 and IScom3 (1.989) was, relatively, slightly higher than all the other values. Thus, the full CFA model for the impact of SISP success was individually re-run without Orcap4 and without

IScom3 to gain the acceptable value of the discriminant validity.

Table 6.48 shows the result of the discriminant validity of the full measurement factor model for the impact of SISP success construct after the elimination of IScom3. The discriminant validity was not supported and the result was even worse than it had been before the IScom2 was deleted. However, the outcome of the discriminant validity on the full measurement factor model was improved and supported when the Orcap4 was deleted.

Table 6.48. The result of discriminant validity of the full CFA measurement factor model for the impact of SISP success construct

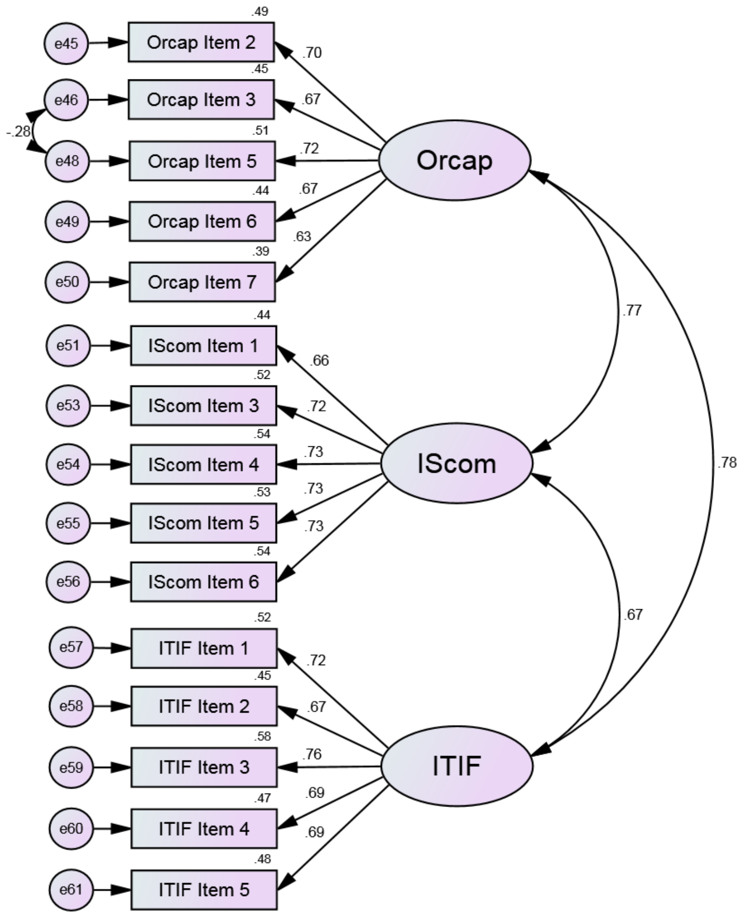
After deleting IScom3				After deleting Orcap4			
	Orcap	**IScom**	**ITIF**		**Orcap**	**IScom**	**ITIF**
Orcap	**.61 (AVE)**	-	-	**Orcap**	**.61 (AVE)**	-	-
IScom	*.64*	**.68 (AVE)**	-	**IScom**	.60	**.68 (AVE)**	-
ITIF	*.61*	.44	**.63 (AVE)**	**ITIF**	.61	.45	**.63 (AVE)**

As shown in Table 6.49, the result of GOF statistics was enhanced after the deletion of Orcap4. The threshold values of the p-value, CMIN/df, RMSEA and NFI were improved from 0.000 to 0.002, from 1.610 to 1.511, from 0.044 to 0.040 and from 0.927 to 0.936 respectively. All the absolute fit indices and incremental fit indices were also enhanced. Furthermore, all the factor loadings and the SMC values were more than 0.6 and 0.3 and within the admissible threshold ranges. Thus, the full CFA measurement model for the impact of SISP success described in Figure 6.26 was admissible.

Table 6.49. The result of GOF statistics and validity measures for the full CFA model of the impact of SISP success construct (after deleting Orcap4)

CMIN/df	***1.511***	RMSEA	.040	CFI	.977
		RMR	.019	IFI	.977
		SRMR	.036	NFI	***.936***
				TLI	.972

Figure 6.26. The final full CFA measurement model for the impact of SISP success construct



6.2.10. Full CFA measurement model

Sections 6.2.7 to 6.2.9 above discuss each construct individually; they also outline the congeneric measurement models and the full measurement models of antecedents, the successful outcomes of SISP and the impact of SISP success. These models constitute the input into the full CFA measurement model displayed in this section. Brown (2015) argues that it is important to construct a feasible measurement model before pursuing a structural solution in order to reduce the possibility of a poor fit from the structural portion of a CFA measurement model. Thus, it is important to follow this procedure to ensure the uni-dimensionality and construct validity of each of the constructs included in the study. Figure 6.27 below shows the full CFA measurement model of this study.

Figure 6.27. Full CFA measurement model

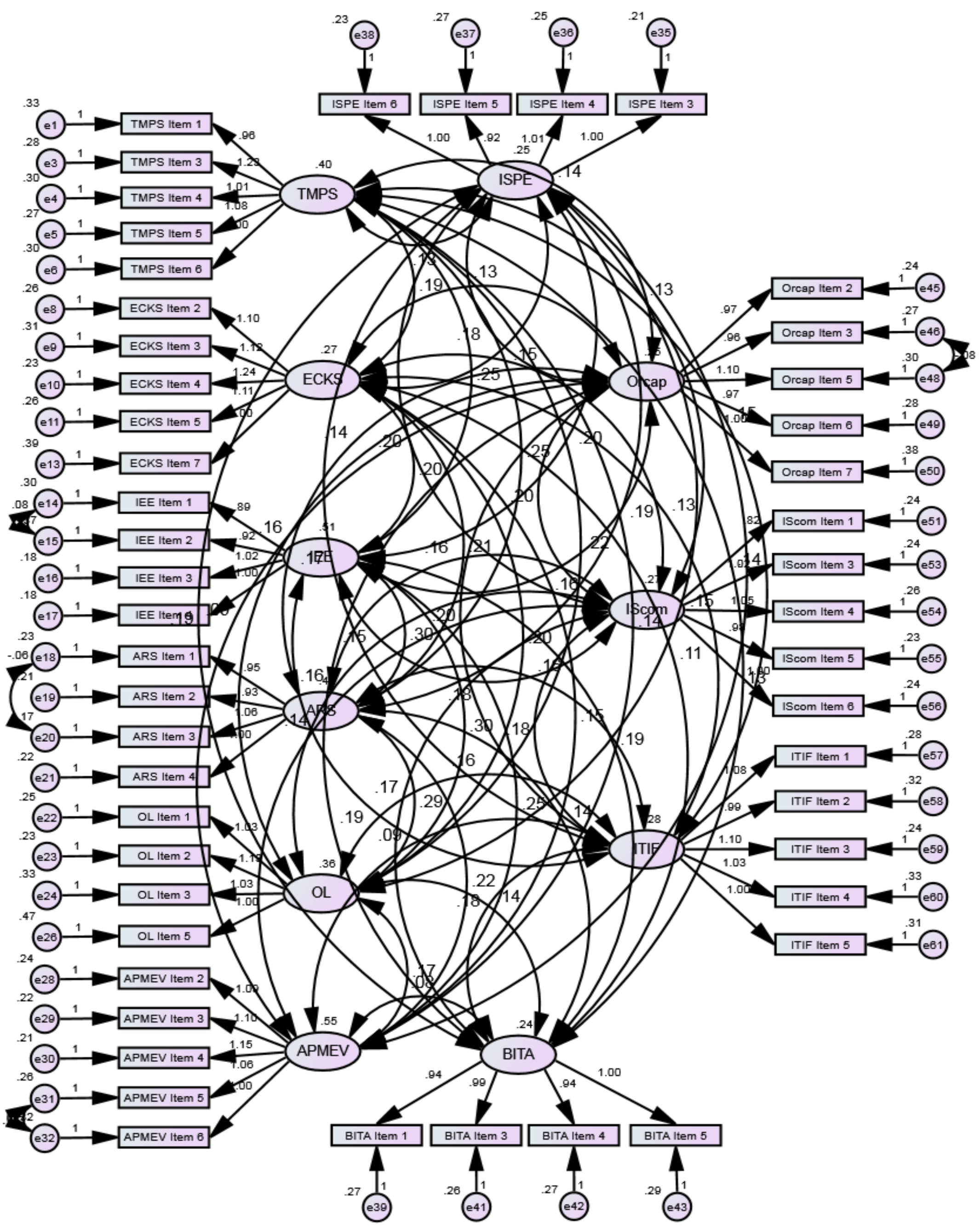


Table 6.50 presents the result of GOF statistics of the full CFA measurement model. Based on the selected fit indices, the full CFA measurement model was acceptable. The normed chi-square of the model was 1.569, which was within the acceptable threshold range. The three absolute fit indices, such as RMSEA, RMR and SRMR were within the recommended ranges: 0.042, 0.029 and 0.048 respectively, which were below the threshold value of 0.1. The model's parsimony fit indices for PCFI and PNFI were 0.849 and 0.752, respectively, which were above 0.5, so they were acceptable.

Table 6.50. The result of GOF statistics and validity measures for the full CFA measurement model

CMIN/df	1.521	CFI	***.934***	PCFI	.851
RMSEA	.041	IFI	***.935***		
RMR	.029	NFI	***.831***	PNFI	.757
SRMR	.044	TLI	***.928***		

The model's incremental fit indices fell slightly short of the threshold value of 0.95 that this study established. The values of CFI, IFI, NFI and TLI were 0.934, 0.935, 0.831 and 0.928 respectively. However, according to Hair et al. (2010) and Holmes-Smith (2007), CFI and TLI values above 0.90 are considered as acceptable value and usually associated with a model that fits well. Moreover, the NFI is supported by the CFI and sample size. Either of the two, the CFI is the first index of choice (Bentler, 1990). The CFI value (.934) suggests that the model fitted the data well in the sense as well as that the hypothesised model adequately described the sample data. Therefore, although the NFI's threshold value was a bit less, the model fit was adequate.

After determining that the full CFA measurement model was satisfied with the GOF statistics, this study then undertook discriminant validity. In order to be supported the discriminant validity, the AVE value, should consistently be greater than the squared inter-construct correlations estimate (Straub et al., 2004; Hair et al. 2010). The result of the discriminant validity analysis displayed in Table 6.51 indicated that all AVE values were greater than their square inter-construct correlations in all cases, so that the full CFA measurement model had adequate discriminant validity.

Table 6.51. The result of discriminant validity of the full CFA measurement model

	TMPS	ECKS	IEE	ARS	OL	APMEV	ISPE	BITA	Orcap	IScom	ITIF
TMPS	**.67***										
ECKS	.34	**.65***									
IEE	.30	.29	**.72***								
ARS	.37	.40	.43	**.76***							
OL	.36	.42	.30	.57	**.63***						
APMEV	.10	.16	.32	.20	.15	**.74***					
ISPE	.22	.19	.48	.21	.22	.05	**.67***				
BITA	.17	.34	.22	.36	.27	.13	.60	**.63***			
Orcap	.19	.25	.20	.19	.28	.07	.46	.54	**.61***		
IScom	.15	.19	.22	.23	.23	.14	.46	.61	.61	**.68***	
ITIF	.22	.23	.25	.24	.26	.05	.51	.41	.60	.45	**.63**

Prior to proceeding with the structural model, the instrument for all the measurement factors was required to check for reliability using Cronbach's Alpha (Field, 2009; Lewis et al., 2005; Straub et al., 2004). In general, the Cronbach's Alpha value of more than 0.7 is widely accepted as recommended value (Hair et al., 2010). Table 6.52 shows the Cronbach's Alpha values of each of the variables all above 0.7; thus the measurement instrument was reliable.

Table 6.52. The result of instrument reliability test using Cronbach's Alpha

Research construct	No. of the final items	Cronbach's Alpha	Comment
TMPS	5	0.879	Above 0.7 so supported
ECKS	5	0.849	Above 0.7 so supported
IEE	4	0.884	Above 0.7 so supported
ARS	4	0.877	Above 0.7 so supported
OL	4	0.825	Above 0.7 so supported
APMEV	5	0.929	Above 0.7 so supported
ISPE	4	0.799	Above 0.7 so supported
BITA	4	0.766	Above 0.7 so supported
Orcap	5	0.797	Above 0.7 so supported
IScom	5	0.839	Above 0.7 so supported
ITIF	5	0.834	Above 0.7 so supported

6.3. Assessing Structural Model Validation and Hypotheses Testing

After confirming an acceptable fit for the measurement model based on the test of validity and reliability, the final stage was to measure the validity of the structural model as well as to test its corresponding hypothesised structural (theoretical) relationships between independent and dependent variables. The structural model is a "set of one or more dependence relationships linking the hypothesised model's constructs (i.e., the structural theory)" (Hair et al., 2010, p. 708). It also defines the theory and relations among the unobserved variables with a visual diagram, so that the structural relationship between two constructs is empirically signified by the structural parameter estimate (is called as a path estimate) (Hair et al., 2010; Kline, 2010) to test how latent variables directly or indirectly affect (or cause) in the values of other latent variables in the model (Byrne, 2010). Therefore, the structural model is helpful in representing the interrelationships of variables between constructs (Hair et al., 2010).

In general, the assessment of structural model validation is achieved by a comparison of the structural model fit compared to the CFA model and an investigation of model diagnostics. There are several procedures that need to be undertaken to suitably assess the validity of structural model. First, as with the CFA model fit, the structural model fit needs to be assessed by multiple GOF statistics, including one absolute index (i.e., GFI, RMSEA, or SRMR), one incremental index (i.e., CFI or TLI), and the $\chi 2$ value and the associated *df* of the model at a minimum, which are recommended by Hair et al. (2010). Second, after the measurement of the structural model's GOF statistics, the next procedure is to compare the CFA model fit and the structural model fit. In general, the closer the GOF statistics of structural model comes to that of measurement model, the better the structural model fit. This is due to the measurement model fit that offers an upper bound to the GOF statistics of the structural model (Hair et al., 2010). However, it does need to follow the standard cut-off values on key GOF statistics (i.e., above 0.95) if sample size is large, and if a model is complex with a number of measured variables and parameter estimates (Hair et al., 2010). Finally, the variance explained estimates for the endogenous constructs need to be observed. The variance explained estimates are commonly obtained by the analysis of R^2 in multiple regressions and are measured by SMC in SEM/AMOS (Hair et al., 2010; Kline, 2010).

Based on the suggested procedure, the full structural model with 52 items is presented in Figure 6.28. Moreover, the result of GOF statistics in the structural model is shown in Table 6.53 below.

Figure 6.28. Full structural model

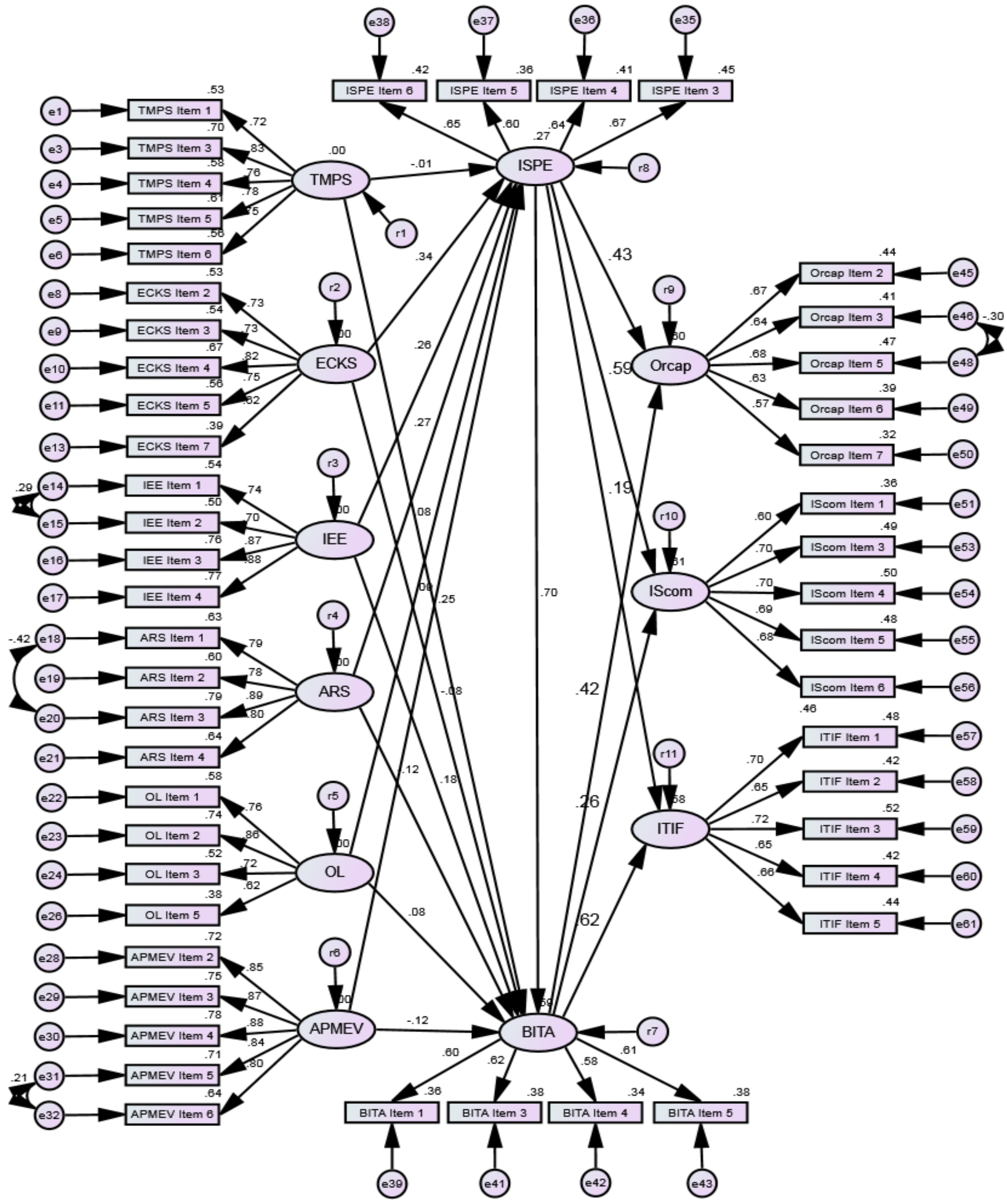


Table 6.53. The result of GOF statistics for structural model

CMIN/df	1.569	CFI	***.927***	PCFI	.860
RMSEA	.042	IFI	***.927***		
RMR	.031	NFI	***.822***	PNFI	.763
SRMR	.048	TLI	***.921***		

As seen in the above table, the model's normed chi-square (CMIN/df) was within the acceptable range (1.569) and the absolute fit index values, such as RMSEA, RMR and

SRMR, which were 0.042, 0.031 and 0.048, respectively, were within the admissible range. The model's incremental fit indices did reach the threshold value of 0.95 set up by the study. The values of CFI, IFI, NFI and TLI were 0.927, 0.927, 0.822 and 0.921 respectively. However, CFI and TLI values of more than 0.90 are normally related to a model that fits well (Hair et al., 2010; Holmes-Smith, 2007). The NFI is also proposed by the CFI and sample size. The CFI should be the first index of choice between the two (Bentler, 1990). Although the NFI threshold value is a little less than the acceptable range, the model fit can still be appropriate. The model's parsimony-fit indices values were also acceptable in terms of PCFI and PNFI, which were relatively higher value than the CFA measurement model.

To further validate the structural model, the GOF statistics of the structured model (Table 6.53) were compared to that of CFA measurement model (Table 6.50). According to the result, the GOF statistics of CFA measurement models had better GOF statistics than that of structural model, but the difference of the values was very small. For example, the difference of CFI and RMSEA between the structural and the measurement model was 0.06 and 0.01 respectively. Furthermore, the difference of the normed chi-square between the structural and measurement model equalled 0.048. Hence, the result satisfied the recommendation of Hair et al. (2010), which is that the CFA measurement model fit normally offers an upper bound to the GOF statistics of the structural model.

As the next step, the SMC was estimated to inspect the extent of variance explained (R^2) for the five dependent constructs, which were IS planning effectiveness (ISPE), business and IT alignment (BITA), organisational capabilities (Orcap), IS competencies

(IScom) and IT infrastructure flexibility (ITIF). Table 6.54 shows the SMC values for the five dependent constructs. This points out that the structural model explains the observed sample data well; thus the variance explained (R^2) appropriately supported the validity of the structural model. Further, as the final assessment for the structural model, Table 6.55 presents the strengths of the structural paths in the model by showing how the research hypotheses were tested.

Table 6.54. Variance Explained

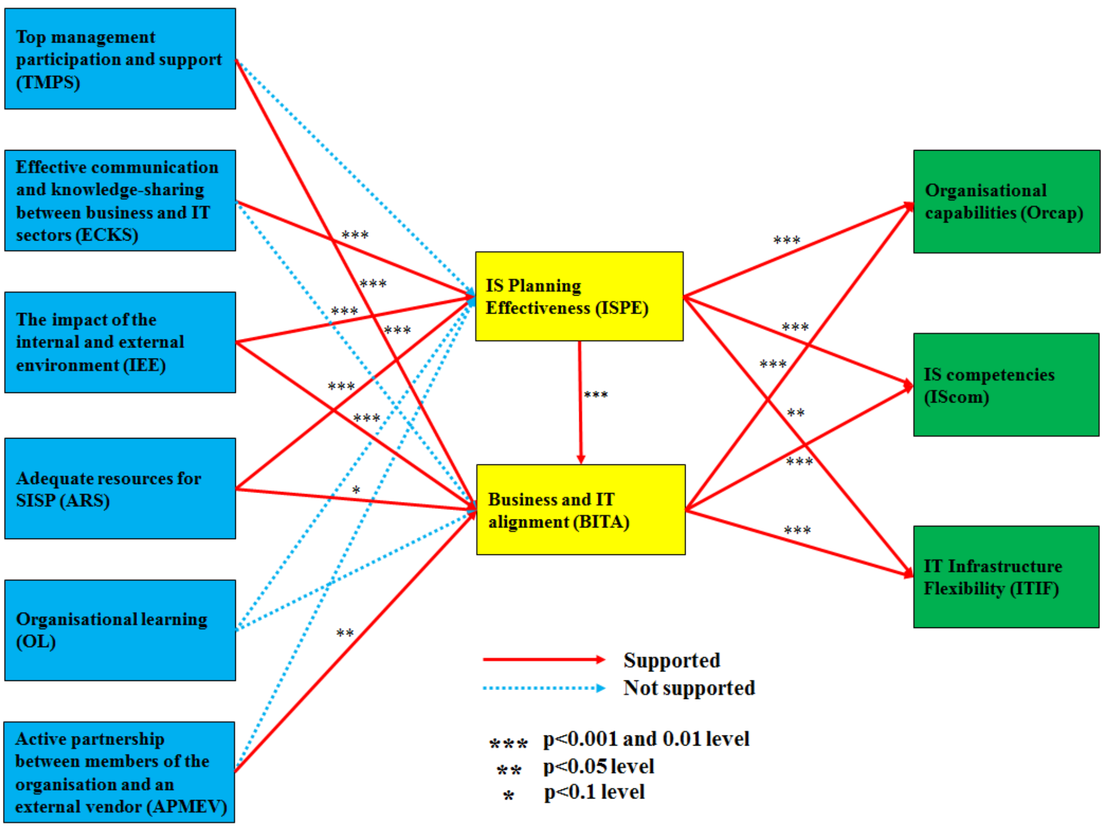
Construct	Variance explained (SMC)
ISPE	0.273
BITA	0.591
Orcap	0.600
IScom	0.613
ITIF	0.579

Table 6.55. Structural Paths

Hypotheses	Relationship			Std estimate	S.E.	C.R.	P	Supported?
H1a	ISPE	<---	TMPS	-0.014	0.041	-0.236	0.814	Not supported
H1b	**ISPE**	<---	**ECKS**	**0.344**	**0.059**	**4.864**	***	**Yes in p<0.001**
H1c	**ISPE**	<---	**IEE**	**0.257**	**0.037**	**4.029**	***	**Yes in p<0.001**
H1d	**ISPE**	<---	**ARS**	**0.274**	**0.042**	**4.313**	***	**Yes in p<0.001**
H1e	ISPE	<---	OL	0.078	0.047	1.243	0.214	Not supported
H1f	ISPE	<---	APMEV	0.089	0.034	1.486	0.137	Not supported
H2a	**BITA**	<---	**TMPS**	**0.25**	**0.042**	**3.96**	***	**Yes in p<0.001**
H2b	BITA	<---	ECKS	-0.081	0.057	-1.188	0.235	Not supported
H2c	**BITA**	<---	**IEE**	**0.176**	**0.037**	**2.742**	**0.006****	**Yes in p<0.01**
H2d	***BITA***	<---	***ARS***	***0.122***	***0.042***	***-1.938***	***0.053#***	***Yes in p<0.1***
H2e	BITA	<---	OL	0.075	0.046	1.243	0.214	Not supported
H2f	**BITA**	<---	**APMEV**	**-0.122**	**0.034**	**-2.073**	**0.038***	**Yes in p<0.05**
H3	**BITA**	<---	**ISPE**	**0.7**	**0.109**	**6.497**	***	**Yes in p<0.001**
H4a	**Orcap**	<---	**ISPE**	**0.427**	**0.103**	**4.278**	***	**Yes in p<0.001**
H4b	**IScom**	<---	**ISPE**	**0.586**	**0.113**	**5.655**	***	**Yes in p<0.001**
H4c	**ITIF**	<---	**ISPE**	**0.188**	**0.109**	**1.996**	**0.046***	**Yes in p<0.05**
H5a	**Orcap**	<---	**BITA**	**0.42**	**0.103**	**4.142**	***	**Yes in p<0.001**
H5b	**IScom**	<---	**BITA**	**0.257**	**0.1**	**2.792**	**0.005****	**Yes in p<0.01**
H5c	**ITIF**	<---	**BITA**	**0.622**	**0.13**	**5.476**	***	**Yes in p<0.001**
(p<0.001= ***, p<0.01= **, p<0.05= * and p<0.1 = #)								

From the 19 theorised structural paths, 11 paths were significant at 99%, two paths were significant at 95% and a path was significant at a 90% confidence interval. That is, the assessment of the structural model revealed that H1b to H1d, H2a, H2c and H2f, H3, H4a to H4c, and H5a to H5b (presented in bold) were supported at more than p<0.5 level. H2d (shown in bold with italic) were also supported at p<0.1 level. However, the rest of the hypotheses (i.e., H1a, H1e H1f, H2b and H2e) were not supported. Figure 6.29 shows the developed research model and the hypotheses testing result.

Figure 6.29. The hypotheses testing result



6.4. Multiple Group Analysis

According to Hair et al. (2010), many SEM applications include analysing groups of respondents from an overall sample to test similarities and differences between those populations through dividing it by purposeful characteristic, including age and gender of respondent. Multiple group analysis in a SEM framework is utilised for "testing any number or type of differences between similar models estimated for different groups of respondents; the main purpose is to see if there are differences between individual group models" (Hair et al., 2010, p. 744). Hence, it is a useful analysis to look through several different groups in order to gain all the information about model specification and data for each group (Kline, 2010).

The objective of this analysis was to empirically examine the relationship between the antecedents and impact of SISP success from the dyadic perspectives. Hence, multiple group analysis of the structural model discussed in Section 5.5 was utilised to make a comparison between two independent groups: business managers (150 respondents) and IT managers (167 respondents). The analysis was conducted to ascertain if there was a difference in the findings between the groups of business managers and IT managers.

6.4.1. Multiple group analysis via SEM to test moderating effect

A moderating effect typically happens "when a third variable or construct changes the relationship between two related variables/constructs" (Hair et al., 2010, p. 755). For example, if there is a relationship between two variables that is significantly different between males and females, it is recognised that the relationship is moderated by gender. Multiple group analysis in SEM is normally used to test moderating effects by transforming nonmetric or metric moderating variable into a nonmetric variable (Hair et al., 2010). Since moderation comprises the testing of structural model estimates, the process is known as an extension of the multiple group analysis to test measurement invariance (Hair et al., 2010). There are two common methods utilised to analyse the moderating effect on nonmetric variable by multiple group analysis in AMOS: these are the chi-square different test and the pairwise parameter comparison.

According to Hair et al. (2010), comparison of the differences between models with a chi-square difference test indicates that if the estimates are considered to be equal, the model fit is significantly reduced with an increase in chi-square. If there is a statistical significant difference between models, it indicates that the path estimates are different; thus moderation exists. If the path estimates are not different between the groups, then there is no support for moderation (Hair et al., 2010).

The AMOS program also provides a powerful and unique strategy for multiple group analysis that is known as critical ratio differences (CRDIFF) method. The critical ratio differences method displays a critical ratio for each pair of parameter estimates. It also provides a test of the hypothesis that the two parameters are equal (Byrne, 2010). Hence, this method can produce a listing of critical ratios for the pairwise differences among all parameter estimates (Byrne, 2010). For the pairwise parameter comparison test, critical ratios for differences between two parameters in question are calculated by dividing the difference between the parameter estimates by an estimate of the standard error of the difference (Arbuckle, 2012). The difference between two parameters is seen as z-scores. That is, if the difference between two parameters (z-scores) is above ±2.58, ±1.96 or ±1.645, it is indicated that there is the significance of difference between two parameters at $p<0.01$, $p<0.05$ or $p<0.1$. This indicates that the difference between two parameters is significant at the 99, 95 or 90 percent respectively.

6.4.2. Moderating effect analysis between business managers and IT managers

In this study, the multiple-group moderating effect is utilised to ascertain whether the hypothesised model is different between business managers and IT managers. Table 6.56 presents the result of regression weights on two different groups, including 150 business managers and 167 IT managers, with the level of the parameters between two groups. The table shows the results of the critical ratio for difference between the business and the IT managers on each hypothesis.

Table 6.56. The result of regression weights of business and IT managers with CRDIFF

Hypothesis	Business managers				IS/IT managers				CRDIFF*
	Std estimate	S.E	P	Label	Std estimate	S.E	P	Label	
H1a	.135	.068	.142	par_44	-.064	.051	.411	par_106	**-1.667**
H1b	.195	.091	.040	par_45	.432	.079	***	par_107	1.334
H1c	.249	.058	.007	par_46	.328	.050	***	par_108	0.52
H1d	.223	.073	.015	par_47	.399	.052	***	par_109	0.72
H1e	.003	.080	.976	par_48	-.063	.057	.429	par_110	-0.48
H1f	.154	.057	.084	par_49	-.061	.043	.427	par_111	**-1.86**
H2a	.164	.040	.005	par_50	.087	.029	.099	par_112	-1.313
H2b	.143	.052	.013	par_51	-.148	.051	.050	par_113	**-3.319**
H2c	.076	.029	.128	par_52	-.065	.029	.262	par_114	**-1.868**
H2d	-.063	.035	.188	par_53	-.222	.043	.008	par_115	-1.21
H2e	.088	.041	.079	par_54	.179	.042	.011	par_116	0.586
H2f	-.039	.027	.386	par_55	.028	.022	.553	par_117	1.046
H3	.830	.134	***	par_56	1.113	.166	***	par_118	0.766
H4a	-.410	.215	.093	par_57	-.793	.396	.063	par_119	-0.833
H4b	.028	.204	.890	par_58	-.669	.445	.093	par_120	-1.586
H4c	-1.073	.405	.004	par_59	-.036	.307	.897	par_121	**2.191**
H5a	1.233	.270	***	par_60	1.546	.520	.001	par_122	0.922
H5b	.738	.236	***	par_61	1.456	.578	***	par_123	**1.802**
H5c	1.725	.477	***	par_62	.765	.392	.010	par_124	-1.589

CRDIFF*: Critical ratio for difference between parameters (i.e., z-scores of business managers and IT Managers). CRDIFF is more than ±2.58 (99%), ±1.96 (95%) and ±1.645 (90%), and then there is a difference between business managers and IT managers.

According to the results of the critical ratio for the difference between two groups in the relationship between antecedents and IS planning effectiveness, there were two hypothesis; these were H1a: -1.667 and H1f: -1.86, which revealed above |1.645| in z-scores. That is, there was a moderating effect between business managers and IT managers on the relationship between TMPS and ISPE, and between APMEV and ISPE at 90 percent ($p<0.1$).

In case of the relationship between antecedents and business and IT alignment, there were two hypotheses, H2b: -3.319 and H2c: -1.868, which revealed above |2.58| and |1.645| in a critical ratio. This indicates that there was a significance of difference between business managers and IT managers in the relationship between ECKS and BITA at 99 percent and between IEE and BITA at 90 percent. Thus, it was identified that there was a moderating effect between business managers and IT managers in these two relationships.

It was identified that there was a significance of difference between business managers and IT managers in the relationship between ISPE and ITIF (H4c: 2.191) and between BITA and IScom (H5b: 1.802). Thus, there was a moderating effect of 95 and 90 % between business managers and IT managers in these two relationships. However, there was no moderating effect between two groups in the rest of the hypothesis (H1b to H1e, H2a, H2d to H2f, H3, H4a and H4b, and H5a and H5c).

Table 6.57 shows the result of the hypotheses testing on each group of business and IT managers, with overall hypotheses testing of the structural model displayed in Table 6.55, and the result of the moderating effect regarding the relationship of each hypothesis. This means that the perspective and recognition of the importance of each construct and relationship can differ somewhat between business and IT managers.

Table 6.57. The results of hypotheses testing in business–IT manager with moderating effect

Relationship			Hypothesis support?			Moderating effect
			Business managers	IT managers	Overall (Table 6.55)	
ISPE	←	TMPS	Not supported	Not supported	Not supported	***Yes in p<0.1***
ISPE	←	ECKS	**Yes**	**Yes**	**Yes**	No
ISPE	←	IEE	**Yes**	**Yes**	**Yes**	No
ISPE	←	ARS	**Yes**	**Yes**	**Yes**	No
ISPE	←	OL	Not supported	Not supported	Not supported	No
ISPE	←	APMEV	***Yes in p<0.1***	Not supported	Not supported	***Yes in p<0.1***
BITA	←	TMPS	**Yes**	***Yes in p<0.1***	**Yes**	No
BITA	←	ECKS	**Yes**	***Yes in p<0.1***	Not supported	**Yes**
BITA	←	IEE	Not supported	Not supported	**Yes**	***Yes in p<0.1***
BITA	←	ARS	Not supported	**Yes**	***Yes in p<0.1***	No
BITA	←	OL	***Yes in p<0.1***	**Yes**	Not supported	No
BITA	←	APMEV	Not supported	Not supported	**Yes**	No
ISPE	←	BITA	**Yes**	**Yes**	**Yes**	No
Orcap	←	ISPE	***Yes in p<0.1***	***Yes in p<0.1***	**Yes**	No
IScom	←	ISPE	Not supported	***Yes in p<0.1***	**Yes**	No
ITIF	←	ISPE	**Yes**	Not supported	**Yes**	**Yes**
Orcap	←	BITA	**Yes**	**Yes**	**Yes**	No
IScom	←	BITA	**Yes**	**Yes**	**Yes**	***Yes in p<0.1***
ITIF	←	BITA	**Yes**	**Yes**	**Yes**	No

6.5. Conclusion

As the second part of the survey, the instrument validation and measurement model by utilising the EFA and CFA was achieved to ensure and validate that the measurement instrument turned out to be both valid and reliable. The procedures for instrument validation included content validity, measurement purification and construct validity. The result of the measure purification using Cronbach's Alpha showed that the Alpha value of all constructs was more than 0.8, which exceeded the set-up threshold. After the procedure, the research instrument remained at 62 items from 11 constructs. The outcome of EFA showed that all items of the eleven constructs loaded as expected on their constructs and had significant factor loadings (above 0.60), so that no items were dropped. After the EFA, CFA utilising AMOS was conducted to further test for the construct validity of the measurement model.

Sections 6.2.6 to 6.2.10 describe how the construct validity of the measurement model using CFA/AMOS was assessed. The congeneric measurement model for antecedents, the successful outcomes of SISP and the impact of SISP success were first assessed by one measure, or a combination of the following measures: goodness of fitness (GOF) statistics, squared multiple correlation (SMC) and standardised factor loadings (SFL). Based on these measures, one or two items of each construct were deleted to improve the overall value of GOF indices.

Although, in total, 12 items from nine constructs were eliminated among 62 items of 11 constructs from the congeneric measurement model, the remaining items adequately reflected the constructs they were measuring. SEM was then employed to measure the convergent and discriminant validity of each measurement model for the three constructs (antecedents, the successful outcomes of SISP and the impact of SISP success). It was also used to measure the whole measurement model with average variance extracted (AVE) and construct reliability (CR). As a result, the final full measurement model presented in Section 6.2.10 was proposed with sufficient convergent and discriminant validity as well as with acceptable results of GOF statistics. That is, the measurement instrument in the research model was proved to be valid and reliable.

This chapter further assessed the structural model that was built by the CFA measurement model. It also addressed the testing of the research hypotheses. The main objective of this part was to analyse and discuss how the findings of this study could answer the proposed research questions. The structural model was then validated by three themes: (1) comparing GOF statistics of the CFA measurement model and the structural model, (2) estimating variance explained and (3) testing the hypothesised paths. In most cases, the direction of theorised paths was almost consistent with the theorised model; thus, the model was identified as valid. It was confirmed from the analysis that among 19 hypotheses, 11 hypotheses were significant at a 99% confidence level, two hypotheses were significant at a 95% confidence level and one hypothesis was significant at a 90% confidence level.

Finally, multiple group analysis between business and IT managers using moderating effect of the structural model was undertaken by the pairwise parameter comparison test in AMOS. The main purpose of the analysis was to examine and identify whether or not the business groups and IT groups had different opinions or perspectives on the relationship between antecedents and impact of SISP success. From the analysis, it was confirmed that there was a moderating effect between business group and IT group regarding the six relationships within the organisation.

The following chapter addresses the discussion of findings obtained from the result of the interview and the survey.

CHAPTER 7 Discussion of Findings

7.1. Introduction

The main objective of this chapter is to present and discuss the core findings of both the qualitative and quantitative study (i.e., Chapters Four, Five and Six). This chapter summarises the analysis and describes the antecedents that contribute to the successful outcomes of SISP, which led to an improved impact of SISP success in South Korean organisations. Specifically, the focus of the discussion is about the antecedents, the successful outcomes of SISP and the impact of SISP success. The conceptual framework for this study (see Section 4.4) was developed on the basis of prior studies drawn from the literature and the qualitative study with the research objective of seeking to identify and observe the relationship between antecedents of the successful SISP outcomes and the impact of SISP success in South Korean organisations. Thus, this chapter provides the results of the data analysis to answer the research questions. The first section of this chapter commences with SISP in the organisations. Sections 7.3 to 7.5 discuss antecedents essential for successful SISP, the successful outcomes of SISP achieved by identifying the antecedents and the impact obtained from successful SISP. Further, the difference of perspective on the relationship between antecedents and the impact of SISP success between the business and IT manager is addressed in Section 7.6. The next section 7.7 addresses the discussion of the findings and then concludes this chapter in Section 7.8.

7.2. SISP in the Organisations

Earlier literature (Aladwani, 2002; Lientz, 2010; McNurlin et al., 2009; Peppard and Ward, 2016) has asserted that SISP is typically conducted before the start of an IT-related project and it incorporates the project's demands for personnel, IT application and other resources in terms of budget and time. The result of the interviews (see section 4.3.1 for more detail) identified that although the first starting period of SISP in four selected organisations was diverse, all of them undertook SISP prior to their key IT system implementation. The result of the survey (see section 5.3.3 for more detail) also confirmed that of the 317 organisations, 76% of them (242 organisations) conducted their SISP in a formal way with the participation of people from various departments, but 24% (75 organisations) undertook SISP in an informal way with the participation of specific members within the organisation. The findings from the study indicate that regardless of the industry, many South Korean organisations currently well recognise the importance of SISP for effectively implementing an IT system.

In terms of the interview question on the objectives of SISP (see section 4.3.1.2 for more detail), the primary objective of SISP stated by six interviewees was business and IT alignment. This finding is in line with the argument of earlier studies (Earl, 1993; Maharaj and Brown, 2015; Reich and Benbasat, 2000; Teo, 2009) that business and IT alignment is regarded as the primary objective while undertaking SISP in organisations. Further, prompt and transparent decision making and the facilitation of communication and knowledge sharing with all members throughout the organisation were represented by eight and six interviewees respectively. These results are consistent with the view in prior literature that improving transparency of decision making for business management (Cassidy, 2006; Peppard and Ward, 2016), and communication and knowledge sharing between stakeholders (Earl, 1993; Lee and Pai, 2003; Yeh et al., 2011) are one of the important objectives for SISP.

In particular, there were some objectives stated by several interviewees, but few of these been put forward in earlier studies, such as the importance of maintaining consistency of business management and support in all companies located at home and abroad (five interviewees), resolving inefficiency and differences on the processes (five interviewees), obtaining accurate and reliable information and data for providing better services (two interviewees) and promoting automation of business operation and transaction (one interviewee). Based on the results of the qualitative interview, eight objectives of SISP were proposed for the quantitative survey. Of the eight objectives, the most important four objectives of SISP according to the respondents were to enhance the promptness of decision-making (78%) followed by the commitment to upgrade overall efficiency of processes (77%), to promote automation of business management and transactions (75%) and to improve business and IT alignment (72%). Further, the rest of the four objectives were regarded by a majority of the respondents as important objectives (see section 5.3.3 for more detail). Thus, the findings identified from this study conclude that although the most important objective might be different for each organisation or industry field, most South Korean organisations consider that a number of SISP objectives effectively support their business management and operation as a consequence of a successful SISP.

In the qualitative study, the question about how frequently interviewees preferred to have a SISP review resulted in various answers from the organisations. Some preferred that they range from once a year and at least every two years or three years to no fixed time and period (see section 4.3.1.3 for more detail). However, in the case of the survey, it was identified that 65% of the respondents' (206 out of 317 respondents) organisation undertook SISP, if needed, without a fixed time frame. 26% (85 respondents) responded that the organisation conducted SISP at least once a year. Only 5% and 4% (14 and 12 respondents) of the respondents answered that the organisation undertook SISP twice a year and once every 2-3 years respectively (see section 5.3.3 for more detail). According to a report carried out by the Korea Institute for Electronic Commerce (KIEC, 2009) titled, *The e-business and IT use survey of South Korean organisations*, among the large organisations conducting SISP (over 1,000 employees), 57.2% of organisations normally review their SISP every two years, 26.8% of them undertake the review every year and 16% of them carry out the review every three years. The findings of this study concluded that although the frequency of the SISP review varies depending on each organisation, most South Korean organisations check and monitor their SISP process on a regular basis by recognising the importance of SISP review.

In particular, it was identified from the qualitative interview that to the exclusion of Organisation B, three organisations undertook the SISP with an external vendor, such as business consultants and IT developers. Both the BM and ITM of Organisation C and D highlighted that the manufacturing and banking industry is highly dependent on the ability of an external vendor due to their insufficient capabilities and resources. In the survey, there were 59% of the respondents (188 out of 317 respondents) who stated that the organisations undertook the SISP with an external vendor. This finding is in line with the result of Grant et al. (2010) and Teo and Ang (2001) in which organisations normally appoint some experts outside the organisation, such as business consultants and IT developers to undertake SISP due to the lack of internal capabilities in their activities and limited internal resources (Peppard and Ward, 2016). Thus, this finding concluded that regardless of the industry and size, a majority of organisations in South Korea undertake SISP with an external vendor. Their high level of dependence on the external vendor also shows that most South Korean organisations do not have suitable capabilities and resources to undertake SISP independently yet.

7.3. Factors Essential for Successful SISP

This section concentrates on addressing the results of the eight interviews regarding antecedents essential for successful SISP. As indicated in Chapter Four, there were six antecedents that helped the South Korean organisations conduct SISP successfully. This result also enabled the researcher to test the relationship between antecedents and the successful outcomes of SISP with two main hypotheses and their subsidiary hypotheses in the survey, as presented in the section 7.4. The discussion of each factor will be presented in the following section.

7.3.1. Top management participation and support

The results of the data analysis from the interviews show that top management's continuous participation and support with high interest in and understanding of SISP is an important factor for undertaking SISP successfully and it was confirmed by all interviewees in the identified South Korean organisations. This result confirms the argument of Basu et al. (2002), Khan et al. (2013), Kearns (2006), Philip (2009) and Teo and Ang (2001) that top management participation and support is a critical factor for successful SISP. In particular, four managers (the CEO and the ITM in Organisation A, and the BM in Organisation B and D) stated that it was the most important factor considered during SISP.

It was found from the interviews that there were two South Korean organisations that had experienced high level of top management participation and support, but the rest of two organisations did not. The interviewees in Organisation A and C answered that a high level of top management participation and support, and their open-mind and positive thinking on SISP and IT project enabled the project team to gain a large scale budget and timeframe for conducting the project successfully. Their support also enabled members of the organisations' different departments to have a high interest in the project and to actively communicate, collaborate and share their knowledge and opinions on the project. On the other hand, the interviewees in Organisation B and D stated that before the beginning of the SISP, top management's interest and support level was not high as top management had brought a conservative approach and mind to SISP and did not want to spend a large amount of budget, HR and time.

This finding is consistent with the result of Jitpaiboon et al. (2010) and Young and Jordan (2008) in which improved top management support plays an important role in the selection and prioritisation of IT investment. Earlier studies (Bhattacharjya and Venable, 2006; Lee and Pai, 2003; Kearns and Sabherwal, 2006; Pai, 2006) have also indicated that improving cooperation and involvement between different departments and stakeholders in SISP is important. However, their indifference and insufficient support resulted in restricted returns on IT investment (Earl and Feeny, 2000; Kearns and Sabherwal, 2007; Oh and Pinsonneault, 2007) and issues in resource allocation

(Kappelman et al., 2006; Stemberger et al., 2011; Teo and Ang, 2001).

The four managers in Organisation B and D stated that to increase top management's interest and recognition, the project team performed benchmarking or case studies to show top management the current environments and trends of the SISP and IT system, and to explain the advantages and disadvantages of the existing processes and IT systems. They argued that the effort enabled the project team to successfully gain a large scale of investment and support from top management. This finding can be explained by existing studies (Chi et al., 2005; King, 2009; Newkirk et al., 2008) that argue that to undertake successful SISP, it is essential for all members in organisations, including top management, to recognise the importance of environmental changes and trends to adequately plan business and IT objectives and strategies as well as to meet the present and future requirements for SISP.

Thus, top management participation and support enabled the organisations to enhance the level of SISP success by building proper business and IT goals and strategies (the BM in Organisation A and B, and the ITM in Organisation A, C and D) and effective alignment business and IT processes (the BM in Organisation B and C, and the ITM in Organisation C and D) (see section 4.3.2 for more detail).

The key finding from the interviews is that top management participation and support is a vital factor that leads to achieving successful SISP in South Korean organisations by providing proper budget and time as well as improving members' communication and collaboration. The degree of SISP success is highly dependent on how adequately top management is aware of the importance of SISP and the level of its interest in it.

7.3.2. Effective communication and knowledge sharing between business and IT stakeholders

All interviewees regarded communication and knowledge sharing by a collaborative relationship between business and IT stakeholders as one of the most important factors to undertake SISP successfully. In particular, four respondents (the ITM in Organisation B, C and D, and the BM in Organisation C) emphasised that this factor was the most important one among the identified factors. This result is congruent with the finding of Campbell et al. (2005), Pai (2006), Philip (2009) and Segars and Grover (1999) in which communication and knowledge sharing between business and IT stakeholders are important to conduct SISP successfully.

All interviewees stressed that communication and knowledge sharing on SISP and IT project in the past was not high. This was due to due to members' indifference, their passive attitude and habits (four interviewees), and a low interest and participation rate of business members for the SISP (two interviewees) and the pursuit of a top-down approach with an external vendor (four interviewees). The above findings are consistent with earlier studies that suggest, due to the concern of individualism, employees in many organisations were less willing to share personal knowledge (Constant et al., 1994); thus there is a gap that exists between business requirements and the ability of IT personnel to recognise these requirements (Kovacic, 2004). The results obtained from only an outside vendor without adequate discussion and collaboration with members of the organisation may negatively affect the success of IT project (Grover et al., 1996).

The three respondents (the CEO in Organisation A, and the ITM in Organisation B and C) suggested that poor communication and knowledge sharing between business and IT sectors caused an inadequate alignment of business and IT objectives and strategies. This result is in line with the finding of Campbell et al. (2005) and Luftman and Brier (1999), suggesting that insufficient communication and knowledge sharing leads to the result that business stakeholders do not understand IT and vice versa, so that it prevents organisations from achieving successful business and IT alignment.

However, all interviewees stressed that the organisations in the current SISP focused more on communication and knowledge sharing between business and IT members to decrease gaps of opinions and views between business and IT sectors, and to promote their understanding on the importance of SISP and IT implementation. Prior studies have identified that effective communication and knowledge sharing helps to identify risks and opportunities (Cassidy, 2006) and to reduce organisational resistance on the SISP task (Lee and Bai, 2003). It also encourages both business and IT stakeholders to have a clear understanding of business and IT goals and strategies in the organisation (Bhattacharjya and Venable, 2006; Luftman, 2000).

Thus, five managers (the BM in Organisation B, C and D, and the ITM in Organisation B and D) indicated that effective communication and knowledge sharing encouraged the organisations to enhance overall planning effectiveness by appropriately allocating resources for SISP, such as budget, people and time at the planning stage. Further, six interviewees commented that it enabled them to achieve effective alignment by setting clear directions and priorities for business and IT goals and strategies.

The key finding from the interviews was that effective communication and knowledge sharing between business and IT stakeholders is an essential factor that enables South Korean organisations to achieve successful SISP. Moreover, it has a positive influence on improved consideration of other essential factors, including an adequate allocation of SISP resources and an understanding of the internal situation of the organisation.

7.3.3. The impact of the internal and external environment

The results of the data analysis from the interviews showed that all selected South Korean organisations considered their internal and external environmental factors to conduct SISP successfully as one of the most important factors. These findings are in line with previous claims that it is essential to recognise complex relationships between various internal and external environments to undertake SISP successfully (King, 2009) because it helps the organisations understand the impact of the environment and better respond to it (Chi et al., 2005; Newkirk et al., 2008).

All eight interviewees stated that the organisations performed benchmarking studies on leading organisations to adequately understand the current business and IT changes, issues and trends. The benchmarking studies enabled the organisations to analyse and compare strengths and weaknesses (or advantages and disadvantages) on existing planning structures and IT systems with those of other organisations. These studies encouraged business and IT members to become aware of change and risk management (the ITM in Organisation C) and to improve understanding on the necessity of the new SISP and IT project (the BM and ITM in Organisation D). Further, these studies motivated top management to change their conservative mindset (the ITM in Organisation D). The term benchmarking is defined as a continuous, systematic process for evaluating the products, services, and work processes of organisations that are regarded as representing best practices, for the objective of organisational improvement (Spendolini, 1992). The elements in the benchmarking process typically comprise the search for best practice, collecting information on best practices and improving superior performance through comparing and reviewing an organisation's processes and structures against best practice anywhere in the world to gain information which will support an organisation to improve its processes and structures (Anand and Kodali, 2008; Muhammad, 2015).

It was identified by the interviews that a proper understanding of internal and external environments encouraged the organisations to improve overall planning effectiveness by building advanced business and IT architectures (five interviewees) and realising effective business and IT plans (five interviewees). Moreover, it was suggested by six interviewees that it enabled the organisation to facilitate the level of business and IT alignment (the BM in Organisation B and C and all ITMs).

The key findings from these interviews showed a summary of points about the necessity of taking into account the impact of internal and external environment to undertake SISP successfully in the four South Korean organisations. The proper understanding of internal and external environmental factors based on the benchmarking studies of other top organisations encouraged the organisations to attain successful SISP by comparing and analysing their existing business and IT processes and systems as well as building effective architectures and plans. Further, the interviewees confirmed that the proper understanding of internal and external environmental factors had a positive influence on other factors that were related to successful SISP, such as business and IT members' improved awareness of change and risk management, and an understanding of SISP and IT projects as well as a change in top management's conservative mindset.

7.3.4. Adequate resources for SISP

The results emerged from the interviews indicated that four interviewees in Organisation B and D agreed that adequate resource allocation, such as budget, HR and the period of time dedicated to SISP and IT project was an essential factor for completing the project successfully. This finding is congruent with the result of Batra et al. (2016), Brown (2004), Cassidy (2006), King and Teo (1997) and Premkumar and King (1994) in which SISP success is dependent on how well various resources necessary for SISP are allocated.

The BMs and the ITMs in Organisation B and D claimed that, in the past project, it was not easy for the organisations to determine allocating adequate budget, time and resources for the project. It was due to the interest and support of top management not being high (Organisation B and D) and also due to the external vendor's domination in the IT project (Organisation B). The result is in line with the extant literature (Oh and Pinsonneault, 2007; Tallon et al., 2000; Teo and Ang, 2001) where top management indifference and insufficient interest in SISP and IT project can lead to resources being poorly allocated and investments poorly managed for the project. The two managers in Organisation B commented that this resulted in the loss of their organisations' original objectives and strategies, and reduced the planning efficiency of business and IT processes; as a result, business and IT processes became poorly aligned. Prior studies (King and Teo, 2000; Teo and King, 1997) have indicated that the failure of resources allocation in SISP can cause a lack of alignment between business and IT objectives and strategies.

In particular, it was identified that there was a different perspective on the adequate allocation of resources for SISP between the business and IT manager. For example, the BM and the ITM in Organisation B stated that in the SISP recently undertaken, all resources were adequately allocated into planning stages because of the high interest and support shown by top management (the ITM) and effective communication and knowledge sharing among various members and departments by their recognition of the importance on the project (the BM). This finding is in line with the result of Arora and Rahman (2016), Elbanna (2013), Salmela et al. (2000), and Young and Jordan (2008) where top management participation and support in resource allocation reduces the influence of SISP and IT project issues; so that it leads to achieving successful outcomes of SISP (Gottschalk, 1999b). Business and IT members' cooperative communication in SISP also plays an important role in better shaping the organisation's investment strategy in the planning (Cassidy, 2006; Peppard and Ward, 2016).

Thus, it was agreed by several interviewees that the adequate allocation of resources in SISP enabled the organisations to enhance overall level of planning effectiveness (the BM and the ITM in Organisation B) and the alignment of business and IT processes (the BM in Organisation B, and the ITM in Organisation B and D).

The findings from the interviews indicated that adequate resources for SISP are vital for South Korean organisations to conduct SISP successfully, although the perspective on resource allocation is different depending on whether it reflects that of the business or the IT manager. Further, it was identified that there were some factors important for SISP that could contribute to helping adequate allocation of SISP resources.

7.3.5. Organisational learning

The results of the data analysis from the interviews showed that seven interviewees except for the CEO in Organisation A highlighted that they considered an essential factor was that continuous organisational learning, related to SISP and IT projects, be made available to members in the organisation. This finding is congruent with the result of Amrollahi et al. (2014), Audy and Lederer (2000), Otim et al. (2009) and Reponen (1998) in which in the context of SISP, organisational learning is regarded as a vital component and an integral part of successful SISP especially due to uncertainty in internal and external environments (Mintzberg et al., 2005).

Five interviewees (the BM in Organisation B and C, and the ITM in Organisation A, B and C) suggested that the learning was not compulsory in the past. Hence, members were without adequate knowledge and understanding of the implemented process and IT system. This finding is in line with previous claim of Otim et al. (2009) that without organisational learning in the planning stages, it would be difficult for users of the organisation to suitably understand the anticipated solutions to potential issues. In the case of Organisation B, SISP and IT projects were dominated by an external vendor without any learning on the project being made available, so members lacked an adequate interest and understanding of business and IT environmental changes and trends in the industry. Prior studies (Earl, 1996; Bahli and Rivard, 2003) have argued that if an organisation works on an IT-related project with an external vendor, poor organisational learning of client personnel on business and IT applications and processes can result.

The seven interviewees stated that in the SISP currently undertaken, the organisations have fully recognised the necessity and importance of organisational learning, so they are now providing this compulsory learning to their members both online and offline. The interviewees maintained that the organisational learning enabled all members of the organisation to be aware of and to understand the impact and necessity of IT for business execution (all interviewees), to enhance an understanding about external environments and trends (all interviewees) and to promote a sense of responsibility (the ITM in Organisation B) and communication and cooperation between different teams (three interviewees) regarding SISP and IT projects. These findings are consistent with earlier studies, in which organisational learning enables members of the organisation to obtain information so as to be well aware of the impact of IT applications (Olfman and Pitsatorn, 2000) as well as being able to positively improve their understanding of external surroundings and trends (Newkirk et al., 2009; Otim et al., 2009). Organisational learning also contributes to improving the likelihood of SISP success based on enhanced leadership (Audy and Lederer, 2000) and the collaboration (Kang and Santhanam, 2003; Newkirk and Lederer, 2006; Sabherwal et al., 2009) of SISP participants. Thus, it was identified that organisational learning encouraged the organisations to realise successful SISP by establishing appropriate business and IT objectives and strategies (Organisation D) and effective business and IT alignment (Organisation A, B and C).

The findings from the interviews indicated that performing compulsory organisational learning before/during SISP is an essential factor for successful SISP in South Korean organisations. Further, organisational learning enables members in the organisation to promote awareness of other important factors considered for SISP undertaking.

7.3.6. Active partnership between members of the organisation and an external vendor

The results of the data analysis from the interviews showed that six interviewees in Organisation B, C and D agreed that an active partnership between members in the organisation and an external vendor was essential. It was imperative that the vendor had the proper capability, experience, and leadership level to undertake SISP and IT project successfully. In the case of two interviewees in Organisation A, they commented that the organisation undertook SISP successfully with the external vendor, but they did not offer any further comments on the partnership. The partnership between members of the organisation and an external vendor plays a critical part in the success of IT-related tasks (Mohr and Spekman, 1994; Venkatraman and Loh, 1994) although there has been little SISP study to observe the partnership.

It was identified by three interviewees in Organisation B and D that undertaking SISP with an external vendor is very common in most South Korean manufacturing and banking industries because of their deficient capabilities and resources for conducting the SISP process independently. Through the importance of the partnership, however, all interviewees in three organisations highlighted that they experienced some issues through trials and error due to their limited knowledge and understanding of business cultures and the processes of the organisations (four interviewees), insufficient collaboration and communication with various departmental members (all interviewees) and adherence to the top-down approach of the vendor (three interviewees). It led to the spending of a huge sum in additional costs, resources and time, so that the issue caused the organisation replace the vendor with a new vendor in the early stage (Organisation C) and change the vendor's project manager and several members with other ones in the middle stage to complete the project successfully (Organisation D). This result is consistent with the finding of Ko et al. (2005) in which the failure of a partnership with an external vendor was found to be associated to negative affects the information acquisition and information acquisition. The wide range of risks regarding insufficient partnership also results in unexpected escalated budgets, loss of control over outsourced functions and loss of organisational competencies (Bahli and Rivard, 2003; Earl, 1996). Therefore, the results obtained from only outside without the adequate discussion and partnership with internal members of the organisation might not guarantee the success of this IT project (Grover et al., 1996).

Four managers in Organisation B and D stated that a poor partnership between internal members of the organisation and the external vendor produced an unsatisfactory level of planning efficiency and business and IT alignment. This result is consistent with the finding of Onita and Dhaliwal (2011), suggesting that misalignment can result if an organisation has only a top-down orientation or has only a totally opposite bottom-up orientation. Poor partnership at all possible levels for achieving a successful alignment of business and IT objectives and strategies has thus been stressed by Campbell et al. (2005) as one of the aspects of a poor alignment. Thus, the issues of poor partnership became the main reason for Organisation B to conduct the SISP independently without any help from an outside vendor. The BM stressed that the internal human resources should be the people who know about both the present situation of the organisation and the importance of SISP better than any others. This finding is in line with previous claims that the good internal partnership enables organisations to effectively build their business objectives and strategies, and share risks and benefits with their members (Henderson, 1990; Mohr and Spekman, 1994). Since SISP is the task that needs in-depth understanding of the organisation to make a link between the business strategy and IS mission (King, 2007), it is necessary that intimate discussions are held and partnership are formed between internal members who are participating in the process (Herath and Kishore, 2009).

It was found by the ITM in Organisation B and D that it is vital for the organisation to consider the partnership level of an external vendor as the first priority to complete the SISP and IT project successfully. In this regard, the BM in Organisation C emphasised the importance of building a cooperative environment in the organisation for working effectively with an outside vendor. The findings are in line with previous claims that organisations need to pay more attention to considering whether or not outside specialists or outsourcing companies have the adequate communication and partnership expertise or skill with the organisation personnel (Baldwin et al., 2001; Willcocks et al., 2004). Further, organisations need to understand their business processes on a strategic level before/when they intend to work together with outside vendors (Herath and Kishore, 2009).

The findings from the interviews confirm that active partnership between members in the organisations and an external vendor is an important factor to undertake successful SISP because a number of South Korean organisations currently undertake their SISP with an external vendor. It was identified that to minimise the waste of unexpected costs, resources and time, it is important for South Korean organisations to carefully choose the external vendor based on their knowledge, collaboration and communication level with the internal members. In addition, it is essential for internal members to establish a cooperative environment for working effectively with the vendor based on an adequate understanding of their business and IT processes.

This section of the study presents a summary of important factors for successful SISP that are regareded as antecedents in the four South Korean organisations. There are six antecedents identified from the interview of eight interviewees as well as there is a difference in what is regarded to be the most important antecedents. This difference reflects the varying perspectives held by between the business managers and the IT managers. Most BMs considered top management participation and support as the most important factor, whereas most ITMs regarded effective communication and knowledge sharing as the most important factor. Further, it was identified that each antecedent helped South Korean organisations achieve successful SISP by positively influencing other antecedents. The next section discusses the successful outcomes of SISP achieved by considering the antecedents in South Korean organisations.

7.4. Successful Outcomes of SISP Achieved by Identifying the Antecedents

As mentioned in the previous section, six antecedents were identified as important for conducting successful SISP. The interviewees indicated that the consideration of identified antecedents encouraged the organisation to achieve IS planning effectiveness by better harmonising business and IT directions, opinions and requirements as well as realise effective business and IT alignment by establishing standardised business and IT goals and frameworks. Based on the results of the interview, the relationship between SISP antecedents and the successful outcomes of SISP was hypothesised in three ways for the survey. These three hypotheses were that (1) SISP antecedents positively improve IS planning effectiveness, (2) SISP antecedents positively improve business and IT alignment and (3) the relationship between IS planning effectiveness and business and IT alignment. Therefore, this section discusses the survey findings relating to the three hypotheses, comprising H1a to H1f, H2a to H2f and H3.

7.4.1. Effect of SISP antecedents on improving IS planning effectiveness

As shown in Table 7.1., the result of the hypothesis testing indicated that there were three factors: effective communication and knowledge sharing (ECKS), the impact of internal and external environment (IEE) and adequate resources for SISP (ARS) that positively influenced enhancing IS planning effectiveness. In other words, H1b, H1c and H1d were significant at a 99% confidence interval. However, H1a (top management participation and support: TMPS), H1e (organisational learning: OL) and H1f (active partnership between members of the organisation and an external vendor: APMEV) did not have a statistically significant impact on enhancing IS planning effectiveness.

Table 7.1. The hypotheses testing result of the relationship between antecedents and IS planning effectiveness

Hypotheses	Relationship			Std estimate	P	Supported?
H1a	ISPE	<---	TMPS	-0.014	0.814	Not supported
H1b	**ISPE**	**<---**	**ECKS**	**0.344**	*******	**Yes in p<0.001**
H1c	**ISPE**	**<---**	**IEE**	**0.257**	*******	**Yes in p<0.001**
H1d	**ISPE**	**<---**	**ARS**	**0.274**	*******	**Yes in p<0.001**
H1e	ISPE	<---	OL	0.078	0.214	Not supported
H1f	ISPE	<---	APMEV	0.089	0.137	Not supported

The hypothesis test result in H1a (TMPS) was not a statistically significant influence on enhancing IS planning effectiveness. This result is in contrast to the interview finding, and the information systems (IS) literature commonly identified that top management participation and support in SISP helps improve IS planning effectiveness (Aladwani, 2001; Basu et al., 2002; Premkumar and King, 1994; Segars et al., 1998). One possible explanation is found in the interview result. Both the BM and the ITM in Organisation B and D answered that top management's interest and support level was not sufficient at the beginning of SISP because of its conservative approach and mind to invest a large amount of costs, HR and time. Hence, it became difficult for the project team to progress the SISP effectively. Prior IS study has identified that insufficiency of top management's awareness and interest in SISP is considered as an inhibitor that have a negative influence on SISP success (Cerpa and Verna, 1998; Stemberger et al., 2011; Peppard and Ward, 2016) and being one of the common unsuccessful characteristics of SISP (Griffiths and Hackney, 2001; Salmela et al., 2000). Therefore, top management participation and support without an adequate awareness and understanding about SISP and IT might decrease overall level of IS planning effectiveness. Although top management participation and support does not directly impact the IS planning effectiveness, it would have an indirect effect on the impact of SISP success through the successful outcomes of SISP. This suggests that it is vital for SISP undertakers to make sure the top management group has an adequate perception and understanding of the SISP so as to achieve improved IS planning effectiveness and the impact of SISP success.

The significant positive influence of effective communication and knowledge sharing on the IS planning effectiveness in SISP identified in this study is consistent with the interview result and previous findings in the IS literature (Elbanna, 2008; Lee and Bai, 2003; Pai, 2006; Premkumar and King, 1994). This result suggests that the effective communication and knowledge sharing between business and IT stakeholders plays a direct and important role in achieving the successful outcomes of SISP by providing improved IS planning effectiveness.

The impact of the internal and external environment has a significant direct influence on improving IS planning effectiveness. This result is in line with the finding of the existing literature (Kearns, 2007; Kearns and Lederer, 2004; Raghunathan and Raghunathan, 1991) in which the degree of the internal and external environments is regarded as a vital dimension that leads to achieving IS planning effectiveness. The interview result also confirms that considering internal and external environmental factors encouraged the organisations to achieve successful SISP by understanding current issues and trends, and to become aware of change and risk management. Therefore, this result suggests that the more highly organisations consider internal and external environmental factors, the better they shall realise improved levels of planning effectiveness.

The significant direct influence of adequate resources for SISP identified in this study is consistent with the interview result and previous findings in the IS literature (Batra et al., 2016; Goodhue et al., 1998; Raghunathan and Raghunathan, 1991). If organisations have the adequate resources to undertake SISP, they are more likely to achieve the successful outcomes of SISP based on improved IS planning effectiveness. This suggests that it is critical for SISP undertakers to understand that SISP is the task that needs to be conducted with various resources that will enable the organisations to maximise the successful outcomes of SISP.

Organisational learning has no significantly direct influence on improving IS planning effectiveness. This finding is in contrast to other research that suggests that organisational learning is an important factor for successful SISP (Audy and Lederer, 2000; Huysman et al., 1994; Reponen, 1998; Otim et al., 2009). A possible explanation is found in the result of the interview offered by five managers in Organisation A, B and C that organisational learning did not produce satisfactory results of SISP and IT project in the past, because it was not conducted compulsorily. Another explanation is also found from the answer of the ITM in Organisation A, who suggested that this result was due to most members' passive attitude and lack of interest in the learning. This implies that in the context of South Korean organisations, organisational learning might not be yet undertaken compulsorily, and organisational members might be still inactive in their learning about SISP. Although organisational learning does not directly impact the IS planning effectiveness, it would have an indirect influence on the impact of SISP success through the successful outcomes of SISP. If organisations suitably undertake organisational learning during SISP, it would provide a higher possibility of improving the impact of SISP success, based on a proper understanding of the impact and necessity of IT, and external situations and trends. This suggests that it is important for SISP undertakers to stress to organisational members the importance of organisational learning for the successful outcomes of SISP, so that members might actively engage in the learning during SISP.

According to the hypothesis test outcome, active partnership between members of the organisation and an external vendor (APMEV) as suggested in the interview does not have a statistically significant direct influence on improving IS planning effectiveness. This result was different from that of the qualitative interview, in which this factor was found to be essential for successful SISP. This finding is also in contrast to IS studies (Ko et al., 2005; Mohr and Spekman, 1994; Venkatraman and Loh, 1994) that focus on the partnership between members of the organisation and an external vendor for achieving the success of IT project. The possible reason can be found in the interview outcome of six interviewees, which highlighted the vendor's poor level of communication, knowledge and partnership with the project team members and top-down approach. Prior IS study (Grover et al., 1996) has identified that the outcomes and resources obtained from only outside, without proper discussion and partnership with members of the organisation, might not guarantee the success of IT project. Another reason might be the high dependence on an external vendor regarding SISP and IT-related project that exists in South Korean organisations. Although active partnership between members of the organisation and an external vendor does not directly affect IS planning effectiveness, it would have an indirect effect on the impact of SISP success through the successful outcomes of SISP. This suggests that it is necessary for SISP undertakers in South Korean organisations to fully understand the importance of selecting an external vendor based on the vendor's communication and leadership level and the necessity of the partnership with an external vendor for the successful outcomes of SISP. This would assist the organisation to work effectively with, as well as manage and supervise, the vendor.

7.4.2. Effect of SISP antecedents on improving business and IT alignment

The result of the hypothesis testing as shown in Table 7.2 confirmed that there were four factors, such as TMPS, IEE and ARS that positively affected improving business and IT alignment. In particular, APMEV was a factor that had a statistically significant influence on enhancing business and IT alignment but showed a negative coefficient value. That is, H2a and H2c were supported at a 99% confidence interval, H2d was significant at a 90% confidence interval and H2f was supported at a 95% confidence internal. However, H2b (ECKS) and H2e (OL) did not have a statistically significant impact on enhancing business and IT alignment.

Table 7.2. The hypotheses testing result of the relationship between antecedents and business and IT alignment

Hypotheses	Relationship			Std estimate	P	Supported?
H2a	**BITA**	**<---**	**TMPS**	**0.250**	*******	**Yes in $p<0.001$**
H2b	BITA	<---	ECKS	-0.081	0.235	Not supported
H2c	**BITA**	**<---**	**IEE**	**0.176**	**0.006****	**Yes in $p<0.01$**
H2d	***BITA***	***<---***	***ARS***	***0.122***	***0.053$^{\#}$***	***Yes in $p<0.1$***
H2e	BITA	<---	OL	0.075	0.214	Not supported
H2f	**BITA**	**<---**	**APMEV**	**-0.122**	**0.038***	**Yes in $p<0.05$**

Top management participation and support has a significant direct influence upon improving business and IT alignment on the successful outcomes of SISP. This finding is in line with the interview result and the extant literature (Kearns, 2006; Lin, 2006; Mirchandani and Lederer, 2012) where top management participation and support enables the organisation to better achieve the alignment of the IS plan with the business plan by enhancing the higher quality of SISP. This implies that top management participation in and support of SISP should play a vital role in positively facilitating the level of business and IT alignment to achieve the successful outcomes of SISP in South Korean context.

The effective communication and knowledge sharing between business and IT stakeholders do not have significant direct influence on improving business and IT alignment. This result is in contrast to that of the interview, and the previous studies (Campbell et al., 2005; Pai, 2006; Preston and Karahanna, 2009; Reich and Benbasat, 2000) that consider effective communication and knowledge sharing between business and IT stakeholders as having a positive effect on the alignment of IS strategies with business strategies. A possible explanation can be found in the answer gained from the interview, which was South Korean business and IT members' uncooperative habits, and their low interest and participation in the SISP. If business and IT stakeholders in an organisation do not have cooperative behaviours with a high interest in and understanding of SISP, successful business and IT alignment might not be achieved. Although effective communication and knowledge sharing between business and IT stakeholders do not directly affect business and IT alignment, they have an indirect influence on the impact of SISP success through the successful outcomes of SISP. This suggests that it is necessary for SISP undertakers in South Korean organisations to inform business and IT stakeholders of the importance of effective communication and knowledge sharing for the successful SISP so that they can commit to ultimately engage with the SISP.

The significant positive influence of the impact of the internal and external environment on the business and IT alignment in SISP identified in this study is consistent with the interview result and earlier studies in the IS literature (Brown, 2004; Chi et al., 2005; Kearns and Lederer, 2004; Mirchandani and Lederer, 2012). This indicates that a proper understanding about the impact of the internal and external environment in South Korean organisations plays an essential role in attaining the successful outcomes of SISP based on improved business and IT alignment. Hence, this suggests that the more South Korean organisations recognise the importance of internal and external environmental factors during SISP, the better they shall realise improved levels of business and IT alignment.

Adequate resources for SISP present a significant direct effect on facilitating business and IT alignment and the successful outcomes of SISP. This finding is consistent with the interview result and existing IS studies (Baker et al., 2011; Huang, 2010; Kearns and Sabherwal, 2006; Newkirk and Lederer, 2007), in which greater attention on resource allocation in SISP is regarded as a way to align IS initiatives with business strategy. This suggests that adequate resources for SISP are directly related to an improvement of the overall level of business and IT alignment for achieving the successful outcomes of SISP in South Korean organisations.

Organisational learning has no significant direct influence on facilitating business and IT alignment. This finding is in contrast to the interview findings and other IS studies that argue that organisational learning has a positive influence on a successful SISP outcome that better aligns IS strategies and business strategies (Newkirk and Lederer, 2007; Newkirk et al., 2009; Segars and Grover, 1998). Similar to the result of the relationship between organisational learning and IS planning effectiveness indicated in the interview, the reasons might be due to uncompulsory organisational learning, and most members' inactive habits and lack of interest in most South Korean organisations. Although organisational learning does not directly impact the business and IT alignment, it would have an indirect influence upon the impact of SISP success through the successful outcomes of SISP. This suggests that if organisational learning is performed well by all members during SISP in South Korean organisations, it would provide a higher possibility for them to enhance the impact of SISP success based on an appropriate understanding of the necessity of IT as well as external situations and trends.

Active partnership between members of the organisation and an external vendor has a negative direct effect on enhancing business and IT alignment (β=-.122). Similarly the relationship between antecedents and IS planning effectiveness has a negative direct effect on enhancing business and IT alignment. A possible explanation might be the external vendor's insufficient communication skills and collaboration with the project team members and the vendor's top-down approach. Prior IS study has identified that poor alignment can result if an organisation has only a top-down or bottom-up orientation (Onita and Dhaliwal, 2011). In this regard, communication and partnership at all levels are important to achieve the successful alignment of business and IT processes (Campbell et al., 2005). Therefore, this result suggests that it is important for SISP undertakers of South Korean organisations to recognise the importance of the partnership with an external vendor and to present an alternative to a top-down approach during SISP to achieve successful SISP outcome based on improved business and IT alignment.

7.4.3. The relationship between IS planning effectiveness and business and IT strategic alignment

It was found from the qualitative interview that there were two dimensions measuring the successful outcomes of SISP success achieved by considering various antecedents, including IS planning effectiveness and business and IT alignment. Moreover, it was confirmed that there is a relationship between IS planning effectiveness and business and IT alignment. That is, the identified antecedents encouraged the organisations to improve overall level of IS planning effectiveness; as a result, it led to a positively influenced improving business and IT strategic alignment. Thus, based on this result, the hypothesis Three was proposed to verify whether or not IS planning effectiveness had a positive influence on improving business and IT alignment.

The hypothesis testing result as shown in Table 7.3 provided empirical support that IS planning effectiveness has a positive and direct effect on improving business and IT alignment (β=0.7, $p<0.001$). The hypothesis Three was supported at a 99% confidence interval. Therefore, it was confirmed that the survey result positively supported that of the interview.

Table 7.3. The hypotheses testing result of the relationship between IS planning effectiveness and business and IT alignment

Hypotheses	Relationship			Std estimate	P	Supported?
H3	BITA	<---	ISPE	0.70	***	Yes in p<0.001

This indicates that the achievement of IS planning effectiveness through considering various antecedents is likely to enhance the overall level of business and IT alignment. This finding is consistent with the existing literature in which the outcome of business and IT alignment include improved IS effectiveness and efficiency in the organisation (Karimi, 1988); thus business and IT alignment is regarded as an essential measure of IS planning effectiveness (Newkirk et al., 2008; Silvius and Stoop, 2013). This suggests that it is essential for SISP undertakers in South Korean organisations to understand the importance of these two dimensions and their relationship in order to better measure successful SISP.

This section of the research presents a summary of the survey result of the successful outcomes of SISP achieved by considering the identified antecedents in South Korean organisations. It was confirmed that there are three antecedents (i.e., ECKS, IEE and ARS) that have an effect on improving IS planning effectiveness, and there are four antecedents (i.e., TMPS, IEE, ARS and APMEV) that influence facilitating business and IT alignment. It was also identified that the achievement of IS planning effectiveness has a positive effect on improving the level of business and IT alignment. This result suggests that there are five antecedents that positively affect an improvement in the successful outcomes of SISP as well as there being a relationship between IS planning effectiveness and business and IT alignment in South Korean organisations. The next section discusses the impact of SISP success obtained from successful SISP in South Korean organisations.

7.5. The Impact Obtained from Successful SISP

The interview results provided evidence to support a positive and direct relationship between the successful outcomes of SISP and the impact of SISP success. There were three different impacts identified from eight interviewees in four selected South Korean organisations and these impacts are summarised as follows. The impacts:

1. Enabled the organisations to integrate, recombine, reconfigure and upgrade their overall business and IT processes, resources and structures according to their business objectives and strategies;
2. Encouraged the organisations to enhance an understanding of the potential impact and role of their IT functions, technologies and skills, and to improve consensus and interrelationship between business and IT stakeholders (departments); and
3. Enabled the organisations to build and implement flexible business and IT functions and structures by adapting and responding to internal and external changes, issues and trends promptly.

The first impact is associated with the term of organisational capabilities discussed by Amit and Schoemaker (1993) and Grant (1996), which refer to an organisation's capacity to combine, deploy and reconfigure specialised processes, resources and structures to repeatedly perform a productive task and to obtain a desired goal. Similar views with regard to the second impact are shown in IS competencies. IS competencies typically include a better assignment of impact and role to the IS function (Peppard et al., 2000), effective management of IT assets, such as a competent human and IT resource (Ross et al., 1996), a close partnership between business and IT management (Peppard et al., 2000), and improvement of both managerial IT skills and technical IT skills (Bhatt, 2009). The third impact is consistent with the term of IT infrastructure flexibility proposed by (Byrd and Turner, 2000; Duncan, 1995; Palanisamy, 2005), which refers to the progress of the ability of IT infrastructure to easily and quickly scale and evolve in accordance with the requirements of the market by adapting and responding to the changes and trends of the marketplace.

However, to date there has not been an empirical study to examine the three dimensions at the same time and to observe the relationship between the successful outcomes of SISP and the impact of SISP success. Therefore, it is essential to empirically test how much the successful outcomes of SISP have an influence on improving the level of organisational capabilities, IS competencies and IT infrastructure flexibility. Based on this finding, the relationship between the successful outcomes of SISP and the impact of SISP success was hypothesised for the survey. This relationship can be ssen in the following: (1) IS planning effectiveness has a positive influence upon the impact of SISP success, and (2) business and IT alignment has a positive influence on improving the impact of SISP success.

7.5.1. The effect of IS planning effectiveness on improving the impact of SISP success

IS planning effectiveness was hypothesised to have a positive influence on enhancing organisational capabilities (H4a), IS competencies (H4b) and IT infrastructure flexibility (H4c). The result of the hypotheses testing presented in Table 7.4 confirmed that IS planning effectiveness has a positive influence upon facilitating all dimensions of the impact of SISP success, including Orcap (β=.427, $p<0.001$), IScom (β=.586, $p<0.001$) and ITIF (β=.188, $p<0.05$). This implies that H4a and H4b were at a 99% confidence interval, and H4c was significant at a 95% confidence interval level.

Table 7.4. The hypotheses testing result of the relationship between IS planning effectiveness and the impact of SISP success

Hypotheses	Relationship			Std estimate	P	Supported?
H4a	Orcap	<---	ISPE	0.427	***	Yes in p<0.001
H4b	IScom	<---	ISPE	0.586	***	Yes in p<0.001
H4c	ITIF	<---	ISPE	0.188	0.046*	Yes in p<0.05

IS planning effectiveness was identified to positively affect improving organisational capabilities. This finding is in line with the existing studies in which IS planning effectiveness is achieved by enhancing organisational understanding of business and IT goals and strategies, and their related technologies enable organisations to realise IT-based organisational capabilities (Lee and Pai, 2003; Ramanujam and Venkatraman, 1987; Otim et al., 2009). If South Korean organisations achieve successful SISP, overall IT-based capabilities for successfully implementing and using IT system would increase. This suggests that improved IS planning effectiveness is able to facilitate organisational capabilities to maximise the impact of SISP success.

The IS planning effectiveness does have a significant direct influence on improving IS competencies. Although there are no studies to describe the relationship between IS planning effectiveness and IS competencies, this result can partially be explained by the finding of Peppard and Ward (2004). The two authors argue that the underlying IS competencies are measured by the extent to which IS objectives are incorporated with business objectives for facilitating the IS effectiveness. IS competencies for supporting IT implementation and use in South Korean organisations would increase if organisations realised the successful outcomes of SISP. This suggests that the successful undertaking of SISP would help organisations to better realise IS competencies.

IS planning effectiveness has a direct effect on improving IT infrastructure flexibility. This result is in consistent with the existing studies in the achievement of IS planning effectiveness for improving flexibility of IT processes and structures (Papke-Shields et al., 2002, 2006; Tallon et al., 2000); this is achieved through a response to unexpected organisational and environmental changes (Raghunathan and Raghunathan, 1991; Segars and Grover, 1998). If organisations in South Korea achieved successful outcomes of SISP based on improved IS planning effectiveness, they would increase an overall level of IT infrastructure flexibility for better implementing and using their IT systems. Thus, this suggests that achieving a higher level of IS planning effectiveness would maximise organisational impact by facilitating IT infrastructure flexibility.

7.5.2. The effect of business and IT alignment on improving the impact of SISP success

From the result of the hypotheses testing as presented in Table 7.5, it was confirmed that business and IT strategic alignment has a positive effect on all three dimensions of the impact of SISP success, including Orcap (β=.420, $p<0.001$), IScom (β=.257, $p<0.01$) and ITIF (β=.622, $p<0.001$). This means that H5a, H5b and H5c were significant at a 99% confidence interval.

Table 7.5. The hypotheses testing result of the relationship between business and IT alignment and the impact of SISP success

Hypotheses	Relationship			Std estimate	P	Supported?
H5a	Orcap	<---	BITA	0.420	***	Yes in p<0.001
H5b	IScom	<---	BITA	0.257	0.005^{**}	Yes in p<0.01
H5c	ITIF	<---	BITA	0.622	***	Yes in p<0.001

The business and IT alignment has a significant direct and positive effect on enhancing organisational capabilities. This finding is consistent with the result of Duhan (2007), Peppard and Ward (2004), Ravichandran and Lertwongsatien (2005) and Segars et al. (1994) in which the business and IT alignment is recognised as an important factor for facilitating IT-enabled organisational capabilities through optimising business and IT investments and resources, and through prioritising strategic goals for implementing an IT system in the organisation. The business and IT alignment would directly affect the realising of organisational capabilities in South Korean organisations. This suggests that a better attainment of business and IT alignment is able to facilitate the realisation of organisational capabilities for implementing and using IT systems.

The business and IT alignment has a significant direct influence upon facilitating IS competencies in the impact of SISP success. This finding is consistent with the result of Bhatt (2009), Reich and Benbasat (2000) and Peppard et al. (2000) in which business and IT alignment is identified as an important factor that has an influence in enhancing core IS competencies in organisations. The significant direct relationship between business and IT alignment and IS competencies indicates that if South Korean organisations attain a better alignment of business and IT plans and strategies, they are more likely to realise higher IS competencies. This suggests that the achievement of successful SISP outcomes with business and IT alignment is able to improve overall level of IS competencies in the impact of SISP success.

The significant direct influence of the business and IT alignment on the IT infrastructure flexibility in the impact of SISP success is in line with previous studies (Broadbent et al., 1999b; Tallon and Pinsonneault, 2011). Business and IT alignment provides IT infrastructure flexibility for ensuring strategic business flexibility, such as responding more rapidly to changes and trends of the marketplace (Tallon and Pinsonneault, 2011). If business and IT objectives and strategies in South Korean organisation were suitably aligned with each other, the organisation would improve the level of flexibility of IT infrastructure for better implementing and utilising their IT system. This suggests that the achievement of business and IT alignment is able to help organisations to realise improved flexibility of their IT infrastructure.

In particular, it was confirmed by examining the extent of variance explained (R^2) for the five dependent constructs as shown in Table 7.6 that the structural model signified the observed sample data well; so the variance explained assessment further supported the validity of the structural model.

Table 7.6. Variance Explained

Construct	Variance explained (SMC)
ISPE	0.273
BITA	0.591
Orcap	0.600
IScom	0.613
ITIF	0.579

This section presents the survey result of the impact of SISP success gained from the successful SISP outcomes in South Korean organisations. It was empirically confirmed that both IS planning effectiveness and business and IT alignment has a positive effect on enhancing all three dimensions of the impact of SISP success. This survey result also supports that of the qualitative study. Thus, it is important for SISP undertakers in South Korea to recognise that the successful SISP outcomes achieved by improved IS planning effectiveness and business and IT alignment is more likely to improve the level of the SISP impact. Further, this result suggests the importance of considering three dimensions of the impact to better measure the impact of SISP success.

7.6. The Difference of Perspective on the Relationship between Antecedents and the Impact of SISP Success between Business and IT Manager

Earlier literature (Kearns and Lederer, 2004; Teo and Ang, 2001; Wallace, 2013) has argued that the activities for SISP need to be well-organised, managed and understood by involving various parties, such as top management, business and IT professionals, and frequently external specialists. Due to the participation of various people, there is a difference or gap of perspective and thinking about objectives, plans and strategies between business and IT people during SISP (Lientz, 2010). Hence, SISP is regarded as the task with a collaborative discussion, clarification and in-depth understanding of all parties involving in SISP (McNurlin et al., 2009; Piccoli, 2008) to make the link between the business strategy and IS mission (King, 2007).

Despite the importance of considering the dyadic views in SISP, however, there have not been studies to empirically examine the relationship between the antecedents and impact of SISP success between business and IT manager. Therefore, multiple group analysis of the structural model was conducted to ascertain if there was a difference in the findings between the groups of business managers (150 samples) and IT managers (167 samples). The pairwise parameter comparison test that calculates critical ratios for differences between two parameters in AMOS was utilised as a common method to analyse the moderating effect on the two groups as presented in Table 7.7.

Table 7.7. The result of multiple group analysis on the hypothesised model between business and IT manager

Hypothesis	Business managers			IT managers			CRDIFF*
	Std estimate	P	Label	Std estimate	P	Label	
H1a: ISPE ← TMPS	.135	.142	par_44	-.064	.411	par_106	**-1.667**
H1b: ISPE ← ECKS	.195	.040	par_45	.432	***	par_107	1.334
H1c: ISPE ← IEE	.249	.007	par_46	.328	***	par_108	0.52
H1d: ISPE ← ARS	.223	.015	par_47	.399	***	par_109	0.72
H1e: ISPE ← OL	.003	.976	par_48	-.063	.429	par_110	-0.48
H1f: ISPE ← APMEV	.154	.084	par_49	-.061	.427	par_111	**-1.86**
H2a: BITA ← TMPS	.164	.005	par_50	.087	.099	par_112	-1.313
H2b: BITA ← ECKS	.143	.013	par_51	-.148	.050	par_113	**-3.319**
H2c: BITA ← IEE	.076	.128	par_52	-.065	.262	par_114	**-1.868**
H2d: BITA ← ARS	-.063	.188	par_53	-.222	.008	par_115	-1.21
H2e: BITA ← OL	.088	.079	par_54	.179	.011	par_116	0.586
H2f: BITA ← APMEV	-.039	.386	par_55	.028	.553	par_117	1.046
H3 : ISPE ← BITA	.830	***	par_56	1.113	***	par_118	0.766
H4a: Orcap ← ISPE	-.410	.093	par_57	-.793	.063	par_119	-0.833
H4b: IScom ← ISPE	.028	.890	par_58	-.669	.093	par_120	-1.586
H4c: ITIF ← ISPE	-1.073	.004	par_59	-.036	.897	par_121	**2.191**
H5a: Orcap ← BITA	1.233	***	par_60	1.546	.001	par_122	0.922
H5b: IScom ← BITA	.738	***	par_61	1.456	***	par_123	**1.802**
H5c: ITIF ← BITA	1.725	***	par_62	.765	.010	par_124	-1.589

CRDIFF*: Critical ratio for difference between parameters (i.e., z-scores of business managers and IT Managers). CRDIFF is more than ±2.58 (99%), ±1.96 (95%) and ±1.645 (90%), and then there is a difference between business managers and IT managers.

According to the results of the critical ratio for difference between two groups in the relationship between antecedents and the impact of SISP success, it was confirmed that there was a moderating effect between business managers and IT managers in about six relationships, including ISPE←TMPS, ISPE←APMEV, BITA←ECKS, BITA←IEE, ITIF←ISPE and IScom←BITA. This indicates that the perspective and recognition of the identified relationships differ somewhat between business and IT managers. Thus, in order to maximise organisational impact from successful SISP, it is essential for SISP undertakers in South Korean organisation to minimise differences in viewpoints and opinions between business and IT people during SISP by properly understanding business and IT objectives, plans and strategies of the organisation.

7.7. Summary of Discussion

This section of the study presents a summary of essential factors for successful SISP that are antecedents, the relationship between antecedents and the successful outcomes of SISP, and the relationship between the successful outcomes of SISP and the impact of SISP success, which were obtained from the qualitative and quantitative study. It also describes the difference of perspective on the relationship antecedents and the impact of SISP success between business managers and IT managers, which was identified from multiple group analysis. Table 7.8 shows a summary of the discussion as well as existing studies and comments for similarity and difference. The Table below first indicates a gap in existing studies and presents how this study fills in the gap by showing the results of the study. Furthermore, it provides similarities and differences compared to the existing studies and the South Korean context, and an implication based on the empirical results. Thus, this table shows the level of understanding on the importance of antecedents for achieving successful SISP and the relationship between antecedents and the impact of SISP success as well as the dyadic perspective on the relationship between business and IT people.

Table 7.8. A summary of the discussion

	Existing studies	Research findings – Yang (2017)	What this similar/differs
Antecedents essential for successful SISP	• Although it is vital for organisations to consider various factors to strengthen the level of SISP success (Bechor et al., 2010; Philip, 2009; Peppard and Ward, 2016), there have been few studies to discuss various factors for successful SISP with a more extensive understanding in IS literature and South Korean context • Thus, in this study, there were five antecedents identified from the literature: 1. Top management participation and support (TMPS) 2. Effective communication and knowledge sharing between business and IT stakeholders (ECKS) 3. The impact of internal and external environment (IEE) 4. Adequate resources for SISP (ARS) 5. Organisational learning (OL)	• From the qualitative interviews, the five factors found in the literature were identified as antecedents, which led to successful SISP • Each antecedent helps South Korean organisations achieve successful SISP by positively influencing other antecedents • An antecedent (active partnership between members of the organisation and an external vendor) essential for successful SISP was identified in the South Korean context	• Similarity - It is important for South Korean organisations to consider various antecedents to improve the level of successful SISP - Each antecedent can positively influence other antecedents • Difference - There is a difference of the most important antecedents between business and IT managers in the South Korean context. Most BMs considered top management participation and support as the most important factor, whereas most ITMs regarded effective communication and knowledge sharing as the most important one - There have been few studies that have examined the relationship between a partnership between internal members and an external vendor and SISP success. It was identified that this relationship was important in the South Korean context

Table 7.8. A summary of the discussion (Continued)

	Existing studies	Research findings – Yang (2017)	What this similar/differs
The relationship between antecedents and the successful outcomes of SISP	• The literature has argued that each antecedent plays an essential role in improving an overall level of IS planning effectiveness and realising effective business and IT alignment	• It was identified from the interviews that the consideration of identified antecedents enabled the South Korean organisation to achieve IS planning effectiveness by harmonising business and IT directions and requirements as well as realising business and IT alignment by building a standardised business and IT framework • It was confirmed from the survey that ECKS, IEE and ARS are antecedents that have an effect on enhancing IS planning effectiveness, and TMPS, IEE, ARS and APMEV are those that have an influence on improving business and IT alignment	• Similarity - Considering the identified antecedents enable South Korean organisations to achieve improved IS planning effectiveness and business and IT alignment; thus two dimensions are important to measure the successful outcomes of SISP • Difference - It was identified from the survey that not every antecedent has an effect on improving IS planning effectiveness and business and IT alignment in the South Korean context - According to the interview results, the reason might be most South Korean organisations' top-down approach, members' passive habits, their poor communication and participation, and high dependence on an external vendor during SISP
The relationship between IS planning effectiveness and business and IT alignment	• There have been few studies that directly observe the relationship between IS planning effectiveness and business and IT alignment, but there have been some studies to discuss the relationship - IS planning effectiveness is related to realising its goals by aligning business and IT planning (Papke-Shields et al., 2002, 2006) - The outcome of business and IT alignment includes improved IS effectiveness (Karimi, 1988) - Business and IT alignment is regarded as an important measure of IS planning effectiveness (Newkirk et al., 2008; Silvius and Stoop, 2013)	• From the result of the interviews, it was identified that there is a relationship between IS planning effectiveness and business and IT alignment. That is, the identified antecedents enabled the South Korean organisations to improve the overall level of IS planning effectiveness; as a result, it led to positively influenced and improved business and IT strategic alignment • The survey result also provided empirical support that IS planning effectiveness has a positive and direct effect on improving business and IT alignment. Thus, it was confirmed that the survey result positively supported that of the interview	• Similarity - The two dimensions, including IS planning effectiveness and business and IT alignment, are important to better measure the successful outcomes of SISP in South Korean organisations - There is a positive relationship between IS plannin g effectiveness and business and IT alignment in S outh Korean context. That is, the more highly the organisations in South Korea achieve IS planning effectiveness, the more they will realise business a nd IT alignment

Table 7.8. A summary of the discussion (Continued)

<table>
<tr><th></th><th>Existing studies</th><th>Research findings – Yang (2017)</th><th>What this similar/differs</th></tr>
<tr><td>The relationship between the successful outcomes of SISP and the impact of SISP success</td><td>• There have been some studies to individually observe the relationship between IS planning effectiveness or business and IT alignment and each of the organisational capabilities, IS competencies and IT infrastructure flexibility
- However, despite the importance of the three dimensions to measure the impact of SISP success, there has not been an empirical study to investigate them at the same time and to observe the relationship between the successful outcomes of SISP and the impact of SISP success with the three dimensions</td><td>• It was identified from the interviews that the successful outcomes of SISP enabled the South Korean organisation to realise improved organisational capabilities, IS competencies and IT infrastructure flexibility for implementing successful IT system and sustaining organisational performance and competitive advantage
• It was confirmed from the survey that the two dimensions for the successful outcomes of SISP have a positive effect on improving the three dimensions for the impact of SISP success
• This relationship is also verified important by the examination of variance explained (R^2)</td><td>• Similarity
- All three dimensions, including organisational capabilities, IS competencies and IT infrastructure flexibility, are proven by this study to be important dimensions for measuring the impact of SISP success in South Korean organisations
It was empirically confirmed that there is a positive relationship between the successful outcomes of SISP and the impact of SISP success. This implies that if South Korean organisations undertake SISP successfully, they are more likely to implement a better IT system and to sustain organisational performance and competitive advantage based on improved capabilities and competencies, and flexible infrastructure obtained from the successful SISP outcomes</td></tr>
<tr><td>A difference of view on the relationship between antecedents and the impact of SISP success between business and IT manager</td><td>• There have not been studies to empirically examine the relationship between the antecedents and impact of SISP success between business and IT manager</td><td>• Multiple group analysis of the structural model was conducted to analyse the moderating effect on the two groups
- It was confirmed that there was a moderating effect between business managers and IT managers about six relationships, including ISPE←TMPS, ISPE←APMEV, BITA←ECKS, BITA←IEE, ITIF←ISPE and IScom←BITA
- This indicates that the perspective and recognition on the identified relationships differ somewhat from between business and IT managers</td><td>• Similarity
This empirical result implies that to maximise organisational impact from successful SISP, it is essential for SISP undertakers in South Korean organisations to minimise differences in viewpoints and opinions between business and IT people during SISP by properly understanding business and IT objectives, plans and strategies of the organisation</td></tr>
</table>

Based on the results of both the qualitative and quantitative study shown in the above Table 7.8, the findings of this study have provided valuable insights about the contingency theory and the theory of dynamic capabilities by measuring the relationship between antecedents and the impact of SISP success in South Korean organisations.

Based on the development and validation of the conceptual framework proposed from this study, it was confirmed that the design of the SISP process needs to be undertaken with a close association between various internal and external contingent variables, such as top management participation and support (TMPS), effective communication and knowledge sharing (ECKS), the impact of internal and external environment (IEE), adequate resources for SISP (ARS) and an active partnership between members of the organisations and an external vendor (APMEV) as well as organisational characteristics. This is due to each organisation having different cultures, directions, goals and strategies from each other. As initially proposed in the literature and hypothesised in the survey, the results of the study confirmed that each antecedent played an important role in achieving the successful outcomes of SISP by improving an overall level of planning effectiveness and realising effective business and IT alignment. The aligned, integrated and standardised framework, processes and resources that are produced by the successful outcomes of SISP then enabled South Korean organisations to facilitate sustainable organisational performance and competitive advantage within today's rapidly changing and dynamic environment based on the improvement of organisational capabilities, IS competencies and IT infrastructure flexibility. This relationship was confirmed and validated by both the qualitative and quantitative research.

Hence, the findings of this study provided further evidence on the contingency theory and the theory of dynamic capabilities as well as the complementary competence view that provided valuable insights in order to assess the relationship between antecedents and the impact of SISP success on organisations in South Korea.

7.8. Conclusion

The objective of this chapter was to discuss the core findings of the qualitative and quantitative research. The eight interviews (see Chapter 4) were firstly undertaken to explore antecedents for successful SISP and the impact of SISP success relevant to South Korean organisations and to establish the conceptual framework for the survey. According to the interview result, the five factors identified from the literature review were confirmed as important antecedents to have a positive influence on SISP success in South Korean organisations. In particular, active partnership between members of the organisation and an external vendor was newly identified and turned out to be an antecedent to undertake successful SISP in the South Korean context (see Section 4.3.2 for more detail).

The results of the interview identified that considering various antecedents encouraged the organisations to achieve IS planning effectiveness and business and IT alignment. It was also identified that the higher the achievement of IS planning effectiveness, the better the result of business and IT alignment. Moreover, the successful outcomes of SISP enabled organisations to improve organisational capabilities, IS competencies and IT infrastructure flexibility (see Section 4.3.3 and 4.3.4 for more detail). Thus, the interview findings encouraged the researcher to ensure the importance of six identified antecedents as well as to propose a conceptual framework for the relationship between antecedents and impact of SISP success with five primary hypotheses to empirically test the quantitative survey (see Chapter 5).

The survey finding confirmed that the model is valid and that eleven hypotheses were significant at a 99% confidence interval, two hypotheses were significant at 95% confidence interval and one hypothesis was significant at a 90% confidence interval from the 19 theorised structural paths. The conceptual framework explained 27.3%, 59.1%, 60.0%, 61.3% and 57.9% of the variance in ISPE, BITA, Orcap, IScom and ITIF respectively (see Section 6.3 for more detail). Hence, the findings of this study provided empirical evidence on the research model to measure the relationship between antecedents and the impact of SISP success in South Korean organisations. Further, it was empirically identified from multiple group analysis that there was a significance of difference (or moderating effect) between business and IT managers in six relationships among the hypothesised 19 relationships (see Section 6.4 for more detail).

Based on the results of the qualitative and quantitative study, it was confirmed that the relationship between antecedents and the successful outcomes of SISP provided further evidence on the contingency theory as well as the relationship between the successful outcomes of SISP and the impact of SISP success provided further evidence on the theory of dynamic capabilities.

The following chapter 8, revisits and summarises the main findings of the study as conclusions. It then discusses the theoretical and managerial implications of the key findings of the study as well as outlining the limitations and implications for further research.

CHAPTER 8 Conclusion

8.1. Introduction

The objective of this chapter is to provide a summary of the key findings of the study to show how this study addressed the research questions in order to answer them. The chapter also offers the contributions, limitations, implications and areas for further research. Furthermore, this chapter outlines the final concluding remarks.

This chapter is comprised of five sections. Section 8.2 revisits the research questions posed in Chapter 1 and presents the stages to answer to these questions based on what the research findings indicated. Section 8.3 discusses the contributions of this study both to theory and practice. The limitations of this study and opportunities for further research issue are outlined in section 8.4. Finally, section 8.5 finishes this study with some concluding remarks.

8.2. Research questions revisited

The objectives of this study were to examine essential antecedents that play an essential role in the successful outcomes of SISP, to investigate how much the successful SISP based on the antecedents influence the impact, hence to analyse the relationship between antecedents and the impact of SISP success in South Korean organisations. Moreover, another objective was to observe and compare the similarity and difference of the business and IT sector's perspectives about the relationship between antecedents and the impact of SISP success in South Korean organisations. In order to address these objectives, the primary research question was proposed: '*What is the relationship between antecedents of SISP on SISP success, and what is the impact of SISP success on South Korean organisations?*'

The primary research question was then further expanded into the four sub-questions. The four sub-questions: (1) *What SISP success factors as antecedents need to be considered to undertake successful SISP in South Korean organisations?*; (2) *How are the successful outcomes of SISP achieved by considering the antecedents measured in South Korean organisations?*; (3) *What is the impact of SISP success, and how is it measured in South Korean organisations?; and* (4) *How do the perspectives on the relationship between antecedents essential for successful SISP and the impact of SISP success differ between the business and IT sectors within South Korean organisations?*

To appropriately answer the research questions as above, a sequential mixed methods approach was adopted; thus this study first undertook qualitative interviews followed by a quantitative survey. Since there have been few studies in the context of South Korea to observe the relationship between antecedents and the impact of SISP success, the qualitative study was needed to obtain a rich description and understanding of antecedents for SISP success and improved organisational impact, and the relationship to establish a theoretical framework with research hypothesis for the survey. Further, the quantitative phase was useful to increase the generalisability of the framework by testing and validating for the relationship between antecedents and the impact of SISP success in South Korean organisations (see Section 3.4 for more detail). A difference of perspective on the relationship between antecedents and the impact of SISP success between the business and IT manager was also explored by using multiple group analysis in AMOS (see Section 6.4 for more detail). Thus, this section provides a summary of how these questions were addressed in this study.

8.2.1. What are antecedents that need be considered to undertake successful SISP?

Earlier studies (Bechor et al., 2010; Gottschalk, 1999a; Wallace, 2013) have indicated that SISP success is largely dependent on a function of many variables. This is due to the likelihood that various factors are more likely to underpin SISP success (Cassidy, 2006; Cerpa and Verner, 1998; Peppard and Ward, 2016). Although the role of the various factors for achieving SISP success has been significant, there have been few studies that discuss the various factors essential for successful SISP that also have an extensive understanding of the South Korean context.

Based on the literature review, there were five factors identified as essential for successful SISP in South Korean organisations: namely, top management participation and support, effective communication and knowledge sharing between business and IT stakeholders, the impact of the internal and external environment, adequate resources for SISP and organisational learning. From the findings of the qualitative study, it was confirmed that the importance of the five factors identified from the literature review were confirmed as antecedents that were responsible for achieving successful SISP in the organisations. Another factor was also identified from the interview as an antecedent relevant for successful SISP in South Korean context. This antecedent was active partnership between members of the organisation and an external vendor (see Section 4.3.2.6 for more detail).

The literature review and the qualitative study findings led to the development of the conceptual framework comprising 12 hypotheses to describe the relationship between the identified SISP antecedents and the successful outcomes of SISP. The framework was then empirically tested by using data from 317 organisations in South Korea. The findings revealed that among six identified SISP antecedents, five antecedents except for organisational learning were confirmed as those that play a vital role in successful SISP by positively affecting the consideration of other antecedents (see Section 6.3 for more detail). These findings of this study support the view that considering various antecedents is a key to successful SISP in South Korean organisations.

8.2.2. How are the successful outcomes of SISP achieved by considering the antecedents measure?

Apart from investigating the importance of antecedents associated with SISP success, the conceptual framework of this study has incorporated insights on the dimensions of the successful outcomes of SISP obtained from considering various antecedents in the South Korean context. Therefore, the second research question of this study was proposed to observe the relationship between antecedents and the successful outcomes of SISP.

According to IS literature, if organisations appropriately consider and identify various factors, they are more likely to achieve higher opportunities by improving IS planning effectiveness (Mirchandani and Lederer, 2014b; Osman et al., 2013; Papke-Shields et al., 2002, 2006; Premkumar and King, 1994; Segars and Grover, 1998) and business and IT alignment (Chen et al., 2010; Kearns and Lederer, 2004; Kearns and Sabherwal, 2006; Luftman et al., 1999; Maharaj and Brown, 2015; Reich and Benbasat, 2000).

The qualitative component of this study confirmed that the consideration of various antecedents enabled South Korean organisations to enhance the level of IS planning effectiveness by better harmonising business and IT directions, opinions and requirements as well as realising effective business and IT alignment by establishing standardised business and IT objectives and framework. The finding suggests that the attainment of IS planning effectiveness and business and IT alignment improved an overall level of successful SISP outcomes in South Korean organisations. Furthermore, the qualitative study identified that the better the level of IS planning effectiveness, the better the result of business and IT alignment (see Section 4.3.3 for more detail).

Based on the findings, the conceptual framework for observing the relationship between six identified antecedents and two dimensions of the successful outcomes of SISP was established with 12 hypotheses, which were tested and validated in the survey. The first six hypotheses (H1a to H1f) were proposed to investigate the relationship between SISP antecedents and IS planning effectiveness. The second six hypotheses (H2a to H2f) were proposed to explore the relationship between SISP antecedents and business and IT alignment. Moreover, the result of the qualitative study enabled the researcher to hypothesise the relationship between IS planning effectiveness and business and IT alignment (H3).

According to the survey findings, there were three factors: effective communication and knowledge sharing (ECKS), the impact of internal and external environment (IEE) and adequate resources for SISP (ARS) confirmed as antecedents to positively affect improving IS planning effectiveness. Also, the four factors, including top management participation and support (TMPS), IEE, ARS and active partnership between members of the organisation and an external vendor (APMEV) were identified as important antecedents that had a positive effect on enhancing business and IT strategic alignment. This suggests that the five antecedents were empirically confirmed to play an essential role in enhancing the successful outcomes of SISP in South Korean organisations (see Section 6.3 for more detail).

In terms of the relationship between IS planning effectiveness and business and IT alignment, it was empirically confirmed that there is a direct relationship between the two dimensions; thus the survey result corresponded with that of the qualitative study. This suggests that if South Korean organisations achieve a high level of IS planning effectiveness, they are more likely to realise a better level of business and IT alignment.

8.2.3. What is the impact of SISP success and how is it measured?

As the successful outcomes of SISP are a higher order resource that improves the impact obtained by its success, this study was further interested to examine the dimensions on the impact of SISP success and to test the relationship between the successful outcomes of SISP and the impact of SISP success, which has received little coverage in the IS literature, specifically in the South Korean context.

By the result of the qualitative study, it was identified that one of the most important impacts obtained by SISP success in the identified South Korean organisations was to integrate, reconfigure, recombine and renew business and IT processes, resources and structures of the organisation (organisational capabilities). Further, SISP's successful outcomes enabled South Korean organisations to improve their understanding about the potential impact, opportunities and role of IT functions, technologies and skills, and to improve consensus and interactions between business and IT members (departments) (IS competencies). Another impact of SISP success was that it enabled organisations to establish flexible business and IT processes and structures by adapting and responding to internal and external changes, issues and trends promptly (IT infrastructure flexibility) (see Section 4.3.4 for more detail).

Based on the qualitative study result, the two main hypotheses were then proposed to test the relationship between the successful outcomes of SISP and the impact of SISP success. The two main hypotheses encompassed the relationship between IS planning effectiveness and the impact of SISP success (H4a to H4c), and the relationship between business and IT strategic alignment and the impact of SISP success (H5a to H5c). The hypothesis testing result confirmed that both IS planning effectiveness and business and IT alignment have a direct and positive influence upon all three dimensions of the impact of SISP success. This indicates that if organisations successfully undertake SISP, they are more likely to realise improved organisational capabilities, IS competencies and IT infrastructure flexibility (see Section 6.3 for more detail).

According to the relative superiority in the magnitude of variance explained by the proposed structural model, the conceptual framework explained 27.3% and 59.1% of the variance in IS planning effectiveness and business and IT alignment respectively.

In terms of the impact of SISP success, organisations in South Korea that undertake successful SISP experienced the ability to demonstrate organisational capabilities (60%), IS competencies (61.3%) and IT infrastructure flexibility (57.9%). In other words, the three dimensions identified in this study proved to be all important for effectively measuring the impact of SISP success in South Korean organisations.

8.2.4. How do the perspectives on the relationship between antecedents and the impact of SISP success differ between business sector and an IT sector within an organisation?

The activities for SISP need to be well-organised, managed and understood by various parties (McNurlin et al., 2009; Piccoli, 2008) since there are various human resources, including top management, business and IT members, and often external stakeholders commonly involved in SISP (Lientz, 2010; Teo and Ang, 2001; Wallace, 2013). This review enabled the researcher to assume that their leading insights offered by these various parties on the relationship between antecedents and impact of SISP success might different from one manager to another or from one sector to another in an organisation. Therefore, this study was further interested to compare and observe a difference of view on the relationship between business and IT sectors, which has received little examination in IS literature and the South Korean context.

To address this research question, multiple group analysis between business managers and IT managers on the structural model using a moderating effect was undertaken. The purpose of the multiple group analysis was to ascertain whether there was a significance of difference between the two groups regarding the relationship between antecedents and impact of SISP success. Among the 317 responses, there were 150 responses received from business managers and 167 responses received from IT managers (see Chapter 5). In order to analyse the moderating effect regarding the hypothesised structural model, the pairwise parameter comparison test conducted by using critical ratios for differences between two parameters was used in AMOS.

From the results of the multiple group analysis on the structural model, it was identified that there were six relationships (TMPS → ISPE, APMEV → ISPE, ECKS → BITA, IEE → BITA, ISPE → ITIF and BITA → IScom) out of a total of 19 relationships that had a moderating effect between business managers and IT managers. That is, it was confirmed that there were differences existing between the two groups on the opinions or views of some relationships during SISP undertaking in South Korean organisations. This result suggests that it is vital for SISP undertakers of South Korean organisations to appropriately identify and understand the differences on ideas and perspectives of business managers and IT managers before/during SISP to realise its better success and to maximise the impact.

Based on the findings of this study, it was confirmed that there are a number of factors that need to be considered to achieve the successful outcomes of SISP. To adequately measure the successful outcomes of SISP, IS planning effectiveness and business and IT alignment need to be considered. Moreover, the successful outcomes of SISP based on the consideration of various antecedents are more likely to facilitate organisational capabilities, IS competencies and IT infrastructure flexibility for realising competitive advantage and organisational performance. Therefore, this study has identified that there is a close relationship between antecedents for achieving successful outcomes of

SISP and the impact of SISP success, which can answer the main research question in this study.

8.3. Contributions of the study

This study provides a major contribution to the field of SISP research from both theoretical and practical perspectives.

8.3.1. Theoretical contributions

This study contributes to the existing literature in the field of SISP in organisations by (a) integrating the framework of the contingency theory and dynamic capability theory to the study of investigating SISP antecedents, the successful outcome of SISP and the impact of SISP success, (b) developing a validated conceptual framework for examining the relationship between SISP antecedent and the impact of SISP success in South Korean organisations and (c) observing a difference of perspective on the relationship between business and IT managers. Moreover, the framework is extended to study the role that various SISP antecedents play in contributing to the successful outcomes and improved organisational impact in South Korean organisations. Therefore, this study uses empirical evidence to further demonstrate the applicability of the framework for investigating the importance of considering various SISP antecedents in improving successful SISP outcomes and the impact.

This study contributes to the field by developing a validated conceptual framework for examining the relationship between antecedents, the successful outcomes of SISP and the impact of SISP success in South Korean organisations. The proposed framework has been tested and validated to provide empirical support. There is a body of research that has investigated a success factor(s) for achieving successful SISP. The existing research, however, does not have a general agreement on how much the successful outcomes of SISP are achieved by considering various antecedents have a positive effect on improving the impact of SISP success. Moreover, little research has observed the importance of antecedents, and the relationship between antecedents and the impact of SISP success in a South Korean context. Although the consideration of antecedents for successful SISP and an improved impact is different from organisations' own unique characteristics and features, this study fills this gap by providing the empirical evidence for the study of the importance of considering how various antecedents might achieve successful SISP and improved organisational impact in South Korean organisations. The conceptual framework for observing the relationship between antecedents and the impact of SISP success in South Korean organisations can also be used as an initial study in studying the relationship in organisations of other developing and developed countries.

This study contributes to explicitly theorising organisational capabilities, IS competencies, IT infrastructure flexibility as the impact obtained from successful SISP. In this study, it was empirically confirmed by both the qualitative and the quantitative study that the successful outcomes of SISP positively affect the improvement of all three dimensions of the impact of SISP success. Despite the importance of these dimensions for improving the impact of SISP success, there have not been SISP studies that address them at the same time. Thus, this thesis theoretically suggests the necessity of the three dimensions to effectively measure the impact of SISP success.

This study confirms that the design of SISP for achieving successful outcomes needs to be conducted based on a close link between various internal and external contingent variables. This is due to each organisation having different cultures, directions, goals and strategies from each other. The successful SISP with an appropriately aligned and standardised framework, processes and resources then enables organisations to improve sustainable competitive advantage and organisational performance based on improved organisational capabilities, IS competencies and IT infrastructure flexibility. Hence, the conceptual framework for describing the relationship between antecedents and the impact of SISP success proposed in this study is original, since the framework integrates insights from contingency theory and the theory of dynamic capabilities. Contingency theory has provided the basic logic to explain that SISP needs to be undertaken by considering various antecedents and each possible antecedent needs to be adequately aligned to achieve better outcomes of SISP. Further, the theory of dynamic capabilities has provided the basic logic to explain that the successful SISP enhances organisational capabilities, IS competencies and IT infrastructure flexibility for improved sustainable competitive advantage and organisational performance. The logic that has emerged from contingency theory and the theory of dynamic capabilities has enabled the researcher to theorise and test the relationship between antecedents and the impact of SISP success. Hence, this thesis provides new theoretical ground regarding SISP in private organisation research.

Finally, this thesis achieved the multiple group analysis on the hypothesised research framework to compare and observe a difference of view on the relationship between antecedents and the impact of SISP success between the business and IT sectors. Most earlier studies have shown either a business or an IT perspective, rather than a way of observing from both viewpoints. The finding of moderating effect analysis of this study empirically confirmed that there are several relationships that reveal significantly different viewpoints, as seen in the business and IT groups during undertaking SISP in South Korean organisations. Therefore, the thesis contributes to the body of knowledge by presenting the differences of view regarding the relationship between antecedents and the impact of SISP success from dyadic perspectives.

8.3.2. Practical contributions

From the perspective of practice, this thesis provides valuable insights for undertakers of SISP in organisations such as CIO/IT managers and CEO/business managers alike.

First, this thesis provides a useful practical contribution to SISP undertakers in South Korean organisations by offering an extensive and deepened viewpoint on the existing discourses of antecedents that positively affect the achievement of successful outcomes of SISP for the improved impact of SISP success. Thus, this thesis provides a basic building block for SISP undertakers in organisations for improving the importance of the consideration and management of various antecedents for facilitating the level of SISP success and organisational impact.

Second, this thesis contributes to providing an awareness of the importance of the three dimensions (organisational capabilities, IS competences and IT infrastructure flexibility) for the impact gained by SISP success. Further, it provides an indication of the extent to which organisations effectively assess the degree of the impact achieved from SISP success. Hence, SISP undertakers in South Korean organisations will be able to utilise the exploratory results of the thesis to benchmark and diagnose the status of their own SISP task.

Third, the findings of this thesis contribute to providing significant information on the difference of opinions and perspectives regarding the relationship between business sectors and IT sectors. Hence, this thesis could provide necessary knowledge for SISP undertakers to establish better managerial and policy implications by understanding the similarity and difference of their viewpoint regarding the relationship. Through the implications, organisations would be available to reduce gaps that occur between two sectors and to obtain a better impact by successful SISP. Furthermore, the validated framework of this study contributes to helping SISP undertakers of South Korean organisations to conduct more effective SISP and sustain its impact long-term.

8.4. Limitations and future research

Despite the above contributions, this thesis has several limitations that need be noted and taken into consideration. These limitations may open avenues for further research in the future.

This thesis only examines the antecedents that affect the successful outcomes of SISP and the impact of SISP in South Korean organisations. Although this thesis enhances internal validity, it can prevent the generalisation of the thesis's findings as the business and IT environment might differ substantially between various geographical locations. Therefore, in order to obtain a more reliable and general viewpoint of this acceptance, the same study can be extended to more organisations in other developing countries and developed countries.

This thesis refers to only large organisations in South Korea as a population, thus small and medium enterprise (SMEs) and public sectors were excluded. However, the results on antecedents for successful SISP outcomes and the impact of SISP success might differ from the results of SMEs and public sectors due to the difference of their economic, environmental and organisational contexts and features (Lee and Hsu, 2009; McNurlin et al., 2009; Peppard and Ward, 2016). Thus, the analysis of the relationship of SMEs and public sectors represents an area for further research in order to generalise the findings of this thesis.

The data collection is based on the key informant method. A business manager and an IT manager, including a CEO and CIO from each of the 1,000 South Korean organisations were chosen to answer the research questions. However, the participation of the CEO (1 out of 150 respondents) and CIO (2 out of 167 respondents) was very low, although their role and responsibility was very high. Therefore, future studies can adopt the research design which allows for the top management group, such as CEOs and CIOs, in order to cross-validate the results between CEOs and CIOs, and between the top management group and the general business and IT managers.

Finally, this thesis shows the results of a moderating effect on the hypothesised model through the multiple group analysis between business and IT managers in the survey. Avenues for further research can be identified by using the validated research framework of this study as a basis to investigate other potential moderating effects. Potential moderators that can be proposed from the scope of this thesis comprise, for example, the number of employees, the employee’s position and SISP experience, and annual turnover in the organisation.

8.5. Final concluding remarks

In conclusion, it has been claimed that as IS/IT is a critical requirement for all aspects of business operations, the need for SISP is important for all organisations to provide a road map that charts the course and to realise the expected benefits from their IS/IT investment (Lientz, 2010; McNurlin et al., 2009; Peppard and Ward, 2016). Within this context, understanding the necessity of SISP antecedents for improving SISP’s successful outcomes and organisational impact is critical, and this needs to be explored further, particularly in relation to organisations in a developing country, such as South Korea. Despite a high diffusion and utilisation level of advanced IT system in South Korean organisations, research on SISP, which is based on the accomplishment of improved organisational success and impact by supporting successful IS/IT implementation, still remains low.

The eight qualitative interviews were first undertaken to investigate the importance of antecedents for the successful outcomes of SISP and and its organisational impact as well as to establish a conceptual framework with hypotheses for the survey. The quantitative survey was then conducted to test and validate the proposed framework and hypotheses for the relationship between antecedents and the impact of SISP success in the South Korean organisations. The results of this thesis have identified that various antecedents of SISP contribute to the successful outcomes of SISP, and the successful SISP leads to its impact being maximised by the progress of capabilities, competencies and flexibility of business and IT processes and resources in South Korean organisations.

Overall, by directly addressing the research question proposed at the beginning of this thesis, the empirical results on the relationship indicate: (1) the consideration of SISP antecedents enables South Koran organisations to achieve the successful outcomes of SISP by improving IS planning effectiveness, and business and IT alignment, (2) the better the attainment of IS planning effectiveness, the higher the level of business and IT alignment, (3) the successful SISP helps South Korean organisations realise the following impacts, such as improved organisational capabilities, IS competencies and IT infrastructure flexibility, and (4) a difference of view exists between business and IT sectors in South Korean organisations regarding several relationships within the proposed framework.

There are certainly important opportunities for further study. This thesis is a milestone for other researchers to examine this topic further, whether in the South Korean context or in other contexts. The proposed conceptual framework of the thesis also provides theoretical and practical implications for both academics and practitioners by providing a foundation for future SISP research and the formulation of organisational policy and strategies in their own organisations. Hence, the potential contribution of this thesis is that it theoretically provides fertile ground for future research about SISP and practically provides a useful guide or information for creating a successful SISP and making an organisational impact.

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APPENDICES

Appendix A: Invitation letter, questions and consent form for the interview

INVITATION TO PARTICIPATE IN A RESEARCH PROJECT

School of Business Information Technology and Logistics

Dear Sir/Madam,

You are invited to participate in a research project being conducted by RMIT University. Please read this sheet carefully and be confident that you understand its contents before deciding whether to participate. If you have any questions about the project, please ask one of the investigators.

My name is Jungho Yang, I am currently undertaking this research project as a part of the requirements for the completion of my PhD degree. My thesis topic is '***Antecedents and Consequences of Strategic Information Systems Planning (SISP) Success: A South Korean Perspective***,' under the supervision of Dr. Zijad Pita and Prof. Mohini Singh from the School of Business Information Technology and Logistics.

SISP is the process of identifying a portfolio of computer-based applications that will assist an organisation in executing its business plans and realizing its business goals to create a competitive advantage. Antecedents are factors that lead to effective SISP undertaking and maximize benefits by the strategic use of IS/IT. This questionnaire is designed to investigate which Strategic Information Systems Planning antecedents contribute to organisational competitiveness in today's highly competitive and dynamic environments and to identify the order of the antecedents' importance organisations to consider ensuring successful SISP. Our primary objective is to suggest different perspectives on SISP antecedents and to provide recommendations which antecedents will play a crucial role in achieving superior organisational performance. The primary research question is: What is the relationship between antecedents essential for successful SISP and the impact of SISP success in organisations of South Korea?

Your organisation has been selected as a potential participant because your organisation is one of the largest Korean corporations and is a leader in the application and usage of IT. I have contacted you by using your organisation address provided publicly on your organisation's web-site. I would like to interview two people (a business manager and an IT manager involved in SISP process) from your organisation. Interviews will be semi-structured around the research questions. Before conducting the interview, the questions will be sent in advance. Interviews will be conducted face-to-face and will last approximately 30-40 minutes. If you agree, the interviews will also be audio-taped. Content from text-based interview discussions will be captured as a transcript record, which will be forwarded to you for confirmation prior to the analysis of data. Participation in the interview is voluntary. You may withdraw at any time prior to the publication of results or completion of the thesis. You will be asked to sign the consent form prior to the start of the interview. Your confidentiality will be respected. At the completion of the research, the researcher's copy of the audio recording and transcript will be stored securely at RMIT for a period of five years, after which time they will be destroyed. A report of the research may be submitted for publication (i.e., as a journal article or conference paper), but individual participants or companies will not be identifiable in such a report.

If you have any queries regarding this project, please contact me or my supervisors at the following contact details at the bottom of the page. Thank you very much for your assistance and taking time to be involved in my research.

Yours Sincerely

Name: Jungho Yang Phone: 03 9925 1133 email: jungho.yang@rmit.edu.au
Name: Dr. Zijad Pita Phone: 03 9925 5830 email: zijad.pita@rmit.edu.au
Name: Prof. Mohini Singh Phone: 03 9925 1355 email: mohini.singh@rmit.edu.au

Interview Questions

Question 1: Interviewee Profile

1A. Please tell me your job title and explain your key responsibilities and role.

1B. How long have you been involved in SISP process?

Question 2: SISP in your organisation

2A. When did your organisation firstly introduce SISP?

2B. What are the primary objectives and purposes of SISP in your organisation?

2C. How often does your organisation review its overall SISP? (i.e., every year or every two years, etc.)

Question 3: Antecedents essential for successful SISP in your organisation

This section focuses on identifying essential antecedents that organisations could undertake successful SISP.

3A. From your experience, what sorts of antecedents do you consider important for undertaking a successful SISP?

3B. Which do you think was the antecedent the most important one? Why do you think it is so? Please explain.

Question 4: Outcomes obtained by the successful SISP in your organisation

This question focuses on identifying outcomes that your organisation has successfully achieved from the SISP undertaking.

4A. Do you think your organisation has successfully achieved the SISP? If so, what outcomes have your organisation achieved by the successful SISP?

Question 5: The impact realised from the successful SISP in your organisation

This question focuses on discovering any significant impact that your organisation has obtained after undertaking SISP successfully.

5A. What impact have your organisation gained from the successful SISP?
5B. Which do you think was the impact the most important one? Why do you think it is so? Please explain.

Question 6: The relationship between antecedents and impact of SISP success in your organisation

6A. From your experience, what do you think is the relationship between antecedents and impact of SISP success? Please explain.

Question 7: Other comments on the organisation's SISP

7A. Is there anything else you would like to add on SISP in your organisation?

Thank you very much

Consent Form – Interviewee

Title: Antecedents and Consequences of Strategic Information Systems Planning (SISP) Success: A South Korean Perspective

NOTE: **This consent form will remain with the RMIT researcher for their records**

I understand that agreeing to take part means that:

1. **I agree to be interviewed by the researcher** ☐ **Yes** ☐ **No**
2. **I agree to allow the interview to be audio-taped** ☐ **Yes** ☐ **No**

I understand that my participation is voluntary, that I can choose not to participate in part or all of the project, and that I can withdraw at any stage of the project without being penalised or disadvantaged in any way.

I understand that any data that the researcher extracts from the interview for use in reports or published findings will not, under any circumstances, contain names or identifying characteristics.

I understand that I will be given a transcript of data concerning me for my approval before it is included in the write up of the research.

I understand that any information I provide is confidential, and that no information that could lead to the identification of any individual will be disclosed in any reports on the project, or to any other party.

I understand that data from the interview transcript and audio-tape will be kept in a secure storage and accessible to the research team. I also understand that the data will be destroyed after a 5 year period unless I consent to it being used in future research.

Participant's name: ..……………………………………………………….................

Participant's email/phone: ….……………………………………..…………………...

Signature: ………………………………………………………………………………...

Date: ……………………………………………………………………………………

Appendix B: Invitation letter and questionnaire for the survey

Appendix C-1: Invitation letter and questionnaire for the survey

(English version)

<u>INVITATION TO PARTICIPATE IN A RESEARCH PROJECT</u>

RMIT UNIVERSITY

School of Business Information Technology and Logistics

Dear Sir/Madam,

You are invited to participate in a research project being conducted by RMIT University. Please read this sheet carefully and be confident that you understand its contents before deciding whether to participate. If you have any questions about the project, please ask one of the investigators.

My name is Jungho Yang, I am currently undertaking this research project as a part of the requirements for the completion of my PhD degree. My thesis topic is '***Antecedents and Consequences of Strategic Information Systems Planning (SISP) Success: A South Korean Perspective***,' under the supervision of Dr. Zijad Pita and Prof. Mohini Singh from the School of Business Information Technology and Logistics.

This questionnaire is designed to investigate which Strategic Information Systems Planning (SISP) antecedents contribute to organisational competitiveness in today's highly competitive and dynamic environments and to identify the order of the antecedents' importance organisations to consider ensuring successful SISP. Our primary objective is to suggest different perspectives on SISP antecedents and to provide recommendations which antecedents will play a crucial role in achieving superior organisational performance. Thus, the main question is 'What is the relationship between antecedents essential for successful SISP and the impact of SISP success in organisations of South Korea?'

I am inviting you to participate in my research. This survey is required to be completed by the business and the IT managers. The ideal respondents for this questionnaire should be managers who have participated in SISP process and have extensive knowledge of strategic planning processes and outcomes in his/her organisation. Your participation will involve completion of the attached questionnaire and please when completed, reply to me at your earliest possible. Participation in this research is voluntary and you may withdraw at anytime. This survey is strictly confidential and no identification is required. It means that no personal information will be collected in the survey so none will be stored as data. The questionnaire is designed in an easy to read format and should not take more than 15 minutes of your time.

The data collected will be analysed for my PhD thesis and the outcomes may appear in publications. The results will be reported in a manner which does not enable you to be identified, maintaining your anonymity. The authoritative copy of all current data will reside on appropriate network systems securely at RMIT; and I will be responsible for the retention and storage of the original data pertaining to the project for a minimum period of five years after publication, before being destroyed.

If you have any queries regarding this project, please contact me or my supervisors at the following contact details at the bottom of the page. Thank you very much for your assistance and taking time to be involved in my research.

Yours Sincerely

Name: Jungho Yang Phone: 03 9925 1133 email: jungho.yang@rmit.edu.au

Name: Dr. Zijad Pita Phone: 03 9925 5830 email: zijad.pita@rmit.edu.au

Name: Prof. Mohini Singh Phone: 03 9925 1355 email: mohini.singh@rmit.edu.au

RMIT UNIVERSITY

Survey Questions

Section A: Interviewee Profile

1. What field are you currently working in your organisation? (<u>Do not fill both fields</u>)

☐ Information Systems (IS)/Information Technology (IT) field
☐ Business/Management field

2. Which department or team are you in your organisation? (<u>If the name of the team specified is not the same as yours, please indicate only one item which is the closest</u>)

☐ Strategy and Planning
☐ Accounting and Finance
☐ Consulting and Outsourcing
☐ Organisational Management and Support (including change, quality and risk management; and customer relationships and services)
☐ Marketing and Sales
☐ System Analysis, Integration and Standardization
☐ IS/IT Programming, Operation and Maintenance
☐ Others

3. What is your position in your organisation?

☐ CEO/CIO
☐ Director
☐ Chief/Senior Manager
☐ Manager
☐ Assistant Manager

4. How long have you had an experience in this industry? (<u>*including work experience in both the current organisation and previous employment*</u>)

☐ Less than 5 years
☐ Between 5 and 9 years
☐ Between 10 and 14 years
☐ More than 15 years

5. How long have you been working in this organisation?

☐ Less than 5 years
☐ Between 5 and 9 years
☐ Between 10 and 14 years
☐ More than 15 years

6. How long have you been involved in the SISP process and IS/IT system implementation related projects? (*including work experience in both the current organisation and previous employment*)

☐ Less than 5 years
☐ Between 5 and 9 years
☐ Between 10 and 14 years
☐ More than 15 years

Section B: Business Profile

1. What is your organisation's industry sector or primary business/activity?

☐ Manufacturing
☐ Banking, Finance and Insurance
☐ Construction
☐ Cargo, Logistics, Shipping and Transport
☐ Electricity, Electronic and Information Technology and Telecommunications
☐ Services (i.e., Consulting, Education, Health and Publication etc.)
☐ Wholesale and Retail trade
☐ Others

2. How many employees does your organisation employ in total? (*including employees in both domestic and overseas ones*)

☐ Less than 500 employees
☐ 501 – 1,000 employees
☐ 1,001 – 3,000 employees
☐ 3,001 – 5,000 employees
☐ Above 5,001 employees

3. What is the approximate annual turnover of your organisation? (*including in both domestic organisation and overseas ones*)

☐ Less than 100 Billion KRW (approx. less than 100 Million AUS$)
☐ Between 100 Billion and 500 Billion KRW (approx. between 100 and 500 Million AUS$)
☐ Between 500 Billion and 1 Trillion KRW (approx. between 500 and 1 Billion AUS$)
☐ Between 1 Trillion and 3 Trillion KRW (approx. between 1 and 3 Billion AUS$)
☐ More than 3 Trillion KRW (approx. more than 3 Billion AUS$)

Section C: Strategic Information Systems Planning (SISP) in your organisation

1. Did your organisation undertake an SISP process prior to the implementation of the primary IS/IT system?

☐ Yes

☐ No (If your organisation has never been undertaken the SISP process, there is no need to continue the questionnaire. Thank you for taking your time to be involved in this survey)

2. How would you describe the basic nature of your organisation's SISP process?

☐ Formal SISP process

☐ Informal SISP process

3. Who was involved in the undertaking of the SISP process within your organisation? (<u>Please tick all items</u>)

The involvement of SISP undertaking	Yes	No
1. Top management group (CEO, CIO or CFO)	☐	☐
2. Department/Division manager of business field	☐	☐
3. IT team and IT manager	☐	☐
4. End-user group	☐	☐
5. External consultant or vendor group	☐	☐

4. What were the primary objectives and purposes in undertaking your organisation's SISP process? <u>Please read and tick all the items</u> to indicate the extent to which your organisation has considered each of the objectives.

The objectives and purposes of SISP (Scale: 1. No extent at all; 2. Low extent; 3. Neutral; 4. high extent; 5. Very high extent)	1	2	3	4	5
1. To maximize and upgrade the overall function, efficiency and performance of IS/IT systems	☐	☐	☐	☐	☐
2. To improve overall processes and structures by alignment, integration and standardization	☐	☐	☐	☐	☐
3. To enhance communication and knowledge-sharing among all users of the organisation	☐	☐	☐	☐	☐
4. To promote automation of overall business management and transactions	☐	☐	☐	☐	☐
5. To enhance effectiveness and promptness of business support and decision-making	☐	☐	☐	☐	☐
6. To maintain consistency and unity of management for companies in home and abroad	☐	☐	☐	☐	☐
7. To obtain competitive advantage by facilitating customer services and improving customer satisfaction	☐	☐	☐	☐	☐
8. To build mid- and long-term planning and provide a roadmap for business management and overall IS/IT systems	☐	☐	☐	☐	☐

5. How frequently does your organisation normally review its SISP process?

☐ Once a year at least

☐ Twice a year

☐ Once every 2-3 years

☐ Undertaken as needed (*no fixed time*)

Section D: The Antecedents of SISP in your organisation

1. **The following table indicates antecedents that an organisation commonly needs to consider during the period of SISP undertaking. <u>Please read and tick all the items</u> to indicate the extent to which your organisation has considered each of the antecedents to achieve the undertaking successfully.**

Antecedents of Strategic Information Systems Planning in your organisation **(Scale: 1. No extent at all; 2. Low extent; 3. Neutral; 4. high extent; 5. Very high extent)**					
Top management(TM) participation and support	1	2	3	4	5
TM was knowledgeable about the strategic potential of IS/IT, the organisation's IS/IT assets and opportunities, and the competitor's use of IS/IT	☐	☐	☐	☐	☐
TM perceived and understood SISP as an important activity/source or long-term investment for implementing IS/IT systems of the organisation	☐	☐	☐	☐	☐
TM was actively involved/participated in decision-making or project meetings for SISP	☐	☐	☐	☐	☐
While undertaking SISP, TM communicated and shared his/her knowledge with CIO and CFO formally or informally	☐	☐	☐	☐	☐
TM appropriately allocated and prioritised financial and human resources as well as the time horizon vital for SISP	☐	☐	☐	☐	☐
TM monitored/post-audited on the results of SISP	☐	☐	☐	☐	☐
Effective communication and knowledge-sharing between business and IT sector	1	2	3	4	5
A variety of people from the business and IT sectors participated in SISP with high interest	☐	☐	☐	☐	☐
Those from the business and IT sectors properly understood their working environment while undertaking SISP	☐	☐	☐	☐	☐
Those in the business sector who participated in SISP possessed proper IS/IT knowledge and those in the IT sector had suitable business knowledge	☐	☐	☐	☐	☐
While undertaking SISP, business and IT sectors maintained open lines of oral/written communication with each other based on their close relationship with each other.	☐	☐	☐	☐	☐
Business and IT sectors shared with each other their knowledge, know-how, work experience and expertise, which encompassed emerging technologies, technological advancement in the industry, changes in business conditions, customer needs, and the strategies and tactics of their competitors.	☐	☐	☐	☐	☐
Business and IT sectors assisted each other to identify common goals/objectives, problems and opportunities regarding SISP	☐	☐	☐	☐	☐
Project members of SISP properly communicated and shared their information and knowledge with external vendors	☐	☐	☐	☐	☐

Antecedents of Strategic Information Systems Planning in your organisation (Scale: 1. No extent at all; 2. Low extent; 3. Neutral; 4. high extent; 5. Very high extent)					
The impact of internal and external environment	1	2	3	4	5
While undertaking SISP, the organisation considered and reviewed its internal business environments, including current business goals, strategies, resources, and processes, as well as its inherent culture	☐	☐	☐	☐	☐
While undertaking SISP, the organisation considered and reviewed its external business environments, including the economic, industrial and competitive climate in which the organisation operates, such as economic, social, political, legal, and ecological factors.	☐	☐	☐	☐	☐
While undertaking SISP, the organisation considered and reviewed its internal IS/IT environments, including the current IS/IT perspective in the business, its maturity, business coverage and contribution, skills, resources and technological infrastructure	☐	☐	☐	☐	☐
While undertaking SISP, the organisation considered and reviewed its external IS/IT environments, including technology trends and opportunities, and the use of IS/IT by others, especially customers, competitors and suppliers	☐	☐	☐	☐	☐
Adequate resources for SISP	1	2	3	4	5
While undertaking SISP, human resources from business and IT sectors, and external vendors (i.e., consultants and system developers) with suitable understanding of the organisation's business-IT goals and strategies were appropriately allocated and invested	☐	☐	☐	☐	☐
Financial funds for undertaking SISP, performing organisational learning, and IS/IT systems' implementation and maintenance were properly allocated and invested	☐	☐	☐	☐	☐
Top management supported the resource investments necessary for the SISP and provided active participation in and strategic awareness of IS/IT	☐	☐	☐	☐	☐
While undertaking SISP, communication, consensus and partnership between people of the business and IT sectors regarding the resource allocation were suitably arranged and performed undertaken	☐	☐	☐	☐	☐
Organisational learning	1	2	3	4	5
Project members learned about the scope and goals of the SISP, and the organisation's mission and purpose, key issues and internal and external environments	☐	☐	☐	☐	☐
Project members were trained in the SISP methodology that the organisation intended to introduce	☐	☐	☐	☐	☐
End-users received extensive on-the-job learning/training on why the organisation should undertake the SISP process; the importance of the process; its difference from the previous one; and its benefits etc.	☐	☐	☐	☐	☐
The organisation provided learning/training opportunities or supports regarding SISP and IS/IT systems to end-users internally and externally on a regular basis	☐	☐	☐	☐	☐
To encourage the organisational learning, the organisation provided incentives (i.e., awards or promotion etc.) for end-users	☐	☐	☐	☐	☐

Antecedents of Strategic Information Systems Planning in your organisation (Scale: 1. No extent at all; 2. Low extent; 3. Neutral; 4. high extent; 5. Very high extent)					
Active partnership between members of the organisation and an external vendor	1	2	3	4	5
While undertaking SISP, the external vendors had a good relationship with various parties (i.e., CEO, project team and end-users)	☐	☐	☐	☐	☐
The external vendors showed active commitment and participation while undertaking SISP	☐	☐	☐	☐	☐
The external vendors properly understood the organisation's culture, objectives and structures to undertake SISP of the organisation	☐	☐	☐	☐	☐
While undertaking SISP, the external vendors had a predisposition to communicate and share their expertise, information, knowledge and resources with members of the organisation based on integrity (performed with honesty) and trust	☐	☐	☐	☐	☐
The external vendors had relevant and suitable project experience, management skills and techniques for undertaking the task	☐	☐	☐	☐	☐
The external vendors have maintained long-term partnership with the organisation following the project	☐	☐	☐	☐	☐

Section E: The Successful Outcomes of SISP in your organisation

1. **The following table indicates the successful outcome of SISP that an organisation commonly achieved by considering various antecedents during the period of SISP undertaking. Please read and tick all the items to indicate the extent to which your organisation has realized each of the factors for SISP success.**

The successful outcomes of SISP in your organisation **(Scale: 1. No extent at all; 2. Low extent; 3. Neutral; 4. high extent; 5. Very high extent)**					
IS planning effectiveness	1	2	3	4	5
Improved decision-making, support and understanding of top management for better assessment investment regarding IS/IT planning and implementation	☐	☐	☐	☐	☐
Better appreciation of the role of IS/IT and improved collaboration between members in the organisation	☐	☐	☐	☐	☐
Better implementation of organisational architecture based on appropriate alignment of business-IT objectives, plans and strategies	☐	☐	☐	☐	☐
Increased efficiency of business operation and user satisfaction with IS/IT services	☐	☐	☐	☐	☐
Better planning and control of human, software and hardware resources	☐	☐	☐	☐	☐
Greater contribution to organisational performance and competitive advantage of the organisation by exploiting IS/IT opportunities	☐	☐	☐	☐	☐
Business and IT alignment	1	2	3	4	5
Communication and knowledge-sharing between business and IT sectors regarding SISP (i.e., exchange of ideas or information on the organisation's long-term strategies and plans, business-IT environments and so on)	☐	☐	☐	☐	☐
Connection and integration between business planning and IS/IT planning (i.e., aligning IS/IT capabilities, goals, issues, missions, resources, HR skills and strategies with business ones)	☐	☐	☐	☐	☐
Adaptation of IS objectives to organisational change; and adaptatioin of technology to strategic change	☐	☐	☐	☐	☐
Identification of IT-related opportunities to support strategic direction of the organisation	☐	☐	☐	☐	☐
Assessment and management of the strategic importance of the organisation's overall technologies, including enterprise architecture (EA), H/Ws, S/Ws and databases)	☐	☐	☐	☐	☐

Section F: The Impact of SISP success in your organisation

1. **The following table indicates the impact that an organisation commonly achieved through a successful SISP undertaking. Please read and tick all the items to indicate the extent to which your organisation has realized each of the factors for measuring the impact of SISP success.**

The impact of SISP success in your organisation (Scale: 1. No extent at all; 2. Low extent; 3. Neutral; 4. high extent; 5. Very high extent)					
Organisational capabilities	1	2	3	4	5
Ability to identify key problem areas	☐	☐	☐	☐	☐
Ability to identify new business opportunities	☐	☐	☐	☐	☐
Ability to align IS/IT strategy with organisational strategy	☐	☐	☐	☐	☐
Ability to understand the organisation's business and IT requirements	☐	☐	☐	☐	☐
Flexibility to adapt to and forecast unanticipated changes and crises	☐	☐	☐	☐	☐
Ability to gain coordination and communication between the business sector and IS/IT sector regarding new ideas, information and knowledge, to improve decision-making	☐	☐	☐	☐	☐
Ability to foster organisational learning	☐	☐	☐	☐	☐
IS competencies	1	2	3	4	5
Ability to identify and evaluate the implications of IS/IT-based opportunities as an integral part of business strategy formulation, and (re)define the role and scope of business and IS/IT in the organisation	☐	☐	☐	☐	☐
Ability to manage, reengineer and translate the business strategy into processes, information and systems investments and change plans that matched the business priorities with proper knowledge and skills	☐	☐	☐	☐	☐
Ability to manage, reengineer and translate the business strategy into long-term information architectures, technology infrastructure and resourcing plans that enabled the implementation of the strategy with proper knowledge and skills	☐	☐	☐	☐	☐
Ability to maximise the benefits realised from the implementation of IS/IT investments through effective use of information, applications and IT services	☐	☐	☐	☐	☐
Ability to deploy human, H/W and S/W resources in order to implement and operate business-IS/IT solutions, which exploited and improved the capabilities of business and technology	☐	☐	☐	☐	☐
Ability to create and maintain a necessary information, technology, resource and supply chain etc.	☐	☐	☐	☐	☐

The impact of SISP success in your organisation (Scale: 1. No extent at all; 2. Low extent; 3. Neutral; 4. high extent; 5. Very high extent)					
IT infrastructure flexibility	1	2	3	4	5
Ability to quickly respond to consumers' demands, environmental conditions, organisational technology needs and emerging market trends	☐	☐	☐	☐	☐
Ability to swiftly provide optimised products/services for customers	☐	☐	☐	☐	☐
Ability to react to resource allocation needs in the organisation and new products/services launches by competitors	☐	☐	☐	☐	☐
Ability to expand into new regional or international markets	☐	☐	☐	☐	☐
Ability to adopt and (re)design new business processes and technologies for quick delivery and to produce better, faster and cheaper products/services	☐	☐	☐	☐	☐
Ability to review and switch partners or suppliers in order to maintain lower costs and secure better partnership with partners/suppliers	☐	☐	☐	☐	☐

Thank you very much for your support

Appendix C-2: Invitation letter and questionnaire for the survey

(Korean version)

<u>연구프로젝트 참여를 위한 초대</u>

RMIT UNIVERSITY

설문조사를 위한 담당자님께

귀하는 RMIT 대학에서 진행되는 리서치 프로젝트 참여를 위해 초대되었습니다. 아래의 글을 자세히 읽으시고 이 프로젝트를 참여하실지 또는 아닌지에 대한 결정을 해 주시기 바랍니다. 만일 귀하께서 그 프로젝트에 관한 질문 사항이 있으시다면 아래 조사자들 가운데 한 명에게 연락을 해 주십시요.

안녕하십니까. 제 이름은 양정호입니다. 저는 현재 School of Business Information Technology and Logistics에서 Dr. Zijad Pita 그리고 Prof. Mohini Singh의 지도하에 박사과정을 수행하고 있습니다. 제 논문의 주제는 '***Antecedents and Consequences of Strategic Information Systems Planning (SISP) Success: A South Korean Perspective***'이며, 논문완성을 위한 부분의 일환으로 설문조사를 진행할 계획입니다.

이 설문지는 최근 매우 경쟁적이고 다이나믹한 환경에서 어떠한 전략적정보시스템계획이 기업의 성과 및 경쟁력 강화에 기여하는지를 조사하고, 그 계획의 성공을 위해 필수적으로 고려되야 하는 선행요소들의 중요성과 전략적정보시스템계획의 성공 그리고 성공적인 계획의 결과와의 관계를 알아보기 위해 디자인 되었습니다. 그러므로 이 설문조사의 주요목적은 비즈니스-IT 부서 및 산업별로 서로 다를 수 있는 전략적정보시스템계획의 선행요소들을 조사 및 제안하며. 그 요소들이 어떻게 전략적정보시스템계획의 성공과 기업 성과 그리고 경쟁력 강화에 영향을 미치는지에 대한 정보를 제공하는 것입니다.

이 설문조사는 귀사에서 전략적정보시스템계획에 참여한 경험이 있으며, 귀사의 전략계획 프로세스에 대한 기본적인 지식이 있는 비즈니스 및 IT 분야의 담당자들에게 적합합니다. 귀하는 이 초대장과 함께 동봉된 설문지를 받게 되실 것이며, 완성 후 설문지는 제 이메일이나 우편으로 보내주시면 됩니다. 이 설문조사의 참여는 자발적이며, 귀하는 언제든지 설문조사를 중단하실 수 있습니다. 또한 이 설문조사는 전적으로 비밀이 보장되며, 귀사와 귀하의 어떤 민감한 정보도 요구하지 않습니다. 설문지는 읽고 표기하기 쉽도록 디자인되었으며, 귀하께서 약 15분 정도면 설문지를 완성할 수 있을 것입니다.

그 수집된 데이터는 제 박사논문을 위해 분석될 것이며, 제 책임하에 대학내 적절한 네트워크 시

스템에 5년간 안전하게 보관 후에 자동폐기될 것입니다. 또한 그 분석결과는 어떠한 개인 및 기업정보의 공개없이 컨퍼런스나 저널 등에 활용될 것입니다.

만일 귀하께서 이 프로젝트와 관련한 문의사항이 있으시다면 저나 혹은 아래의 제 지도교수들에게 연락을 주시기 바랍니다. 제 연구의 협조를 위해 소중한 시간을 할애하여 주신 귀하에게 다시 한 번 감사의 말씀을 올립니다.

양정호 배상

Name: Jungho Yang Phone: 03 9925 1133 email: jungho.yang@rmit.edu.au
Name: Dr. Zijad Pita Phone: 03 9925 5830 email: zijad.pita@rmit.edu.au
Name: Prof Mohini Singh Phone: 03 9925 1355 email: mohini.singh@rmit.edu.au

설문조사를 위한 질문들

Section A: 인터뷰 대상자 프로필

1. 현재 기업에서 귀하께서는 어떤 분야에서 일하고 계십니까? (한 항목에만 표시해 주십시요)

☐ 정보시스템(IS)/정보기술(IT) 분야
☐ 비즈니스/관리 분야

2. 현재 귀하께서 근무하시는 부서 또는 팀은 무었입니까? (만일 언급된 부서의 이름이 귀하가 현재 근무하시는 곳과 일치하지 않을 경우, 하시는 업무와 가장 가깝다고 생각되는 한 곳에 표시해 주십시오)

☐ 전략 및 기획
☐ 재무 및 회계
☐ 컨설팅 및 아웃소싱
☐ 조직관리/경영지원 (예: 변화, 품질 및 위기 경영/고객관리 및 서비스 포함)
☐ 마케팅 및 세일즈
☐ IS/IT시스템 분석, 통합 및 표준화
☐ IS/IT 시스템 프로그래밍, 운영 및 유지보수
☐ 기타

3. 현재 기업에서 귀하의 직책은 무엇입니까?

☐ 최고경영자 (예: CEO/CIO)
☐ 상무 또는 이사급 (예: Director)
☐ 차장 또는 부장급 (예: Chief/Senior Manager)
☐ 과장급 (예: Manager)
☐ 대리급 (예: Assistant Manager)

4. 귀하께서는 현재 종사하는 산업부문에서 얼마나 오랜 경력을 가지고 계십니까? (현재 직장에서의 경력과 과거의 경력 기간을 모두 포함)

☐ 5년 이하
☐ 5년에서 9년 사이
☐ 10년에서 14년 사이
☐ 15년 이상

5. 귀하께서는 현재 기업에서 얼마나 오랫동안 일하고 계십니까?

☐ 5년 이하

☐ 5년에서 9년 사이

☐ 10년에서 14년 사이

☐ 15년 이상

6. 귀하께서는 전략적정보시스템계획 (Strategic Information Systems Planning: SISP) 및 IS/IT 시스템 개발 관련 프로젝트에 참여한 경험이 얼마나 되십니까? (현재 직장에서의 경력과 과거의 경력 기간을 모두 포함)

☐ 5년 이하

☐ 5년에서 9년 사이

☐ 10년에서 14년 사이

☐ 15년 이상

Section B: 비즈니스 프로필

1. 현재 귀사가 속해 있는 산업부문 또는 수행하는 주요 사업은 무엇입니까?

☐ 제조업 (Manufacturing)

☐ 은행 관련업 (Banking, Finance and Insurance)

☐ 건설업 (Construction)

☐ 화물업, 물류업, 선박업 또는 수송업 (Cargo, Logistics, Shipping and Transport)

☐ 전기, 전자, 정보기술, 통신업 (Electricity, Electronics, IT and Telecommunications)

☐ 서비스업 (Consulting, Education, Health and Publication etc.)

☐ 도소매업 (Wholesale and Retail trade)

☐ 기타 (Other)

2. 현재 귀사는 얼마나 많은 직원을 보유하고 있습니까? (국내외에서 근무하고 있는 모든 내 외국인 인력을 포함)

☐ 500명 이하

☐ 501 – 1,000명

☐ 1001 – 3,000명

☐ 3,001 – 5,000명

☐ 5,000명 이상

3. 귀사의 연간 총 매출액은 얼마입니까? (국내 및 해외에서 발생되는 매출액 모두를 포함)

☐ 연간 1천억원 이하 (approx. less than 100 Million AUS$)

☐ 1천억원 – 5천억원 사이 (approx. between 100 Million and 500 Million AUS$)

☐ 5천억원 – 1조원 사이 (approx. between 500 Million and 1 Billion AUS$)

☐ 1조원 - 3조원 사이 (approx. between 1 Billion and 3 Billion AUS$)

☐ 3조원 이상 (approx. more than 3 Billion AUS$)

Section C: 귀사의 전략적정보시스템계획

1. 귀사는 주요 IS/IT 시스템을 개발 또는 구현하기 전에 전략적정보시스템계획을 수행하였습니까?

☐ 예

☐ 아니오 (만일 귀사에서 전략적정보시스템계획을 수행하신 적이 없다면 이 설문지를 계속 진행하실 필요가 없습니다. 이 설문조사에 시간을 할애해 주셔서 감사합니다)

2. 귀사에서 어떠한 방법으로 전략적정보시스템계획을 수행하였습니까?

☐ 공식적인 방법으로 전략적정보시스템계획 프로세스를 수행

☐ 비공식적인 방법으로 전략적정보시스템계획 프로세스를 수행

3. 귀사에서 전략적정보시스템계획 수행시 참여한 사람들은 누구였습니까? (<u>반드시 모든 항목에 표시해 주십시오</u>)

전략적정보시스템계획 참여 인력	Yes	No
1. 최고경영자 그룹 (CEO, CIO or CFO)	☐	☐
2. 각 비즈니스/경영 부서의 관리자(들)	☐	☐
3. IT 부서의 관리자	☐	☐
4. 일반 직원 대표(들)	☐	☐
5. 외부기업의 컨설턴트 및 담당자 그룹	☐	☐

4. 귀사에서 전략적정보시스템계획을 수행한 주요 목적 및 목표는 무엇이었습니까? 아래의 표를 읽고 <u>모든 항목</u>에 표시를 부탁 드립니다.

전략적정보시스템계획의 목적과 목표 (1. 전혀 중요하지 않음; 2. 중요하지 않음; 3. 보통; 4. 중요; 5. 매우 중요)	1	2	3	4	5
1. IS/IT systems의 종합적인 기능과 효율성 및 성능의 업그레이드 및 극대화를 꾀하기 위해	☐	☐	☐	☐	☐
2. 제휴, 통합 표준화를 통해 기업 전반적 프로세스들과 구조들을 향상시키기 위해	☐	☐	☐	☐	☐
3. 기업의 모든 사용자들의 의사소통과 지식공유를 활성화하기 위해	☐	☐	☐	☐	☐
4. 기업 전반적 비즈니스 경영과 처리 등의 자동화를 촉진하기 위해	☐	☐	☐	☐	☐
5. 비즈니스 지원과 의사결정의 신속성과 효율성을 촉진시키기 위해	☐	☐	☐	☐	☐
6. 국내기업과 해외지사에 경영수행의 일관성 및 통일성 유지를 위해	☐	☐	☐	☐	☐
7. 고객서비스향상과 고객만족도의 극대화를 통해 여타기업보다 우수한 경쟁적 우위를 확보하기 위해	☐	☐	☐	☐	☐
8. 기업전반적인 경영 및 IS/IT systems을 위한 로드맵을 제공하고 중장기 계획을 수립하기 위해	☐	☐	☐	☐	☐

5. 귀사는 일반적으로 얼마나 자주 전략적정보시스템계획을 재검토하십니까?

☐ 적어도 일년에 한 번

☐ 2년에 한 번

☐ 2-3년에 한 번

☐ 필요시 수행함 (따로 정해진 시간은 없음)

Section D: 전략적정보시스템계획 수행의 선행요소

1. **아래 테이블은 전략적정보시스템계획 프로세스의 성공적 수행을 위해 일반적으로 기업에서 고려해야 할 필요가 있는 선행요소들입니다. 각 요소의 내용을 읽으신 후 <u>모든 항목</u>에 기입을 해 주십시오.**

전략적정보시스템계획의 선행요소 (1. 전혀 고려하지 않음; 2. 거의 고려하지 않음; 3. 보통; 4. 다소 고려; 5. 매우 고려)					
최고경영자의 참여와 지원	1	2	3	4	5
최고경영자는 일반적으로 IS/IT 시스템에 대한 전략적 잠재성을 인식하고, 현재 기업의 IS/IT 시스템 자산과 기회 및 경쟁업체의 IS/IT시스템 사용에 대한 전반적인 지식을 가지고 있었다	☐	☐	☐	☐	☐
최고경영자는 전략적정보시스템계획을 기업의 중장기 IS/IT 시스템 구축과 전반적인 투자를 위한 중요한 활동 또는 자료로서 이해하고 인식하고 있었다	☐	☐	☐	☐	☐
최고경영자는 전략적정보시스템계획 수행을 위한 프로젝트 미팅 또는 의사결정에 적극적으로 참여하였다	☐	☐	☐	☐	☐
최고경영자는 CIO 및 CFO와 서로 공식 또는 비공식 채널을 통해 전략적정보시스템계획과 관련한 의사소통 및 지식공유를 수행하였다	☐	☐	☐	☐	☐
최고경영자는 전략적정보시스템계획에 필수적인 자원할당과 투자와 관련한 우선순위를 설정하고 이를 적절하게 지원하였다 (예: 인력, 재정, 수행기간 및 기타 자원의 우선순위 설정과 지원)	☐	☐	☐	☐	☐
최고경영자는 전략적정보시스템계획의 결과에 대한 모니터를 적극적으로 수행하였으며 사후감사를 실시하였다	☐	☐	☐	☐	☐
비즈니스 부문 및 IT 부문간의 적극적인 의사소통과 지식공유	1	2	3	4	5
기업내 비즈니스 및 IT 부문의 다양한 인력들이 높은 관심을 가지고 전략적정보화시스템계획 프로세스 구축에 참여하였다	☐	☐	☐	☐	☐
비즈니스 및 IT 부문의 인력들은 서로의 근무환경과 업무특징들에 대해 높은 신뢰와 이해를 가지고 있었다	☐	☐	☐	☐	☐
전략적정보시스템계획에 참여한 비즈니스 부문의 인력들은 적절한 IT 관련 지식을, IT 부문의 인력들은 충분한 비즈니스 관련 지식을 가지고 있었다	☐	☐	☐	☐	☐
비즈니스 및 IT 부서들은 전략적정보시스템계획 수행기간 동안 서로 친밀한 관계를 기반으로 공개적으로 구두 및 문서를 활용한 열린 의사소통을 수행하고 유지하였다	☐	☐	☐	☐	☐
비즈니스 및 IT 부문의 인력들은 서로 그들의 지식, 노하우, 업무 경험 및 전문지식 등을 공유했다 (예: 떠오르는 신기술, 산업의 기술 진보현황, 최근 경쟁기업의 비즈니스 운영의 전략 전술 및 고객요구의 변화 등)	☐	☐	☐	☐	☐
비즈니스 및 IT 부문들은 전략적정보시스템계획 프로세스 수행과 관련한 일반적인 목적과 목표 및 문제점과 기회들을 인식하고 확인하였다	☐	☐	☐	☐	☐
전략적정보시스템계획에 참여한 비즈니스 및 IT 부문의 인력들은 외부 컨설턴트 및 참여기업 인력들과도 정보와 지식을 공유하고 의사소통을 수행하였다	☐	☐	☐	☐	☐

전략적정보시스템계획의 선행요소 (1. 전혀 고려하지 않음; 2. 거의 고려하지 않음; 3. 보통; 4. 다소 고려; 5. 매우 고려)					
기업의 내부 및 외부 환경의 고려	1	2	3	4	5
귀사는 전략적정보시스템계획 프로세스 수행 동안 현재 비즈니스 전략, 목표, 자원, 프로세스 뿐만 아니라 기업문화, 비즈니스 역량 및 가치 등을 포함한 기업내부의 비즈니스 환경에 대해 고려하고 조사하였다	☐	☐	☐	☐	☐
귀사는 전략적정보시스템계획 프로세스 수행 동안 경제, 사회, 정치, 법률 및 생태학적 현상 등 기업을 운영하는데 필수적인 외부 경제, 산업 및 경쟁적 환경을 고려하고 조사하였다	☐	☐	☐	☐	☐
귀사는 전략적정보시스템계획 프로세스 수행 동안 최근 비즈니스 운영을 위한 IS/IT 시각과 관점, IS/IT의 성숙도와 보급현황 및 공헌도, IS/IT 스킬과 자원 그리고 기술적 인프라를 포함한 기업 내부의 IS/IT 환경에 대해 고려하고 조사하였다	☐	☐	☐	☐	☐
귀사는 전략적정보시스템계획 프로세스 수행 동안 IS/IT 기술 트랜드와 기회들 그리고 소비자와 경쟁자 및 공급자들의 IS/IT 기술 사용현황 등을 포함한 외부 IS/IT 환경에 대해 고려하고 조사하였다	☐	☐	☐	☐	☐
전략적정보시스템계획 수행을 위한 적절한 자원할당	1	2	3	4	5
기업내 비즈니스-IT 목표와 전략에 대한 적합한 이해와 지식을 보유한 비즈니스 및 IT 부문의 인력과 외부 컨설턴트 및 시스템 개발자 등의 인력이 전략적정보시스템계획 수행시 적절하게 할당되고 지원되었다	☐	☐	☐	☐	☐
전략적정보시스템계획의 수립, 기업교육의 수행, IS/IT 시스템 구현과 사후관리 등을 위한 금융/재정자금이 적절하게 할당되고 투자되었다	☐	☐	☐	☐	☐
최고경영자는 IS/IT 시스템의 전략적 중요성에 대한 이해를 바탕으로 전략적정보시스템계획 수행을 위한 재정 및 인적 자원에 대한 투자와 할당을 적절하고 명확하게 지원하였다	☐	☐	☐	☐	☐
재정 및 인력 자원할당과 관련한 비즈니스 및 IT 부문 인력의 의사소통과 협력 및 의견의 통합이 전략적정보시스템계획 수행시 적절하게 관리되고 수행되었다	☐	☐	☐	☐	☐
기업교육의 수행	1	2	3	4	5
전략적정보시스템계획에 참여한 프로젝트 멤버들은 그 전략적정보시스템계획의 목표와 범위, 기업의 수행목적과 이유, 기업이 가지고 있는 핵심이슈 및 기업의 내외부 환경들에 대한 교육을 받았다	☐	☐	☐	☐	☐
전략적정보시스템계획에 참여한 프로젝트 멤버들은 기업이 수행하고자 할 전략적정보시스템계획 방법론에 대한 교육을 받았다	☐	☐	☐	☐	☐
귀사의 직원들은 왜 전략적정보시스템계획이 수행되어야 하는지, 그것이 왜 중요한지, 과거의 계획들과 새로운 계획은 무엇이 다른지 그리고 수행시 어떠한 이득이 있는지 등과 관련한 포괄적인 사내 교육을 받았다	☐	☐	☐	☐	☐
귀사는 정기적으로 직원들에게 전략적정보시스템계획과 IS/IT 시스템과 관련한 외부 교육 기회와 지원을 제공하였다	☐	☐	☐	☐	☐
귀사는 기업교육을 활성화시키기 위해 직원들에게 수상 또는 승진의 기회 등을 포함한 인센티브를 제공하였다	☐	☐	☐	☐	☐

전략적정보시스템계획의 선행요소 (1. 전혀 고려하지 않음; 2. 거의 고려하지 않음; 3. 보통; 4. 다소 고려; 5. 매우 고려)					
기업내 인력들과 외부인력들과의 적극적인 협력과 파트너쉽	1	2	3	4	5
외부 인력들은 전략적정보시스템계획을 수행하기 위해 기업내 다양한 그룹들(예: 최고경영자 그룹, 프로젝트 팀 인력 그리고 사용자 그룹들)과 좋은 관계를 형성하였다	☐	☐	☐	☐	☐
외부 인력들은 전략적정보시스템계획 수행 동안 그 프로젝트에 적극적으로 참여하고 헌신적으로 지원하였다	☐	☐	☐	☐	☐
외부 인력들은 전략적정보시스템계획을 수행하기 위해 당사의 문화, 사업목표 및 구조 등을 적절하게 이해하고 있었다	☐	☐	☐	☐	☐
외부 인력들은 정직과 성심을 다해 기업내 인력들과의 소통과 그들이 가진 전문지식, 정보와 자원을 적극적으로 공유하고 맡은 업무를 수행하고자 하는 경향을 가지고 있었다	☐	☐	☐	☐	☐
외부 인력들은 그 전략적정보시스템계획을 수행하는데 적절한 프로젝트 경험과 운영스킬 및 기술 등을 보유하고 있었다	☐	☐	☐	☐	☐
외부 인력들은 전략적정보시스템계획 프로젝트 수행기간 동안 및 수행 이후에도 귀사와 장기적인 파트너쉽을 계속 형성하고 있다	☐	☐	☐	☐	☐

Section E: 전략적정보시스템계획의 성공적 결과

1. 아래의 테이블은 전략적정보시스템계획 수행 중에 다양한 선행요소들을 고려함을 통해 달성될 수 있는 전략적정보시스템계획의 성공을 나타냅니다. 내용을 읽으신 후 언급된 <u>모든 항목</u>에 표시를 부탁 드립니다.

전략적정보시스템계획의 성공적 결과 (1. 전혀 중요하지 않음; 2. 다소 덜 중요; 3. 보통; 4. 다소 중요; 5. 매우 중요)					
정보시스템계획 효율성 (IS planning effectiveness)	1	2	3	4	5
IS/IT 계획 및 구현과 관련한 더 나은 평가와 투자를 위한 최고경영자의 보다 향상된 의사결정, 지원 및 이해의 촉진	☐	☐	☐	☐	☐
기업내 사용자들의 보다 향상된 IS/IT에 대한 (재)인식과 구성원들간의 활발한 협업의 촉진	☐	☐	☐	☐	☐
적절한 비즈니스-IT 목표와 계획에 대한 제휴 및 통합을 기반으로 보다 향상된 전사적 아키텍쳐 및 프레임워크 구현의 실현	☐	☐	☐	☐	☐
향상된 비즈니스 운영 및 관리의 효율성 및 IS/IT 서비스에 대한 사용자 만족도의 증가	☐	☐	☐	☐	☐
더욱 높은 수준의 계획의 수립 뿐만 아니라 기업 인력, 소프트웨어 및 하드웨어 등의 원활한 통제가 가능	☐	☐	☐	☐	☐
효과적인 IS/IT 개발을 통한 기업의 종합적인 재무성과와 경쟁우위 확보에 보다 큰 기여의 제공	☐	☐	☐	☐	☐
비즈니스 및 IT 전략적 제휴 (Business and IT alignment)	1	2	3	4	5
기업의 중장기 전략과 목표 그리고 현 비즈니스 및 IT 환경 등에 대한 정보 또는 아이디어 교환을 포함한 비즈니스-IT 부문의 전략적정보시스템계획 프로세스와 관련한 의사소통과 지식공유	☐	☐	☐	☐	☐
비즈니스 계획과 IT 계획간의 연계와 통합 (예: IS/IT 능력 (capabilities), 목표, 이슈, 임무, 자원, 인력 및 전략을 비즈니스 능력, 목표, 이슈, 임무, 자원, 인력 및 전략 등에 연계하고 통합)	☐	☐	☐	☐	☐
기업 체제 및 전략적 변화를 위한 IS 목표 및 기술의 적용	☐	☐	☐	☐	☐
기업의 전략적 방향 설정을 지원하기 위한 IS/IT 관련 기회들에 대한 인지와 확인	☐	☐	☐	☐	☐
기업에서 활용되는 전사적 아키텍쳐 (Enterprise Architecture), 하드웨어, 소프트웨어 및 데이터베이스 등 기업구조와 IS/IT 구축 방법에 영향을 미치는 최신기술들의 전략적 중요성에 대한 평가와 운영	☐	☐	☐	☐	☐

Section F: 전략적정보시스템계획 성공의 영향

1. 아래의 테이블은 성공적 전략적정보시스템계획 수행을 통해 일반적으로 기업에서 달성되는 결과들을 나타냅니다. 언급된 내용을 읽으신 후 전략적정보시스템계획 성공의 결과를 측정하는 언급된 <u>모든 항목</u>에 표시를 부탁 드립니다.

전략적정보시스템계획 성공적인 수립의 영향 (1. 전혀 중요하지 않음; 2. 다소 덜 중요; 3. 보통; 4. 다소 중요; 5. 매우 중요)					
동적 역량 (Organisational capabilities)	1	2	3	4	5
기업의 주요 핵심 문제 분야들에 대한 확인 능력의 향상	☐	☐	☐	☐	☐
기업의 새로운 비즈니스 기회들에 대한 확인 능력의 향상	☐	☐	☐	☐	☐
IS/IT 전략과 기업 전략의 제휴 및 통합 능력의 향상	☐	☐	☐	☐	☐
기업내 비즈니스 및 정보 요구사항들에 대한 이해 능력의 향상	☐	☐	☐	☐	☐
기업내 예측 불가한 변화 및 위기에 적응하기 위한 유연성의 향상	☐	☐	☐	☐	☐
비즈니스-IT 부문간 비즈니스 수행의 의사결정 향상을 위한 신 아이디어, 정보 및 지식 등과 관련한 의사소통과 협동 능력의 향상	☐	☐	☐	☐	☐
기업 교육 촉진을 위한 능력의 향상	☐	☐	☐	☐	☐
정보시스템 역량 (IS competencies)	1	2	3	4	5
비즈니스 전략 공식화의 구성요소로서 IS/IT 기반 기회들의 영향 및 결과에 대한 확인 및 평가 능력의 향상과 기업내의 비즈니스 및 IS/IT의 역할과 범위에 대한 (재)정의 능력의 향상	☐	☐	☐	☐	☐
적절한 지식과 능력을 기반으로 비즈니스 우선 순위 설정에 필수적인 기업 프로세스, 정보 및 시스템에 대한 투자 등과 관련된 비즈니스 전략에 대한 관리, (재)개발 및 실행하는 능력의 향상	☐	☐	☐	☐	☐
적절한 지식과 능력을 기반으로 기업 전략의 구현을 가능하게 하는데 필수적인 중장기 정보 아키텍처, 기술 인프라 및 자원관리계획 등과 관련된 비즈니스 전략에 대한 관리, (재)개발 및 실행하는 능력의 향상	☐	☐	☐	☐	☐
기업내 정보, 어플리케이션 및 IS/IT 서비스의 효율적 사용을 통한 IS/IT 투자 이행으로부터 실현되는 이익들의 극대화 능력 향상	☐	☐	☐	☐	☐
비즈니스 및 기술 역량의 활용과 강화를 위해 필수적인 비즈니스-IT 솔루션들을 구현하고 운영하기 위해 인력, 하드웨어 및 소프트웨어 등 기업내 모든 자원들을 효율적으로 배치하고 사용하기 위한 능력의 향상	☐	☐	☐	☐	☐
적절하고 적용 가능한 정보, 기술, 어플리케이션 뿐만 아니라 공급 체인 및 가용 자원 용량을 창출하고 유지하기 위한 능력의 향상	☐	☐	☐	☐	☐
정보기술 인프라 유연성 (IT infrastructure flexibility)	1	2	3	4	5
소비자 요구, 환경 상황, 기업내 기술적 요구 및 신흥시장 트랜드 등에 대한 반응 및 응답능력의 향상	☐	☐	☐	☐	☐
고객들에게 최적화된 제품 또는 서비스 등을 신속하게 제공하기 위한 능력의 향상	☐	☐	☐	☐	☐

전략적정보시스템계획 성공적인 수립의 영향 **(1. 전혀 중요하지 않음; 2. 다소 덜 중요; 3. 보통; 4. 다소 중요; 5. 매우 중요)**					
정보기술 인프라 유연성 (IT infrastructure flexibility) 계속	1	2	3	4	5
기업내의 자원배분요구 뿐만 아니라 경쟁기업들의 신제품 및 서비스 출시 등에 대해 반응하는 능력의 향상	☐	☐	☐	☐	☐
새로운 지역 또는 국제 시장으로 비즈니스를 다변화하기 위한 능력의 향상	☐	☐	☐	☐	☐
더 좋고 빠르며 값싼 상품과 서비스를 생산하고 제공하는데 필수적인 비즈니스 프로세스 및 신기술을 신속히 적용하고 (재)디자인하기 위한 능력의 향상	☐	☐	☐	☐	☐
생산원가절감과 더 나은 파트너쉽의 확보를 위해 전략적 파트너 및 협력업체들을 검토하고 전환하기 위한 능력의 향상	☐	☐	☐	☐	☐

설문조사에 응해주셔서 대단히 감사 드립니다.

Appendix C: Testing result of the assumption of linearity

ANOVA Table						
		Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
TMPS * BITA	(Combined)	29.701	13	2.285	5.497	.000
	Linearity	23.646	1	23.646	56.894	.000
	Deviation from Linearity	6.055	12	.505	1.214	**.272**
ECKS * BITA	(Combined)	19.299	13	1.485	4.708	.000
	Linearity	16.675	1	16.675	52.885	.000
	Deviation from Linearity	2.624	12	.219	.694	**.758**
IEE * BITA	(Combined)	37.858	13	2.912	6.568	.000
	Linearity	34.936	1	34.936	78.792	.000
	Deviation from Linearity	2.923	12	.244	.549	**.881**
OL * BITA	(Combined)	24.178	13	1.860	4.736	.000
	Linearity	22.433	1	22.433	57.124	.000
	Deviation from Linearity	1.745	12	.145	.370	**.973**
ARS * BITA	(Combined)	25.973	13	1.998	5.233	.000
	Linearity	22.726	1	22.726	59.526	.000
	Deviation from Linearity	3.247	12	.271	.709	**.743**
APMEV * BITA	(Combined)	16.328	13	1.256	1.915	.028
	Linearity	8.279	1	8.279	12.626	.000
	Deviation from Linearity	8.049	12	.671	1.023	**.427**
TMPS * ISPE	(Combined)	35.062	17	2.062	5.115	.000
	Linearity	23.944	1	23.944	59.377	.000
	Deviation from Linearity	11.118	16	.695	1.723	**.042**
ECKS * ISPE	(Combined)	35.778	17	2.105	7.959	.000
	Linearity	30.526	1	30.526	115.446	.000
	Deviation from Linearity	5.253	16	.328	1.242	**.235**
IEE * ISPE	(Combined)	44.837	17	2.637	6.191	.000
	Linearity	41.600	1	41.600	97.658	.000
	Deviation from Linearity	3.236	16	.202	.475	**.958**

Appendix D: Testing result of the assumption of linearity (Continued)

ANOVA Table						
		Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
OL * ISPE	(Combined)	35.240	17	2.073	5.743	.000
	Linearity	31.274	1	31.274	86.640	.000
	Deviation from Linearity	3.966	16	.248	.687	**.807**
ARS * ISPE	(Combined)	42.530	17	2.502	7.546	.000
	Linearity	38.306	1	38.306	115.550	.000
	Deviation from Linearity	4.223	16	.264	.796	**.690**
APMEV * ISPE	(Combined)	30.679	17	1.805	2.927	.000
	Linearity	23.522	1	23.522	38.156	.000
	Deviation from Linearity	7.157	16	.447	.726	**.767**
BITA * Orcap	(Combined)	35.104	21	1.672	9.448	.000
	Linearity	29.447	1	29.447	166.444	.000
	Deviation from Linearity	5.656	20	.283	1.599	**.052**
BITA * IScom	(Combined)	31.934	18	1.774	9.550	.000
	Linearity	28.587	1	28.587	153.878	.000
	Deviation from Linearity	3.347	17	.197	1.060	**.394**
BITA * ITIF	(Combined)	33.964	17	1.998	11.201	.000
	Linearity	29.067	1	29.067	162.960	.000
	Deviation from Linearity	4.897	16	.306	1.716	**.043**
ISPE * Orcap	(Combined)	38.708	21	1.843	12.132	.000
	Linearity	36.375	1	36.375	239.405	.000
	Deviation from Linearity	2.333	20	.117	.768	**.752**
ISPE * IScom	(Combined)	42.173	18	2.343	16.882	.000
	Linearity	40.011	1	40.011	288.297	.000
	Deviation from Linearity	2.163	17	.127	.917	**.555**
ISPE * ITIF	(Combined)	32.373	17	1.904	11.130	.000
	Linearity	28.455	1	28.455	166.312	.000
	Deviation from Linearity	3.917	16	.245	1.431	**.126**

Appendix D: Multicollinearity test

Multicollinearity test for antecedents

	TMPS 1	TMPS 2	TMPS 3	TMPS 4	TMPS 5	TMPS 6	ECKS 1	ECKS 2	ECKS 3	ECKS 4	ECKS 5	ECKS 6	ECKS 7
TMPS 1	1												
TMPS 2	.741	1											
TMPS 3	.604	.618	1										
TMPS 4	.559	.553	.641	1									
TMPS 5	.596	.651	.627	.591	1								
TMPS 6	.498	.533	.649	.558	.598	1							
ECKS 1	.339	.309	.354	.301	.399	.338	1						
ECKS 2	.349	.353	.455	.360	.450	.424	.622	1					
ECKS 3	.243	.237	.299	.295	.357	.331	.504	.563	1				
ECKS 4	.296	.337	.328	.378	.356	.351	.519	.593	.602	1			
ECKS 5	.247	.261	.311	.369	.343	.302	.468	.537	.495	.634	1		
ECKS 6	.248	.310	.253	.321	.329	.292	.490	.503	.458	.510	.580	1	
ECKS 7	.252	.278	.233	.244	.308	.287	.474	.449	.469	.472	.497	.603	1

Multicollinearity test for antecedents (Continued)

	IEE 1	IEE 2	IEE 3	IEE 4	ARS 1	ARS 2	ARS 3	ARS 4
IEE 1	1							
IEE 2	.657	1						
IEE 3	.650	.616	1					
IEE 4	.641	.621	.765	1				
ARS 1	.425	.399	.422	.443	1			
ARS 2	.441	.457	.449	.380	.612	1		
ARS 3	.456	.438	.495	.454	.586	.692	1	
ARS 4	.477	.409	.473	.432	.635	.611	.709	1

	OL 1	OL 2	OL 3	OL 4	OL 5	APMEV 1	APMEV 2	APMEV 3	APMEV 4	APMEV 5	APMEV 6
OL 1	1										
OL 2	.659	1									
OL 3	.526	.629	1								
OL 4	.450	.484	.578	1							
OL 5	.497	.509	.456	.534	1						
APMEV 1	.321	.297	.282	.316	.314	1					
APMEV 2	.323	.281	.222	.241	.307	.778	1				
APMEV 3	.269	.234	.214	.297	.332	.713	.738	1			
APMEV 4	.298	.239	.228	.289	.364	.696	.737	.770	1		
APMEV 5	.246	.185	.192	.247	.288	.707	.712	.732	.743	1	
APMEV 6	.198	.196	.156	.238	.338	.625	.696	.669	.707	.740	1

Multicollinearity test for the successful outcomes of SISP

	BITA 1	BITA 2	BITA 3	BITA 4	BITA 5	ISPE 1	ISPE 2	ISPE 3	ISPE 4	ISPE 5	ISPE 6
BITA 1	1										
BITA 2	.534	1									
BITA 3	.477	.421	1								
BITA 4	.453	.396	.477	1							
BITA 5	.406	.452	.433	.461	1						
ISPE 1	.394	.411	.268	.297	.354	1					
ISPE 2	.423	.438	.490	.362	.341	.559	1				
ISPE 3	.361	.382	.392	.354	.417	.396	.459	1			
ISPE 4	.292	.365	.335	.319	.423	.346	.367	.540	1		
ISPE 5	.342	.267	.348	.324	.378	.399	.466	.454	.474	1	
ISPE 6	.381	.337	.399	.413	.407	.383	.461	.486	.525	.516	1

Multicollinearity test for the impact of SISP success

	Orcap1	Orcap2	Orcap3	Orcap4	Orcap5	Orcap6	Orcap7	IScom1	IScom2	IScom3	IScom4	IScom5	IScom6	ITIF 1	ITIF 2	ITIF 3	ITIF 4	ITIF 5	ITIF 6
Orcap1	1																		
Orcap2	.514	1																	
Orcap3	.365	.473	1																
Orcap4	.390	.459	.443	1															
Orcap5	.430	.534	.342	.448	1														
Orcap6	.296	.480	.405	.446	.502	1													
Orcap7	.270	.396	.442	.454	.404	.443	1												
IScom1	.379	.345	.444	.439	.438	.350	.428	1											
IScom2	.304	.252	.303	.420	.332	.280	.186	.518	1										
IScom3	.268	.373	.417	.522	.377	.369	.368	.432	.540	1									
IScom4	.349	.368	.401	.418	.338	.318	.371	.451	.472	.575	1								
IScom5	.358	.325	.403	.487	.407	.328	.319	.488	.501	.526	.535	1							
IScom6	.313	.390	.421	.427	.368	.328	.419	.504	.459	.496	.550	.546	1						
ITIF 1	.287	.414	.352	.306	.441	.397	.376	.273	.256	.346	.317	.289	.286	1					
ITIF 2	.329	.374	.315	.381	.307	.317	.314	.280	.367	.387	.359	.370	.369	.549	1				
ITIF 3	.288	.398	.410	.425	.417	.444	.403	.392	.350	.410	.306	.402	.368	.520	.522	1			
ITIF 4	.218	.377	.307	.400	.413	.350	.427	.340	.293	.355	.316	.362	.341	.490	.447	.520	1		
ITIF 5	.303	.370	.343	.331	.382	.414	.292	.306	.287	.355	.388	.296	.362	.505	.425	.538	.495	1	
ITIF 6	.249	.293	.328	.367	.339	.309	.412	.326	.367	.417	.357	.438	.421	.346	.351	.453	.499	.526	1

Appendix E: The outcome of EFA model

The outcome of EFA (Antecedents)

	Component					
	1	**2**	**3**	**4**	**5**	**6**
TMPS Item 1			**.785**			
TMPS Item 2			**.768**			
TMPS Item 3			**.781**			
TMPS Item 4			**.733**			
TMPS Item 5			**.724**			
TMPS Item 6			**.702**			
ECKS Item 1		**.668**				
ECKS Item 2		**.698**				
ECKS Item 3		**.727**				
ECKS Item 4		**.738**				
ECKS Item 5		**.721**				
ECKS Item 6		**.666**				
ECKS Item 7		**.650**				
IEE Item 1				**.695**		
IEE Item 2				**.635**		
IEE Item 3				**.773**		
IEE Item 4				**.800**		
ARS Item 1						**.623**
ARS Item 2						**.657**
ARS Item 3						**.745**
ARS Item 4						**.730**
OL Item 1					**.568**	
OL Item 2					**.660**	
OL Item 3					**.698**	
OL Item 4					**.704**	
OL Item 5					**.646**	
APMEV Item 1	**.788**					
APMEV Item 2	**.838**					
APMEV Item 3	**.848**					
APMEV Item 4	**.850**					
APMEV Item 5	**.860**					
APMEV Item 6	**.834**					

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalisation.[a]
a. Rotation converged in 6 iterations.

The outcome of EFA (The successful outcomes of SISP)

	Component	
	1	**2**
BITA Item 1		**.771**
BITA Item 2		**.735**
BITA Item 3		**.696**
BITA Item 4		**.690**
BITA Item 5		**.577**
ISPE Item 1	**.524**	
ISPE Item 2	**.544**	
ISPE Item 3	**.704**	
ISPE Item 4	**.765**	
ISPE Item 5	**.761**	
ISPE Item 6	**.719**	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalisation.[a]
a. Rotation converged in 3 iterations.

The outcome of EFA (The impact of SISP success)

	Component		
	1	**2**	**3**
Orcap Item 1			**.655**
Orcap Item 2			**.766**
Orcap Item 3			**.555**
Orcap Item 4			**.506**
Orcap Item 5			**.654**
Orcap Item 6			**.618**
Orcap Item 7			**.515**
IScom Item 1	**.610**		
IScom Item 2	**.753**		
IScom Item 3	**.689**		
IScom Item 4	**.698**		
IScom Item 5	**.722**		
IScom Item 6	**.678**		
ITIF Item 1		**.709**	
ITIF Item 2		**.633**	
ITIF Item 3		**.692**	
ITIF Item 4		**.718**	
ITIF Item 5		**.719**	
ITIF Item 6		**.602**	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalisation.[a]
a. Rotation converged in 6 iterations.