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UNIVERSITI TEKNOLOGI PETRONAS

FACTORS INFLUENCING THE STRATEGIC ALIGNMENT OF INFORMATION TECHNOLOGY WITH BUSINESS IN THE TOURISM INDUSTRY

By

MOHAMMED ABDI MUSSA

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FACTORS INFLUENCING THE STRATEGIC ALIGNMENT OF INFORMATION TECHNOLOGY WITH BUSINESS IN THE TOURISM INDUSTRY

by

MOHAMMED ABDI MUSSA

A Thesis

Submitted to the Postgraduate Studies Programme

As a requirement for the degree of

DOCTOR OF PHILOSOPHY

DEPARTMENT OF COMPUTER AND INFORMATION SCIENCES

UNIVERSITI TEKNOLOGI PETRONAS

BANDAR SERI ISKANDAR

PERAK

MAY 2011

DECLARATION OF THESIS

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ACKNOWLEDGMENT

I am indebted to my supervisors, Associate Professor Dr P. Dhanapal Durai Dominic and Dr Alan Giffin Downe. Without their wise counsel, inspiring discussions and guidance, this thesis would not have been completed. I wish to convey my deepest appreciation for their encouragement and support over the last three years. I would like also to express my sincere appreciation to Associate Professor Dr Azween Abdullah at Universiti Teknologi PETRONAS, and Dr Siew-Phaik Loke at Universiti Teknologi Mara for their time and enduring assistance to help me to complete this thesis.

I would also like to acknowledge and express my gratitude to the Universiti Teknologi PETRONAS for their financial support which has enabled me to conduct this research. Without the graduate assistance scheme awarded to me by the postgraduate office, this research would not have been materialized.

Additionally, I would to express my heartfelt thanks to my late father, my mother, my wife, and all of my family members who have provided me all the necessary support and encouragement to pursue my education. I am grateful for the support of my close friends and colleagues who have been supportive in peer review sessions.

Finally, I wish to acknowledge the important contribution of the survey respondents. Their support to provide the survey data made this study possible.

ABSTRACT

For the last two decades, information technology (IT) in general, and information systems (IS) in particular have rapidly advanced in capability and have changed the way organizations do business. For many organizations, IT spending constitutes one of the biggest investments each year and as a result, the strategic alignment between information technology (IT) and business has been a priority for information system practitioners and business executives. However, the conditions under which IT can be used for competitive advantage continues to be a major challenge. The objectives of this thesis were to identify the behavioral, technical and organizational underlying strategic alignment factors, and to investigate strategic alignment influence of the use of IT for competitive advantage. The findings of this study further extend the strategic alignment research stream. This was achieved by developing, empirically testing, and validating the second-order strategic alignment factor model to investigate the influence of the strategic alignment between IT and business on the use of IT for competitive advantage.

Using the survey method, a mail questionnaire has provided 202 respondents of IT and business executives from the Malaysian service sector (Tour and Travel agents). The data were analyzed using structural equation modeling (SEM) techniques to validate the hypothesized second-order strategic alignment factor model. Confirmatory factor analysis supported the coordination of IT planning with business planning; communication between IT and managers; human resource skills maturity; IT infrastructure flexibility; and organizational change adaptability as the underlying strategic alignment factors. The analysis also supported that strategic alignment between IT and business to positively influence the use of IT for competitive advantage. Furthermore, the hypothesized second-order strategic alignment factor model demonstrated an adequate model fit with the sample data. Hence, the hypothesis that the proposed second-order factor model fits the data was supported.

The study has made theoretical and practical contributions. First, the theoretical contribution, the proposed second-order strategic alignment model of this study has

extended the cumulative research of aligning IT strategy with business strategy by examining how strategic alignment can influence the use of IT for competitive advantage. Another theoretical contribution is that, strategic alignment is specified as a second-order construct, derived from the first-order constructs; which are a coordination of IT and business planning factor; communication between IT and business managers factor; human resource skills maturity factor; IT infrastructure flexibility factor; and organizational change adaptability factor. The revised second-order strategic alignment factor model not only has acceptable model fit, but also performs better than the alternative model.

This study has provided a validated and tested research model that will be an important tool for practitioners and managers to be able to know and assess the underlying strategic alignment factors, and the influence of strategic alignment of the use of IT for competitive advantage.

ABSTRAK

Dalam lingkungan dua dekad yang lalu, teknologi maklumat (IT) secara umum, dan sistem maklumat (IS) secara khususnya mempunyai kemajuan yang pesat dalam kemampuan dan telah mengubah gaya sesebuah organisasi menjalankan perniagaan; dalam kebanyakan organisasi, perbelanjaan IT merupakan salah satu pelaburan yang terbesar pada setiap tahun . Sebagai hasilnya, penyelarasan strategik antara teknologi maklumat (IT) dan perniagaan telah di senaraikan antara sepuluh tertinggi dalam isu IT bagi para pengamal sistem maklumat dan eksekutif perniagaan. Namun, keadaan di mana IT boleh digunakan untuk keunggulan dalam persaingan terus menjadi cabaran besar bagi mereka. Tujuan tesis ini adalah untuk mengenalpasti perilaku, teknikal dan organisasi yang mendasari faktor penyelarasan strategik, dan untuk mengetahui pengaruh penyelarasan strategik pada penggunaan IT untuk keunggulan kompetitif. Penemuan kajian ini memanjangkan penyelarasan strategik aliran penyelidikan. Hal ini dilakukan dengan membentuk, menguji dan mengenal pasti secara memerhati peringkat kedua model faktor penyelarasan strategik untuk menyiasat pengaruh penyelarasan strategik antara IT dan perniagaan mengenai penggunaan IT untuk keunggulan kompetitif.

Dengan menggunakan kaedah tinjauan, senarai soalan melalui e-mel telah menyediakan 202 responden IT dan eksekutif perniagaan dari sektor perkhidmatan Malaysia (agen pelancongan dan perjalanan). Data yg diperolehi dianalisis menggunakan teknik pemodelan persamaan berstruktur atau "*structural equation* modeling" (SEM) untuk mengesahkan peringkat kedua model faktor penyelarasan strategik. Analisis faktor pengesahan telah menegaskan bahawa penyelarasan perancangan IT dengan perancangan perniagaan, komunikasi antara IT dan pengurus, tempoh kematangan kemahiran sumber manusia, fleksibiliti infrastruktur IT, dan kebolehupayaan perubahan organisasi merupakan faktor-faktor yang menyebabkan berlakunya penyelarasan strategik. Analisis ini juga disokong bahawa penyelarasan strategik antara IT dan perniagaan mempunyai pengaruh yang positif terhadap

penggunaan IT untuk keunggulan kompetitif. Selain itu, peringkat kedua model faktor penyelarasan strategik menunjukkan sebuah model padanan yang mencukupi dengan sampel data . Oleh sebab itu, hipotesis bahawa model faktor penyesuaian data peringkat kedua yang dicadangkan adalah benar dan disokong.

Kajian ini telah memberikan sumbangan secara teori dan praktikal. Pertama, sumbangan secara teori, model peringkat kedua penyelarasan strategik yang dicadangkan dalam kajian ini telah memanjangkan kajian kumulatif penyelarasan strategi IT dengan strategi perniagaan dengan menyemak bagaimana penyelarasan strategi IT dapat memberikan sumbangan untuk menggunakan IT untuk keunggulan kompetitif. Sumbangan lain yang disampaikan secara teori adalah , penyelarasan strategik ditetapkan sebagai binaan peringkat kedua, berasal dari peringkat pertama pembinaan, yang merupakan penyelarasan faktor perancangan IT dan perniagaan, komunikasi antara faktor pengurusan IT dan perniagaan, faktor kematangan kemahiran sumber manusia, faktor infrastruktur IT yang fleksibel, dan faktor perubahan adaptasi organisasi. Semakan model faktor penyelarasan strategik peringkat kedua bukan hanya mempunyai model padanan yang diterima, bahkan dapat melakukan lebih baik berbanding dengan model-model alternatif yang lain.

Akhir kata, atas sumbangan secara praktikalnya, kajian ini telah memberikan sebuah model kajian yang telah disahkan dan diuji yang mana akan menjadi alat yang berguna serta penting bagi pengamal dan pengurus untuk mengetahui dan menilai faktor-faktor yang mendasari penyelarasan strategik, dan pengaruh penyelarasan strategik pada penggunaan IT untuk keunggulan dalam persaingan.

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CHAPTER 1
INTRODUCTION

1.1 Introduction

Achieving strategic alignment between IT and business has been a major concern for IT and business executives over the last two decades. Although several frameworks were developed to address this issue, the strategic alignment IT and business strategies remains a primary consideration for information system practitioners, business executives and researchers. Additionally, the strategic alignment between and business could turn IT investment into competitive capabilities, especially in today's competitive global market. For this reason, it is important to understand the key behavioral, technical and organizational underlying strategic alignment factors, and how strategic alignment influences the use of IT for competitive advantage. This thesis proposes a new second-order factor model that empirically validates underlying strategic alignment factors, and in turn, the strategic alignment influence on the use of IT for competitive advantage.

1.2 Problem Statement

Over the last two decades, information systems (IS) and information technology (IT) have characterized with the rapid development, and emerged in business to become integral part of most business forms and industrial organizations. Most organizations in all sectors of industry, business and commerce, government and academia, healthcare and tourism in the modern world are fundamentally dependent on their

information systems and information technology (IS/IT) (Peppard and Ward, 2004; Ward and Peppard, 2002). For organizations to remain competitive in a dynamic business environment, determination and understanding of how to manage IS/IT is fundamental. A key success factor for a successful business in such a dynamic business environment is an effective, efficient IT strategy supporting business strategies and processes (Henderson and Venkatraman, 1993; Luftman, 2000). The importance of strategic use of technology based IS/IT for effective organizational performance contributing to the creation of business value is addressed and well recognized (Galliers and Leidner, 2003; Luftman et al., 1999).

The alignment of business strategy and strategic choices of IS/IT deployment are therefore a prominent area of concern remaining a challenging yet business IT issues (Kafi and Kalika, 2005; Kanter, 2003; Luftman and Kempaiah, 2008; Luftman et al., 2006; Silvius, 2009; Ward and Peppard, 2002). IS/IT is an integral part of most forms of business and industrial organizations and its role and impact in business and industries has changed significantly over the last decade (Peppard and Ward, 2004). With the emergence of IS/IT in business, businesses everywhere are undergoing rapid and significant change, and across a wide range of business markets, IS/IT has emerged from its traditional 'back office' role and evolved towards a 'strategic' position. It has potential to not only support chosen business strategies, but also to shape new business strategies (Galliers and Leidner, 2003; Henderson and Venkatraman, 1993; Luftman et al., 1999). As a result, IT and business executives, and researchers have made many attempts to address how to achieve strategic alignment. One outcome, The Strategic Alignment Model (SAM) was developed by Henderson and Venkatraman (1993) to describe the key alignment of domains of business strategy, IT strategy, organizational infrastructure and process, and IT infrastructure and process. Additionally, a number of methodologies and frameworks have extended the SAM model to achieve strategic alignment between IT and business strategy (Luftman et al., 2006; Luftman, 2003a; Luftman, 2003b; Luftman et al., 1999). However, Silvius (2009) noted that there has been limited empirical research to validate these concepts.

In order to overcome the lack of strategic alignment between IT and business strategy, to turn IT investments into competitive advantage, a continuous process to monitor and adjust alignment levels is required. For the alignment to be monitored and adjusted in a continuous manner there must be a clear understanding of the underlying strategic alignment factors.

While many factors contribute to the strategic alignment of IT with business, this thesis investigates the key factors that provide the necessary foundation for IT and business managers to develop strategic alignment between IT and business. Based on these critical key factors, this thesis proposes a new second-order factor model that empirically validates underlying strategic alignment factors, and the strategic alignment influence on the use of IT for competitive advantage.

In this study, several research contributions will be suggested that are considered important for IT and business executives, and researchers to achieve sustainable strategic alignment between IT and business, and turn IT investments into competitive advantage uses. There are a number of issues, which are related to the research problem of "the lack of the strategic alignment of IT with business to use IT resources for competitive advantage." Including:

- The fast advancement of technology makes IT less manageable and IT investment uncertain and risky.
- No concise and specific metrics have been identified that measures the impact of IT investment on competitive advantage.
- Limited empirical research to validate strategic alignment concepts.

It is therefore important to investigate the underlying strategic alignment factors and examine the strategic alignment implication on the use of IT for competitive advantage.

1.3 Motivation

There are number of issues that have motivated the researcher to conduct this study. First, the emergence of information technology (IT) has contributed to the rapid

growth in the electronic marketplace Norzaidi et al. (2007). IT and particularly the internet, is believed to be the most cost-efficient tool to help companies to gain bigger market shares and compete with rival organizations to attract customers towards their products, services, and information (Tan et al., 2009). The favourable characteristics inherent in the internet i.e. speed, user friendliness, low cost and wide accessibility have allowed electronic commerce (e-commerce) to be increasingly diffused globally bringing countries together into a global networked economy (Gibbs and Kraemer, 2004).

Second, the tourism industry is considered an important factor for the development for Malaysian economy. The allocation for this industry has increased over recent years. From RM605.5 million in the 7th Malaysian plan to RM1009.0 million in the 8th plan period, i.e. a 60% increase in its allocation (EPU, 2001). In the 9th Malaysian plan period, the allocation reached RM1367.0 million (EPU, 2006). According to 2009 data from the World Tourism Organization (WTO, 2009), Malaysia secured 9th position in ranking of most visited countries by internal tourist arrivals. For example, international tourist arrivals in Malaysia increased from 17.5 million in 2006 to 23.6 million in 2009, generating revenue of RM 53.4 billion. The contribution of travel and tourism to Gross Domestic Product (GDP) including its wider economic impacts, is forecasted to rise by 5.0% from RM 124.7 billion or 15% of GDP in 2011 to RM 203.6 billion by 2021. Travel and tourism contribution to employment is forecasted to rise by 3.5% from 1,587,000 jobs or 13.8% of total employment) in 2001 to 2,241,000 jobs or 15.3% by 2021 (WTTC, 2009). Moreover, under the 9th Malaysian plan, the National Information Technology Council (NITC, 2007) identified three technology focus areas of strategic ICT roadmap for Malaysia that could advance Malaysia economically and technologically over the next ten years and beyond, and could help fulfil the tenets of Vision 2020 these are: 1) wireless sensors networks, 2) Predictive analytics, and 3) 3-Dimentional internet. These technology focus areas would enhance the productivity of key sectors of the economy and promote development of new IT-based and knowledge intensive industries such as tourism etc.

However, no effort has been made to develop an assessment model to strategically align IT and business in the tourism sector in Malaysia. Therefore, the researcher is concerned about factors that contribute to strategic alignment to utilize IT capabilities in tourism sector so that IT would serve in tourism sector as a foundation condition that would transform Malaysia into a knowledge-based and value-driven economy.

1.4 Research Objectives

This study has the following research objectives:

1. To examine the perceived relationship between the alignment of IT strategy with business strategy and the use of IT for competitive advantage,
2. To investigate factors that contribute to align IT strategy with business strategy,
3. To develop a new second-order factor model of strategic alignment of IT with business and the use of IT for competitive advantage.

1.5 Research Questions

To meet the aforementioned research objectives, the following research questions were proposed:

1. What are the underlying strategic alignment factors?
2. Is there a significant association between the strategic alignment of IT with business and the use of IT for competitive advantage?

1.6 IT and Tourism Sector

The advancement of IT has transformed business practices and strategies, as well as industry structures. In the tourism sector for example, the introduction of computer reservation systems in the late 1970s, global distribution systems in the late 1980s, and the internet revolution in the 1990s have brought many implications to operational and strategic practices in the tourism industry (Buhalis, 2003; eBusinessW@tch,

2006). The use of IT has provided distinct advantages for the tourism industry such as cost reduction, revenue growth, and customer retention (Buhalis, 2003).

According to Werthner and Ricci (2004) e-commerce in travel and tourism industries are continuously increasing despite of tough economic problems. The authors further stated, this industry is adapting application business to business (B2B) and business to consumer (B2C). This industry has changed the ways of doing business from traditional ways to modern way, i.e. e-commerce via web and other online transaction software where as other industries are still adapting the traditional way. Web is changing the behavior of consumers, as they are becoming less loyal, take less time for choosing and consuming the tourism products. As this industry is service oriented business industry, companies are implementing various new techniques to satisfy consumer needs and providing information to them through web and different value generating strategies like value extraction, value capture, value addition value creation (Werthner and Ricci, 2004). Travel and tourism is information based service orientated business and the product is termed as *confidence good*, and prior comprehensive assessment of quality is impossible however due to use of e-commerce feeds backs from consumers can be obtained in short span of time and this services can be enhanced accordingly. Due to adaption of e-commerce in travel and tourism industry consumers are becoming more powerful players as they can choose their destination and sites in few minutes whereas travel agents, travel websites etc see diminishing power in sales however they are providing new market functionality using new technologies to attract more consumers. Many tour operator, travel agents, online travel agents are using these strategy to attract more consumers however using more high-tech technologies needs huge investments, need more high skill human resource etc.

There are various factors which are considered that travel and tourism will adapt ecommerce strategy. (Kim, 2004) argued that, there are main two factors for conducting successful e-commerce strategy which are security of the e-commerce system and user-friendly Web interface. Security means not only securing own system but also providing security assurance to users who are using the sites or online software. User-friendly web interface give consumer trust and it is easy to

convenience for customers. Beside these factors other factors are also essential to succeed which are top management support, IT infrastructure, and customer acceptance. Top management support plays vital role as they are the decision makers and their support and decision will direct the company to use the strategy (Kim, 2004). Further, he also explained that without proper IT structure and skilled human resources, e-commerce strategy will fail. One of the factors he explained is customer acceptance; customer acceptance means the way customer accepts the web or online software of the company and it should have very rich contents and very easy to use. These factors will decide whether business will get more customers. Customers intend to use research website quality due to content richness and ease of use (Law and Bai, 2008).

According to Law and Bai (2008), there are two types of customers who use travel companies websites, those are buyers and browsers. Buyers are those people who actually intend to buy the services whereas browsers are those who intend to surf and get information only. Those browsers can be converted to buyers by improving the website contents, making it attractive, provided very rich in contents and very user friendly to use. As more and more travel companies are applying these strategies, the increase in percentage of website buyers and browsers are also increasing day by day. This is due to adaption of e-commerce technology in travel and tourism industry.

There are various benefits for small and medium sized tourism enterprise to use e-commerce. Kim (2004) listed some benefits of using e-commerce in tourism as follow:

- Providing easy access to information on tourism products and services
- Providing better information on tourism products and services
- Providing convenience for customers
- Expanding choices by customers
- Creating new markets
- Establishing interactive relationship with customers

- Improving customer services
- Improving image and public recognition of the small & medium sized tourism enterprises
- Saving time for providing tourism services
- Providing customized & specialized tourism products & services
- Reducing operating cost
- Simplifying the process business
- Interacting with business partners
- Founding new business partners

Kim (2004) argued that by adapting e-commerce companies can interact with customers frequently which will enhance their customer service and use of ecommerce also reduce their operating costs as lots of human resource is not needed and new opportunity of finding new agents, creating new markets etc. Due to use of ecommerce by small and medium enterprises they can save time as well.

E- Commerce transforms travel and tourism industry from traditional way to technological way; however, there are various barriers for travel and tourism companies to adapt e-commerce in their business. Kim (2004) included these barriers the following:

- Knowledge of available technology
- Lack of awareness
- Cost of initial investment
- Lack of confidence in the benefits of e-commerce
- Cost of system maintenance
- Shortage of skilled human resources

- Resistance to adaption of e-commerce.
- Insufficient e-commerce infrastructure

Moving from traditional way to technological way is not easy so in order to adapt e-commerce huge investment on IT have to done along with this staffs have to be trained accordingly. It is not always possible for small and medium size companies to invest huge amount and get skill human resource people. Some countries have different rules and regulation for e-commerce business rather than traditional ways. Government rules and regulation also plays a vital role for adapting e-commerce. Further, websites and software must be rich in contents very easy to use, updated time to time. If these factors are ignored, then these factors will be barrier of e-commerce in tourism.

According to Mamaghaini (2009), there are several challenges to adapt e-commerce in travel and tourism industry. The behavior of customers is changing and due to e-commerce they swap agency in few minutes if they are not happy with them. Customers expect the same service, same treatment as offered by travel agents through their outlet or through the web. Different customers have different ways of surfing internet as per their level of internet knowledge as well user friendly website and website's rich contents. To adapt e-commerce by a company, they have to focus on their detailed of services, product availability, special offers, personalized information which are important factors consumers search on web for the product. The author further argued that e-commerce customers have become demanding. As such, regular maintenance, upgrade of technologies and continuous improvement of customer service are the core factors for enhancing business and attracting more customers. Consumers these days are far more demanding and want convenience, speed and a seamless buying experience. A main challenge is to create awareness among customers about product, make them loyal (Mamaghaini, 2009).

Due to drastic change in technology, Internet, mobile and handheld portals available, consumers access the Internet for travel planning and companies have to grasp these technologies and move as per the change in technology which of course is expensive and need skilled human resource manpower. Some countries have weak IT

structure and people from these countries might have problems for using e-commerce. One of the main challenge of the adaptation of e-commerce in travel and tourism is to build trust of people in internet system so that they could choose e-commerce instead of tradition way (Mamaghaini, 2009).

To build the trust among people, companies can try to capture a part of the traditional travel agent client market by focusing on different advertisement, emphasizing online agents' knowledge (Wolfe et al., 2004). The authors argued that companies can lure their customers via providing personalized service through email, web texts customized web sites that are built "*on the fly*" based on users' specific profiles and needs. The main theme of writers is to gain customer confidence and trust toward the website. The challenge is determining how a web site can exude trust and good service. To build customer trust, (Wolfe et al., 2004) suggested online travel agencies have to give telephone numbers or e-mail contact information. This phone numbers and email address can be useful for customers who want proper information about destination, services and some specific questions. An e-mail reply or telephone call allows companies to respond more inquiries with politeness in a professional way which of course provide sense of postal mail. In this way, a browser may be transformed to buyer.

Similarly, to attract more consumers, website should provide virtual tour of the destination. Virtual tour means description of the destination by through audio and visual mode by sharing videos, photo, destination details with pictures etc. (Cho et al., 2002). The authors mentioned that virtual tour attracts customers as it give the picture of the destination, hotel details where they are suppose to go ,stay and enjoy . Virtual tour enables tourists to become more confident about their trip, they can choose the destination which leads them more satisfaction rather than booking the product through tradition way. At least, they can picture destination, hotel, transportation system etc about the destination before their travel date.

In summary, IT has enabled tourism organizations to achieve a global reach of worldwide customers in a cost effective way. IT has assisted tourism organizations to using a wide range of promotional activities to supplement, if not replace offline promotions and has transformed the distribution functions to an electronic

marketplace, where access to information is achieved, while interactivity between the customers and suppliers provides other opportunities. IT promotes the mass-customization of tourism products and allows the industry to target niche markets of significant size in different geographical locations. Therefore, IT drives the re-engineering of the entire process to produce and deliver tourism products. In order to remain a competitive destination, Malaysian tourism has developed an online advertisement campaign in collaboration with Yahoo and Microsoft Network to promote the Malaysia Truly Asia brand visibility worldwide, and to display tourist attractions in Malaysia

1.7 Scope and Delimitation of the Study

This study focuses on the underlying strategic alignment factors of IT with business, and in turn, the influence of achieving strategic alignment between IT and business on the use of IT for competitive advantage for tour and travel agents in Malaysia. According to (Yusoff, 2004) the Malaysian service sector grew by 6.8% in 2004, due to higher consumer expenditure and a record level of tourist arrivals. The growth rate for service industry sub-sectors has been overwhelming, with transportation and communication in the leading position at 8.4% growth rate; wholesale and retail trade, hotels and restaurants with a growth rate of 7.1%., while finance, insurance, real estate and business services achieved a 6.5% growth rate. With the help of Information and Communication Technology (ICT), the Malaysian service sector was able to maintain its premier position in terms of its GDP at 57.4% (Yusoff, 2004). Tour and travel operators have been selected since they operate in an information-intensive industry in which IT plays a critical role in productivity and performance (Lim, 2006). In summary, the emergence of new technologies has brought dramatic changes that have affected the entire structure of the industry. IT has enabled service companies with the ability to compete with other competitors to attract customers and deliver goods and services in a cost-efficient way (Tan et al., 2009).

Data used in this study was collected from 202 tour and travel agents in Malaysia during the period of July 2009-May 2010. The Firms that participated in this study comprise small, medium and large firms and the respondents were limited to IT and

business managers or executives. However, it should be noted that how IT transforms or enables a particular business strategy topology or dimension was not in the research scope of this study.

1.8 Contributions of the Study

The second-order factor model that have been proposed had demonstrated an adequate model fit using the sample data collected from Malaysian tour and travel agents. In the next section, the theoretical and practical contributions are discussed.

1.8.1 Theoretical Contribution

In academic research, a strong theoretical framework is needed to guide research objectives, research questions, and hypotheses development. The conceptual model of this study extends to the cumulative research of aligning IT strategy with business strategy by examining how strategic IT alignment can contribute to the use of IT for competitive advantage. What distinguishes this study from other studies, to our knowledge, is that, it is the first research of its kind that establishes a link between the strategic alignment and use of IT for competitive advantage using structural equation modeling. Another important theoretical contribution is that, the strategic alignment of IT with business is specified in this study as a second-order construct, derived from the first-order exogenous factors. The second-order factor (strategic alignment) does not have its own set of measured indicators; rather, it is indirectly linked to those measuring first-order factors. Additionally, the revised second-order factor model is compared with the first-order model to ensure that the revised second-order factor model of strategic alignment of the use of IT for competitive advantage not only has an acceptable model fit, but also performs better than the alternative model. The two models were compared using the chi-square (χ^2) difference statistics ($\Delta\chi^2$), the fit indices, and the coefficients determination (R^2) of the two models effect on dependent latent construct to assess the preferred model between the first-order factor model and the second-order factor model which best fits the sample data.

1.8.2 Practical Contribution

The strategic alignment model developed in this study will help IT and business managers in the tour and travel agents to gain a better understanding of strategic alignment which in turn influences the use of IT for competitive advantage.

Practitioners and business managers in tour and travel agents should note that, the strategic alignment of IT with business has a positive influence on the use of IT for competitive advantage. In the present study, the use of IT for competitive advantage was measured with operation effectiveness and functional efficiency, product or service innovation, and interoperability across value chains that are achieved through the effective use of IT resources. Practitioners and managers in tour and travel agents should focus on using IT to reduce production or service costs of the firm. Travel agents may adapt e-commerce to enhance their service operations. For example, tour and travel agents could provide their services online, and therefore customers have access destinations online, search attractive destination and compare prices online, interact with others customers and exchange information online. These IT related capabilities reduce a cost for the tour and travel agents as well as for the customers. Therefore, it is important for Malaysian tour and travel not to miss the opportunity cost that may reshape their overhead cost.

1.9 Definition of Terms

The definitions of the main concepts that have been used in this study are presented in the section below:

Business Strategy is defined as:

- "*The match an organization makes between its internal resources and skill and the opportunities and risks created by its external environment*" (Hofer and Schendel 1978, p.12)

- "*The determination of the basic long-term goals and objectives of an enterprise, and the adoption of courses of action and the allocation of*

resources necessary for carrying out these goals" (Chandler, 1962, p.131)

- "The p*lan, ploy, pattern, position and perspective"* (Mintzberg, 1987, p.14)

- "W*ell-articulated vision of where a business seeks to go and how it expects to get there. It is the form by which a business communicates its goals. Management constructs this plan in response to market forces, customer demands, and organizational capabilities"*(Pearlson and Saunders, 2004, p. 73).

In addition to business strategy, some popular business strategies are defined as follow:

a) *Aggressiveness* strategy is defined as "*the posture adopted by a business in its allocation of resources for improving market positions at a relatively faster rate than the competitors in its chosen market*" (Venkatraman, 1989b, p.948)

b) *Analysis* strategy represents the organization's "*overall problem-solving posture*," (Venkatraman, 1989b, p.948)

c) *Futurity* strategy reflects "*the relative emphasis of effectiveness (long-term) considerations versus efficiency (shorter-term) considerations*" (Venkatraman, 1989b, p.948).

d) D*efender* strategy is adapted by "*an infrequently innovative firm, which uses efficiency and the scale of economics to maintain a stable position in a niche market"* (Miles and Snow, 1978, p.29).

e) *Analyzer* strategy refers to "*a business that maintains a stable core product whilst attempting to extend new markets with minimal risk*" (Miles and Snow, 1978, p.29).

f) *prospector* strategy is adapted by "*a technically flexible organization that continually uses environmental scanning and emphases innovation, new products and market opportunities to creatively change its markets*" (Miles and Snow, 1978, p.29).

g) The *reactor* business strategy is adapted by "*an organization unable to respond to change effectively or to induce change in the industry which makes strategic adjustments only when it is forced to do so by international pressures and lacking a consistent strategy-structure relationship*" (Miles and Snow, 1978, p.29).

IT strategy: refers to "*a set of decisions made by IT and functional business managers that either enable or drive the business strategy; it leads to the deployment of technology infrastructure and applications, and human competencies that will assist the organization in becoming more competitive*" (Luftman, 2003b, p.77).

Strategic information system planning (SISP) is defined as:

a) "*an information system which supports an organization in fulfilling its business goals"* (Clarke, 2005).

b) "The process of identifying a portfolio of computer-based applications to be implemented, which is both highly aligned with corporate strategy and has the ability to create an advantage over competitors" (Doherty et al., 1999, p. 262).

c) "The process of identifying a portfolio of computer-based applications that will assist an organization of executing its business plans and realizing its business goals." (Lederer and Gardiner, 1992, p.76)

Alignment of IT strategy with business strategy is conceptualized as:

a) "*the degree to which the information system mission, objectives and plans support and supported by the business mission, objectives and plans*" (Luftman, 2003b, p.77).

b) "*Achieving and sustaining alignment demands focusing on maximizing the enablers and minimizing the inhibitors that cultivate alignment*" (Luftman, 2000, p. 2).

c) "*as the degree to which the resources being directed to each of the seven dimensions of IS strategy are consistent with the strength of the organization's emphasis on each of the corresponding seven dimension of business strategy (aggressiveness; analysis; defensiveness; futurity; innovativeness; proactiveness, and riskiness)"* (Chan et al., 1997, p.53)

d) "*The fit between the priorities of the IS function and those of the business unit and the degree of structural fit between IS and the business"* (Chan, 2002, p.98).

e) "*The fit between IS strategy and structure while business alignment is conceptualized as the fit between business strategy and organization"* (Sabherwal et al., 2001, p.181).

f) *"The alignment between business unit strategic orientation and IS strategic orientation"* (Chan et al., 1997, p.132).

g) "*The degree to which the IT mission, objectives, and plans support and are supported by the business mission, objectives, and plans*" (Reich and Benbasat, 1996, p.56).

h) "*Intellectual alignment where IT and business objectives are consistent and valid"* and "*social alignment where IT and business personnel understand and are committed to each other's mission, objectives and plans*" (Reich and Benbasat, 1996, p.57).

i) "The extent to which the IS strategy supports, and supported by, the business strategy" (Luftman et al., 1999, p.204)

j) "*The internal fit and functional integration between business strategy and IS/IT strategy and how this integration is important to gain a competitive advantage*" (Venkatraman et al., 1993, p.72).

Resource Based View (RBV): the resource based view argues a firms resources can be used for sustainable competitive advantage when resources have four attributes "*resources that are valuable, rare, difficult to imitate, and non-substitutable*" (Barney, 1991, p.105).

IT infrastructure: is defined as "*the shared IT resources consisting of a technical physical base of hardware, software, communications technologies, data, and core applications and a human component of skills, expertise, competencies, commitments, values, norms, and knowledge that combine to create IT services that are typically unique to an organization. These IT services provide a foundation for communications interchange across the entire organization and for the development and implementation of present and future business applications*" (Byrd and Turner, 2000, p.172)

Use of IT for competitive advantage : use of IT for competitive is based on the resource based view, and it is defined as " *the IT capability of a firm, that comprise IT infrastructure, human IT resources, and IT enabled-resources, presenting the linkage between IT capability of the firm and firm performance*" (Bharadwaj, 2000, p. 169)

Model: is defined as "*a representation of theory; theory can be thought of as a systematic set of relationships providing a consistent and comprehensive explanation of phenomena*" (Hair et al., 2005, p.713).

- **Structural Equation Modeling (SEM):** is defined as "*a family of statistical models that seek to explain the relationship among multiple variables*" (Hair et al., 2005, p.706)

1.10 Research Methodology

To test the proposed research model, a survey research design was used to collect data from business and IT managers in tour and travel agents. Since the main objective of this study is to investigate the relationship between strategic alignment and the use of IT for competitive advantage, the survey method was considered the most appropriate to collect data from a large number of respondents. Thus allowing quantitative

analysis in testing hypotheses, and potentially, to generalize the findings. A questionnaire was chosen to collect data from a large number of tour and travel agents in Malaysia and a total of 202 questionnaires were available for data analysis. Preliminary data analysis was conducted using SPSS while structural equation modeling with AMOS 18 was employed for validating and testing the model fit to the data obtained from the sample. A detailed research methodology is discussed in the research methodology chapter.

1.11 Thesis Organization

Chapter One gives an overview of the thesis, problem statement, motivation, research objectives, research questions, IT and tourism sector, scope of the study, definition of terms and a brief discussion about research methodology.

Chapter Two reviews the relevant literature on strategic alignment between IT and business to provide a theoretical foundation for the investigation of the strategic alignment construct.

Chapter Three presents a brief description about the research methods used in past information system (IS) studies, followed by a discussion of the rationale for a particular design to be chosen for this study, sampling design, research model instrument, data collection method and lastly, an introduction of data analysis procedures.

Chapter Four presents results of the preliminary data analyses of the study and the measurement assessment of the confirmatory factor analysis as well as the hypothesis testing results using the SEM technique. Firstly, a discussion of the reliability analysis or alpha testing was carried out. Secondly, preliminary data analysis procedures were highlighted. Thirdly, the descriptive data analyses that relate to the background information of the firms and the respondents' demographics were discussed. Fourthly, measurement scale validation in which the assessment of fit, unidimensionality, and construct validity of the measurement model will be presented. Fifthly, the final

structural model testing and the alternative model comparison will be covered. And lastly, the final structural model hypotheses testing will be conducted

Chapter Five discusses the main findings of the study based on the revised research model with six factors and resulting path coefficients presented in Chapter Five as they apply to the research questions posed in Chapter One and hypotheses as postulated in Chapter Three. Lastly, theoretical and practical implications are delivered.

Chapter Six presents a summary of the research, providing main contributions, and outlining limitations and future work.

1.12 Chapter Summary

This chapter has presented the research problem requiring or attention by the researchers, as well as business and IT managers. Several research objectives and questions have therefore been highlighted to address the given research problem. The motivation why researcher is interested to conduct this study is included in this chapter.

This chapter also provided a clarification or definition of the main terms used in the study. In addition the role of IT in tourism industry is also discussed in this chapter.

This chapter also presented the research scopes and a brief summary of the research contributions and methodology has been also discussed. The organization of the thesis and the focus of each chapter have also been presented.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the relevant literature on the strategic alignment of IT with business to provide a theoretical foundation for the investigations of the strategic alignment construct. The study focuses on available literature related to business strategy dimensions; IT and information systems strategic planning; strategic alignment factors; competitive advantage based on IT resources, etc. The literature review was conducted using the electronic information resources, and printed material that are provided by the Information Resources Center (IRC) at Universiti Teknologi PETRONAS. Additionally, some other information resources were obtained via interlibrary loans, internet search engines and personal information resource sharing with other researchers.

2.2 Main Concepts

In the following sections, there are detailed descriptions of the main topics covered in the literature review that are deemed important to understand strategic alignment, and its impact on the use of IT for competitive advantage.

2.2.1 Business Strategy Dimensions

In this study, several business strategy dimensions were reviewed. According to Pearlson and Saunders (2004) a business strategy is a well-articulated vision of where a business seeks to go and how it expects to get there; it is the means through which a

business communicates its goals. Management is responsible for constructing a strategy in response to market pressure, customer demand and organizational capabilities.

Several business strategy topologies or dimensions are found in the business literature. The *defender*, *prospector*, *analyzer* and *reactor* business strategy topologies that were developed by Miles and Snow (1978) received much attention in the business domain. The *defender* strategy is adapted by an infrequently innovative firm, which uses efficiency and the scale of economics to maintain a stable position in a niche market. By contrast, the *analyzer* strategy refers to a business that maintains a stable core product whilst attempting to extend new markets with minimal risk. The *prospector* business strategy topology is adapted by a technically flexible organization that continually uses environmental scanning and emphases innovation, new products and market opportunities to creatively change its markets. This type of business strategy enables firms to seek new markets and opportunities to create change and uncertainty in the industry. However, the price of their flexibility and agility is low operational efficiency (Miles and Snow, 1978). The *reactor* business strategy is adapted by an organization unable to respond to change effectively or to induce change in the industry which makes strategic adjustments only when it is forced to do so by international pressures and lacking a consistent strategy-structure relationship.

There are other business strategy topologies that have been discussed in the literature, such as the generic strategies introduced by (Porter, 1980). These generic strategies are: *focus*; *cost leadership* and *product differentiation* business strategy dimensions. The focus strategy is used by firms that have a small market niche focus, and within the niche attempt to achieve either differentiation or cost advantage. As the firm focuses on a small market segment, it is also known as a niche strategy. By contrast, companies that employ the *product differentiation* strategy have a broad market target with unique capabilities or attributes compared to other competitors in the market. In the *cost leadership* strategy, a firm concentrates on being the lowest cost producer in the markets to gain market share.

Additionally Ansoff and Stewart (1967) developed a model of business strategy based on a combination of new or existing markets or products with four business

strategy topologies: *market penetration*, *market development*, *product development* and *diversification*. The *market penetration* strategy is employed by firms looking for growth with their current products in current market targets. The firms that adapt *market development* strategy seek growth by discovering new market segments for their existing products. In the *product development* strategy, firms focus on developing new products for current market segments. The *diversification* strategy is deployed by firms seeking growth by introducing new businesses by developing new products for new market segments.

Moreover, Hitt and Ireland (1985) suggested a grand strategy that includes: *stability, internal growth, external acquisitive growth, and retrenchment*. In the *stability* strategy, a firm continues to serve a market segment with the same product. The *internal growth* strategy used by a firm concentrates independently on internal development such as market penetration, product development and market development. In the *external acquisitive growth*, a firm merges with other firms or an acquisition occurs between the firms. A firm seeking to improve performance by reducing operation costs of some units or division adapts the *retrenchment* strategy.

Similarly, Treacy and Wiersema (1995) described three generic value disciplines that form the basis of formulating business strategy, these value disciplines consist of *operation excellence* or *best total cost*, *customer intimacy* or *best total s*olutions and *product leadership* or *best product*. In the *operation excellence* strategy, a firm improves its operational quality by improving efficiency. In the *customer intimacy* strategy, a firm builds ties with customers by understanding their needs, and tailors its products and service accordingly. For them, customer loyalty is their greatest interest. Firms employing *product leadership*, keep innovative and create new knowledge as a top priority. Usually, these firms operate in a highly creative environment and culture.

Moreover, Venkatraman (1989a) developed a comparative measure approach that has six business dimensions of *aggressiveness*, *analysis*, *defensiveness*, *futurity*, *proactiveness* and *riskiness.* In the *aggressiveness* dimension, a firm improves market rates at a relatively faster pace compared to its competitors. The *analysis* strategy refers to the extent of tendency a firm may have to search deeper to get to the root problems and to generate best possible solution alternatives. A firm that has a

defensive behavior defends its products, markets and technology. Cost efficient production is their major priority. In the *futurity* business strategy, a firm concentrates on balancing long and short term considerations to remain competitive. A firm that reacts or acts with initiative and opportunistic to influence market trends, expectations and demand adapts the *proactiveness* strategy. The *riskiness* strategy involves uncertainty of decisions involving resource allocation, products and markets.

Furthermore, Gupta (2006) introduced a strategic orientation, which includes *leadership, relationship, and learning orientations*. The *leadership orientation* focuses on the way organizational leadership makes decisions and acts to lead by engaging in innovative activities, undertaking risk ventures, and competing proactively in the market. The *relationship orientation* refers to the willingness of an organization to find, develop and manage alliance. While the *learning orientation* focuses on the willingness of an organization to bring about relatively stable changes in their way of thinking about strategic issues and the challenges facing the organization. Table 2.1 presents a comparison of business strategy dimensions.

Table 2.1: Business Strategy dimensions

Author & year	Business Strategy Dimensions
Miles & Snow (1978)	1. Prospector 2. Analyzer 3. Defender 4. Reactor
Michael Porter (1980)	1. Focused 2. Cost leadership 3. Product differentiation
Ansoff (1965)	1. Market penetration 2. Market development 3. Product development 4. Diversification
Hitt & Ireland (1985)	1. Stability 2. Internal growth 3. External acquisitive growth 4. Retrenchment
Treacy & Wiersema (1995)	1. Operational excellence 2. Customer intimacy 3. Product leadership
Venkatraman (1989a)	1. Aggressiveness 2. Analysis 3. Defensiveness 4. Futurity 5. Proactiveness 6. Riskiness
Gupta (2006)	1. Leadership orientation 2. Relationship orientation 3. Learning orientation

The internet revolution in general and e-business in particular have transformed business processes and the nature of industry. As a result, the above mentioned business strategies may be subject to criticism as new strategic frameworks appear due to continuous information innovations that change the shape of business or industry.

Therefore, it is important to understand some of the existing business strategy dimensions and anticipate new strategies could be linked with the development of IT. However, this study, will not perform a comparison between business strategy topologies or the dimensions mentioned in the above statements. The focus is on how IT is used for competitive advantage irrespective of a particular business strategy setting.

2.2.2 IT Strategy Dimensions

Some authors view IT strategy as a departmental strategy, which can be compared to strategies of other departments such as marketing or production. Since these departments are traditionally in charge of business functions e.g marketing, production, sales, procurement, IT is often said to be a functional unit strategy (Boddy et al., 2005; Mocker and Teubner, 2005). The IT strategy refers to how the organization meets its need for information and systems supported by technology (Ward and Peppard, 2002). A further suggestion is that, IT strategy is concerned with IT capabilities and services e.g. IT operations, system developments and user support. IT strategy is defined to as a set of decisions made by IT and functional business managers that either enables or drives the business strategy (Luftman, 2003a). This leads to the deployment of technology infrastructure and applications, and human competencies that will assist the organization to become more competitive.

A number of different typologies and dimensions of IS strategy have been proposed. Earl (1989) identified four types of IS strategy: *delivery* - IT is the means of delivering goods and services; *dependent* - business strategies increasingly depend on IT for their implementation; *drive*- IT potentially provides new strategic opportunities; and *delayed* - IT has no strategic impact in the organization. Using a typological approach, Das et al. (1991) drew on 14 different studies to create a typology of distinctive IS competences that includes lowest cost, differentiation, uniqueness, and flexibility. Drawing on (Rackoff et al., 1985) Sabherwal et al. (2001) used a typology consisting of low cost, differentiation, growth, alliance and innovation IS strategy components which combined in a similar fashion to (Das et al., 1991). Similarly, Croteau and Bergeron (2001) identified cost reduction, growth, advantage,

and differentiation dimensions of strategic impact. In addition, Hirschheim and Sabherwal (2001) and Sabherwal and Chan (2001) defined similar typologies of IS roles in *efficiency, flexibility or opportunism, and comprehensiveness*. The *efficiency* IS strategy focuses on internal and inter-organizational efficiency and long-term decisions; the *opportunistic* or *flexible* IS strategy focuses on market flexibility and quick decisions; and the *comprehensiveness* IS strategy balances the two, enabling comprehensive decisions and responsiveness (Hirschheim and Sabherwal, 2001; Sabherwal and Chan, 2001). These IS strategy typologies are summarized in Table 2.2 below.

Table 2. 2: IS Strategy typologies

Author & year	IS Strategy Typologies
Earl (1989)	1. Delivery 2. Dependents 3. Drive 4. Delayed
Das et al. (1991)	1. Lowest cost 2. Differentiation 3. Uniqueness 4. Flexibility
Sabherwal et al. (2001)	1. Low cost 2. Differentiation 3. Growth 4. Alliance 5. Innovation
Hirschheim and Sabherwal, 2001 Sabherwal and Chan 2001	1. Efficiency 2. Flexibility 3. Opportunism 4. Comprehensiveness

In addition to typological approaches, a number of studies have examined dimensional approaches. In Bergeron et al. (2004) study IT strategy was defined in terms of two dimensions: IT environment scanning and strategic use of IT. IT

environment scanning denotes the firm's capacity to detect and react to technological change in its competitors. Strategic use of IT denotes the firm's capacity to use IT to improve performance, quality and competitiveness of its products or services. In addition, Sabherwal and Chan (2001) conceptualized IS strategy based on the types of systems predominant in different strategic types. Specifically, they looked at the varying levels of dependence on operational support systems, market information systems, strategic decision support systems and inter-organizational information systems.

Similarly, Chan et al. (1997) provided direct IS analogs to Venkatraman (1989a) STROBE formulation, identifying dimensions of IS support for: aggressiveness, analysis, internal defensiveness, external defensiveness, futurity, proactiveness, risk aversion and innovation. Following the same approach, Cragg et al. (2002) developed dimensions of IS strategy that supported their matching conceptualization of business strategies: IS support for pricing, quality product, product differentiation, product diversification, new product, new market, quality service, intensive marketing, and production efficiency strategies. An alternative view of IS strategy is seen in the formulation of a strategic IT management construct, which includes dimensions of IT planning and control, IT acquisition and implementation, IT environment scanning and strategic use of IT (Bergeron et al., 2001). The strategic use of IT construct included differentiation among efficiency, productivity, profitability, timeliness and quality elements. Other research supported this view, including the conceptualization of the strategic impact of the IS department, which dealt with the use of IS to assist organizations to gain competitive advantage and meet other strategic objectives (Croteau and Bergeron, 2001). A list of IS strategy dimensions is presented in Table 2.3.

Table 2. 3: IS Strategy Dimension

Author & year	IS Strategy Dimensions
Chan, Huff, Barclay and Copeland (1997)	IS Support for: 1. Defensiveness 2. Risk aversion 3. Aggressiveness 4. Proactiveness 5. Analysis 6. Futurity
Sabherwal and Chan (2001)	1. Operational support 2. Market information 3. Interorganizational 4. Strategic decision support
Cragg, King and Hussin (2002)	IS Support for: 1. Pricing 2. Quality product 3. Product differentiation 4. Product diversification 5. New product 6. New market 7. Quality service 8. Intensive marketing 9. Product efficiency
Bergeron, Raymond and Rivard (2004)	1. IT Environment scanning 2. Strategic use of IT

Another important aspect of IT strategy focuses on understanding the role of strategic information systems (SIS) on business performance. The SIS plays an important part in supporting an organization to achieve its goals (Clarke, 2005). Similarly, Ward and Peppard (2002) stated that the SIS functions in ways that are similar to data processing and management information systems, however, it is the impacts it causes on the business due to the continual changes that causes the difference.

According to Pearlson and Saunders (2004) previously, the IS strategic plan had focused only on the internal IT infrastructure; i.e. the processes, the applications, the hardware, the people and the internal capabilities. Today, IT strategy must also extend to external positioning because the scope of IT responsibility has become wider and more complex. In addition to technical skills, IT executives require knowledge of business demand and market structure.

The IT/IS strategic plan provides the information needed to support business goals. Construct-IT for business1 defined information strategy planning as the way systems relate to the general business environment of the organization. The IT/IS plan is usually created for an entire enterprise or business unit within the enterprise. As figure 2.1 illustrates, the IT/IS plan has a wide scope and involves development stages, beginning with definition the project scope which involves a description of business needs, followed by an analysis of the existing environment and application; then the identification of new options and eventually, the evolution of a strategy and an IT/IS plan..

[1] Construct IT For Business has been set up to coordinate and promote innovation and research in ICT in Construction in the UK to improve competitive performance of the UK construction industry and to act as a catalyst for academic and industrial collaboration

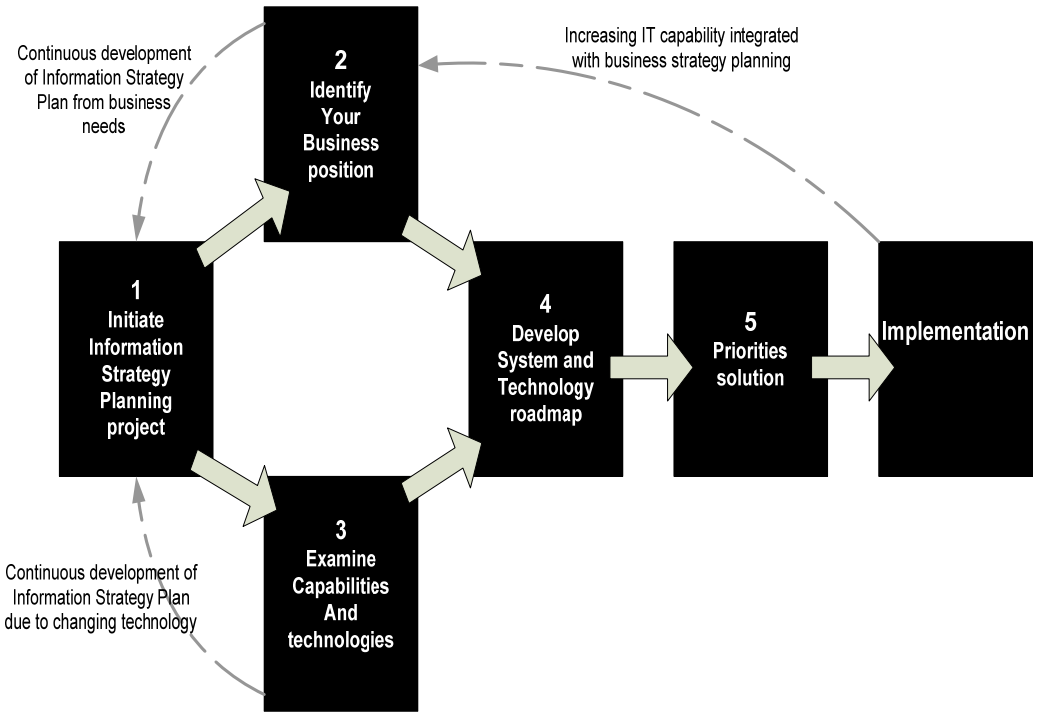

Figure 2. 1: Stages of Information System Planning Process (Source: construct-IT)

Organizations have acknowledged the role of IT/IS in business requirements and the benefits of making IT/IS a strategic business partner. Firms are looking at application technology not only to underpin existing business operations but also to create opportunities that provide them with a source of competitive advantage (Ward and Peppard, 2002). Although there has been much research on the IT/IS strategic planning process, there is still, evidently, a mismatch in the process that separates plans and expectations of IT/IS strategists and the actual results obtained on implementation of the strategies (Hartono et al., 2003).

In order to improve business performance supported by IT/IS solutions, first it is important to understand IT strategy and SIS planning process dimensions. Thus, an organization may take effective steps to close the gap IT/IS and business planning processes.

2.2.3 Alignment of IT with Business Strategy

In Luftman (2003b) study, the strategic alignment of IT with business was defined as the degree to which a state of harmony is achieved between the business and IT functional constituents within an organization. Additionally, Reich and Benbasat, (2000) defined strategic alignment as the degree to which the information technology mission, objectives, and plans support and are supported by the business mission, objectives and plans.

2.3 Strategic Alignment Perspectives

Researchers in information system and business studies have different views on conceptualizing the strategic alignment concept, how to achieve it, and how to conduct research on it. Organizations are more concern how to achieve practically a sustainable strategic alignment between IT and business to be competitive in the market place. This section reviews the existing literature of above mentioned issues.

IS and business researchers has defined the strategic alignment between IT and business in synonymous terms as Table 2.4 shows.

Table 2. 4: Strategic Alignment Definitions

Author & year	Strategic Alignment
(Porter 1996)	Fit
(Weill and Broadbent 1998)	Integration
(Ciborra 1997)	Bridge
(Luftman et al. 1999)	Harmony
(Smaczny 2001)	Fusion
(Henderson and Venkatraman 1993)	Linkage

Although the strategic alignment is conceptualized differently, but main focus is how to integrate IT/IS strategy with business strategy. According to Smaczny (2001) IT/IS is an integral and inseparable part in business setting, hence, the strategic alignment is not an issue by its own. However, this argument may not be hold true as IT capabilities and business needs are continuously changing, as a result organization are more concern how to exploit IT capabilities into competitive business opportunities (Reich and Benbasat, 2000; Sambamurthy and Zmud, 1999).

Weill and Broadbent (1998) claimed that achieving strategic alignment between IT and business in organization provides flexibility to react to new opportunities; maximizes return on IT investment; and helps to achieve competitive advantage through IT/IS. These are achievable when IT investment decision making are linked business opportunities may enhance business transformation process and value creation. Therefore, IT and business managers must co-operate to turn IT investment into competitive business opportunities. Moreover, Weill and Broadbent (1998) stated many senior business executives does not include IT management as one of their career paths. As a result IT is viewed as a cost to control rather than treating it as enabler of business opportunities and value creator (Papp, 2001; Venkatraman, 1997).

Jarvenpaa and Ives (1994) argued that a firm flexibility could be jeopardized if IT strategy and business strategy are closely tied together. However, achieving strategic alignment between IT with business usually enhance business performance as the following studies indicate. According to Lederer and Mendelow (1989) achieving strategic alignment is important for the business performance and developing applications systems more collaboratively. Since IT role in business strategy setting is increasingly evolving, achieving strategic alignment between IT and business is important to be competitive (Galliers, 1992). The strategic alignment links IT strategy and infrastructure and process with business strategy and infrastructure and process (Henderson and Venkatraman, 1993). This strategic fit or linkage enhance business and IT planning processes to improve business performance (Luftman et al., 1999; Papp, 2001).

As aforementioned above, achieving strategic alignment is important to enhance business performance, another equally important issue is how organizations may

achieve strategic alignment. The first is concern is related to the practice of strategic alignment and whether strategy or strategizing is a suitable way for firms to achieve strategic alignment. Weill and Broadbent (1998) maintain this view, by claiming that understanding and leveraging the business–IT partnership, a firm can focus on deploying IT to enable the business strategy.

In contrast, Ciborra (1997) argued that achieving strategic alignment in structured strategic manner is problematic as flexibility and uncertainty has profound impact on setting strategic focus, and therefore it is difficult in today's IT enabled world. Similarly, McKay and Marshall (1999) stated that structured strategizing turns to be messy and human seldom abide strict concepts. It is also presumed when there is strategic alignment between IT and business, senior management are fully capable to deliberately link IT with emerging business insight (Ciborra, 1997; Galliers and Leidner, 2003; Maes, 1999).

The application of concepts such as strategic fit between resources and opportunities; generic strategies of low cost versus differentiation versus focus; and the strategic hierarchy of goals, strategies and tactics may make the strategic process rigid. This has a negative rather than a positive impact on an organization when followed specifically and pedantically (Prahalad and Hamel, 1990). Strategic planning can distort creative thinking and misguide organizations that embrace it unreservedly (Mintzberg, 1987).

Reich and Benbasat (1996) conceptualized IS planning intellectual dimensions of linkage that require business and IT plans to be internally consistent with business mission, and to be externally valid, i.e. comprehensive and balanced to external business and IT environments. They discussed the conceptualization of linkages and how they can be measured by understanding current objectives, congruence in IT vision and self-reporting.

Another issue is related to the measurement of strategic alignment. It is theoretically possible and easy classify strategies in linear relationships, however, practically, it is hard to measure and map the relationships between the strategies to implement the strategic alignment between them (Ciborra, 1997). Achieving strategic

alignment requires a comprehensive measures that integrate everything within the organization from both business and IT perspectives, but there no is concrete agreement of what is the nature of these measures (Galliers, 1991; Labovitz and Rosansky, 1997).

Additionally, researchers have two different perspectives about how the strategic alignment should be treated. For example, Earl (1989), Porter and Millar (1985) and Weill and Broadbent (1998) regarded strategic alignment as outcome, while Venkatraman, (2000) argued that strategic alignment is ongoing process.

According to Smaczny (2001) claimed that no studies focus on how organizations actually achieve alignment, or whether alignment is the correct way of looking at the issue. Most models of alignment assume that organizations are built on mechanistic principles and that management uses structured, planning-oriented approaches to business objectives. In such firms alignment may work, but not in others.

The early studies on strategic processes basically consider organizations as homogeneous entity. Current recent research, due to the growing focus on capabilities and competencies acknowledge that organizations have various resources and are accordingly able to organize these resources in effective and efficient way. According to Tallon et al. (2000) achieving strategic alignment is a major challenging concern for IT practitioners and business managers, firms that more focused will attain better alignment than those which are less focused for IT investment and capability evaluations. They classified organizations as unfocused, operation focused, market focused, and dual focused. Firstly, unfocussed organizations do not have clear IT goals. Also this type of organization consider IT as an expense to control, therefore, senior management at executive level are reluctant to IT investment and management. Secondly, operations focused organizations have a clear IT objective for business operational efficiency. In this type, IT is used to reduce operation cost and enhance quality of service to gain customer satisfaction. Thirdly, market focused organizations turn to have a clear strategic IT road map. In this type, IT is used to improve strategic business planning purpose and to create value for the customers. Lastly, dual-focused organizations used IT capabilities for both business operational effectiveness and strategic planning enabler to expand market reach and the introduction new markets.

The findings indicate that executives in dual-focused organizations perceived the highest level of IT business value, followed market-focused firms, operations-focused firms, and finally unfocussed firm executives. Executives with more focused goals for IT perceived higher levels of alignment, and higher levels of strategic alignment are associated with higher perceived levels of IT business value.

In contrast to organization-focus, Sabherwal and Chan (2001) discussed how the Miles and Snow's defender, analyzer, prospectors business strategies could be alignment IS strategy. Defender organization align their *defender strategy* with *IS for efficiency strategy* where IT resources and capabilities support operational efficiency of the organizations. Similarly, in prospector organizations align their business *prospector strategy* with *IS for flexibility strategy* where IT resources and capabilities are used to discover new business opportunities that may require structural change and innovative process. Finally, the analyzer organization implement a mixture of defender and prospector strategy, therefore, analyzer organizations align their *analyzer strategy* with *IS for comprehensiveness strategy* where IT resources enable comprehensive decisions and quick responses through knowledge of other organizations. The finding of this concluded that IS strategy is significantly correlated with prospector and analyzer organizations, while defender organizations report a non significant correlation.

Similarly, Sabherwal and Chan (2001) and Sabherwal et al. (2001) assessed whether firms that follow the Miles and Snow typology suffer differentially from problems achieving alignment. They identified three problematic trajectories in seeking alignment: paradoxical decisions, excessive transformations and uncertain turnarounds. Defenders are thought to have a 'utility' profile for IS use, achieved through low cost delivery which is often outsourced. Analyzers will seek alliances, perhaps by strategic sourcing. Lastly, prospectors have an infusion profile involving alignment through business leadership and IS is in sourced and decentralized. Problematic alignment trajectories are explained by organizational inertia often due to sequential attention to goals, knowledge gaps, split executive responsibilities and underestimating the extent of problems. The authors suggest that knowledge and process integration; planning processes involving multiple perspectives and

transitional figures or powerful external forces may be employed to aid strategic IS alignment efforts.

Luftman et al. (1999) argued understanding the business practices presented in Table 2.5 enable or inhibit achieving strategic alignment in the organizations.

Table 2. 5: Enabling/Inhibiting Business Processes

Enabling practice	Inhibiting practice
1. IT demonstrates leadership Executive support for IT	1. IT department prioritizes workload poorly
2. Starting development in cycle	2. Lack of close relationship between the IT department and business
3. Leadership from the IT department	3. IT department does not know its customers and it does not meet its commitments
4. IT department prioritizes workload well and the firms' resources are shared	4. Senior executives do not support IT

Papp (1999) claimed that achieving strategic alignment is a prerequisite for turning investment into a profitable tool. In that study, the author identified twelve (12) views about the strategic alignment. The author found the common view perceived strategic alignment as fusion between strategy and business strategy. This study is considered as an important study as it assists business and IT executives to obtain a practical approach to measure strategic alignment level. This involves assessing the firm's perspectives using the alignment model; learning to recognize and leverage IT to maximum efficiency; incorporating financial measurements suitable for the particular industry; giving everyone a role to facilitate synergy between IT and the business, and finally, continuous review of alignment and assessment. However, while these may be sensible steps to take, this is somewhat general in nature and there is little here for a manager to use in practice.

Hussain et al. (2002) study explored how the strategic alignment is achieved in small firms. The results shows that strategic alignment is interpreted differently as different researchers investigate different section of the Henderson and Venkatraman (1993) strategic alignment model (SAM). These investigations mainly focused on social alignment and intellectual alignment. The social alignment concentrates on who is involving to achieve strategic alignment, while intellectual alignment focuses on techniques and methods that enable strategic alignment. Several authors attempted to measure the strategic fit between IT and business (Chan et al., 1997; Luftman et al.,1999; Reich and Benbasat, 2000). The findings of these studies supported that organization that have strategic between IT and business realized enhanced IT maturity management, knowledgeable CEO about IS offering. The authors suggested that further research can be concluded into processes associated with alignment. likewise, Cragg et al. (2002) found that highly aligned small manufacturing firms achieve high degree of strategic alignment between IT and business strategy and as result IT effectively contribute into business performance.

Some practical applications of strategic alignment, for example, where to start and how to continue the alignment process were introduced by (Luftman, 2000; Luftman et al. , 1999; Papp, 2001). However, these fail to test the theories and methods in a practical manner in real life situations and organizations (Avison et al. 2004). Most firms of any size have had strategic plans for many years and their increasing linkage with business strategy should have resulted in some form of alignment. However, this is clearly not the case, and this suggests that a problem still exists. Perhaps, there is a need for a clearer framework, despite models being available (Henderson and Venkatraman, 1993)

This section has demonstrated that there is a lack of agreement in the literature concerning how firms do and should align. Part of this deficit concerns a focus on theoretical rather than empirical studies, but other aspects point to disagreement concerning how alignment is best researched. This aspect will be investigated.

Even though achieving strategic alignment has been ranked as top IT practitioners and business executives concern, however, there is no strategic alignment model that has been agreed upon in practice. According to Reich and Benbasat (2000) strategic

alignment may be investigated from either process or outcome dimensions. The Process oriented strategic alignment concentrates on planning processes, while outcome oriented strategic alignment focus on strategies. Research of these two types would either examine strategies, structures and planning methods, or would focus on actors, values, communication and understanding. The authors also propose two perspectives to strategy setting; a social perspective and an intellectual perspective. The social perspective focuses on who may involve achieving strategic alignment between IT and business, while an intellectual perspective investigates the planning processes. As alignment is the degree to which the IT mission, objectives and plans support are supported by the business mission, objectives and plans, it is a state or outcome and its determinants are processes. Additionally, Reich and Benbasat (2000) concluded that there is a limited study focusing on the social perspective in order to achieve strategic alignment. In any planning process, the involvement of top management is important to improve the quality of IT, the progressive use of IT, rational innovation and IT effectiveness. Therefore, future studies could further explore this perspective.

Concerning process, Das et al. (1991) identified five dimensions. Formality describes structure in the planning process, while scope assesses its comprehensiveness. Participation requires the involvement of managers, and influences describe the power of stakeholders. Finally, co-ordination investigates planning process corrections.

Reich and Benbasat's (2000) study, five elements that contribute to short-term alignment were highlighted. These are shared domain knowledge between the IT department and the business domain, IT implementation success, communications, planning connections between IT and the business, and business direction. In the longer term, there is little support for their model, as shared domain knowledge unambiguously distinguishes high from low achievers; however, long-term business direction is also important.

Researchers have raised a concern whether firms, plans, or processes are the right items to study in strategic alignment research. as a result, Tallon and Kraemer (2003) assess alignment at a process rather than the firm level, employing cross-referencing

in plans as a surrogate for alignment. They state that some studies use executive perceptions of IT payoffs to try to understand the link between strategic alignment and IT business value. The authors also introduce the notion of IT shortfall where IT fails to support the business strategy and IT under-utilization where business strategy fails to use IT. Their results show that alignment is highest in production, operations and customer relations, and lowest in sales and marketing. They further suggest that strategic alignment may lead to greater payoffs from IT, but the relationship is only valid up to a certain critical level of alignment. However, Reich and Benbasat (1996) dismiss the use of written reports in alignment research, as they claim that reports are not used and can easily become outdated.

Lastly, researchers differ in opinion whether strategic alignment is a static or continuous state. Sabherwal et al. (2001) explored how strategic alignment evolves over time using a punctuated equilibrium model. If this model applies, then static contingent models are unlikely to be appropriate. A punctuated equilibrium model suggests that even after alignment is achieved, environmental changes can reduce alignment due to overemphasis, complacency and inertia, engendering a need for revolutionary change. Sabherwal et al.'s results demonstrate that some firms had low alignment or misalignment even during evolutionary periods. Additionally, all change required some combination of five strong trigger: environmental shifts; sustained low performance; influential outsiders; strong leadership and perceptual transformation. The conclusions are that resolution by redesign is used but this often does not work, however revolutions are sometimes too extreme. To address this, the IS strategic management profile should include business and IS strategy and structure.

This discussion has shown that there is a clear need for further research into alignment, especially the practicalities of its achievement. Following this overview of alignment, with a focus on the gaps in the research, this study will review the content and process research streams of the most cited strategic alignment model and its extensions is indicated by (Avison et al., 2004; Chan and Reich, 2007a; Chan and Reich, 2007b; Vargas et al., 2008; Vargas et al., 2007), strategic alignment measures and antecedents to strategic alignment

2.3.1 Popular Strategic Alignment Models

In its formative years, IT served as a mere support tool in the back office. However, as IT capabilities grew, many organizations realized the potential for IT to offer more benefits and play a strategic role. Massachusetts Institute of Technology (MIT) initiated a program called Management In The 1990s (MIT90s) which attempted to exploit the strategic role of IT in the 1990s. Accordingly, Scott Morton (1991) proposed a MIT90s framework, which focused on the role of IT within the firm, claiming IT investment can bring about substantial benefits provided the key forces of *strategy, technology, structure, management processes and individuals* are kept in balance or in alignment. All the elements in the model have impact on one another, which require decisions to be made collaboratively on these issues to maintain proper alignment as illustrated in figure 2.2.

The conception of business-IT alignment in terms of these fundamental components has given rise to numerous research studies measuring the degree of fit between such factors (Bergeron et al., 2001). However, this notion of alignment, as simply a fit between discrete elements appears to be inadequate for characterizing the complex nature of this phenomenon. Recent studies, for example, have argued that alignment is a dynamic process actively shaped by the actions of organizational actors, rather than a static relationship of structural fit (Hirschheim and Sabherwal, 2001). Thus, there is a need for further research to reveal key strategic alignment factors and strategic alignment influence on the use of IT for competitiveness in today's world dynamic environment.

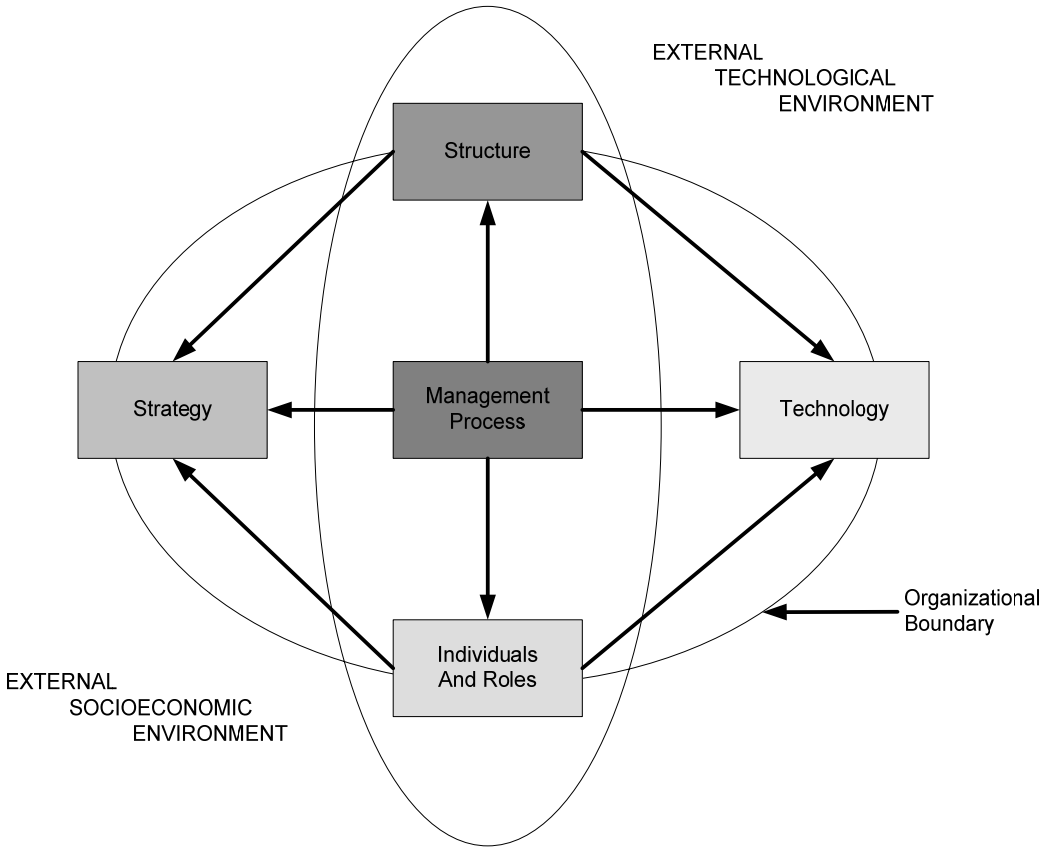

Figure 2.2: MIT90s framework. (Scott Morton, 1991)

Furthermore, Henderson and Venkatraman (1993) extended MIT90s research by linking IT with business strategy by developing the Strategic Alignment Model (SAM). The SAM discusses the linkages of the four domains: *Business Strategy; IT Strategy; Organizational Infrastructures and Processe;, and IT Infrastructure and Processes* (Figure 2.3). Within each of these domains are inter-related sets of decisions. *Business strategies* include decisions about business scope or product/market offerings, distinctive competencies, and business governance or choices about structural mechanisms to organize the business. *IT strategy* decisions include the dimensions of IT scope, systemic competencies e.g. system reliability, interconnectivity, etc, and IT governance. *Organizational infrastructure and processes* is concerned with the administrative infrastructure, business processes (including workflow), and organizational skills. Finally, *IT infrastructure and process* have the characteristics of IT infrastructure, IT processes, and IT skills. As these

domains are interrelated, the structure and decisions made in any domain will affect the other domains. Multi-domain relationships can be defined and related to IT planning methods. Four three-domain perspectives for IT planning, each having a domain anchor and pivot, were defined by (Henderson and Venkatraman, 1993). In Strategy execution as illustrated in figure 2.3, uses the strategy domain as its anchor and assesses the implications of implementing these strategies firstly through organizational infrastructures, and then through IT infrastructures. The competitive potential perspective begins with an analysis of IT strategy and its ability to influence business strategy and then implement corresponding decisions about organization infrastructure. The technology transformation or technology potential perspective begins with business strategy and attempts to implement these strategies through development of appropriate IT strategies. These are in turn implemented through IT infrastructure decisions. Finally, the service level perspective looks at the strategic fit between its anchor of IT strategy and the internal implementation of IT infrastructures, which then influence the organizational infrastructure. It is proposed that the linkage of business and IT strategies is facilitated through these perspectives.

The SAM is most cited strategic alignment model (Avison et al., 2004; Chan and Reich, 2007a; Chan and Reich, 2007b; Vargas et al., 2008; Vargas et al., 2007). However, there are several limitations of the SAM model. Firstly, due to major market changes SAM may no longer provide the much needed strategic alignment between IT and business as the SAM model was developed in the 1990s when the business environment was more stable. Second limitation is that the SAM model does not deal with operational and information/communication levels (Maes, 1999). Third limitation is that the SAM is not a constructive theory of Strategic Alignment as it does not provide clear guidelines of how to achieve a specific goal. For example, there are no concrete criteria to determine which of the strategic alignment perspectives contributes to the success of IT projects (Bhansali, 2007). Therefore, further research is needed to investigate how to achieve strategic alignment by identifying key strategic alignment factors and how IT can be used efficiently and effectively.

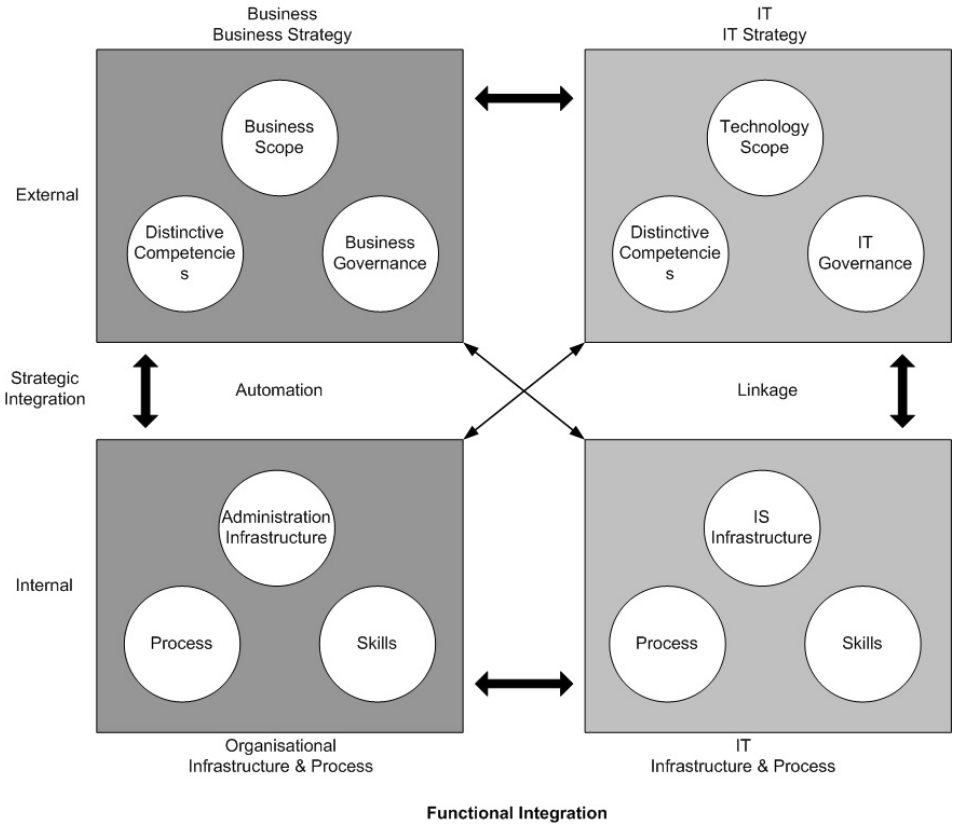

Figure 2.3: Strategic Alignment (Henderson and Venkatraman, 1993)

Many scholars have extended the SAM model. A generic framework by Maes (1999) added a third vertical and horizontal domain to the SAM to reflect the separation of information/communication from technology, thereby stressing the growing importance of information and information delivery as illustrated in figure 2.4. The main premise is that the use and sharing of information, and not the provision of information, are the real source of competitive advantage. Information sharing acts as a buffer between business and technology, making the benefits of information more apparent to the business.

The horizontal dimension splits the internal domain into structural and operational levels. The new middle row represents the more long-term architectural components, competencies and infrastructures of the organization and combines all functional areas. The vertical dimension represents the internal and external information/communication aspects, the interpreting processes of information and communication and knowledge sharing. The vertical column is the translator, the

finder of a common language between technology and business. At its core, is where infra structure meets

The limitation of generic framework for information management, is just tool for management, to position and interrelate the different aspects of information management and hence the business – IT relationship. This particular framework did not combine management aspects and design aspects to form a unified architecture which achieves strategic aligned between IT and business. Therefore, further research is needed to develop a second-order factor model that enables information system practitioners and business managers to understand the key factors of aligning IT strategy with business strategy in a more practical way.

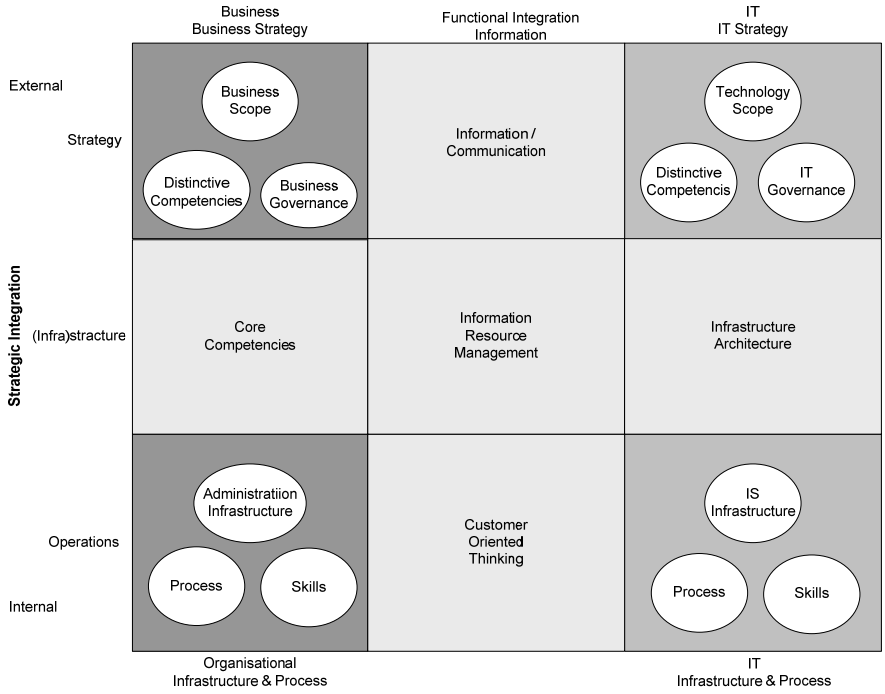

Figure 2. 4: Generic Framework for Information Management (Maes, 1999)

Additionally, Goedvolk et al. (2000) extended the SAM model by providing an integrated architecture framework (IAF) which focused on integrating the technical and architectural sides of business and IT. They enhanced Maes's idea an internal information requirement by adding one additional column that separates between

information providers from systems that provide information. Using the framework according to Goedvolk et al. (2000) the impact of business transformations on information systems can be easily assessed, together with the consequences of technological advancements on the business level. The main dimension subdivides the framework into four architectural areas, each describing a particular type of information: the business area focuses on the delivery of services and products to the consumer, while the information area focuses on information and knowledge aspects in the organization. The ICT support consists of the information systems area (IS), which contains applications that support the former areas, and the technology infrastructure area, provides technological support to the information systems. Since the information systems area has a direct relationship with all other whether supporting or supported areas, this is our main point of interest. The second dimension subdivides the framework in four design phases which recur in each architecture area. As a first step, the *contextual phase* describes why a certain system is designed and establishes its scope, environment, stakeholders and their concerns. *The conceptual phase* investigates what products and services must be designed in the particular architecture area. The *logical phase* describes how the business and information areas are designed as a collaboration of roles and the IS and TI areas as a collaboration of functions. The *physical phase* expresses with what concrete means the logical solution is realized.

The limitation of that research is its emphasis on the technical and architectural side of SAM to integrate business and IT. Hence, it requires further improvement in order to also view management components. In addition, there are several organizations offering different standards and frameworks for architecture-based development of information systems e.g. Group Architecture Framework (TOGAF) The Open Group (2003) and Microsoft Enterprise Architecture (Sousa et al., 2004). As a result, the decision of what particular standard or architecture to adapt when aligning IT with business or developing information system is problematic. Therefore, this study aims to close that gap by identifying practical success factors of strategic alignment, and in turn the use of IT for competitive advantage.

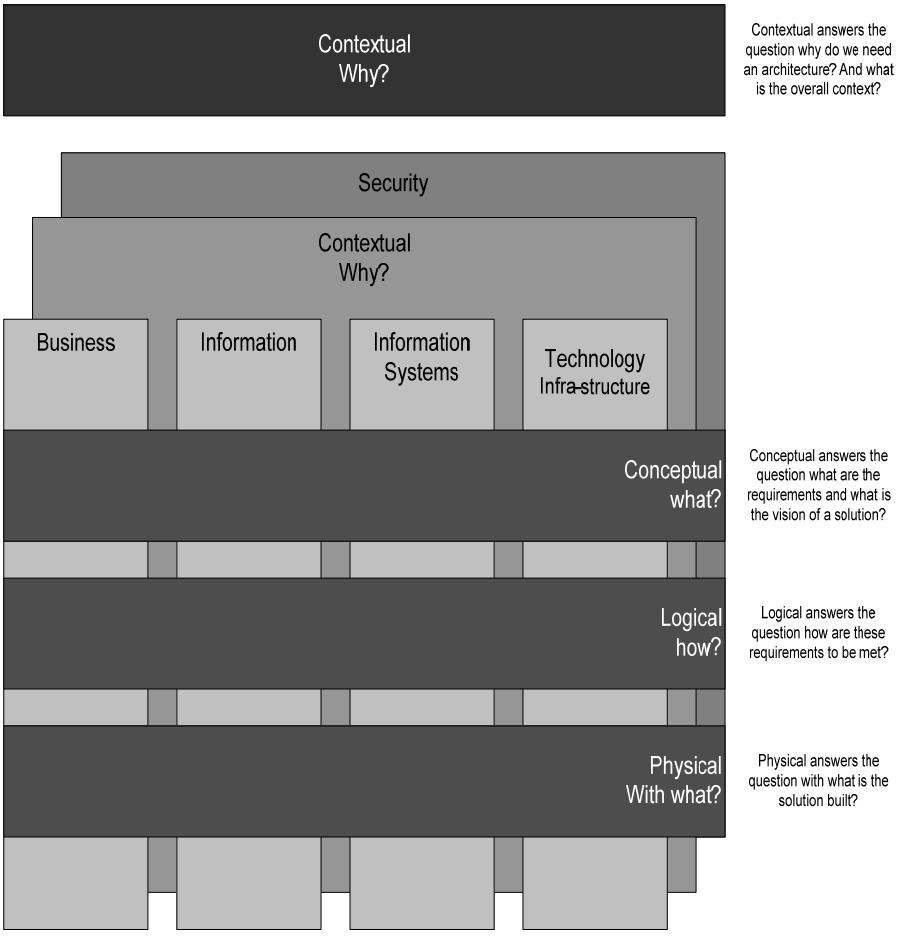

Figure 2.5: IAF (Goedvolk et al., 2000)

Moreover, Maes et al. (2000) extended the strategic alignment model of Henderson and Venkatraman (1993) and combined Maes's (1999) generic framework and IAF to form a unified framework that interrelates different components of information management, and emphasizes the interrelationships of business, information, communication and technology at strategic, structural and operational levels see figure 2.6. This alignment through Unified Framework incorporates both management and design components which transform the strategic alignment concept into a practical method.

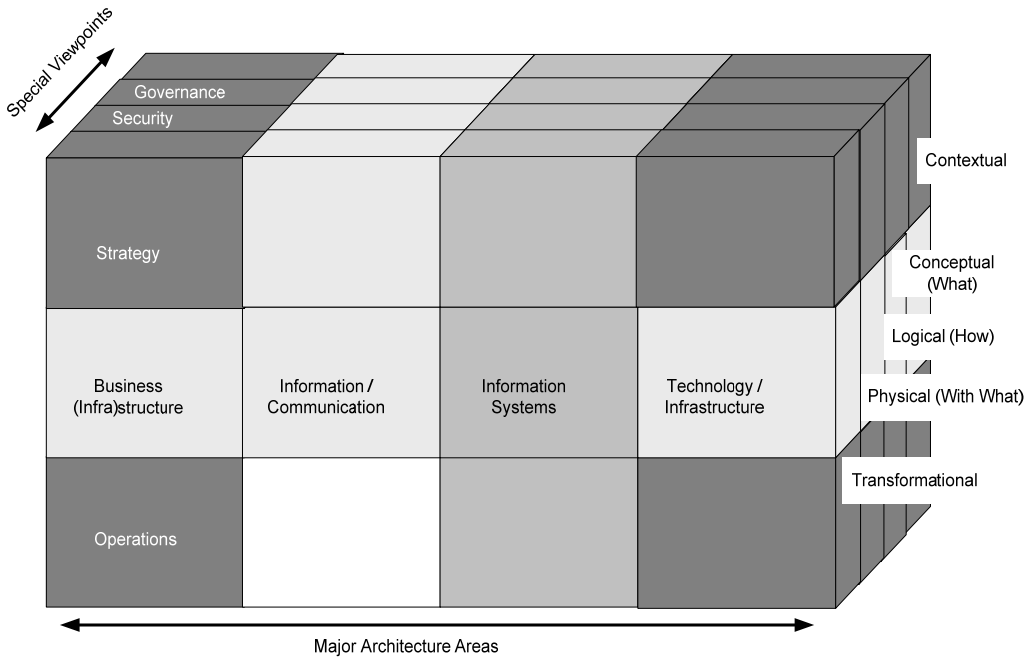

Figure 2.6: Alignment through Unified Framework (Maes et al., 2000)

The main limitation of the Alignment through Unified Framework is related to its sole concentration on the architectural and information sharing issues. Business architecture issues do not receive any attention in this framework, which in our view is unjustified as they can play a significant role in translating the business strategy to the IT strategy as well as to the design of the organization. Further research is required to establish a connection between business and IT architectures. However, the current study is not to compare or propose particular business or architectural and information sharing issues, its main concern is related into the underlying strategic alignment factors that provide sustainable strategic alignment between IT and business, and the predicted outcome from achieving strategic alignment that is related to the use of IT for competitive advantage.

Unfortunately, none of the models that have been depicted explain what a manager should do with these frameworks other than have a conceptual understanding of them. Therefore, this study identifies underlying strategic alignment factors to achieve a practical strategic alignment between IT and business using empirical data from Malaysian tour and travel agents.

2.3.2 Strategic Alignment Measures

Academics and practitioners are concerned about the reliability and validity of how to assess or measure the strategic alignment of IT with business. The following sections present some the measures that have been used to assess or measure the strategic alignment of IT with business.

2.3.2.1 Topologies

To measure business strategy, anticipate the suitable IT strategy and measure strategic alignment, Sabherwal and Chan (2001) use Miles and Snow's (1978) business strategy topology of defenders, prospectors, and analyzers. For defenders, they anticipated a strategic alignment for IT efficiency; for prospectors, they expected a strategic alignment for IS flexibility, and for analyzers, their anticipation was strategic alignment for IS comprehensiveness. They empirically examined real-life business and IT strategies. The results indicate that strategic alignment influences overall business success for prospectors and analyzers but not for defenders.

2.3.2.2 Fit Measures

The strategic fit has been a central theme for theoretical and empirical discussion in strategic management research (Venkatraman, 1989a). It emphasizes understanding what needs to be aligned and how to obtain alignment. A conceptual framework proposed by Venkatraman (1989a) describes strategic fit as 1) moderation: calculated using interaction terms, 2) mediation: modeled using indirect or intermediate variables, 3) matching: using different scores, 4) gestalts: arrived at via cluster analysis, 5) profile deviation: examined using pattern analysis and 6) covariation: computed using factor analysis. These six strategic perspectives have been further represented by two classificatory schemes known as ‘bivariate fit’ and ‘system fit’. These six conceptualizations of fit in IT research were examined by Bergeron et al. (2001) who claimed that studies, which fail to specify the exact perspective of fit, might lead to contradictory, mixed or inconsistent results. Additionally, specifying

one type of fit conceptually and then using measures designed for another type of fit introduces errors. Additionally, Cragg et al. (2002) study provided evidence of inconsistent results from different measurement approaches: the matching perspective and moderation perspective. They also argue the importance of selecting the appropriate alignment model.

In Chan et al.'s (1997) model, the content of the strategic alignment deployed eight distinct dimensions of business strategy labeled STROBE (Strategic Orientation of Business Enterprises). These were matched against eight corresponding dimensions of IS strategy labeled STROEPIS (Strategic Orientation of Existing portfolio of IS application) to produce an overall content based measure of strategic alignment. The strategic alignment was operationalized as the internal consistency between the STROBE and STROEPIS metrics.

Other researchers have subsequently carried out measurement of the strategic alignment of business strategy and IT strategy based on the combination of STROBE and STROIS. In Cragg et al.'s (2002) study, IT alignment was modeled as the interaction between business strategy and IT strategy (moderation variable), instead of a simple match between the two. Therefore, assessing strategic alignment between IT and business could be more practical if there are certain business strategic orientations that could be fitted or moderated with an existing portfolio of IS applications.

Table 2. 6: Dimension of High Order Constructs (Chan et al., 1997)

Strategic Orientation of Business Enterprise (STROBE)	
Company aggressiveness	Push to dominate even if this means reduced prices and cash flow
Company analysis	Reliance on detailed, numerically oriented studies prior to action
Company internal defensiveness	Emphasis on cost cutting and efficiency, internally 'lean and mean'
Company external defensiveness	Formatting tight marketplaces alliances
Company futurity	Having forward looking, long term focus
Company proactiveness	First to introduce new products and services; a step ahead of the competition
Company risk aversion	Reluctance to embark on risky projects
Company innovativeness	Creativity and experimentation are strengths
Strategic Orientation of the existing Portfolio of IS applications (STROEPIS)	
IT supports aggressiveness	IT deployment used by the business unit when pursuing aggressive marketplace action
IT supports analysis	IT deployment used by the business unit when conducting analyses of business situations
IT supports internal defensiveness	IT deployment used by the business unit to improve the efficiency of company operations
IT supports external defensiveness	IT deployment used by the business unit to strengthen marketplaces
IT supports futurity	IT deployment used by the business unit for forecasting and anticipation process
IT support proactiveness	IT deployment used by the business unit to expedite the instruction of products/services
IT supports risk aversion	IT deployment used by the business unit to make business risk assessments
IT support innovativeness	IT deployment used by the business unit to facilitate creativity and exploration

2.3.2.3 Questionnaire Items Measures

Some IT researchers have simply composed a scale of 1-5 questions of how an organization rates its IT alignment. In Kearns and Lederer's (2003) study, a 12 item scale measure of alignment was provided. This scale measures the alignment of an IT plan with a business plan of six items and the alignment of a business plan with an IT plan of six items. Additionally, Bergeron et al. (2004) designed a questionnaire to assess or measure IT strategy and IT infrastructure. Their questionnaire item measures include dimensions of IT environment scanning, IT planning and control, and IT acquisition and implementation. They initially tested 66 items; however, only 29 items were retained in the final questionnaire.

Another questionnaire-based measure for alignment is the Organizational Culture Audit (OCA) of (Burn, 1993; Burn, 1996). Since alignment is an ongoing process, different managers annually complete the OCA instrument. This is used to measure how closely the behavior of an organization matches its expressed values. The yearly review and changes in the respondents' opinions provide a robust picture of alignment within an organization. Six relationships in particular were examined: the external strategy and the IT strategy, the internal infrastructure model for business and IT, and the planning models for internal and external cross-alignment.

2.3.2.4 Qualitative Measures

Researchers and practitioners also discuss qualitative measures on the state of strategic alignment in organizations. In Reich and Benbasat's (1996) study compared several measures of the social dimensions of alignment. These measures include alignment of written business and IT plans, self-reports, mutual understanding of current objectives (short term alignment) and congruence in IT vision (long term alignment). Moreover, Reich and Benbasat (2000) later developed a model to study the social dimensions of alignment. Their findings indicate shared domain knowledge and a successful IT history were antecedents of both communication and connections between business and IT planning. These, in turn, are antecedents to strategic alignment and are found to be a qualitative support for their model. Additionally, Hu

and Huang (2006) conducted another qualitative study to confirm and enhance Reich and Benbasat (2000) model by adding relationship management as an antecedent of strategic alignment and a balanced scorecard management system[2] as a tool for managing an achieved strategic alignment between IT and business.

2.3.3 Factors Contributing to the Strategic Alignment

Generally, recent literature has in found that the most important antecedents of strategic alignment are connections of business and IT planning, and communications between IT and business executives, close relationship between IT and business managers, human resource skill maturity, flexibility of IT infrastructure, IT unit structure, organizational change adaptability (Benya and Mckelvey, 2006; Chan et al., 2006; Feeny et al., 1992; Hu and Huang, 2006; Luftman et al., 1999; Reich and Benbasat, 1996; Reich and Benbasat, 2000; Sabherwal and Kirs, 1994; Teo and Ang, 1999).

Although these has been conceptual agreement on these antecedents, studies are largely at conceptual or qualitative level. The number of empirical studies on strategic alignment is limited and the findings across the studies are inconsistent and have three main shortcomings. Firstly, the data for most of the empirical studies was collected in the mid 1990s (Chan et al., 1997; Sabherwal and Kirs, 1994). The role of IT in today's organizations is considerably different, and therefore, their values in providing insights to the strategic IT-business alignment process in today's business environment are limited. Secondly, only a few studies have utilized the benefits of sophisticated statistical methodologies, such as Structural Equation Modeling (SEM), to test the proposed research models. The extant empirical studies mostly utilized multiple regression, ANOVA, and t-tests, which could severely limit their ability to uncover complex interactive relationships among the key alignment constructs.

Achieving strategic alignment between IT and business may require behavioural

[2] The balanced card is a strategic planning and management system that maps an organization's strategic objectives performance metrics in four perspectives: financial, internal processes, customers, and learning and growth (Kaplan and Norton, 2004)

commitment, technical solutions and supportive organizational culture. Hence, several factors classified as social or behavioural factors, technical factors and organizational factors were identified from the literature to explore this perspective. These factors were thought to be important as they present multiple perspectives that have a significant role to achieve sustainable strategic alignment. However, it should be clear that the purpose of classifying these factors into behavioral, technical, and organizational factors is merely theoretical assumption, but the main purpose was to identify underlying strategic alignment to use IT for competitive advantage.

2.3.3.1 Behavioral Factors

In the behavioral dimension, the identified factors include coordination between IT planning and business planning; communication between IT and business managers; managing IT and business managers relationship, and human resource skill maturity. These factors are described in the following sections.

- **Coordinating of IT Planning with Business Planning**

The fundamental factor in the alignment of IT strategy with business strategy is to reflect business objectives and strategies in the IT planning and investment. The research findings of Lederer and Mendelow (1989) indicated that IT executives were successful if supported by top management. For example, alignment improved as a result of the CEO encouraging business participation in IT planning; the establishment of an IT plan; and IT management's participation in business planning.

Clearly defined business goals and vision are prerequisites in the strategic alignment process. In a study of small manufacturers by Luftman et al. (1999) found that many of the manufacturers had achieved a high degree of strategic alignment between their business and IT strategy. While two thirds of the sample had a written business plan, only a quarter had formalized their IT strategy. Another study by Teo and Ang (1999) has examined success factors that are critical for aligning IT plans with business plans and they listed 12 critical success factors as shown in table 2.7.

Table 2. 7: Success Factors for Aligning IT Plans with Business Plans (Teo and Ang, 1999)

1. Top management's commitment to the strategic use of IT.
2. Top management's confidence in the IT department.
3. Top management's knowledge of IT.
4. The IT management's knowledge of business.
5. Business goals and objectives that are known to the IT management.
6. The corporate business plan being available to the IT management.
7. The IT department being able to identify creative ways to use strategically.
8. The IT staff who are able to keep up with advances in IT.
9. Frequent communication between users and IT departments.
10. Business and IT management partnering to prioritize application development.
11. The IT department's efficiency and reliability.
12. An IT department that is responsive to user needs.

In a study of 1051 IT and business executives by Luftman et al. (1999), the behavioral dimension examined factors influencing strategic alignment by determining major enablers and inhibitors to achieving strategic alignment. In their study, IT and business executives were asked to list their firm's top three enablers and inhibitors to their firms in achieving strategic alignment between their IT and business functions, as listed in table 2.6 below.

Table 2. 8: Enablers and Inhibitors of Alignment (Luftman et al., 1999)

Enablers	Inhibitors
1. Senior executive support for IT	1. IT/business lacks close relationships
2. IT involved in strategy development	2. IT is not prioritized well
3. IT understand the business	3. IT fails to meet its commitments
4. Business/IT partnership	4. IT does not understand business
5. Well-prioritized IT project	5. Senior executives do not support IT
6. IT demonstrates leadership	6. IT management lacks leadership

Moreover, Luftman et al. (1999) found support from senior non-IT executives to be an enabler of strategic alignment by both IT and non-IT executives. However, non–IT executives ranked support from senior non-IT executives considerably higher than IT executives. This finding indicates the need for businesses to be aware of and support technology. Technology professionals' participation in creating business strategies and achieving their own strategic goals was the second most important enabler. Both IT and IT executives report the need for common cooperation and a close working relationship in the strategy formulation process. Luftman et al. (1999) recognized that is easier to achieve alignment when cross-functional teams, including IT, create enterprise strategies. Additionally, they recommended that business strategies are translated into priorities and projects for IT that will ensure the correct IT priorities are set. They further argued that a governance process that includes steering committees, IT-business liaisons, budget and human resource allocation processes, IT organization and value assessment is required. In Bergeron et al.'s (2001) study argues that planning sophistication or comprehensiveness leads to an increase in shared knowledge, which in turn affects alignment. The more sophisticated the planning process, the greater the likelihood of personal involvement from different areas of expertise.

As mentioned in the above studies, IT planning and business planning processes are important enablers of strategic alignment. However, there is a need to measure quantitatively how coordination between IT planning and business can be achieved. Therefore, it is justifiable to measure coordination of IT plans with business plans as an underlying strategic alignment factor with the following hypothesis:

H_1: Coordination of IT plans with business plans is an underlying strategic alignment factor

- **Communication between IT and Business Managers**

According to Compbell (2005), open and effective exchanges and interactions between IT and business managers positively influence the level of alignment between IT strategy and business strategy. Additionally, Sledgianowski and Luftman (2005) emphasize that communication should be a regularly occurring task of all managers and employees. To gain alignment, IT-business communication should occur regularly and be pervasive throughout the organization. They added that it should be informal using e-mail, videoconferencing and face to-face communication.

Moreover, Johnson and Lederer (2005) maintain frequent communication between the chief executive officer (CEO) and chief information officer (CIO) would not only promote mutual trust and enhance convergence, but also guarantee that IT resources would be used to support daily operations. Further, they found that when the CEO and CIO communicated frequently with each other, then the degree of convergence about the IT role was higher.

Furthermore, Chan et al. (2006) stated reciprocal exchanges of business and IT knowledge between business and IT managers not only improve shared understanding but also promote a common vision. Shared domain knowledge enables business managers to capture the IT knowledge and IT managers, business knowledge (Ranganathan and Sethi, 2002). The lack of shared domain knowledge is considered as an inhibitor of communication and strategic IS planning (Feeny et al., 1992). Chief information officers' (CIO) business knowledge enhances formal and informal interactions of CIOs with top management and increases the assimilation of IT in an organization (Armstrong and Sambamurthy, 1999). Moreover, shared domain

knowledge is considered an important factor of strategic alignment as it has positive influences on the communications between IT and business executives and connections between IT and business plans (Burn, 1996; Reich and Benbasat, 2000).

It is true that the communication between IT and business managers is considered a strategic alignment factor, nevertheless, a quantitative measure will provide a clear picture of what communication level between IT and business managers enables strategic alignment between IT and business. For this reason it is hypothesized that:

H_2: Communication between IT and business managers is an underlying strategic alignment factor

- **Managing IT and Business Managers' Relationship**

A healthy working relationship in management that emphasizes the extent to which IT and business managers allocate time and effort in managing their relationship amongst each other is another important factor. A close relationship between IT and business managers enables them to work together to understand business and technological requirements (Rockart et al., 1996). To support this, Armstrong and Sambamurthy (1999) stated that a good relationship between a CIO and a CEO is considered as an enabler of IT-business integration. Additionally, the CEO and CIO relationship could be crucial for the alignment and quality of strategic IT planning (Bai and Lee, 2003). It has been argued that, the stronger the relationship between IT and business managers, the better their communication will be (Coughlan et al., 2005; Hu and Huang, 2006). The informal relationship networks are also important elements of alignment (Chan 2002).

In summary, IT and business executives' relationship is considered an important enabler of strategic alignment. However, there is a need to measure the extent to which formal processes are in place that enhance the relationship existing between IT and business managers. Therefore, it is justifiable to hypothesize that:

H_3: Managing IT and business mangers' relationship is an underlying strategic alignment factor.

- **Human Resource Skills**

Skills and competences of IT and business professionals are important to successfully execute strategic alignment. IT professionals with technical skills as well as knowledge of business operations, management and interpersonal skills are more valuable to an organization than those who only possess technical skills (Ross et al., 1996). Moreover, because of the changing landscape of information technology and security issues, IT professionals should acquire a strong mix of business and technical skills (Morneau, 2006). The importance of behavioral and contextual competences is expected to increase more than the importance of technical competences (Silvius, 2009).

Luftman et al. (1999) suggested that business professionals understand the opportunities that IT offers to business and therefore, possess a certain level of IT skills themselves. According to (Bassellier et al., 2001) IT skills refer to "the set of IT –related explicit and tacit knowledge that a business manager possesses that allows him or her to exhibit IT leadership in his or her area of business". Organizations should therefore have effective programs to attract IT and business professionals and train them in both IT skill and business knowledge.

IT and business executives need to be competent to acquire both IT and business skills, therefore, the human resource skills maturity level will be tested and validated quantitatively in this study.

H_4: Human resource skills maturity is an underlying strategic alignment factor.

2.3.3.2 Technical Factors

The IT infrastructure flexibility is the only technical factor identified to be an underlying strategic alignment factor. A flexible IT infrastructure is required based on agile or integrated hardware and networking resources, reusable software, and IT expertise that can be leveraged to change IT infrastructure to suit business strategy (Pollalis, 2003). The IT infrastructure flexibility is derived from Broadbent and Weill's (1997) view of the infrastructure framework. Who maintained, the investment

of an organization in their IT infrastructure falls under one of four views. In the first perspective, IT infrastructure expenditures are based on local needs without consideration of firm wide integration (the "*none*" view). In the "*utility view*", IT expenditures are seen as a way to reduce costs through economies of scale and sharing. In the "*dependent*" view, IT expenditures are in response to specific current business strategies, and in the "*enabling*" view, IT expenditures aimed to provide flexibility in achieving the long-term goals of the firm and enable quick development of new products and services. Another study by Duncan (1995) illustrated IT infrastructure flexibility in terms of *connectivity, compatibility and modularity*. Connectivity means "the ability of any technology component to attach to any of the other components inside and outside the organizational environment". Similarly, (Byrd and Turner, 2000) defined *compatibility* as the ability to share any type of information across any technological component and *modularity* as the ability to add, modify and remove any software, hardware or data components of the infrastructure with ease and with no major overall effect. IT infrastructure must be flexible in response to a change in the marketplace to meet business needs.

As flexible IT infrastructure is important to meet the requirement of market and business process changes, this study hypothesized that having a flexible IT infrastructure is an underlying strategic alignment factor. The degree of the flexibility of the IT infrastructure as an underlying strategic alignment factor will be tested quantitatively with the following hypothesis:

H_5: IT flexibility is an underlying strategic alignment factor.

2.3.3.3 Organizational Factors

The organizational factors mainly focus on organizational cultural practices in relation to the IT resource governance power structure and organizational change adaptability.

- **Organizational IT Resource Governance Power Structure**

Having an organizational structure that provides mechanisms for accountability and

ownership of strategy formulation is important for successful alignment (Luftman et al. 1999). Considering its potential impact on strategic alignment, the IT unit function concentrates on the degree of centralization of the IT decision-making formulization of IT activities.

Generally, in centralized IT governance modes, IT activities are coordinated at the corporate level (Sambamurthy and Zmud, 1999). As a result, organizations may require less effort for alignment. by contrast, in decentralized IT governance modes, unit managers have relative authority on IT investment decisions therefore, they are more likely to focus on their own unit objective rather than the wider organizational objective (Sambamurthy and Zmud, 1999). When an organization aims to leverage its IT for a more strategic role or when it is dissatisfied with the level of alignment, the first step executives undertake is to centralize the IT investment decision making (Rothfeder, 2005).

Centralization also has an effective influence on the communication factor. In a centralized structure there are less power and status discrepancies among decision makers, consequently, centralization enables better communication among decision makers (Ranganathan and Sethi, 2002). Therefore, the centralized IT governance is an enabler of strategic alignment between IT and business.

Moreover, those organizations with a smaller span of control of IT units are more flexible and therefore, more able to readily align their business and IT strategy more successfully than those who have a larger span of control of IT units (Sambamurthy, 2000). Additionally, formulation procedures and rules promote better task coordination through frequent communication and integration of planning, and in turn, increase the quality of IS strategic planning and enhance the IT management and decision making process (Bai and Lee, 2003; Bassellier et al., 2001).

H_6: IT resource governance power structure is an underlying strategic alignment factor.

- **Organizational Change Adaptability**

The much increased focus on organizational adaptability or agility is the effect of the accelerating pace of business change. Organizations must make changes as a team and

align IT and business strategy as quickly as possible. In today's dynamic environments, organizational adaptability is an important determinant of its success.

According to Plummer and McCoy (2006) adaptability refers to the legitimate management discipline requiring alignment between management of business and management of the IT organization.

Adaptability explicitly presumes that organizations are too dynamic for static order, especially between IT and business (Ambrose and Morello, 2009). Due to many environmental forces, organizations cannot remain static any longer. For organizations to be dynamic and adaptive, they need to ensure they have a flexible structure to survive and prosper (Allen and Boynton, 1991). Moreover, Benya and Mckelvey (2006) noted that achieving strategic alignment is not a single event that occurs only once, but a co-evolutionary and emergent process. They described it as a task that requires continual adaptation and change between the different domains. The domains are described as being interdependent, therefore, a change in one domain will require adjustments in other domains for alignment to be maintained.

Overall, the dynamic environment of IT requires organizations to be adaptive and agile, and provides mechanisms for accountability and ownership of strategy formulation. Therefore, these organizational factors are hypothesized to be important for successful strategic alignment between IT and business to remain competitive in the market.

H_7: Organizational change adaptability is an underlying strategic alignment factor

2.4 Resource based view theory

The resource based view initially proposed that organizations possessing valuable tangible assets i.e. cash or land and valuable intangible assets i.e. a patent, well known brand or customer list will have advantages over competitors, particularly where these assets or resources are rare, difficult to imitate or substitute (Barney, 1991). Subsequent research found that valuable process competencies such as production

know-how, customer relationship management, and investment management are also resources that can confer competitive advantage (Prahalad and Hamel, 1990). Competitive advantage is mainly used to describe the relative performance of a company in a given market Peteraf and Barney (2003): (1) if a company creates more economic value than marginal competitors who can just break even, the company achieves competitive advantage in the given market; (2) economic value refers to the difference between consumer benefits and economic costs.

Barney (1991), and Bingham and Eisenhardt (2008) stated that, competitive advantages can arise from resource heterogeneity and immobility if the following resource characteristics are fulfilled: (1) valuable: valuable resources help the focal company achieve, at least, competitive parity; (2) rare: a company with rare, valuable resources has the potential to gain temporary competitive advantage; (3) imperfectly imitable: if resources are valuable, rare, and inimitable, the company has the potential to achieve long-term competitive advantage; (4) imperfectly substitutable: if competitors are able to find substitutable resources to support their competitive strategies, the incumbent company's competitive advantage depends upon the relative costs and benefits of alternative resources.

Although the value, rarity, and non-substitutability are important, the inimitability of resources is at the heart of competitive advantage because it minimizes the effects of competition over some time horizon (Bingham and Eisenhardt, 2008). In addition, Bingham and Eisenhardt (2008) claimed inimitability can arise: (1) if a company has property rights to resources that cannot be legally obtained by competitors; (2) if resource accumulation involves path dependencies and time compression diseconomies; or (3) if the linkages between resources and firm performance are causally ambiguous.

Dynamic capabilities are defined as the organizational and strategic routines by which managers alter their resource base to generate new value-creating strategies (Daniel and Wilson, 2003; Eisenhardt and Martin, 2000; Teece et al., 1997; Zahra and George, 2002). Examples of dynamic capabilities are new product development, strategic decision-making, and "alliancing" (Eisenhardt and Martin, 2000). Dynamic capabilities evolve to fit changing business, social, and/or technical conditions. It has

been proposed that dynamic capabilities do not directly confer advantage, but do so indirectly through the unique constellations of resources i.e. assets, skills, competencies that they harness (Eisenhardt and Martin, 2000). Dynamic capabilities which adapt to fit changing conditions are purportedly even more valuable than competencies. Since competencies and dynamic capabilities can be imitated, firms succeed in volatile markets only by continuously reconfiguring resources. The potential for long-term competitive advantage lies in using dynamic capabilities sooner, more astutely, or more fortuitously than the competition to create resource configurations that have that (temporary) competitive advantage (Eisenhardt and Martin, 2000).

2.5 Resource-Based View Model and the Use of IT for Competitive Advantage

The resource-based view has been adapted by IS researchers categorizing IT resource as technical, human and intangible. The technical resources consist of physical IT assets such as hardware, software and databases, applications and networks (Bharadwaj, 2000; Weill and Broadbent, 1998). The IS-based human resources are related to the skills of IS professionals, including technical skills and skills in management, communication and understanding of the business (Bharadwaj 2000; Wade and Hulland, 2004; Ward and Peppard, 2002). The intangible IS resources comprise the knowledge assets, a customer orientation, a flexible IS culture Bharadwaj (2000), vendor relationships Powell and Dent-Micallef (1997), and partnership between IT and business units (Bassellier and Benbasat, 2004). Dynamic IT capabilities combine IT assets and competencies, and may also incorporate business assets and competencies (Karimi et al., 2007). Some examples of dynamic IT capabilities include systems development, IT planning, and vendor management and parallel the dynamic business capabilities noted above i.e. new product development, strategic decision making and alliancing. A higher-order dynamic capability such as effective IT management may combine multiple lower-order competencies and dynamic capabilities such as relationship management or IT planning. Studies find that the highest-order dynamic IT capability of "IT management" contributes to organizational performance, but leave open the question of what specific processes are

employed to achieve this, and the question of the relative contribution of various lower-order dynamic IT capabilities, assets, and competencies (Bharadwaj, 2000; Mata et al., 1995). Therefore, further research is needed to uncover effective steps that CIOs can take to develop and sustain IT assets, IT competencies, and dynamic IT capabilities (Newkirk et al., 2008; Piccoli and Ives, 2005).

According to Carr (2003) and Mata et al. (1995), imitable IT assets, especially hardware and software, can hardly bring any competitive advantage to companies. Because competitors can easily acquire similar software and hardware, such imitable resources can seldom become sources of competitive advantage. Furthermore, even though imitable IT assets sometimes may contribute to competitive advantage, such competitive advantages tend to be short-lived (Mata et al., 1995; Wade and Hulland, 2004).

Carr (2003) only focused on imitable IT assets, and concluded that IT does not matter to gain competitive advantage. However, when software and hardware become ubiquitous, their complementarities (i.e., IT capabilities) will become even more important and IT does still matter for a company's competitive advantage (Varian, 2009).

In an extensive review of IS studies, Wade and Hulland (2004) identified eight valuable dynamic IT capabilities, in three broad categories: Inside-Out, Spanning, and Outside-In. They suggested some dynamic IT capabilities involve purely human competencies e.g. external relationship management; some utilize both human and technical assets and competencies e.g. IS development and some involve purely technical assets and competencies e.g. IS infrastructure. Inside-Out capabilities are the core IS capabilities typically which are the CIO's purview, reflecting the need to ensure that members of the IT organization have the skills, tools and platforms needed to realize their tasks effectively and achieve the desired ends. A well designed IT infrastructure is a platform that constitutes a vital resource Mitra (2005) and Weill et al. (2002) that can be leveraged in various IT capabilities although on its own, the infrastructure does not provide a direct competitive advantage (Bhatt and Grover, 2005). Inside-out capabilities also interact with both outside-in and spanning capabilities in that they are subject to rapid business and technical change, which adds

pressure and cost. For example, an IT organization may have an ongoing need for competence in maintaining legacy systems on aging platforms, while also needing to develop competencies and capabilities for working with new platforms and approaches, e.g. a service-oriented architecture. Many inside-out capabilities are likely to be necessary but insufficient to strategic success.

Outside-In capabilities refer to an IT organization's abilities to partner efficiently with vendors and respond to market needs. This latter aspect, responsiveness or "agility" is particularly challenging because it requires IT organizations to quickly shift focus and mobilize resources in ways that complement business units' efforts to be agile (Van Oosterhout et al., 2006). According to Overby et al. (2006), a flexible IT architecture and an options-based IT planning and investment process are two important dynamic IT capabilities that support enterprise agility.

Spanning capabilities address the IT organization's relationships with its internal customers and their business requirements. Effective IT planning is a vital capability that the CIO needs to build, and has been the subject of many studies (Lederer and Sethi, 1996; Segars and Grover, 1998; Segars and Grover, 1999). The spanning capabilities of planning and internal relationship management are challenging to develop and maintain. One important activity in support of this capability is frequent CEO-CIO communication, which promotes mutual understanding (Johnson and Lederer, 2005). However, while IS leaders and non-IS business leaders may share a similar vision for the role of IT, they often differ on specific operational priorities, levels of involvement, and commitment (Burns and Szeto, 2000; Drury, 2005).

In the present study, the use of IT for competitive advantage was measured with operation effectiveness and functional efficiency, product or service innovation, and interoperability across value chains that are achieved through the effective use of IT resources. The rationale for adapting the resource-based view is grounded in the perspective that the internal environment of a firm, in terms of its resources and capabilities, including IT resources, is more important to the determination of competitive advantage than the external environment. This is in contrast to the traditional competitive strategy models such as Porter's (1980) five forces model, which focuses on the external competitive environment of the company. Therefore, it

is important to examine the influence of the perceived strategic alignment on the use of IT as a competitive resource with the following hypothesis:

H_8: The strategic alignment has a positive impact on the use of IT for competitive advantage.

2.6 Travel and Tourism in Malaysia

Malaysian is one of top tourism destination in the Southeast Asian countries due to its natural resources and cultural diversities. The travel and tourism the second largest foreigner exchange earning after manufacturing with a significant contribution of 7.4% in Malaysian GDP in 2007. Therefore, the budget allocation allocation in travel and tourism industry has increased over recent successive years. In the 7th Malaysian plan the but budget allocation for this industry was MYRM605.5 million, while 8th Malaysian plan has increased budget allocation for this industry to MYRM1009.0 million (EPU, 2001). In the 9th Malaysian plan period, the allocation reached RM1367.0 million (EPU, 2006). Malaysia secured 9th position in ranking of most visited countries by internal tourist arrivals (WTO, 2009). For example, international tourist arrivals in Malaysia increased from 17.5 million in 2006 to 23.6 million in 2009, generating a revenue of RM 53.4 billion. The contribution of travel and tourism to Gross Domestic Product (GDP) including its wider economic impacts, is forecasted to rise by 5.0% from RM 124.7 billion or 15% of GDP in 2011 to RM 203.6 billion by 2021. Travel and tourism contribution to employment is forecasted to rise by 3.5% from 1,587,000 jobs or 13.8% of total employment) in 2001 to 2,241,000 jobs or 15.3% by 2021 (WTTC, 2009).

2.7 Malaysian SMEs and IT

Small and medium enterprises (SMEs) play a vital role in the Malaysian economy and are considered to be the backbone of industrial development in the country (Ramayah and Koay, 2002; Saleh and Ndubisi, 2006). According to Hashim (2000) Small and medium sized enterprises are defined as firms employing full-time employees 150 or

with annual sales turnover not exceeding RM25 million. These firms play a significant role in the country's economic development, particularly in the manufacturing sectors (Ramayah and Koay, 2002). As of December 2005, a total of 600,000 SMEs were registered in Malaysia (SME bank). They contribute 27.3 per cent of total manufacturing, 25.8 per cent to value-added production, own 27.6 per cent of fixed assets, and employ 38.9 per cent of the country's workforce (SMIDEC 2002). There are 192,527 establishments in the services sector, and 186,728 (or 96.7 per cent) of these are made up of SMEs in Malaysia. According to Yusoff (2004) the services sector grew by 6.8% in 2004, driven by higher consumer spending and a record level of tourist arrivals. Growth emanated from strong expansion in all sub- sectors with transport and communication in the lead at 8.4% followed by wholesale and retail trade, hotels and restaurants (7.1%) and finance, insurance, real estate and business services (6.5%). Together with new growth areas in information and communications technology (ICT), the services sector was able to maintain its premier position in terms of its share of GDP at 57.4%. Malaysian businesses, small and medium-sized enterprises (SMEs) have been relatively slow in web adaption.

According to Lee (2005) about 30 per cent of SMEs in Malaysia have a web presence and use IT extensively in their daily operations. This reflects a poor rate of IT adoption among the estimated 600,000 local SMEs. Most SMEs perceived the barriers of implementing IT into their business operations as expensive, risky, complex procedure, lack of technical expatriate, and customer services (Chong et al., 2001; Pires and Aisbett, 2001; Yeung et al., 2003). According to Soh et al. (1997) if SMEs in Malaysia adopt the ICT, the potential commercial functions that could be performed include, marketing themselves both locally and globally, gathering business information and consumer feedback, providing customer support and conducting electronic transactions. On the other hand, if ICT implementation is successful, it would have severe repercussions on small businesses with their limited resources (Chong et al., 2001).

According to Lim (2006) most SMEs in Malaysia realize that ICT is critical to the productivity and performance of their companies. Nevertheless, implementation and maintenance of these ICT systems is restricted due to inability to handle, owing to

high staff turnover and lack of ICT project management expertise. He also stresses that many Malaysian family-based SMEs are still operating their business the conventional way. Consequently, SMEs which have invested in ICT systems fail to implement and maintain these systems successfully. Similarly, Tan et al. (2009) argue that ICT in Malaysia is facing big challenges due to the slow adoption of technology by SMEs in Malaysia. They also suggested that SMEs must learn to adopt technology to increase their global competitiveness.

2.8 Chapter Summary

This chapter has provided literature review about the main components of the strategic alignment dimensions. First, several business strategy topologies or dimensions, and IT strategy typologies and dimensions were discussed. Second, strategic alignment models, measures and factors were presented. Third, resource-based view theory was presented. Fourth, using resource based view theory, how IT resources or capabilities can be used for competitive advantage was highlighted. Lastly, the role of the travel and tourism industry in Malaysian economy and Adaption of IT by Malaysian SEMs are discussed.

CHAPTER 3

RESEARCH MODEL AND METHODOLOGY

3.1 Introduction

The previous chapter reviewed the relevant literature on strategic alignment between IT and business to provide a theoretical foundation for the investigations of the strategic alignment construct. This chapter discusses research methods that were commonly used in past information system (IS) studies, and the rationale for a particular design to be chosen for this study, followed by sampling design, the research model and instrument, and lastly, data collection and statistical analysis methods.

3.2 Research Methodology

This chapter first presents the research methods that were commonly used in past information system (IS) studies, followed by a discussion of the rationale for a particular design to be chosen for this study, and the sampling design.

3.2.1 IS Research Methods

By reviewing methodologies of previous IS studies, this section provides a guide to the research design and methodology employed in this study. Major research methods undertaken in the IS field have been listed by (Hamilton and Ives, 1982). Who surveyed 15 journals from the period of 1970-1979 and found 70% of the articles reviewed were of a conceptual nature. Hamilton and Ives (1982) claimed this finding was not surprising due to the relative infancy of the discipline at that time.

A decade later, empirical articles were much more prevalent than those of a conceptual nature. The review of four IS publication outlets from the period of 1983-1988 by Orlikowski and Baroudi (1991) found that, positivism represented a dominant perspective in empirical research at that time. They also found that the most popular research method was a survey, followed by laboratory experiments and then case studies. Similarly, Alavi and Carlson (1992) study of 8 journals classified IS research as following the positivist paradigm, however, they found that the preferred research method were: field study; followed by lab experiments and then case studies, with surveys being the fourth preferred method.

From 1990-2007, there have been at least six studies published investigating the development of the IS research community. The summaries of these studies with regard to research methods used are presented in table 3.1.

Table 3.1: Information System Research Methodologies

Popularity of IS methods						
Rank	Farhooman d & Drury (1999)	Claver, Gonzalez & LIopis (2000)	Vessay, Ramesh & Glass (2002)	Mingers (2003)	Chen & Hirschheim (2004)	Myers & Liu (2009)
1	Survey (32%)	Field study (57%)	Field study (26.8%)	Case study (27%)	Survey (41%)	Survey (43%)
2	Case study (17%)	Case study (31%)	Case study (19.1%)	Survey (24%)	Case study (36%)	Case study (31%)
3	Lab experiment (10%)	Lab experiment (11%)	Lab experiment (13.7%)	Observation (12%)	Lab experiment (18%)	Lab experime nt (18%)
Period	1985-1996	1981-1997	1995-1999	1993-2000	1991-2001	1998-2007

As table 3.1 shows, survey, field studies, case studies, and lab experiment were the most common research methods reported in the selected IS journals. Moreover, table 3.2 summarizes the findings of some the recent studies, with regard to the paradigm

used in the selected IS journals. The common classification of paradigms into positivist research, interpretive research and critical research was initiated by Orlikowski and Baroudi (1991) and it has been widely used by other researchers in IS research community. IS researchers classify articles as positivist if they involve hypothesis testing or quantifiable measures of the variables; articles are classified as interpretive if they focus on the subjective interpretations of the participants; articles are classified as critical if they are based on or more critical theorist (Myers and Liu, 2009). Table 3.2 shows positivist research was the dominant paradigm within the IS research community, despite an increase in the number of interpretive research articles, whereas the number of critical research articles remained small.

Table 3.2: IS Research Paradigms

Recent studies			
Popularity	Mingers (2003)	Chen & Hirschheim (2004)	Myers & Liu (2009)
Positivist	(47%)	(76%)	(81%)
Interpretive	(4.7%)	(18%)	(19%)
Critical	-	6%	Less than 1%
Period survey	1993-2000	1991-2001	1998-2007

Additionally, research methods are described as quantitative, qualitative or mixed depending on whether the method used to collect data and analyze data was statistical or numerical in nature, textual, or mixed (Chen and Hirschheim, 2004). They examined 1893 articles that have been published in eight major IS publication outlets. Their findings indicated that quantitative is the dominant research method in the IS disciplines. Similarly, Myers and Liu (2009) also found quantitative research is the most common IS research method in six journals that have been rated as the top journals in the IS field by the Association for Information Systems (AIS) as shown in table 3.3.

Table 3.3: IS Research Methods

Study	Quantitative	Qualitative	Mixed
Chen & Hirschheim (2004)	60%	30%	10%
Myers & Liu (2009)	58%	36%	6%

3.2.2 Research Design

Choosing the best research design is a matter of appropriateness. The function of the research design is to ensure that the evidence obtained enables us to answer initial questions as unambiguously as possible (De Vause, 2001). As highlighted in the previous section, the survey method was ranked the most used research method for IS publications outlets from 1991-2007 (see table 3.8). The nature of survey research can be best understood by comparing it to two other dominant methods in IS research case study and laboratory experiment.

The Case study method involves examination of a phenomenon in its natural setting. The researcher has no control over the phenomenon, but can control the scope and time of the examination. The researcher may or may not have clearly defined independent and dependent variables. Case studies are most appropriate when the researcher is interested in the relation between context and the phenomenon of interest. The strength of the case study method is that it enables the capture of the reality in considerably greater detail, than is possible with survey method. It is good at identifying variables and possible relationships. As a result, the case study method has been used for theory building. On the other hand, its weakness include the fact that its application is usually restricted to a single organization or event, and there is a difficulty acquiring similar data from a statistically meaningful number of similar organizations, hence the problems associated with making generalizations from individual case studies (Galliers, 1992). Therefore, its utility in theory testing is limited.

Laboratory experiments involve examination of a phenomenon in a controlled setting. The strength of the laboratory experiment method is that the researcher manipulates the independent variables and observes their effects on the dependent variables. The researcher has direct control over the laboratory conditions and manipulation of the independent variables. Its weakness is the researcher can only study phenomena in the present, however laboratory experiments are especially well-suited to research projects involving relatively limited and well-defined concepts and propositions that involve individuals or small groups (Galliers, 1992).

In contrast to these two methods, survey research involves examination of a phenomenon in a wide variety of natural settings. The researcher has very clearly defined independent and dependent variables and a specific model of the expected relationships which is tested against observations of the phenomenon. According to (Galliers, 1992) survey research is most appropriate when:

1. The central questions of interest about the phenomena are "what is happening?", and "how and why is it happening?" Survey research is especially well-suited to answer questions about what, how much and how many, and to a greater extent than is commonly understood, questions about how and why.

2. Control of the independent and dependent variables is not possible or not desirable.

3. The phenomena of interest must be studied in its natural setting.

4. The phenomena of interest occurs in current time or the recent past.

According to Pinsonneault and Kraemer (1993) the surveys conducted for research purposes have three distinct characteristics. First, the purpose of a survey is to produce quantitative descriptions of some aspects of the study population. Survey analysis may be primarily concerned either with relationships between variables, or with projecting findings descriptively to a predefined population. Survey research is a quantitative method, requiring standardized information from and/or about the subjects being studied. The subjects studied might be individuals, groups, organizations or

communities; they might also be projects, applications, or systems. Second, the main way of collecting information is by asking people structured and predefined questions. Their answers, which might refer to themselves or some other unit of analysis, constitute the data to be analyzed. Third, information is generally collected about only a fraction of the study population e.g. -a sample, but it is collected in such a way as to be able to generalize the findings to the population for example service or manufacturing organizations, line or staff work groups, MIS departments, or various users of information systems such as managers, professional workers, and clerical workers. Usually, the sample is large enough to allow extensive statistical analyses.

As the main objectives of this study were to identify what factors contribute of aligning IT strategy with business strategy, and investigate the relationship between strategic alignment and the use of IT for competitive advantage, the survey method thought to be the most appropriate to collect data from a large number of respondents. This would allow quantitative analysis to test hypotheses, and potentially generalize the findings to many tour and travel agents in Malaysia.

There are several types of survey which are regularly used in social research that include questionnaires, interviews, observations, and content analysis. The questionnaire is the most widely used data collection technique in survey research (De Vause, 2001).

There are different ways in which the questionnaires can be administered: face-to-face interview, by telephone and mail. The questionnaire method was chosen in order to obtain data from a large number of tour and travel agents.

The face-to face interviews are best suited at exploratory stages of the research and main advantage of this method is that the researcher can adapt the questions as necessary. The researcher can also gather non nonverbal cues from the respondents. The main disadvantages of face-to-face interviews are geographical limitations and the vast resources needed if such surveys are carried out nationally, therefore, it is both time consuming and costly.

Telephone interviews are best suited for asking structured questions where responses need to be obtained quickly from a geographical spread sample. The main

disadvantage of this method is that the respondent could ultimately terminate the interviews without warning or explanation by hanging up the phone.

The mail questionnaire survey is best suited when a substantial amount of information is to be obtained from a geographical dispersed sample through structured questions at minimum cost. However, the disadvantage of a mail questionnaire is that too many questions which require effort on the part of the respondents will result in a non-response (Jobber, 1991).

In the view of the research objectives, the mail questionnaire method was chosen as the most appropriate data collection method. Besides allowing data collection from widely dispersed locations, this method is less time consuming and less costly. Furthermore, it can be expected to produce results ranging from almost as good as to substantially better (Bradburn et al., 2004).

The strengths of mail questionnaire, according to May (2001) are as follows:

- If the study is dealing with sensitive issues, its anonymity may be advantageous.
- The respondents can take their own time to fill in the questionnaire and consider their responses.
- A Mail questionnaire can lead to less bias compared to face-to-face interviews resulting from the way questions are asked.
- It is possible to cover a wider geography area at lower cost

However, as with other methods, there are some weaknesses of this approach. According to May (2001), these include:

- The need to keep questions relatively simple and straightforward as the researcher has no control over how respondents are interpreting the questions.
- The possibility of probing beyond the answer that the respondent gives is absent.
- There is no over control who answers the questionnaire.
- The response rate may be low and it is possible that bias in the final sample cannot be checked.The Sample Population

3.3 Sample Population

The target population of this study is tour and travel agents in Malaysia. The population size of the tour and travel agents is large, therefore a simple random sample was used to select a sample unit of 350 tour and travel agents selected from a population of 779 tour and travel agents operating in Kuala Lumpur. In addition, a convenience sampling method was conducted among 131 tour and travel agents that participated in the Malaysian Association of Tour and Travel Agents (MATTA) fair that held in Kuala Lumpur 12-14 March2010. There are two reasons why the focus was on Kuala Lumpur: 1) in 2010, Kuala Lumpur was rated the 7th most visited cities in world in the international tourist arrivals (WTO 2009), 2) the MATTA headquarter is located in Kuala Lumpur and MATTA fair 2010 was taking place during data collection for this study.

Currently, most tour and travel agents in Malaysia are using the Internet for retrieving and sending email, locating relevant travel information and sending or attaching documents between company, staff, partners and suppliers. The tourism industry was chosen because it is one of the most competitive and strategic industries in the world and uses the Internet to its fullest extent. The advancement of technology e.g. the Internet and e-commerce has changed the fundamental role and tasks of a travel agency in disseminating its products and services in the marketplace. The role of the travel agency has become a major focus since the Internet is widely considered to be an agent of transformation within the travel industry (Buhalis, 2003).

Since the main objective of this study is to investigate the relationship between strategic alignment and the use of IT for competitive advantage, this study targets all types of firm size from small (less than 100 of employees) medium (101-249 employees) and large (more than 250 employees). The sizes are based on definition from Malaysia Small Medium Industries Development (SMIDEC, 2007).

3.4 Sampling Unit

The sampling unit has been drawn from tour and travel agents in Malaysia. The name list of these companies was found from the online member directory, published in the

Malaysian Tour and Travel Agents' homepage (MATTA) 2009. Kuala Lumpur was ranked in fifth position of most visited cities by international tourist visitors in 2009 (WTTC, 2009). A sample unit of 350 tour and travel agents were selected from tour and travel agents operating in Kuala Lumpur and 131 tour and travel agents were obtained among participants of the MATTA Fair 2010.

3.5 Sample Size

The Structural Equation Modeling (SEM), which requires a large sample size Byrne (2001) has influenced the sample size for this study. There are several factors influencing the required sample size for SEM, which include the multivariate distribution of data, missing data, model complexity, average error variance indicators and estimation techniques (Hair et al., 2006). Additionally, Byrne (2001) stated that the SEM model would lead to stable estimates and good significance tests if the sample size is 200 or over. Thus, assuming a low response rate the total sample size for this study was decided to be 350 as that represents almost half of the population of the tour and travel agents.

3.6 Sampling Method

Two sampling methods were used in this study to select target respondents at from tour and travel agents in Malaysia: simple random sampling and convenient sampling. The simple random sampling technique was selected from tour and travel agents located in Kuala Lumpur as a sub-population of the entire tour and travel agents population. Unlike systematic random sampling that applies a constant interval to choose a sample of elements from the population, an online random generator was used to give each respondent of the population of the tour and travel agents in Kuala Lumpur an equal chance of inclusion in the sample since data representativeness is important to generalize the findings to the population.

Through this method, 71 respondents from tour and travel agents were obtained. Convenient sampling was used by obtaining respondents who were the most

conveniently available to obtain a large number of completed questionnaires quickly and economically. The convenience sampling method was conducted among 131 tour and travel agents that had participated in the Malaysian Association of Tour and Travel Agents (MATTA) Fair 12-14 March2010. At the MATTA fair, tour packages and air tickets to all destinations around the world are sold at a relatively cheap price.

3.7 Respondents

In order to ensure data was collected from the relevant respondents, each questionnaire was attached with a cover letter containing an instruction that the questionnaire should only be completed by IT and business managers involved in IT or business strategies formation. The targeted respondents included managing directors, chief executive officers, operation managers, chief IT officers, tour managers, sales and marketing managers, reservation managers, outbound and inbound managers, administration managers, chief financial officers, customer service managers and/or any other participants holding management positions. To avoid single source as common method biasness, two questionnaires were sent to each organization to obtain data from different sources of business and IT manager.

3.8 Research Model

After integrating the studies in the literature, we included the coordination of the IT and business planning factor, communication between the IT and business managers factor, the human resource skills maturity factor, the IT flexibility factor, the IT resource governance structure factor and the organizational change adaptability factor into the model as the most significant antecedents of strategic alignment. Since SEM was used to validate and test the research model proposed in this study, some of the terms i.e. exogenous factor, second order factor, endogenous factor commonly used in SEM are included in the description of the research model. in SEM, factors are considered exogenous first order factor if they are independent measured factors (Byrne, 2001). A factor is treated as a second-order factor if it does not have its own measures but it is measured by either exogenous or endogenous factors (Byrne, 2001).

Factors are considered endogenous first order factor if they are the dependent measured factors (Byrne, 2001). The research model in figure 3.1 identifies the first order exogenous factors, the second-order factor and the first-order endogenous factor, investigated in this study. The first-order factors or constructs include: coordination of the IT and business planning factor; communication between the IT and business managers factor; the human resource skills maturity factor; the IT flexibility factor; the IT resource governance structure factor and the organizational change adaptability factor. The second-order factor is limited to the strategic alignment factor, and it does not have its own set of measured indicators; rather, it is linked indirectly to those measuring first order exogenous factors. The first-order endogenous factor is identified for the use of IT for competitive advantage.

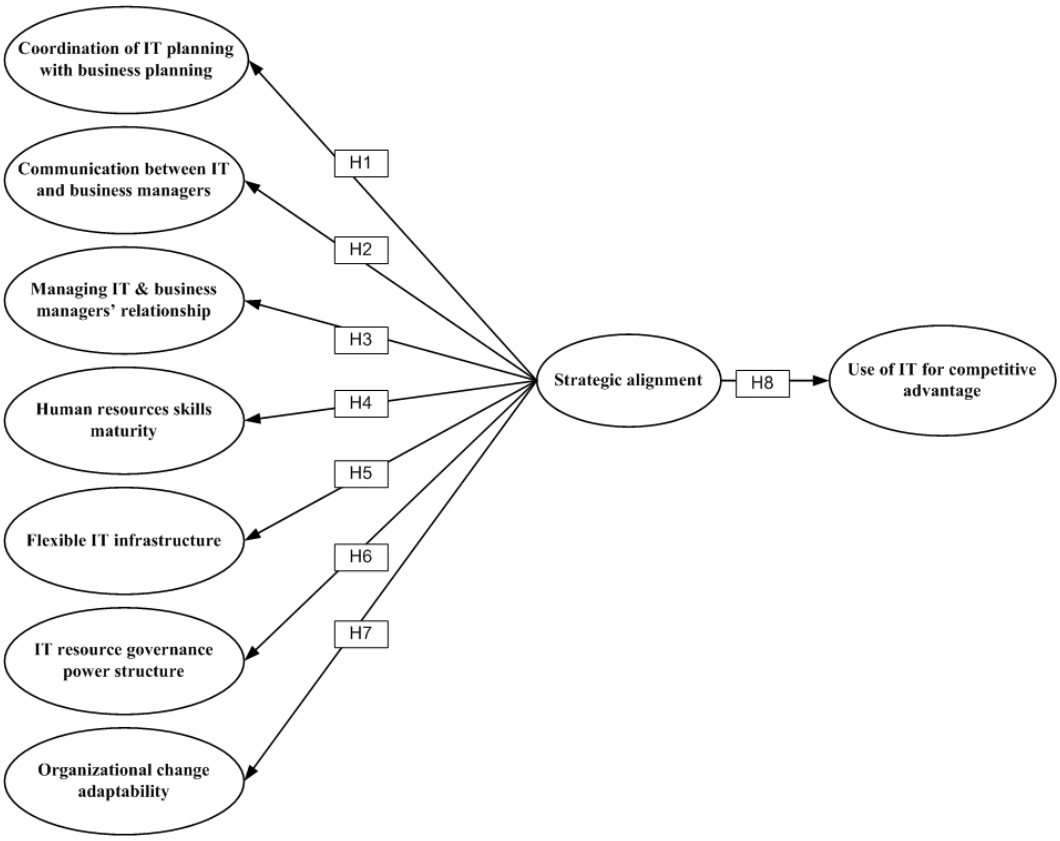

Figure 3.1: Research Model

One of the main objectives of this study is to investigate the perceived influence of the strategic alignment between IT and business of the use IT for competitive

advantage. Hence, the use of IT for competitive advantage is included in this study as the dependent variable. The first order exogenous factors include:

- Coordination of the IT and business planning factor, managing IT and business managers' relationship, communication between IT and the business managers factor, human resource skills maturity factor: these factors measure the maturity level of IT strategy alignment with business strategy. According to Luftman, (2000) maturity is measured by achieving and sustaining demands focusing on maximizing the enablers and minimizing inhibitors that cultivate alignment. A model is used to measure maturity or certain characteristics of this maturity. The notion of measuring maturity relative to strategic planning and linkages to IT was also developed by (Galliers and Leidner, 2003).
- IT flexibility factor: represents technical factors that span a diverse set of resources around a physical IT infrastructure i.e. hardware, software, networks and human expertise. A flexible IT infrastructure is based on agile or flexible hardware and networking resources, reusable software and IT expertise that can be used to suit changing business needs (Pollalis, 2003). The IT infrastructure flexibility is derived from (Broadbent and Weill, 1997) view of infrastructure framework.
- IT resource governance power structure factor and organizational change adaptability factor: the IT resource governance power structure is based on centralization, decentralization or federations of IT resource governance modes. The organizational change adaptability focuses on having strategic readiness programs in place to cope with new changes including IT related changes.

The model shows relationships, represented by single headed lines as shown in figure 3.1 between the first-order exogenous factors, strategic alignment and the use of IT for competitive advantage.

3.8.1 Hypotheses

Hypotheses are developed for variables identified in the research model. A hypothesis is an assumption that can be verified or falsified (Arbnor and Bjerke, 1997). With regard to SEM, Schumacker and Lomax (2004) stated that hypothesis testing involves

confirmation that a theoretical model fits the sample variance data, testing the structural coefficient for significance.

After the lengthy discussion about the underlying strategic alignment factors, and in turn, perceiving the strategic alignment influence on the use of IT for competitive advantage, the following hypotheses were represented in research model based on the research questions and strategic alignment theory.

H_1: Coordination of IT plans with business plans is an underlying strategic alignment factor.

H_2: Communication between IT and business managers is an underlying strategic alignment factor

H_3: Managing IT and business managers' relationship is an underlying strategic alignment factor.

H_4: Human resource skills maturity is an underlying strategic alignment factor.

H_5: IT flexibility is an underlying strategic alignment factor.

H_6: IT resource governance power structure is an underlying strategic alignment factor.

H_7: Organizational change adaptability is an underlying strategic alignment factor

H_8: The strategic alignment has a positive impact on the use of IT for competitive advantage.

Various studies that relate to business strategy, IT strategy, strategic alignment and IS resource based competitive advantage were reviewed in order to develop this research model. Models have been developed in many academic disciplines to substantiate and test hypotheses and theories.

3.9 Instrument

The instrument used in this study has been based on previously validated instruments such as (Luftman, 2000; Sabherwal and Chan, 2001; Bharadwaj, 2000 and Pollalis 2003) to establish criterion validity for scale used in this study . However, major

modifications were made to meet the research objectives and the structural equation modeling requirement.

The instrument consists of four sections (see Appendix D). Section A, was designed to capture information related on the background of the firm. Section B, focused on the measurement exogenous constructs (factors that contribute to strategic alignment); each construct was measured with four items or more, except for the IT flexibility construct, the IT resource governance power and the managing IT and business managers' relationship which have been measured with only three items each. Section C, was designed for the endogenous measurement construct (the use of IT for competitive advantage), and it was measured with six items. Section D, is related to the demographic variables of the respondents.

This study uses a 5-point Likert scale with values range from 1= Never, 2=Seldom, 3= Sometimes, 4= Often, 5= Always and 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree.

In the following sections, we present the instrumental exogenous and endogenous constructs with measured items for each construct, as well as variables related to the background of the firm and the respondents' demographics.

3.9.1 Background information of the firm

The background information of the firm consists of:

a. The year the firm was established,

b. The firm's turnover in the financial year 2008-2009,

c. Percentage of the firm's annual capital expenditure on IT per annum,

d. Number of fulltime employees in the firm,

e. Number of part-time employees in the firm,

f. The current position of a respondent in the firm,

g. The extent that a respondent is involved in business strategy formation,

h. The extent that a respondent is involved in IT strategy formation,

i. The information systems presently used in the firm,

j. Whether the firm has fulltime IT personnel,

k. Who is in charge of managing IT resources in the firm.

Since firms may be reluctant to reveal sensitive data, the firm's turnover was scaled as (between RM 200,000-RM 500,000), (between RM 500,000-RM1 million), (between RM1 million-RM 5 million) and (between RM 5 million-RM 10 million). Similarly, the annual capital expenditure on IT was scaled as (between 0-10%), (between 11-20%), (between 21-30 %), (between 41-50%), (over 50%). For responses regarding the respondent's involvement in business strategy or IT strategy formations, the 5 point Likert scale values ranging from 1= very much involved, 2=involved, 3=neutral, 4=not involved and 5=not involved at all.

The respondents were requested to select information systems that are presently used by their firm. Several information systems that consist of enterprise systems or *enterprise resource planning, supply chain management systems, customer relationship management systems, knowledge management systems and office automation systems* were listed and the respondents were given an option to select more than one option.

The *enterprise systems* or enterprise resource planning systems collect data from various key business processes, such as: reservations, finance and accounting, sales and marketing and human resources. The *supply chain management systems* provide information to help suppliers, distributors and logistics companies share information about orders, production, inventory levels, and delivery of products and services. The *customer relationship management systems* provide information to coordinate all the business processes that deal with customers in sales, marketing and services to optimize revenue, customer satisfaction and customer retention. The *knowledge management systems* collect data that is relevant to the knowledge and experience in the firm, and make it available wherever and whenever it is needed to improve

business processes and management decisions. The *office automation systems* provide workers with effective ways to process personal and organizational data, perform calculations and create documents, for example e.g. MS Word, MS Excel, Email, Voice mail, internet, intranet.

Additionally, the respondents were requested to specify who is in charge for managing IT resources in the firm by selecting only one of these options: 1) IT managers, 2) business managers, 3) IT consultants, 4) others, 5) all the above, or 6) not applicable.

3.9.2 Measuring Coordination of IT with Business Plans Factor

The coordination of IT and business plans factor was conceptualized as the reflection of business objectives and strategies in the IT planning and strategies. Based on this conceptualization, the coordination of IT planning and business planning was measured with eight (8) items presented in table 3.4.

Table 3.4: Measured Items for Coordination IT and Business Plans Factor

	Items (source: Sabherwal and Chan, 2001)
1	IT managers regularly attend business planning meetings.
2	IT managers contribute to the formation of business goals.
3	IT managers have regular contact with top management.
4	IT managers have easy access to business managers.
5	Business managers play an important role in the corporate IT steering committee.
6	Business managers have frequent contact with IT management.
7	Business managers become knowledgeable about IT opportunities within the firm.
8	Business managers regard spending on IT as strategic investments rather than expenses to be controlled.

3.9.3 Measuring Communication between IT and Business Managers factor

The communication between IT and business managers focuses on the extent that IT and managers understand each other's environment, and the extent to which there is knowledge shared between IT and the business managers. The effective

communication level between IT and business managers factor was measured with nine (9) items, as presented in table 3.5.

Table 3.5: Items Measuring Communication between IT and Business Managers

	Items (Luftman, 2000; Sabherwal and Chan, 2001)
1	IT managers do not understand the business.
2	IT managers have a good understanding of the business.
3	Understanding of the business by IT managers is encouraged
4	Business managers do not understand IT.
5	Business managers have a good understanding of IT.
6	Understanding of IT by business managers is required and promoted.
7	Domain knowledge shared between IT and business managers is on an ad hoc basis.
8	Domain knowledge shared between IT and business managers is a consistent structured framework.
9	There is a formal knowledge sharing between business and IT managers.

3.9.4 Measuring Managing IT and Business Managers' Relationship Factor

The management of IT and business managers' relationship was conceptualized as the extent to which formal processes are in place that focus on enhancing the relationship between IT and business managers. There were three (3) items measured for managing IT and business managers' relationship factor presented in table 3.6.

Table 3.6: Items Measuring Managing IT and Business Managers' Relationship.

Items (source: Sabherwal and Chan, 2001)
1. We defined programs to manage our relationship.
2. We manage our relationship on an ad hoc basis.
3. There is a sense of conflict and mistrust between IT and business managers.

3.9.5 Measuring Human Resource Skills Maturity Factor

The human resource skills maturity factor pertains to the ability of a firm to attract and retain IT and business professionals, and prepare them to acquire both business and IT skills. This factor was measured with five (5) items as presented in table 3.7.

Table 3.7: Items Measuring Human Resource Skills Maturity

Items (Luftman, 2000; Sabherwal and Chan, 2001)
1. There is a formal program to retain IT and business professionals.
2. IT hiring is based on technical expertise.
3. Business hiring is based on business skills.
4. Effective programs are in place to attract and retain IT professionals with both technical expertise and business skills.
5. Effective programs are in place to attract and retain business professionals with both business skills and technical expertise.

3.9.6 IT Flexibility Factor

The technical dimension represents technical factors that span a diverse set of resources around physical IT infrastructure i.e. hardware, software, networks and human expertise. A flexible IT infrastructure is based on agile or flexible hardware and networking resources, reusable software and IT expertise that can be used to suit changing business needs (Pollalis 2003). The IT flexibility construct was measured with three (3) items as presented in table 3.8.

Table 3.8: Items Measuring IT flexibility

Items (source: Pollalis 2003)
1. A utility providing basic IT services at minimum cost.
2. Driven by the requirements of the current business strategy.
3. A resource to enable and drive fast responses to the changes in the marketplace.

3.9.7 Measuring IT Resource Governance Power Structure Factor

The IT resource governance power structure is based on centralization, decentralization or federations of IT resource governance modes. The IT resource governance power structure construct was measured with three (3) items as presented in table 3.9.

Table 3.9: Items Measuring IT Resource Governance Construct

Items (source: Sabherwal and Chan 2001)
1. Centralized, whereby the IT department or other central departments have primary authority for architecture, standards and application resource decisions.
2. Decentralized, whereby each functional department has primary authority for their own IT infrastructure, standards and application resources decisions.
3. Federated, whereby the IT department or other central unit has primary responsibility for architecture, common systems and standards decisions; each functional department has authority for making applications resource decisions.

3.9.8 Measuring Organizational Change Adaptability Factor

The organizational change adaptability factor focuses on having strategic readiness programs in place to cope with new changes including IT related changes. The IT organizational change adaptability construct was measured with four (4) items as presented in table 3.10.

Table 3.10: Items Measuring Organizational Change Adaptability

Items (source: Sabherwal and Chan, 2001)
1. We tend to resist change.
2. We tend to have change readiness programs by providing training on necessary skills to adapt to change.
3. We tend to be reactive, rather than planning for change.
4. We tend to be proactive, and therefore anticipate change.

3.9.9 Use of IT for Competitive Advantage

The instrumental use of IT for competitive advantage is based on the resource-based view with regard to IT resources and capabilities. The use of IT for competitive advantage construct was measured with six (6) items, which are newly developed items as presented in table 3.11.

Table 3.11: Items Measuring Use of IT for Competitive Advantage Construct

Items (source: Bharadwaj, 2000)
1. IT is used to reduce our production/service costs.
2. IT is used for time saving/speeding up our production/service processes
3. IT is used for product/ services innovation by improving the quality of our products/services and introducing new products/services.
4. IT is used to achieve better internal integration within our firm both interdepartmental and intradepartmental.
5. IT is used to achieve better integration with our suppliers.
6. IT is used to achieve better integration with our customers.

3.9.10 Demographic Variables of the Respondent

The demographic variables include number of years the respondent has been with the company; gender of the respondent; age group and education level. To avoid encountering problems when asking the respondents sensitive questions, the age variable was grouped as: 1) 20-29, 2) 30-39, 3) 40-49, and 4) 50 and above. Similarly, educational level was classified as: 1) High school, 2) College, and 3) University.

3.10 Pilot Study

Since the instrument items that have used in this study consist of validated but modified items, in additional to newly developed items, it was necessary to carry out pilot testing to ensure that content validity was achieved before conducting a theoretical test using Structural Equation Modeling (SEM). The questionnaire was pilot tested with 15 respondents convenient sampling in seven (7) contact firms to

validate questionnaire items. The pilot test was administered to IT and business managers to review their comments and use their suggestions to further improve the presentation of the questions. The participants commented about the length of the questionnaire, as the original questionnaire consisted of 38 questions, and the average time to complete it was approximately 20 minutes, which is a lot of time for a person holding a management position. Therefore, it was suggested that some questions be removed from the questionnaire and others were suggested to be reworded to better reflect the current study objectives. As a result, the final questionnaire consisted of 24 questions with an average response time of 12 minutes.

3.11 Data Collection Method

In view of the study objectives, the mail questionnaire was chosen as the most suitable data collection method. The strengths of a mail questionnaire has been given by Dillman (2007), include:

- If the data is dealing with sensitive issues, its anonymity may be advantageous.
- The respondents can take their own time to fill in the questionnaire and consider their responses.
- A Mail questionnaire can lead to less bias compared to face-to-face interviews.

According to Dillman (2007) the mail questionnaire also has some weaknesses, which include:

- A need to keep questions relatively simple and straightforward, as the researcher has no control over how respondents are interpreting the questions.
- No possibility of probing beyond the answer given by the respondents.
- No control over who answers the questionnaire.
- Possible low response rate.

The questionnaire was sent out in July 2009, and the participants were asked to return it using a pre-printed return envelope or to contact the researcher upon completion. Follow up calls and emails were used to confirm if the respondents had

received the questionnaire. Some of the problems that encounter during data collection included that nine companies reported that they had not received the initial mailed questionnaire; therefore, we decided to send another copy to increase the response rate. Some other companies never indicate whether they receive the questionnaire or not. In September 2009, another follow up call and email was used as a soft reminder to encourage the respondents to complete the questionnaire. In addition to the mail questionnaire, we also distributed the questionnaire through the direct contact. During data through direct contact, many participating companies in the MATTA fair declined to complete the questionnaire.

3.12 Statistical Data Analysis Procedures

This section discusses the statistical tools that have been used for the data coding and cleaning process, exploratory data analysis process, preliminary data analysis and model testing using SEM.

3.12.1 Statistical Package for Social Sciences (SPSS)

The Statistical Package for Social Science (SPSS) version 11.0 was used as a data-coding tool. A total of 66 variables were entered into the SPSS and their measurement scale of being ordinal, scale, or nominal were determined. Since the measurement scale of the variables influences model testing, all the items that will be used in model testing are ordinal values. Furthermore, several exploratory data analyses were undertaken to check the proper data entry had been made by looking for the out of range values or outliers, detecting missing values, and checking normality distribution of data. Moreover, the SPSS was used to test the reliability of internal consistency between the items using Cronbach's alpha test. These exploratory data analysis and reliability testing measures are recommended to enhance model testing (Hair et al., 2006; Kline, 2005; Schumacker and Lomax, 2004). The SPSS was again used for several descriptive statistics focusing on the background of the firm and demographic variables of the respondents. This was conducted as a preliminary data analysis. These descriptive statistics include means, standard deviations and frequency or percentage.

3.12.2 Structural Equation Modeling (SEM)

The SEM is a statistical procedure used for testing theoretical models that contain hypothesized sets of variables to define constructs (factors) and hypothesized sets of relationships between these constructs (Schumacker and Lomax, 2004). Based on theory and empirical research, the researcher determines which sets of variables define constructs and hypothesized the relationship between these constructs. Furthermore, SEM involves the use of two types analyses that run simultaneously to test and validate the model. The first analysis is the Confirmatory Factor Analysis (CFA). The CFA attempts to determine the set of observed (measured) variables that share common variance characteristics to define the factors (latent factors) or constructs for the model (Schumacker and Lomax, 2004). The second type is the regression analysis that runs simultaneously with CFA, and it validates the path model consisting of relationships between constructs (latent factors). According to Schumacker and Lomax (2004) a sequence of steps is necessary for the SEM technique: model specification, model identification, model estimation, model testing and model modification. Model specification involves the development of the research from the theoretical literature. Model identification is the identification and estimation of the model parameters, which may be free, fixed or constrained. Free parameters are unknown, fixed parameters have a specified value e.g. 0 or 1, and constrained parameters are set equal to one or more parameter. Model estimation involves estimating the values and types of parameters using fitting functions. Model testing involves determining how well the collected data fits the model. Model modification is used when it is determined that the data is not a good fit. Therefore, the model is modified and re-estimated.

3.12.2.1 SEM Advantages and Disadvantages

The validity of measurement is one of the important issues in conducting research. Traditionally, measurement validity has been evaluated using several analyses such coefficients alpha, item-total correlations, inter-item correlations, and exploratory factor analysis (Byrne, 2001). SEM has several advantages over the traditional validation technique (such as regression analysis). Firstly, SEM takes a confirmatory,

rather than an exploratory approach to data analyses. Secondly, SEM estimates are based on information from the full covariance matrix. Thirdly, SEM is an easily applied method for estimating the direct and indirect effects. Fourthly, it provides explicit estimates of the measurement error. Fifthly, SEM can incorporate both unobserved and observed variables into a model (Byrne, 2001). In addition, Hair et al. (2006) noted further SEM advantages: the SEM make it possible to analyse multiple structural relationships simultaneously while maintaining statistical efficiency; the SEM technique is considered a combination of both interdependence and dependence techniques, so that exploratory factor analysis and regression analysis can be conducted more comprehensively in one step.

Nevertheless, there are several drawbacks associated with these scale measurement validation methods Byrne (2001), firstly, most of these analyses are descriptive by nature and hence hypothesis testing is difficult. Secondly, the research findings may be inaccurate and biased by measurement error when the traditional multivariate techniques are used. Thirdly, regression analyses are based on observed measurements only, not both observed and unobserved variables as in the case of SEM. Fourthly, regression analyses are ineffective in the sense that they do not allow for the model estimation and analysis equations simultaneously.

Despite the advantages offered by the SEM compared to the traditional multivariate analyses, concern has been raised about the use of this technique. While statisticians advocated the use of the chi-square test ($\chi 2$) to evaluate the acceptability of the hypothesized model, $\chi 2$ has been criticized for its sensitivity to a large sample size (Byrne, 2001). Therefore, researchers have started to look for other fit indices to indicate an acceptable fit of a given model (Barrett, 2007). Another criticism is related to a sample that is closely related to $\chi 2$ test. The sample size for the use of SEM should be large enough to minimize identification and other research problems. According to Barrett (2007), SEM analyses based upon samples of less than 200 should simply be rejected outright for publication. Additionally, researchers always have the tendency to modify their model based on empirical results such as the modification index. However, model modifications should be conducted based on theoretical grounds rather than merely on an empirical basis (Byrne, 2001).

3.12.2.2 Justification for SEM

The business-IT alignment research reviewed for this study has been limited by methodological deficiencies. First, the methodologies used in previous studies such as

Luftman (2000) strategic alignment model, have focused on measuring directly observed variables and assessing the effects of these variables on business-IT alignment. However, the methodologies have not considered the relationships that exist between the underlying strategic alignment factors and the influence of strategic alignment on the use of IT for competitive advantage.

A second issue observed in the literature was that some studies convert the data from qualitative studies into quantitative data using regression analysis (Islam and Faniran, 2005). However, regression analysis cannot account for the errors that have occurred resulting from this conversion. The CFA performed in this study was restrictive, as the technique validated the set of observed variables associated with the factor.

The strength of SEM is that it enables a comprehensive model to be validated by allowing complex relationships to be expressed through hierarchical or non-hierarchical, recursive and non-recursive structural equations (Gefen et al., 2000). SEM provides more information relative to the validation of the model, based on the use of two analysis techniques. The result is a more rigorous analysis of the proposed research model and a better assessment tool (Kaplan and Norton, 2004)

3.12.3 Fit Indices

The current study tested the proposed model fit with the observed data using the SEM technique. The proposed second-order factor model consisted of constructs: (1) coordination of IT planning with business planning, (2) communication between IT and business managers, (3) human resource skills maturity, (4) IT infrastructure flexibility, (5) organizational change adaptability, (7) strategic alignment and (8) the use of IT for competitive advantage. Research model testing and analysis were conducted through three general approaches. First, the proposed model analyses were

conducted using variances and the most widely used maximum-likelihood estimation method with AMOS 18.0. Second, the model development strategy was followed using a model re-specification procedure, which aimed to identify the source of misfit and then generate a model that achieves a better fit of data (Byrne, 2001). Lastly, following the competing model strategy, our proposed second-order factor model was compared with the first-order factor model. As recommended by Hair et al. (2006) recommendation, the present study examined multiple indices of the model fit because a model may achieve a good fit on a particular fit index but be inadequate on others. These fit indices include Chi-square (χ^2), normed chi-square (χ^2/df), Root Mean Square Error Approximation (RMSEA), Goodness of Fit Index (GFI), Normed Fit Index (NFI) and Comparative Fit Index (CFI). The next section briefly discusses what each index measures and the recommended threshold.

3.12.3.1 Chi-square (χ^2)

The Chi-Square value is the conventional measure for evaluating overall model fit and, assessing the magnitude of discrepancy between the sample and fitted covariances matrices (Hu and Bentler, 1999). A good model fit would provide an insignificant result at a 0.05 threshold (Barrett, 2007). Thus the Chi-Square statistic is often referred to as either a 'badness of fit' or a 'lack of fit' measure (Kline, 2005). While the Chi-Squared test retains its popularity as a fit statistic, there exist a number of limitations in its use. Firstly, this test assumes multivariate normality and deviations from normality may result in model rejections even when the model is properly specified (Mclntosh, 2006). Secondly, because the Chi-Square statistic is in essence a statistical significance test, it is sensitive to sample size which means that the Chi-Square statistic nearly always rejects the model when large samples are used (Bentler and Bonett, 1980).

According to Hair et al. (2006) Chi-square (χ2) is used when one is interested in looking at the association between two nominal level variables, or two ordinal variables, or one nominal and one ordinal level variable. Unlike t-test or ANOVA, Chi-square (χ2) is the suitable statistic that does not require an interval level variable (Maruyama, 1998). Also, unlike t-test or ANOVA, in Chi-square (χ2) analysis, means

are not compared, but rather comparison is made on the relative frequencies. Chi-square ($\chi 2$) analysis involves testing whether one variable is associated with the second variable. The null hypothesis in this type of analysis is that there is no association between the two variables. The alternative hypothesis is that the two variables are associated. Therefore, it is justifiable to use Chi-square ($\chi 2$) to measure the magnitude of discrepancy between the sample- and fitted covariances matrices.

Since the chi-square is sensitive to multivariate normality (Mclntosh, 2006) and sample size (Kenny and McCoach, 2003), the normed chi-square-dividing the chi-square by the degree of freedom- is also used (χ^2/df). The recommended value for χ^2/df (ratio) should below 3.0 (Carmines and McIver, 1981).

3.12.3.2 Root Mean Square Error Approximation (RMSEA)

The RMSEA is an absolute fit index, which measures how well the model, with unknown but optimally chosen parameter estimates, would fit the population covariance matrix (Byrne, 2001). Since it is very sensitive to the number of parameters to be estimated in the model, it has been considered as one of the most informative fit indices (Barrett, 2007). A value less than 0.08 is acceptable, however a cut-off value close to 0.05 is recommended to advocate that there is a good fit between the hypothesized model and the sample data (Hair et al., 2006).

3.12.3.3 Goodness of Fit Index (GFI)

The goodness of fit index (GFI) is an alternative to the chi-square test, and it measures the amount of variance is accounted for by the estimated population covariance (Tabachnick and Fidell, 2006). According to Hair et al.(2006) the GFI value increases with larger samples and with the increase of parameters in the model. An acceptable Cut-off point of 0.90 or greater is recommended for GFI.

3.12.3.4 Normed Fit Index (NFI)

The normed fit index (NFI) is one of the incremental fit indices, which measures the proportion by which the model improved in terms of fitness by comparing the χ^2 value of the model with the χ^2 value of the null model (Hair et al., 2006). An acceptable threshold value of 0.95 or greater is recommended for NFI to indicate a good fit (Hair et al. 2006; Hu and Bentler, 1999). One major drawback for the NFI is its sensitivity to sample size since it underestimates for samples of less than 200 (Kenny and McCoach, 2003).

3.12.3.5 Comparative Fit Index (CFI)

The comparative fit index (CFI) is one of the most important fit indices as it is not affected by the sample, therefore it is commonly included in the reported fit indices (Fan et al., 1999). The CFI is a revised NFI and it takes into consideration the sample size (Byrne, 2001). An acceptable threshold close to 0.95 has been recommended by several researchers (Byrne, 2001; Hair et al., 2006; Hu and Bentler, 1999).

3.13 Chapter Summary

This chapter shed a light on the research methods commonly used in past information system (IS) studies. Firstly, the research methods that comprise quantitative, qualitative or mixed methods were explained. Secondly, different paradigms that include positivist research, interpretive research and critical research were described. Thirdly, several research approaches and the rationale for choosing a particular design were presented. Fourthly, sampling design, research model and instrument were presented. Lastly, there was a discussion of data collection and the statistical analysis procedures used.

CHAPTER 4

STATISTICAL ANALYSIS

4.1 Introduction

In the previous chapter, the statistical data analysis procedures were examined. This chapter reports on the results of the preliminary data analyses and model validation analyses. In the preliminary analyses, several analyses will be carried out. First, a discussion of the reliability analysis or alpha testing will be carried out. Second, preliminary data analysis procedures will be highlighted. Third, the descriptive data analyses that relate to the background information of the firms, and the respondents' demographics will be discussed. In the model validation analyses, the measurement assessment of the confirmatory factor analysis as well as the hypothesis testing results using the SEM technique will be presented. First, measurement scale validation in which the assessment of fit, unidimensionality, and construct validity of the measurement model will be presented. Second, the final structural model testing and the alternative model comparison will be covered. Lastly, the final structural model hypotheses testing will be conducted.

4.2 Response Rate

Of the 350 questionnaires distributed using mail survey, 211 questionnaires were returned, which gave a response rate of 60.3%. Another 131 questionnaires were obtained through direct contact survey. There were 9 unacceptable questionnaires due to incomplete responses, leaving total of 202 valid questionnaires for analysis.

4.3 Item Analysis and Reliability

The internal consistency reliabilities of the scale are assessed in this section. Average inter-item correlation that assesses the extent to which answers to one test item correlate with answers to other test items was implemented. The correlations among all items was computed and find the average of those intercorrelations. Crobach's alpha coefficient, which is the most popular of the internal consistency was employed in this study to assess the reliabilities of measurement scales adapted from (Malhotra, 2004). The acceptable level of coefficient alpha to retain an item in a scale is at least 0.7 (Nunnaly, 1978). The reliability analyses for each of the measured constructs are presented in table 4.1.

Table 4.1: Reliability Analysis for Measured Constructs

Construct	Cronbach's Alpha
Coordination of IT planning with business planning	0.9326
Communication between IT and business managers	0.7115
Managing IT and business managers' relationship	0.3386
Human resource skills maturity	0.8987
Flexible IT infrastructure	0.8182
IT resources governance power structure	0.0714
Organizational change adaptability	0.7073
Use of IT for competitive advantage	0.8837

As shown in the above table, the scales display an acceptable degree of reliability with a Cronbach's alpha coefficient of 0.9326, 0.7115, 0.8987, 0.8182, 0.7073 and 0.8837 for coordinating IT planning with business planning construct, the communication between IT and business managers construct, the human resource skills maturity construct, the flexible IT infrastructure construct, and organizational

change adaptability construct and the use of IT for competitive advantage construct, respectively. Low reliability scores are obtained for the managing IT and business managers' relationship construct and the IT resource governance structure construct, with Cronbach's alpha of 0.3386 and 0.0714 respectively.

All the measures of the alpha coefficient for the scale used were above the acceptable level of the coefficient alpha of 0.70, except the managing IT and business managers' relationships construct and IT resource governance power structure construct. This indicates satisfactory reliability for all but the two previously mentioned constructs employed in this study. These two unsatisfactory constructs were deleted due their lower reliability alpha coefficients of 0.3386 and 0.0714 respectively.

4.4 Preliminary Data Analysis

Prior to the SEM data analysis, several preliminary data analysis procedures were conducted to examine measurement scale, missing values, outliers or extreme values, and normality distribution of data. These data screening procedures are suggested by some the SEM authors to minimize the influence of bad data on the SEM model; model measurement and scaling of the variables have been influenced by the type of statistical analysis needed (Kline, 2005; Mertler and Vannata, 2005; Schumacker and Lomax, 2004). All the variables that are used in the descriptive analysis have either nominal or scale values, while the measured variables have ordinal values.

Outliers and extreme values are cases that have an atypical score either in single variable (univariate outliers and extreme values) or in a combination of variables (multivariate outliers and extreme values) (Hair et al., 2006; Tabachnick and Fidell, 2006). With regard to the outliers and extreme values, there are three fundamental causes of outliers and extreme values: 1) data entry errors, 2) having a survey taken by a non-member of the population, and 3) having a participant who is different from the rest of the sample set (Tabachnick and Fidell, 2006).

To minimize the causes of outliers and extreme values due to a survey being completed by a non-member of the population, the survey was only mailed to

randomly selected firms and follow up phone calls were made to ensure that the questionnaire reached targeted respondents. Hence, it was determined that only the first and third causes could result in the existence of outliers and extreme values. To detect univariate outliers and extreme values, we converted our numeric variables to their standard z scores of each variable as recommended by (Hair et al., 2006). They suggest that, the common rule of thumb is that z scores can range from ± 3 to ± 4 for samples of more than 80. The z scores of ± 4 were selected for this research and there were no univariate outliers detected.

Multivariate outliers and extreme values were determined from examination of several variables using Mahalanobis distance (D^2). This technique evaluates the position of each observation relative to the mean centre of the observations (Hair et al., 2006). These researchers suggest that an observation is an outlier when its p-value is <0.001. Based on this relative comparison, there were no multivariate outliers detected in the observations of this research. Additionally, there were no missing values for measured constructs.

In relation to the normality distribution test, two ways that can be used to assess the normality testing are skewness and kurtosis (Hair et al., 2006). Skewness refers to the symmetry of the distributions, while kurtosis refers to their flatness of peakness (Hair et al., 2006). Normal distributions have values of kurtosis and skewness of zero. Values above zero indicates that the distribution is too peaked, while below zero indicate that the distribution is too flat. Thus, if the distribution is shifted to the right, it is said that the distribution is positively skewed. If there is a shift to the left, it is said that the distribution is negatively skewed (Hair et al., 2006; Mertler and Vannata, 2005). Acceptable values for skewness and kurtosis should not exceed ± 1 (Hair et al., 2006; Kline, 2005; Mertler and Vannata, 2005; Schumacker and Lomax, 2004). Both skewness and kurtosis values fall between ± 1, which exhibit an acceptable normality distribution test at a 5% significance level (see Appendix A).

4.5 Descriptive Results

The descriptive results presented in this section are related to the background information of the participating firms and the respondents' characteristics that have been found in this study.

4.5.1 Firm's Background Information

The respondents' firms are small, medium and large enterprises. The highest group of 45% is from a medium enterprise, followed by the small enterprises 35%, while enterprises with an annual turnover of more than 5 million comprise 20 percent of the total respondents for this survey.

Table 4.2: Firm's Turnover Last Year

Percentage of Turnover in last financial year 2008-2009	
Turnover	***Percentage***
Between RM 200,000- less 1 million	35%
Between RM 1 million- RM 5 million	45%
More than 5 million	20%

Based on the results shown in table 4.3, the majority of the firms (65%) dedicate 0-10% of their capital expenditure on IT. Moreover, 25% of the respondents have a capital expenditure to IT ranging between 11-20%. Only 0.5% of the respondents have a capital expenditure on IT between 31-40%. None the respondents has a capital expenditure on IT between 41-50% or over 50%.

Table 4.3: Firm's Annual IT Expenditure

Annual IT expenditure	
Percentage of Capital expenditure on IT	***Percentage***
Between 0-10%	65%
Between 11-20%	25%
Between 21-30%	10.5
Between 31-40%	.5%
Between 41-50%	No one selected (0%)
Over 50%	No one selected (0%)

With regard to the number of full-time employees in the firms, 40.9% of the participating firms have 50-150 full-time employees. 24.7% of the total respondents indicated there are more than 351 full-time employees in their firms. 22.2% participating firms have 151-250 full-time employees. Only 12.1% percent of the surveyed firms stated there are 251-350 full-time employees in their firms.

Table 4.4: Full Time Employees in the Firm

Full-time employees in the firm		
No. of employees	***Frequency***	***Percentage***
50-150	81	40.9%
151-250	44	22.2%
251-350	24	12.1%
351 and above	49	24.7%

Based on results shown in table 4.5, the majority of the participating firms (64.2%) have 0-5 part-time employees. 15.5% of the participating have 6-10 part-time employees. Only 1.1%, 7% and 12.3% of the participating firms indicated having more 21, 16-20 and 11-15 part-time employees.

Table 4.5: Part-time Employees in the Firm

Part-time employees in the firm		
No. of part-time employees	***Frequency***	***Percentage***
0-5	120	64.2%
6-10	29	15.5%
11-15	23	12.3%
16-20	13	7.0%
21 and above	2	1.1%

As can been seen in table 4.6, the information systems which are presently used by the participating firms are ordered from the highest percentage score to the lowest percentage score. Office automation systems has highest score 84%, followed by enterprise systems or enterprise resources planning 68%, supply chain management system 52%, customer relationship management system 48%, and Lastly, the knowledge management systems 39%.

Table 4.6: Information System Used by the Firm

Information system used by the firm	
Type of information system	***Percentage***
Office Automation Systems(OAS)	84%
Enterprise systems (Enterprise resources planning)	68%
Supply Chain Management System(SCM)	52%
Customer Relationship Management System(CRM)	48%
Knowledge management systems(KM)	39%

As table 4.7 shows, most of the respondents (106) are involved in business strategy formation in their firms (52.5%). Additionally, 76 respondents (37.6%) stated that they are involved in business strategy formation; while 13 respondents (6.4%) claimed that they are not involved in business strategy formation. Only 7 respondents (3.5%) remained neutral about specifying their involvement level in business strategy formation.

Table 4.7: Respondents' Involvement Level in Business Strategy Formation

Business strategy formation involvement	**Frequency**	**Percentage**
Very much involved	76	37.6%
Involved	106	52.5%
Neutral	7	3.5%
Not involved	13	6.4%
Not involved at all	0	0%

As table 4.8 shows, the largest portion of the respondents (68) stated that they are involved in IT strategy formation (33.7%). On the other hand, the next biggest portion stated the opposite; 52 respondents (25.7%) indicated that they are not involved in IT strategy formation in their firms. Additionally, 42 respondents remained neutral about specifying their involvement in IT strategy formation in their respective firms (19.8%). There were 21 respondents (10.4%) who claimed that they are very much involved in IT strategy formation in their firms, while another 21 respondents (10.4%) claimed that they are not involved at all in IT strategy formation in their firms.

Table 4.8: Respondents' Involvement Level in IT Strategy Formation

IT strategy formation involvement	Frequency	Percentage
Very much involved	21	10.4%
Involved	68	33.7%
Neutral	40	19.8%
Not involved	52	25.7%
Not involved at all	21	10.4%

As table 4.9 shows, most of the participating firms (188) hire full-time IT personnel (93%), and only 14 firms do not have any full-time IT personnel (7%).

Table 4.9: IT Personnel in the Firm

Does your firm employ full-time IT personnel?	Frequency	Percentage
Yes	188	93%
No	14	7 %

According to table 4.10, 74.3% of the respondents stated that IT managers are in charge of the management of IT resources. While 17.3% of the respondents indicated that, IT managers, business managers, IT consultants and others, collectively manage of IT resources. 3.5% of the respondents reported that IT consultants manage IT resources in their firms. Only 2.5% of the total respondents stated that business

managers are in charge of managing IT resources in their firms. Lastly, only 0.5% of the total respondents believed that the question was not applicable to them.

Table 4.10: IT Resources Management

Who manages IT resources in your firm?	Frequency	Percentage
IT managers	150	74.3%
Business managers	4	2.0%
IT consultants	7	3.5%
Others	5	2.5%
All the above	35	17.3%
Not applicable	1	.5%

4.5.2 Respondent Characteristics

As shown in table 4.11, the male respondents constituted 54.5% of the total respondents, while female respondents accounted for 45.5% of total respondents.

Table 4.11: Gender of the Respondents

Gender	Frequency	Percentage
Male	110	54.5%
Female	92	45.5%

Table 4.12 shows, the majority of the respondents came from the 30-39 age group, which has the highest score (118) of the total respondents (58.4%). The second highest number of respondents (56), is age group of 40-49 (27.7%). While the respondents from the 20-29 age group had the smallest number of respondents (22) (10.9%).Very few respondents (6) are from the 50 and above age group (3.0 %).

Table 4.12: Age of the Respondents

Age group	Frequency	Percentage
20-29	22	10.9%
30-39	118	58.4%
40-49	56	27.7%
50 and above	6	3.0%

As can be seen in table 4.13, 68% of the respondents were college graduates, while 18.9% of the respondents were university graduates. Additionally, 17.4% of the respondents were high school leavers.

Table 4.13: Education Level of the Respondents

Education level	Frequency	Percentage
High school	35	17.4%
College	128	63.7%
University	38	18.9%

62.4% of the respondents have been with their respective firms 1-5 years. Another 27.2 % claimed that they had been with their respective firms 6-10 years. Only 2% percent indicated that they had been with their respective firms from between 16-20 years.

Table 4.14: Number of Years the Respondents were with the Firm

Numbers years have been with firms	Frequency	Percentage
1-5	126	62.4%
6-10	55	27.2%
11-15	3	1.5%
16-20	4	2.0%
21 and above	1	.5%

The respondents hold different IT and business positions in the surveyed firms. The percentage of the respondents from the business sector (55%) is slightly more than the number of the participants from the IT sector (45%).

Table 4.15: Current Position of the Respondents

Current position	Frequency	Percentage
Business manager/executive	111	55%
IT manager/executive	91	45%

4.6 Measurement Scale Validation

The measurement scale validation was first tested for reliability and validity, with the path model being assessed using SEM for hypothesis testing. The confirmatory factor analysis (CFA) was used for the assessment of measurement model fit and unidimensionality. This section discusses certain important issues related to CFA, which include model validation procedures, model specification, and construct validity issues.

4.6.1 Measure Validation Procedures

According to Schumacker and Lomax (2004) a good measurement of the latent variables is a prerequisite for the analysis of the causal relations among the latent variables. Hence, this study adapts the two-step approach proposed by (Anderson and Gerbing, 1988). This approach is strongly preferred because structural analyses are often unreliable if the measurement model is of low reliability and validity (Hair et al., 2006) An important step in measurement scale validation is to assess the strength of measurement between the indicators and associated constructs. Six measurement models for the first-order exogenous factors and one measurement model for the first-order endogenous factor were estimated separately. All the latent constructs and their indicators are depicted in a measurement model.

4.6.2 Model Specification

For specification of the latent constructs, the loading for one of the indicators of each first construct was fixed to 1.0 in the model to create a scale for the latent construct. This process was done automatically with the features in AMOS 18.0 software. The indicators for each underlying construct were grouped together to perform the CFA using the SEM technique. In this thesis, all the first-order factors were measured with multiple indicators to obtain a desirable reliability estimation for each construct. The indicators for the coordination of IT planning with business planning construct were loaded to the latent variable "COOR" (see Appendix B figure 1). The indicators for communication between IT and business managers construct were linked to the latent variable "COMM" (see appendix B figure 3). The indicators for the human resource skills maturity were linked to the latent variable "HR" (see Appendix B figure5). The indicators for the IT infrastructure flexibility construct were loaded to the latent variable "FLEX" (see Appendix B figure7). The indicators for the organizational change adaptability construct were loaded to the latent variable "OCA" (see Appendix B figure 8). The indicators for the use of IT for competitive advantage construct were linked to the latent variable "ITCA" (see Appendix B figure 10).

After all the indicators were loaded to their respective latent variable, each construct was estimated individually prior to of all the constructs being simultaneously estimated.

In each estimated model, indicators that demonstrate poor loading are dropped, provided that they do not weaken reliability of the alpha coefficient, and then the measurement model is re-estimated. This is done to ensure that the data is a good fit to the measurement models. The cut-off value of 0.5 was used as the threshold for factor loading assessment as recommended by (Hu and Bentler, 1999). For the coordination of IT planning with business planning construct, the poor item reliability (squared multiple correlations) of the q1b1[3], q1b2, q1b3, and q1b4 items indicate that they would not be suitable elements of coordination of IT planning with business planning

[3] Starting from q1b1 until q1e1, these are labels of the items for the measured factors as used in SPSS data entry.

latent variable as initially posited. Therefore, these indicators were eliminated from further analysis (see Appendix B figure 2). For the communication latent variable, indicators q4b1, q4b2, q5b1, q5b4, q61b1 and q6b2 were removed due to poor loadings (see Appendix B figure 4). All the indicators for the human resource skills maturity construct have factor loadings and item reliability above the cut-off values; however, q7b5 was removed from the construct due its large model modification index (MI) (see Appendix B figure 6).

The chi-square value of zero (0.000) for CFA measurement models of IT infrastructure flexibility latent variable indicates a perfect fit or no difference between the values of the observed variance matrix and the estimated variance matrix in the empirical data (Hu and Bentler, 1999). Therefore, none of the indicators for IT infrastructure flexibility construct was removed (see Appendix B figure 7). For the organizational change adaptability latent construct, indicators error terms of q10b1_r and q10b3_r were allowed to covary in the CFA measurement model based on the model modification index (see Appendix B figure 9). The measurement model with three indicators per latent construct is ideal (Byrne, 2001). Lastly, indicators for the use of IT for competitive advantage construct all have acceptable cut-off values in factor loadings and item reliability (see Appendix B figure 10).

The goodness fit indices obtained for each construct imply construct validity by deriving measurement models with good fit for data as shown in table 4.16. However, a further assessment of fit for the measurement model that incorporates five first-order exogenous factors indicated by their respective indicators and one second-order factor was performed to test convergent validity, discriminant validity and construct reliability to ensure data validity and reliability.

Table 4. 16: Goodness of –Fit-Measures

Model for construct	χ^2	P	DF	χ^2/df	GFI	CFI	NFI	RMSEA
Coordination of IT planning and business planning	4.274	0.118	2	2.137	0.989	0.997	0.994	0.075
Communication between IT and business IT managers	1.68	0.430	2	0.843	0.996	1.000	0.996	0.000
Human resource skills maturity	0.249	0.883	2	0.124	0.999	1.000	0.999	0.000
IT flexibility	0.000	-	0	-	1.000	1.000	1.000	-
Organizational change adaptability	0.236	0.627	1	0.236	0.999	1.000	0.999	0.000
Use of IT for competitive advantage	6.684	0.670	9	0.743	0.989	1.000	0.988	0.000

The absolute goodness of fit measure for the measurement models are shown in table 4.17. The measurement model should demonstrate a good model and meet the requirements of certain fit indices as discussed earlier. The initial measurement model (CFA1) of the present study (χ^2 = 1084.023, DF= 372,χ^2 /df= 2.914, P= 0.000, GFI=0.672, CFI=0.826, NFI=0.759, RMSEA=0.098) did not provide an adequate model fit for the empirical data. The measurement model chi-square was 1084.023 with 372 degree of freedom. The p-value associated with the chi-square was 0.000. This significant p-value did not indicate that the observed variance matrix matches the estimated variance matrix in the empirical data (Hair et al., 2006). Nevertheless, other model indices should be checked closely given the sensitivity of the chi-square statistical test to a sample (Byrne, 2001).

A series of confirmatory factor analysis measurement models were performed for CFA1[4], the ration (χ^2 /df) yields a value of 2.914. This value falls within the acceptable ratio of less than 3.0 for (χ^2 /df) value. However, the GFI was 0.672, while the incremental fit indices for CFI and NFI were 0.826 and 0.759 respectively. For the badness of fit index, the RMSEA value was 0.098. These indices indicate a poor fit of the model to the data. Therefore, some model modifications were needed to ensure the model fits the data. The measurement model could be modified by examining the item reliability or squared multiple correlation, and factor loading and item reliability criteria (Hair et al., 2006). The item reliability refers to the value that represents the extent to which an observed indicator's variance is explained by the underlying construct; while factor load refers to the path estimates linking constructs to the indicators (Hair et al., 2006).

Due to its poor reliability, indicator q10b3_r was eliminated from the measurement model (CFA2). However, the resulting model did not ensure that the model fit the data, as fit indices were below the required threshold values. Thus, a further model re-specification was needed. The next indicator deleted from further analysis was q10b1_r. Although some of the model fit indices had improved, the overall model fit was not achieved. As a result, q5b1, q4b1, q6b3, q6b1 and q6b2 (item labels, refer to footnote 3 on page 75) indicators were deleted from the measurement models of CFA4, CFA5, CFA6, CFA7 and CFA8 respectively. Another model re-specification was required, as the obtained fit indices still did not guarantee that the model fits the data.

The next indication of possible re-specification of the model is the modification indices (MI). The MI value represents the expected drop in overall chi-square if a single parameter was to be freed and the model re-estimated in a subsequent run (Byrne, 2001). Typically, a MI value of approximately 4 or greater indicates that the model fit could be improved by estimating the corresponding path (Hair et al. 2006). A review of the MIs for the regression weights revealed several parameters indicative of cross-loadings, especially those parameters associated with items q1b1 in measurement model (CFA9), q1b2 in measurement model (CFA10), q1b3 in

[4] CFA1-CFA12 are several measurement models (refer to Appendix C)

measurement model (CFA11) and q1b4 in measurement model (CFA12). It implies clear evidence of a misspecification associated with these items. Hence, these items were deleted from further confirmatory analysis as presented in table 4.17. Additional model re-specification was needed. As a result, q4b2 in measurement model (CFA13), q7b1 in measurement model (CFA14) and q7b2 in measurement model (CFA15) indicators were eliminated in to ensure that the model fits the data. Eventually, the overall model fit was achieved as given in measurement model CFA15 and summarized as the final confirmatory measurement model. Table 4.17 shows the goodness of fit results for the series of measurement models.

It is important to know that the model fit assessment was improved using a conservative strategy and none of the error terms was allowed to covary in any of the CFA models. Thus, unidimensionality of the measurement model was achieved as each CFA model was limited to a factorial structure with each indicator linked to only a single latent construct (Byrne, 2001).

Table 4. 17: Goodness of Fit Results for Measurement Models

Model	$\chi 2$	DF	χ^2/df	P	GFI	CFI	NFI	RMSEA	Item deleted	Reason for deletion
CFA1	1084.023	372	2.914	0.000	0.672	0.826	0.759	0.098	-	-
CFA2	1049.676	345	3.043	0.000	0.671	0.827	0.764	0.101	q10b3_r	Poor item reliability
CFA3	1011.134	319	3.170	0.000	0.671	0.827	0.768	0.104	q10b1_r	Poor item reliability
CFA4	949.096	294	3.228	0.000	0.674	0.833	0.777	0.105	q5b1	Poor item reliability
CFA5	926.889	270	3.433	0.000	0.668	0.831	0.779	0.110	q4b1	Poor factor loading
CFA6	839.462	274	3.399	0.000	0.682	0.841	0.790	0.109	q6b3	Poor item reliability
CFA7	776.304	225	3.45	0.000	0.686	0.846	0.797	0.110	q6b1	Poor item reliability
CFA8	746.404	204	3.659	0.000	0.684	0.844	0.799	0.115	q6b2	Poor item reliability
CFA9	610.316	184	3.317	0.000	0.742	0.868	0.823	0.107	q1b1	large MI[5]
CFA10	500.440	165	3.033	0.000	0.786	0.889	0.845	0.101	q1b2	Large MI
CFA11	346.591	147	2.358	0.000	0.837	0.929	0.883	0.082	q1b3	Large MI
CFA12	310	130	2.387	0.000	0.847	0.933	0.890	0.083	q1b4	Large MI
CFA13	211.561	114	1.856	0.000	0.889	0.961	0.919	0.065	q4b2	Large MI
CFA14	167.398	99	1.691	0.000	0.907	0.970	0.931	0.059	q7b1	Large MI
CFA15	111.147	85	1.308	0.030	0.931	0.988	0.950	0.039	q7b2	Large MI
Final model	111.147	85	1.308	0.030	0.931	0.988	0.950	0.39	-	-

[5] MI: Modification indices

4.6.3 Construct Validity

In the current study, we adapted Straub's (1989) measurement validation procedures to test construct validity in terms of convergent validity and discriminant validity. Prior to structural model testing, the construct validity and reliability were tested by checking the convergent validity and discriminant validity. The whole process of scale validation is delineated in the sub-sections.

4.6.3.1 Convergent Validity

The measurement model specifies how the observed indicators relate to unobserved constructs (Kline, 2005). After fulfilling the goodness of fit indices assessment, the next step was to test the convergent validity of the data. The convergent validity was assessed by checking the loading of each observed indicator on its underlying latent construct (Schumacker and Lomax, 2004). Table 5.3 shows the CFA results, which include the standardized factor loadings and item reliability for each indicator.

The factor loadings or the path estimates that link construct to an indicator were examined to identify the potential measurement problem with the CFA model. The standardized factor loading should be significant linked to the latent construct and have at least a loading estimate of 0.5 and ideally exceed 0.7 (Hair et al., 2006). Thus, insignificant loading with a poor loading estimate indicates a potential measurement problem. The CFA goodness of fit indices results in table 4.18 indicated that each factor loadings of the indicators were statistically significant at the 0.001 level. In addition, the factor loadings ranged from 0.696 (q4b3) to 0.918 (q5b3), and no loading was less than the recommended threshold of 0.50.

Next, the item reliability, also called squared multiple correlations in the CFA model was examined. Item reliability refers to the value that represents the extent to which an observed indicator's variance is explained by the underlying construct (Hair et al., 2006). The majority of the squared multiple correlations of the indicators with exception of q4b3, in the measurement model were higher than the acceptable cut-off

value of 0.50 (Bollen and Long, 1993). This indicated that most of the latent constructs in the present study accounted for more than half of the explained variance in each indicator.

Table 4. 18: Indicator Loading and Item Reliability (revised measurement model)

Latent constructs	Items/indicators	Standardized factor loading	Item/indicator reliability
Coordination of IT planning with business planning	q2b1	.848	.719
	q2b2	. 887	.787
	q2b3	.880	.775
	q2b4	.912	.832
Communication between IT and business managers	q4b3	.696	.484
	q5b2	.894	.799
	q5b3	.918	.842
Human resource skills maturity	q7b3	.719	.517
	q7b4	.878	.772
	q7b5	.873	.763
IT infrastructure flexibility	q8b1	.712	.507
	q8b2	.803	.645
	q8b3	.807	.652
Organizational change adaptability	q10b2	.898	.807
	q10b4	.780	.609

Although q4b3 did not meet the cut-off value of 0.50, this item was retained as that it was an considered important indicator, and content validity associated with this item items was high (Hair et al., 2006). This was also because other estimates such as factor loading and construct reliability remain satisfactory. Furthermore, deleting this item would have left fewer items on the communication construct which might have lead to identification problems (Byrne, 2001).

In terms of factor loading results for the behavioral dimension, the present study found relatively high indicator loadings for coordination of IT planning with the business planning construct (ranged from 0.848 to 0.912), the communication of IT and business managers construct (ranged 0.696 to 0.918), and the human resource skills maturity construct (ranged from 0.719 to 0.878). Notably, for most of the indicator loadings exceeded the value of 0.70 for the coordination of IT planning with business planning, the communication between IT and business managers, and the human resource skills maturity.

Concerning factor loading for the technical dimension, the current study found relatively high indicator loadings for the IT infrastructure flexibility construct, which ranged from 0.712 to 0.807.

Similarly, the factor loading results for the organizational dimension of the present study found relatively high indicator loadings associated with the organizational change adaptability construct ranging from 0.780 to 0.898.

4.6.3.2 Construct Reliability and Variance Extracted Measured

Besides convergent validity established by high factor loadings and item reliability criteria, construct validity was assessed by discriminant validity determining construct reliability and variance extracted. According to (Hair et al., 2006), variance extracted is "the amount of variance that is captured by the construct in relation to amount of variance due to measurement error". Additionally, (Schumacker and Lomax, 2004) suggested that a construct's variance extracted (VE) should be larger than 0.50 to guarantee adequate construct validity. Table 4.19 summarizes the results of construct reliability and the variance extracted for each construct.

Table 4. 19: Confirmatory Factor Analysis for Convergent Validity

Latent constructs	No. of Items / indicators	Item / indicator loadings	Construct reliability	Variance extracted
Coordination of IT planning with business planning	4	0.848 - 0.912	0.9333	0.61
Communication between IT and business managers	3	0.696 - 0.918	0.8649	0.75
Human resource skills maturity	3	0.696 - 0.918	0.8614	0.75
IT infrastructure flexibility	3	0.712 - 0.807	0.8182	0.57
Organizational change adaptability	2	0.780 - 0.898	0.8216	0.62

In this study, the variance extracted values for the main construct exceeded the acceptable ratio of 0.50 recommended by (Schumacker and Lomax, 2004). The measurement model was further assessed to determine the construct reliability. The result displayed adequate reliability as, the reliability of each construct exceeded the 0.7 threshold of (Nunnaly, 1978) as can be seen in the above table.

In short, the evidence supported construct validity by assessing convergent validity, and discriminant validity of the measurement model as the factor loadings, item reliability, construct reliability, and variance extracted were all at a satisfactory level. Hence, all the items retained at this point provided adequate evidence of construct validity.

4.6.4 The Final Hypothesized Structural Model

After fulfilling various measurement issues e.g. measurement fit and necessary reliability and validity tests, this section will focus on testing the hypothesized relations among underlying first-order exogenous constructs, the second-order factor construct and first-order endogenous construct.

The hypothesized relationships between the coordination of IT planning with business planning, communication between IT and business managers, human resource skills maturity, IT infrastructure flexibility, organizational change adaptability as the first-order exogenous latent constructs, and strategic IT alignment as the second-order factor are represented by single heading straight arrows. The structural relationship between the strategic IT alignment as the independent second-order factor and use of IT for competitive advantage as the dependent first-order factor was specified according to the hypothesis established (and presented by a single direction arrow).

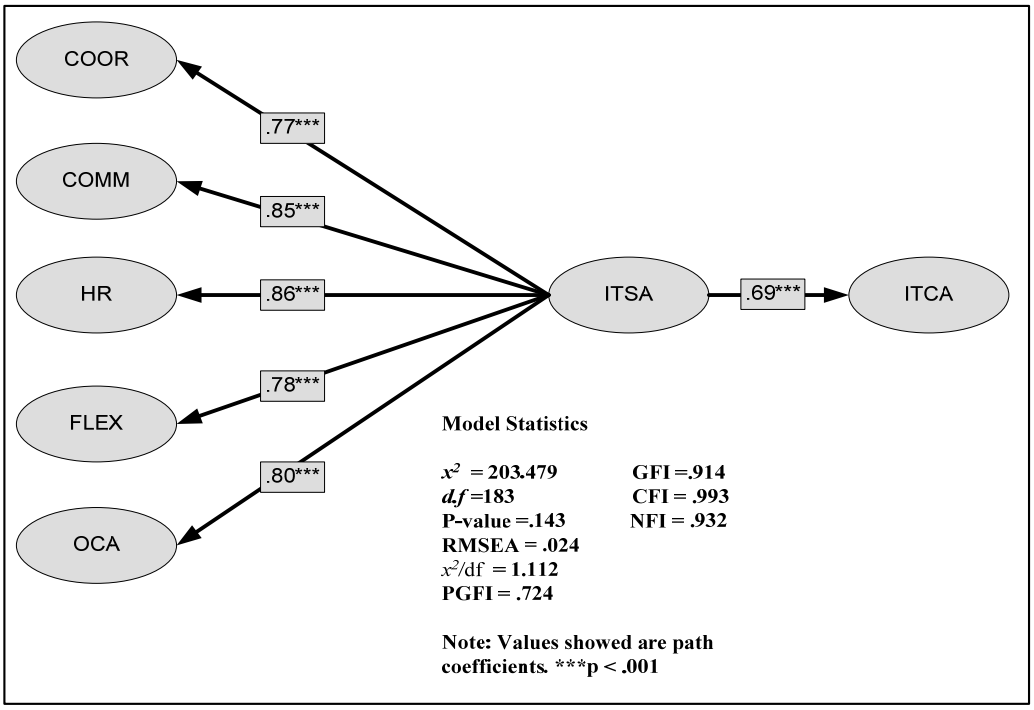

Figure 4.1: Revised Structural Model for the Study

Next, the revised final structural model in figure 4.1 was tested for model fit. The same set of fit indices used to assess the measurement model was used to evaluate the full model. It was found that all the loadings estimates for the final hypothesized structural model did not change substantially compared to the loading estimates of the final measurement model. This further supports the validity of the measurement model specified. Table 4.20 reports the model fit indices estimated in the revised final structural model. The revised second-order factor model fit (χ^2 = 203.479, DF=183,χ^2/df= 1.112, P= 0.143, GFI=0.914, CFI=0.993, NFI=0.932, RMSEA=0.024) demonstrated an adequate model fit with the sample data.

Table 4. 20: Fit Indices of the Revised Second Order-Factor Structural Model

Goodness of fit measures	Indices	Recommended threshold	Revised second-order model	Alternative first-order model
Absolute indices				
χ^2	203.479	The lower the better	203.479	660.339
χ^2/df	1.112	≤ 3	1.112	3.589
GFI	0.914	≥ 90	0.914	0.716
RMSEA	0.024	≤ 0.06 or ≤ 08	0.024	0.113
Incremental indices				
NFI	0.932	≥ 0.90	0.932	0.778
CFI	0.993	≥ 0.90	0.993	0.828

In addition to these overall adequate model fit indices, the squared multiple correlations were examined. It was reported that R^2 0.60 of the variation associated with coordination of IT planning with business as an underlying first-order strategic alignment factor was accounted for by its predictor. Similarly, the variation associated

with communication between IT and business managers as an underlying strategic alignment first order exogenous factor was R^2 0.73. In other words, the error variance of communication between IT and business managers as an underlying strategic alignment factor was R^2 0.27 only. Furthermore, the variance determined for human resource skills maturity as an underlying strategic alignment factor was R^2 0.75. Accordingly, the variance associated with the IT infrastructure flexibility factor was explained as R^2 0.61 by its predictor. It was estimated that the strategic alignment predictor of organizational change adaptability as an underlying strategic alignment factor was explained as R^2 0.64. In other words, the error variance of organizational change adaptability as an underlying strategic alignment factor was approximately R^2 0.36. Lastly, the variance associated for the use of IT for competitive advantage was accounted for by almost half of the variation R^2 0.47, indicating positive association of strategic alignment factor with the use of IT for competitive advantage.

Although the proposed second-order factor model was adequate for explaining the hypothesized links between constructs. There may well be other models that could achieve a better fit to the data. In this situation, alternative models with different hypothesized structural relationships may be tested against each other to determine which has the best overall fit to the empirical data (Byrne, 2001). Indeed, Cooper and Schindler (2003) state that competing model strategy is much stronger than the model development strategy, which is based on slight modifications of a single theory. Therefore, our hypothesized second-order factor model was compared with a first-order model by comparing the coefficient determination of the two models (R^2), and by assessing the fit indices of both models. The two model comparison procedures and results will be explained in the following sub-sections.

4.6.4.1 Alternative Comparison for Strategic Alignment Second Order Factor Model Effects Testing

The competing model strategy was used to ensure that the hypothesized second-order factor model of strategic alignment of the use of IT for competitive advantage not only has acceptable model fit, but it also performs better than the alternative model of (Hair et al., 2006). As a result, a sequence of tests was conducted to determine which

model has the best overall fit to empirical data. Figure 4.2, and figure 4.3 demonstrate the graphical representations of the alternative model for comparison. First, the second-order factor model (figure 4.2 model 1) links underlying first-order exogenous strategic alignment constructs with a second-order strategic alignment construct, and finally with a dependent first-order endogenous construct, which is the use of IT for competitive advantage. Next, the first-order factor model (figure 4.3 model2) links between the first-order exogenous constructs with the first-order endogenous construct and is tested against the hypothesized second-order factor model.

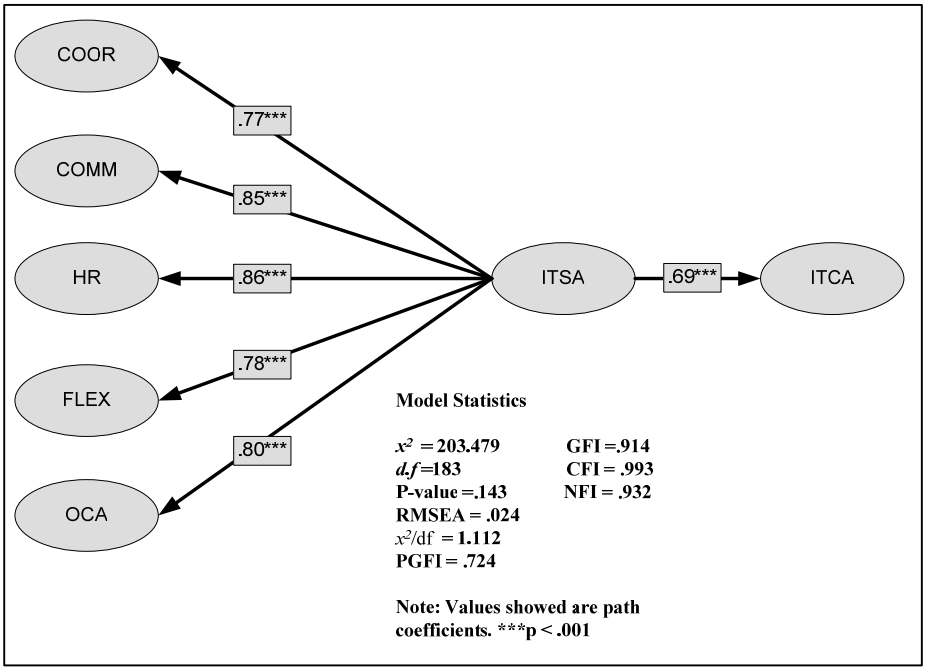

Figure 4.2: Revised second-order factor model for the study (model1)

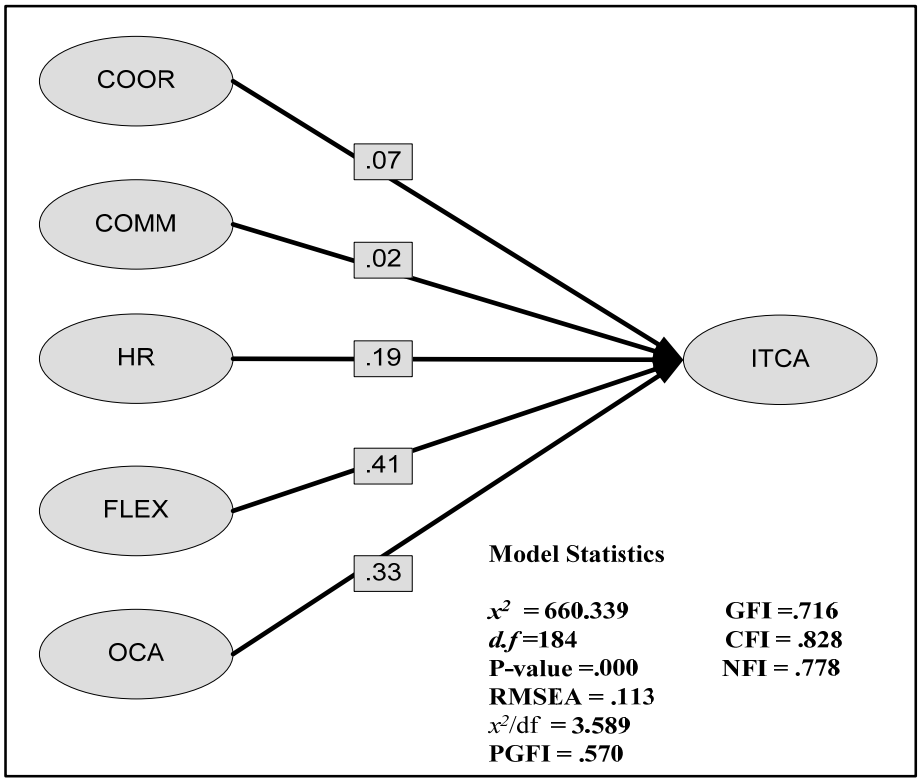

Figure 4.3: alternative model comparison: first-order factor model (model2)

We used chi-square (χ2) difference statistics ($\Delta\chi^2$), the fit indices, and the coefficients' determination of the two models effect on dependent latent construct (R2) to assess the preferred model between the first-order factor model and second-order factor model, which best fit the sample data. Table 4.21 displays the results of the criteria used to compare the two models and several fit indices.

The chi-square (χ2) goodness of fit for the revised second-order factor model was compared to the chi-square (χ2) goodness of fit for the first order factor model. It would offer support for the revised second-order factor model if the $\Delta\chi^2$ test is significant, and the χ2 value for second-order factor model is significantly lower than the first order factor model.

Table 4. 21: Second-Order and First Order Factor models comparison

Goodness of fit measures	Indices	Revised second-order model	Alternative first-order model
Absolute indices	χ^2	203.479	660.339
	χ^2/df	1.112	3.589
	GFI	0.914	0.716
	RMSEA	0.024	0.113
Incremental indices	NFI	0.932	0.778
	CFI	0.993	0.828
Parsimony indices	PGFI	0.724	0.570
Chi-square difference		$\Delta\chi^2 = 456.86$	
Coefficients explained		$R^2 = 0.47$	$R^2 = 0.32$

As reported in table 4.21, the second-order factor model (χ^2 =203.479) achieved a significantly better fit ($\Delta\chi^2$ = 456.86, p <.0.001) compared to the first-order factor model (χ^2 =660.339). Furthermore, the coefficients' determination of the two models' effect on dependent latent construct (R^2) was compared. As can be seen in table 4.21, the second-order factor model explains 15% (0.15) more variance in use of IT for competitive advantage compared with the first-order factor model (R^2 = 0. 47 VS R^2 = 0. 32). Additionally, the goodness of fit indices' measures indicated better model fit indices for the second-order factor model compared with the first-order factor model as presented in table 4.21.

In summary, the evidence from the alternative model comparison test supports the revised second-order factor model as the best overall model fit compared with the alternative first-order factor model. Therefore, the second-order factor model was used for further analysis in the present study. The hypothesis testing will be discussed in the next section.

4.6.4.2 Second-Order Strategic Alignment Factor Model Hypotheses Testing

The hypothesis testing was conducted based on a second-order factor model (χ^2= 203.479, DF=183, χ2/df= 1.112, P= 0.143, GFI=0.914, CFI=0.993, NFI=0.932, RMSEA=0.024) that has the best overall model fit compared to the alternative model discussed earlier. The significance of each hypothesized path in the research model was determined first. This was followed by examining the nature and magnitude of the relationships between latent constructs according to the theoretical expectations. AMOS output reports both unstandardized and standardized estimates for all specified paths, along with standardized errors and test statistics for each path. Large standard errors indicate that the particular parameter estimate is not reliable. Table 4.22 shows all the hypothesized relationships among the study constructs.

The proposed hypotheses were examined by looking at the significance and magnitude of the estimated coefficient using two-tailed distribution (Hair et al., 2006). The size effect of a particular exogenous on its endogenous constructs could be determined by examining the respective absolute magnitude of the standardized path coefficients (Hair et al., 2006). The interpretation concerning the size of effect of the standardized path coefficients for the present study was based on Kline's (2005) recommendation: those standardized path coefficients with absolute values greater than 0.50 indicate a large effect.

All standardized path coefficients for the revised model are presented in figure 4.2. As the figure describes, all the six path coefficients were positive and significant. The hypotheses for coordination of IT planning with business planning, communication between IT and business managers, human resource skills maturity, IT infrastructure flexibility and organizational change adaptability were tested to confirm if they were underlying strategic alignment factors. Furthermore, the structural hypothesis was tested to examine the strategic alignment influence on the use of IT for competitive advantage. Table 4.22 presents the path coefficients for the hypothesized links.

Table 4. 22: Hypotheses Testing: Underlying Strategic Alignment Factors

Hypothesis	Variables	Path		Standardized path Estimate	Standard error	Critical ratio [6]	Supported
H1	COOR	<---	ITSA	.773 ***	.071	11.309	Yes
H3	COMM	<---	ITSA	.853***	.067	12.325	Yes
H4	HR	<---	ITSA	.865***	.067	9.939	Yes
H5	FLEX	<---	ITSA	.780***	.067	9.787	Yes
H7	OCA	<---	ITSA	.801***	.089	9.361	Yes

Note: COOR = coordination of IT planning with business planning; COMM= communication between IT and business managers; HR= human resource skills maturity; FLEX= IT infrastructure flexibility; OCA= organizational change adaptability; H2 and H6 were not tested as they were dropped from further analysis due to a low alpha reliability score of 0.3386 and 0.0.714 respectively (see table 4.1); *** significant at $p<0.001$.

Table 4. 23: Hypotheses Testing of Strategic Alignment Influence for the Use of IT for Competitive Advantage

Hypothesis	Variables	Path		Standardized path estimate	Standard error	Critical ratio	Supported
H8	ITCA	<---	ITSA	.686***	.054	7.988	Yes

Note: ITCA= use of IT for competitive advantage; *** significant at $p<0.001$

[6] Critical ration is obtained by dividing the regression weight estimate by the estimate of its standard error. A value exceeding 1.96 represents significance at the 0.001 level (two-tailed).

4.7 Chapter Summary

In this chapter, the preliminary data analyses of the study have been reported. First, a discussion of the reliability analysis or alpha testing was conducted. Second, preliminary data analysis procedures were conducted to examine measurement scale, missing values, outliers or extreme values, and normality distribution of data. Third, descriptive results that relate to the background information of the participating firms and the respondents' characteristics were explored. Additionally, the measurement scale validation procedures were performed to assess the strength of the measurement between the indicators and associated constructs. To test the validity measurement used, confirmatory factor analysis (CFA) was used to assess, develop and modify the proposed theoretical model. Several CFA measurement validation issues were briefly discussed. The revised second-order factor model was tested and a comparison made with an alternative first-order factor model. The measurement model and final structural model provided an adequate assessment of reliability; convergent validity and discriminant validity. The goodness of fit indices were adequate and six path coefficients were significant at the 0.001 level for the final structural model.

CHAPTER 5

DISCUSSION AND IMPLICATIONS

5.1 Introduction

In the previous chapter reported on the results of the preliminary data analyses and model validation analyses. Several analyses are descriptive nature such reliability analysis or alpha testing, descriptive data analyses that relate to the background information of the firms, and the respondents' demographics were discussed. The previous chapter also discussed the model validation analyses, the measurement assessment of the confirmatory factor analysis as well as the hypothesis testing results using the SEM technique. This Chapter discusses and interprets the main findings of the descriptive data analyses that relate to the background information of the firms, and the respondents' demographics. This Chapter also discusses revised research model based on six factors and the resulting path coefficients presented in Chapter Five as they apply to the research questions posed in Chapter One and hypotheses postulated in Chapter Three. Lastly, several theoretical and practical implications will be delivered.

5.2 Discussion

As mentioned earlier, the measurement model and final structural model provided an adequate assessment of reliability; convergent validity and discriminant validity. The goodness of fit indices were adequate and six path coefficients were significant at the 0.001 level for the final structural model. The hypotheses were based on the initial research model, therefore some hypotheses were not tested as they were not included in the final analysis. The following discussion is mainly based on results of the revised research model, based on six factors, and the resulting path coefficients presented in Chapter Five as they apply to the research questions posed in chapter one and

hypotheses postulated in Chapter Three. The results of this study show support for the research questions and hypotheses.

5.2.1 Description of the Sample

The respondents' firms are small, medium and large Malaysian tour and travel agents; the highest group (45%) is from medium tour and travel agents, followed by small tour and travel agents (35%), while tour and travel agents with an annual turnover of more than 5 million are 20 percent of the total respondents of this survey. This finding is significant as small and medium sized enterprises in Malaysia comprise more than 90% of the total number of businesses in Malaysia and are seen as playing an important role as Malaysia moves towards realizing its objectives of becoming a developed country by 2020 (SMIDEC 2007).

The majority of the respondents (65%) dedicate 0-10% of their capital expenditure to IT. Moreover, 25% of the respondents have a capital expenditure on IT ranging between 11-20%. Only 0.5% of the respondents have a capital expenditure on IT of between 31-40%. None the respondents has a capital expenditure on IT of between 41-50% and over 50%. This finding indicates that the economic slowdown does not deter tour and travel agents from IT spending to sustain their business.

The information systems which are presently used by the participating firms are ordered from the highest score to the lowest score. Office automation systems has the highest score (84%), followed by enterprise systems or enterprise resources planning (67%), supply chain management system (51%), customer relationship management system (47%). Lastly, with the lowest score is knowledge management system (39%). These findings indicate that the Malaysian tour and travel agents were likely to consider using office automation systems to provide workers with effective ways to process personal and organizational data, perform calculations and create documents. Similarly, the enterprise systems or enterprise resources planning was given as the second most important information system used by the tour and travel agents to collect data from various key business processes, e.g. reservations, finance and accounting, sales and marketing and human resources. In addition, the participating tour and travel agents

were likely to consider using the supply chain management system to provide information to help suppliers, purchasing firms, distributors, and logistics companies share information about orders, production, inventory levels and delivery of products and services. Moreover, the participating tour and travel agents point out that they implement customer relationship management systems points to provide information coordinating all business processes dealing with customers in sales, marketing and services to optimize revenue, customer satisfaction and customer retention. Lastly, knowledge management systems that collect the relevant knowledge and experience in the firm, and make it readily available to improve business processes and management decisions has been indicated as one information systems that are presently used by the tour and travel agents in Malaysia.

The introduction of computer reservation systems in the late 1970s, global distribution systems in the late 1980s, and the internet revolution in the 1990s have brought many implications to operational and strategic practices in the tourism industry. This finding of this support confirms of Buhalis (2003) and eBusinessW@tch (2006) research which stated use of IT has provided distinct advantages for the tourism industry such as cost reduction, revenue growth, and customer retention. IT has enabled tourism organizations to achieve a global reach of worldwide customers in a cost effective way. IT has assisted tourism organizations to using a wide range of promotional activities to supplement, if not replace offline promotions and has transformed the distribution functions to an electronic marketplace, where access to information is achieved, while interactivity between the customers and suppliers provides other opportunities. IT promotes the mass-customization of tourism products and allows the industry to target niche markets of significant size in different geographical locations. Therefore, IT drives the re-engineering of the entire process to produce and deliver tourism products. In order to remain a competitive destination, Malaysian tour and travel agents see important to utilize information systems that fulfil their business needs.

With regard to respondents' involvement in business strategy formation, 90 % of the participating business and IT executives in tour and travel agents claimed that they are involved in business strategy formation, while only 10% of the business and IT executives have stated that they are not involved in business strategy formation.

Similarly, 44% of the surveyed IT and business executives in tour and travel agents participate in IT strategy formation, while only 36% of the IT and business executives have stated that they are not involved in IT strategy formation. This finding indicates that the respondents understand the existing business strategy and IT strategy along with business strategy and IT strategy formation processes in their firms. Therefore, collecting data from those executives who are involved in business strategy and IT strategy is important input to understand the perceived strategic alignment level between IT and business strategy in these firms.

Most of the participating tour and travel agents indicated that they hire full-time IT personnel (93%), and only 7% firms do not have any full-time IT personnel (7%). This finding shows that hiring IT personnel has become critical in today's business operations as IT executives play a crucial role in business in today's global market.

Most of the participating tour and travel agents (74%) have reported that IT managers are in charge of managing IT resources. This finding indicates that managing IT resources in tour and travel agents in Malaysia does not require major IT outsourcing contracts unlike the banking sector. For example Bumiputra Commerce Bank (BCB) became the first bank in Malaysia to outsource its IT function, with a USD250 million 10-year contract with EDS in 1999. Other major IT outsourcing contracts in the private sectors include Maybank with a RM1.3 billion deal (Cheong, 2003).

The majority of the respondents were from the 30-39 (58.4%). year old age group The second highest number of respondents (56), was from the age group of 40-49 (27.7%) years. Respondents from the 20-29 year old age group had the smallest number of respondents (22) (10.9%).Very few respondents (6) are from the 50 and above age group (3.0 %). This finding indicates there was no bias to the selection of a particular age group who might be resistant to technology change. It is likely that individuals from differing age group may have different perceptions about the role of technology within business. This study also found the respondents consisted of college graduates (68%), university graduates (18.9%) and high school leavers (17.4%).

Regarding respondent experience, 62.4% stated that they have been with the present firm for 1-5 years. Another 27.2 % claimed that they had been with their respective

firms for 6-10 years. Only 2% percent indicated that they had been with their respective firms from between 16-20 years. This finding indicated that the respondents from Malaysian tour and agent who participated in this study would have enough knowledge about the existing IT strategy and business strategy.

It was also observed that, in the study, 55% of the respondents were business executives, while 45% identified themselves as IT executives. This finding indicated that the role of IT managers taking its own pace at the executive level to drive and innovative business transformation process. Traditional IT executives were regarded as just support staff and most IT investment decision used to be made by CEOs and other business executives. However, in today's competitive world organizations are fundamentally dependent on information systems and information technology. Therefore, it is perceived that IT managers should play an important role to manage cutting edge business technologies in tour and travel agents.

5.2.2 Underlying Strategic Alignment Factors

The first research question, "What factors contribute to the strategic alignment of IT strategy with business strategy?" was addressed by conducting an extensive literature review covering the cumulative studies on strategic alignment. As a result, five underlying strategic alignment factors were identified and validated with empirical data. The statistical evidence was provided to support the goodness-of-fit of the five identified factors: coordination of IT planning with business planning; communication between IT and business managers; human resource skills maturity; IT infrastructure flexibility and organizational change adaptability. The second factor-order model as indicated by (χ^2 = 203.479, DF=183,χ^2/df= 1.112, P= 0.143, GFI=0.914, CFI=0.993, NFI=0.932, RMSEA=0.024) demonstrated an adequate model fit with the sample data. Hence, coordination of IT planning with business planning; communication between IT and business managers; Human resource skill maturity; IT infrastructure flexibility; and organizational change adaptability were found as the underlying strategic alignment factors.

The validity of the coordinating IT planning with business planning as an underlying strategic alignment factor was tested with (H1). The estimated path coefficient for this hypothesis was 0.773 at ($p<0.001$). Hence, hypothesis (H1) was supported.

H_1: Coordination of IT plan with business plan is an underlying strategic alignment factor.

This hypothesis means that tour and travel agents achieve coordination of the IT plan with the business plan when both IT and business managers participate in IT planning. The participation of IT managers in the business planning process would occur when IT managers regularly attend business planning meetings, IT managers have regular contact with, and easy access to, other top management in the organization to contribute to the formation of business goals and promote required IS applications to achieve business objective in tour and travels agents. Similarly, the participation of business managers in the IT planning process indicates that business managers play an important role in the corporate IT steering committee and that implies that they view IT managers as strategic partners in the business planning process. To increase the participation of business managers in the IT planning process, business managers are also encouraged to have frequent contact with IT management and as a result, the coordination of IT planning with business could be obtained. It is also important that business managers become knowledgeable about IT opportunities to facilitate coordination of IT planning with business planning and exploit these IT opportunities for business needs.

This finding is consistent with the early research of Lederer and Mendelow (1989) which emphasized coordinating IS and business planning processes. IT managers and business managers should clearly understand the company's goals, mission, business strategies, IT strategies and IS applications to properly coordinate IT strategy with business strategy. The Malaysian tour and travels agents should look into this important factor to be competitive in the information intensive travel and tourism sector.

The convergent validity of the communication of IT and business as an underlying strategic alignment factor was assessed with hypothesis (H2). The estimated path

coefficient or factor load for this hypothesis was 0.853 at ($p<0.001$). Therefore, hypothesis (H2) was supported.

H_2: Communication between IT and business managers is an underlying strategic alignment factor.

This hypothesis means that communication between IT and business managers underlying strategic alignment is achieved in Malaysian tour and travel agents to enable IT managers to understand the business environment and business mangers to understand the IT environment. Effective communication between IT and business managers only occurs when IT and business mangers interact and exchange business and IT knowledge. Hence, in this study, communication was found to be an underlying strategic alignment factor.

This finding supports an earlier study by Johnson and Lederer (2005) who argued that frequent communication between IT and business executives ensure that IT resources would be used to support daily business operations. This founding is further in line with Chan et al. (2006) conclusions that exchanges of business and IT knowledge between business and IT managers not only improved shared understanding but also promoted a common vision. They emphasized that shared domain knowledge enables business managers to capture the IT knowledge and IT managers to capture business knowledge. To establish effective communication between IT and business managers, and as a result strategically align IT with business, business managers in tour and travel agencies are required and encouraged to have a good understanding of the IT environment including IT terminologies, applications and trends. In addition, IT managers are encouraged to understand the business lexicon and the business environment, thereby eliminating any communication gaps between IT and business managers.

The validity of the human resource skills maturity construct was assessed in a similar way to coordination and communication constructs. The path coefficient or factor load to estimate this construct as an underlying strategic alignment factor was 0.865 at ($p<0.001$) indicating that the hypothesis is positively and significantly supported.

H_3: Human resource skills maturity is an underlying strategic alignment factor.

This hypothesis means that tour and travel agents in Malaysia perceived that the ability to attract and retain IT and business professionals, and prepare them to acquire both business and IT skills, enables the maturity human resource skills to achieve strategic alignment between IT and business. Thus, the empirical study further supported that the human resource skills maturity factor is the best predicted underlying strategic alignment factor, based on its factor load coefficient compared with other two factors. The skills and competences of IT and business professionals are important to successfully execute strategic alignment.

This finding supports early research by Ross et al. (1996) who stated that IT professionals with technical skills as well as knowledge of business operations, management and interpersonal skills are more valuable to an organization than those who only possess technical skills. In addition, this study further reflects that IT business and business must possess both business and IT skills to cope with the changing landscape of business practice and information technology issues. This finding further confirms previous studies such as those reported by Morneau (2006) and Luftman et al. (1999) who claimed that IT professionals should acquire both business and technical skills, and that business professionals should understand the opportunities that IT offers to business. Hence, tour and travel agents should have effective programs to attract IT and business professionals and train them in both IT skill and business knowledge.

The validity of IT infrastructure flexibility factor was hypothesis (H4). The standardized factor load for this hypothesis was 0.780 at ($p<0.001$). Therefore, the hypothesized strategic alignment factor of IT infrastructure flexibility is supported.

H_4: IT infrastructure flexibility is an underlying strategic alignment factor.

This hypothesis means that tour and travel agents in Malaysia perceived that an increase of IT infrastructure flexibility based on agile or flexible hardware and networking resources, reusable software and IT expertise that can be used to suit changing business needs promote the IT fit to business requirement and in turn act as strategic alignment factor.

The empirical data significantly supported the hypothesis that IT infrastructure flexibility is an important predicted strategic alignment factor as reflected by tour and travel agents in Malaysia. IT infrastructure flexibility enables tour and travel agents to adapt to changes in information technology and market conditions and therefore to support business strategy. This finding confirms (Byrd and Turner, 2000) study referring IT flexibility to share IT information resource across technological platforms and add new hardware, software and data without disturbing the smoothness of business operations. IT infrastructure must be flexible in response to a change in the marketplace to meet business needs.

Lastly, the validity of organizational adaptability was assessed with hypothesis (H5). The estimated path coefficient for this hypothesis was 0.801 at ($p<0.001$) which indicated, not to reject the null hypothesis that:

H_5: organizational change adaptability is an underlying strategic alignment factor.

The research finding shows that tour and travel agents demonstrated that organizational change adaptability is achieved by having change readiness programs; and providing training on the necessary skills to adapt to change as well as being proactive; and anticipating changes including business and IT changes. This hypothesis means that tour and travel agents in Malaysia perceived that organization change adaptability factor is a predicted strategic alignment factor.

In today's dynamic business and IT environments, organizational adaptability is an important determinant of success. Tour and travel agents should focus on organizational adaptability as an effect of the accelerating pace of IT and business change. This finding supports the earlier research of Benya and Mckelvey (2006) who noted that achieving strategic alignment is not a single event that occurs only once, but a co-evolutionary process. There must be a continual adaptation and change between IT and business domains in tour and travel agents for alignment to be maintained.

This study supported positively and significantly that coordination of IT planning with business planning; communication between IT and business managers, human resource skills maturity, IT infrastructure flexibility and organizational change adaptability are strategic alignment factors that have been highlighted by IT and business executives in Malaysian tour and travel agents, providing empirical support.

Unlike some previous qualitative research (Bassellier et al., 2001; Benya and Mckelvey, 2006; Feeny et al., 1992; Lederer and Mendelow, 1989; Luftman et al., 1999; Pollalis, 2003; Rockart et al., 1996; Sledgianowski and Luftman, 2005; Teo and Ang, 1999) had conceptually discussed some of the strategic alignment factors, The present study has compared the coefficient load of each underlying strategic alignment factor to determine the relative significance of the factors.

The standardized path coefficients were ranked according the significance level of each underlying strategic alignment factors:

1) Human resource skills maturity (0.865), indicating that tour and travel agents in Malaysia give priority to attracting and retaining IT and business professionals, and to preparing them to acquire both business and IT skills, thereby enabling human resource skills to achieve strategic alignment between IT and business.
2) Communication between IT and business managers (0.853), indicating this is the second most significant factor as reflected from Malaysian tour and travel agents to enable IT managers to understand the business environment and business mangers to understand the IT environment.

3) Organizational change adaptability (0.801), indicating that tour and travel agents perceived that having a change readiness programs and providing training in necessary skills to adapt to change as well as being proactive and anticipating changes including business and IT changes as another significant factor.

4) IT infrastructure flexibility (0.780), indicating that IT infrastructure flexibility is an important strategic alignment factor as perceived by tour and travel agents in Malaysia.

5) Coordination of IT and business planning (0.773), indicating that tour and travel agents perceived achieving coordination of the IT plan with the business plan as an important factor to align IT with business strategy. However, it should be noted that this factor is less significant when compared to other factors.

In summary, all the factors examined in this study can be considered underlying strategic alignment factors that are considered important and significant by Malaysian tour and travel agents. However, practitioners and managers in tour and travel agents

should put priority on each of the underlying strategic alignment factors based on the particular relevance and suitability to characteristics of their particular workplaces.

5.2.3 Perceived Relationship between Strategic Alignment and the Use of IT for Competitive Advantage

The second research question "*is there any significant association between strategic alignment and the use of IT for competitive advantage?*" was addressed by answering the hypothesis postulated in chapter 3. The focus of this research was to investigate the significant influence of strategic alignment on the use of IT competitive advantage based on the resource-based view with regard to IT resources and capabilities.

H_8: *The strategic alignment has a positive impact on the use of IT for competitive advantage*

The convergent validity of the strategic alignment influence on the use of IT for competitive advantage, the dependent variable of this study, was tested with hypothesis (H7). The standardized factor load for this hypothesis was 0.686. Hence, the hypothesized strategic alignment having significant influence on the use of IT for competitive advantage was supported significantly and positively at ($p<0.001$).

The present study found that Malaysian tour and travel agencies use several information systems that include: (1) office automation systems to provide workers in tour and travels with effective ways to process personal and organizational data, perform calculations and create documents; (2) enterprise systems or enterprise resources planning systems to collect data from various key business processes, such as reservations, finance and accounting, sales and marketing and human resources; (3) supply chain management systems to provide information to help suppliers, purchasing firms, distributors, and logistics companies share information about orders, production, inventory levels and delivery of products and services; (4) customer relationship management systems to provide information coordinating all business processes dealing with customers in sales, marketing and services to optimize revenue, customer satisfaction and customer retention; and, (5) knowledge management systems that

collect the relevant knowledge and experience in the firm, and make it readily available to improve business processes and management decisions.

These aforementioned information systems should provide economic return to the tour and travel agents in Malaysia. Therefore, it was necessary to measure the effect of strategic alignment on the use of IT for competitive advantage. In the present study, the use of IT for competitive advantage was measured with operational effectiveness and functional efficiency, product or service innovation, and interoperability across value chains that are achieved through the effective use of IT resources.

The use of IT resources for competitive advantage has been a debatable issue from research findings indicating that IT does not provide competitive advantage (Carr, 2003; Mata et al., 1995). They claimed that IT resources such as hardware, software and information system applications could be easily obtained by as other rival competitor and therefore doe not provide competitive a lead. However, the present study used the Resource Based View (RBV) to explain how IT resource capabilities, if integrated, could provide competitive advantage by improving effectiveness and efficiency of organizational processes. This may include reducing production or service costs, saving time or speeding up production or service processes, product or services innovation, intra-firm integration and better integration with suppliers.

The RBV has been used by IS to classify IT resource capabilities that could provide competitive advantage as technical, human and intangible researchers (Bharadwaj, 2000; Wade and Hulland , 2004, and Weill and Broadbent, 1998). Technical resources consist of physical IT assets such as hardware, software and databases, applications and networks. IT related human resources are related to the skills of IS professionals, including technical skills and skills in management, communication and understanding of the business. Hence, several factors classified as behavioural factors, technical factors and organizational factors were used to measure the strategic alignment influence of IT for competitive advantage. Tour and travel agencies in Malaysia should integrate technical skills, human skills and intangible skills to exploit IT resource for competitive advantage.

The reason for adapting the RBV to this particular research problem is based on the idea that the internal environment of a firm, in terms of its resources and capabilities, including IT resources, is more important to the determination of competitive advantage than the external environment. This finding is in contrast to traditional competitive strategy models such as the Five Forces Model, which focuses on the external competitive environment of the company (Porter, 1980).

This study also reaffirms that the RBV theory, which has been widely applied in the United States and European countries, is also applicable in the an Asian and developing country context such as Malaysia.

In short, the empirical data of this study significantly supported the contention that strategic alignment is a positive predictor of using IT capabilities for competitive advantage in Malaysia tour and travel agents.

5.2.4 Validation of the Second-order Factor Model

The hypothesized relationships between the coordination of IT planning with business planning, communication between IT and business managers, human resource skills maturity, IT infrastructure flexibility, organizational change adaptability as the first-order exogenous latent constructs, and strategic IT alignment as the second-order factor was supported. The finding indicates that proposed model demonstrated an adequate model fit with the sample data from Malaysian tour and travels agents. The hypothesized second-order factor model fit (χ^2 = 203.479, DF=183,χ^2/df= 1.112, P= 0.143, GFI=0.914, CFI=0.993, NFI=0.932, RMSEA=0.024)

The revised second-order factor model proposed in this study was compared with the first-order factor model. This was to ensure that the revised second-order factor model of strategic alignment on the use of IT for competitive advantage not only had an acceptable model fit, but it also performed better than the alternative model. This comparison was done by comparing the coefficient determination of the two models (R^2) and by assessing the fit indices of both models.

We used chi-square (χ^2) difference statistics ($\Delta\chi^2$), the fit indices and the coefficients determination of the two models effect on dependent latent construct (R^2) to assess the preferred model between the first-order factor model and the second-order factor model, which best fit the sample data. The chi-square (χ^2) goodness of fit for the revised second-order factor model was compared to the chi-square (χ^2) goodness of fit for the first-order factor model. It would offer support for the revised second-order factor model if the $\Delta\chi^2$ test was significant, and the χ^2 value for the second-order factor model was significantly lower than the first-order factor model. As reported in the previous chapter, the second-order factor model (χ^2 =203.479) achieved a significantly better fit ($\Delta\chi^2$ = 456.86, p <.0.001) compared to the first-order factor model (χ^2 =660.339). Furthermore, the coefficients' determination of the two models effect on the dependent latent construct (R^2) was compared. As we have seen in chapter five, the second-order factor model explains a 15% more variance in the use of IT for competitive advantage compared to the first-order factor model (R^2 = 0.47 VS R^2 =0.32). Furthermore, the goodness of fit indices' measures indicated better model fit indices for the second-order factor model compared to the first-order factor model reported in chapter five.

In summary, the evidence from the alternative model comparison test supported that the hypothesized second-order factor model had best overall model fit compared to the alternative first-order factor model.

Unlike other conceptual strategic alignment models such as (Goedvolk et al., 2000; Henderson and Venkatraman, 1993; Maes, 1999; Maes et al., 2000; and Scott Morton, 1991), the proposed second-order factor model demonstrated adequate model fit with the sample data from Malaysian tour and travel agents. Hence, the hypothesis that proposed second-order factor model fit the data was supported.

5.3 Implications of the Study

Several implications arose from this study. Firstly, the implications for researchers. In contrast to some other areas of IS research, there is debate in the literature about what alignment actually is, why it is needed, how firms may go about the task of becoming aligned, and how it should best be researched. For example Henderson and

Venkatraman (1993) developed the Strategic Alignment Model (SAM) to describe the key domains of business strategy, IT strategy, organizational infrastructure and process, and IT infrastructure and process that need to be aligned. Subsequently, other researchers contributed a number of methodologies and frameworks to extend SAM model to achieve strategic alignment between IT and business strategy. However, while there is little agreement on conceptualizing alignment and its research basis, the literature regularly lack of studies to assess how organizations main strategic alignment in practice. Although there has been great progress in the conceptual development of the strategic alignment and a continual refinement of the constructs and relationships to define it, there has been limited empirical research to validate these concepts. Thus, this study extends strategic alignment research, providing a comprehensive understanding of the strategic alignment process and its impact on the use of IT for competitive advantage, by proposing and empirically testing and validating the second-order factor strategic alignment model. The model can serve as a basis for further research on underlying strategic alignment factors and the particularly use of IT for competitive advantage and the strategic alignment concept generally.

Secondly, the implication for practitioners and managers. Achieving strategic alignment between business and information technology (IT) strategies has been on several top-ten lists of IT concerns for information system practitioners and business executives. In order to overcome the lack of strategic alignment between IT and business strategy, to turn IT investments into competitive advantage, a continuous process to monitor and adjust alignment levels is required. For the alignment to be monitored and adjusted in a continuous manner there must be a clear understanding of the underlying strategic alignment factors. While many factors contribute to the strategic alignment of IT with business, this thesis investigated the key factors that provide the necessary foundation for IT and business managers in tour and travel agents to achieve to develop strategic alignment between IT and business. Therefore, the research model developed, validated and tested in this study provides a tool for practitioners and managers to know and assess the underlying strategic alignment factors, and in turn, the influence of strategic alignment on the use of IT for competitive advantage.

All the factors that have tested been found in this study as underlying strategic alignment are important and significant as reflected by Malaysian tour and travel agents. However, practitioners and managers in tour and travel agents should put priority on human resource skills maturity to attract and retain IT and business professionals and prepare them with both business and IT skills as it is found to be the most significant underlying strategic alignment factor. This factor could imply direct or indirect information sharing to allow IT and business managers in tour and travel agents to gain both IT and business skills. Moreover, communication between IT and business managers and closing the communication gap is another significant contributor to align IT strategy with business strategy. Additionally, to achieve strategic alignment between IT and business, tour and travel agents must have change readiness programs and provide training on necessary skills to adapt to change as well as to be proactive and anticipate change including business and IT change. Furthermore, the flexibility of an IT infrastructure with flexible hardware and networking resources; reusable software and IT expertise that can be used to suit changing business needs, will promote the IT fit to business requirement and in turn act as a strategic alignment factor. Similarly, the coordination of the IT plan with the business plan is another significant factor to strategically align IT with business.

This study encourages business managers in tour and travel agents to play an important role in the corporate IT steering committee and also have frequent contact with IT management. Moreover, It is also important that business managers become knowledgeable about IT opportunities to facilitate coordination of IT planning with business planning and exploit these IT opportunities for business needs.

Practitioners and managers in tour and travel agents should note that, the strategic alignment of IT with business has a positive influence on the use of IT for competitive advantage. In the present study, the use of IT for competitive advantage was measured with operation effectiveness and functional efficiency, product or service innovation, and interoperability across value chains that are achieved through the effective use of IT resources.

Practitioners and managers in tour and travel agents should note that, the strategic alignment of IT with business has a positive influence on the use of IT for competitive

advantage. In the present study, the use of IT for competitive advantage was measured with operation effectiveness and functional efficiency, product or service innovation, and interoperability across value chains that are achieved through the effective use of IT resources. Practitioners and managers in tour and travel agents should focus on using IT to reduce production or service costs of the firm. Travel agents may adapt e-commerce to enhance their service operations. For example, tour and travel agents could provide their services online, and therefore customers have access destinations online, search attractive destination and compare prices online, interact with others customers and exchange information online. These IT related capabilities reduce a cost for the tour and travel agents as well as for the customers. Therefore, it is important for Malaysian tour and travel not to miss the opportunity cost that may reshape their overhead cost.

There are other functionalities along which IT and business strategy may become aligned. The management of human capital within travel and tourism agencies can be facilitated by talent management systems. Intra-firm communication may be dependent on the appropriate use of technology, as well. Public relations, advertising and corporate identity development are increasingly taking place in online environments, using digital technology. All of these are areas which require not only a sound IT strategy, but require it to be closely integrated with business goals and objectives.

Tour and travel agents could transform their existing enterprise resources planning system into e-business collect data from various key business processes, e.g. reservations, finance and accounting, sales and marketing and human resources. These IT capabilities will save time and expedite service processes in tour and travel agents. The tour and travel agents should utilize IT resources to innovate their services and remain competitive in the marketplace. They could add media rich information to their websites such as *Google earth systems, Youtube, Facebook* and other social networking technologies to attract customers to their website and innovate services offer. These IT capabilities has tremendous impact on business operations in today's competitive marketplace. Therefore, Malaysian tour and travel agents must closely monitor changing customers demand in today's IT revolutionized global.

Similarly, tour and travel agents' could provide virtual tour about tourism destinations to attract more consumers. Virtual tour is important for the customers as it

give the picture of the destination, hotel details where they are suppose to go ,stay and enjoy . Virtual tour enables customers to become more confident about their trip, they can choose the destination which leads them more satisfaction rather than booking the product through tradition way.

Tour and travel agents should use IT resources to improve quality of services and achieve customer satisfaction. In today's travel and tourism customers can access travel and tourism at their convenient time to seek information about destinations, prices and other important information that meet travel's need to search and make reservation. In addition, tour and travel agents can enhance quality of services to electronically deliver customers their reservation tickets and other information resources. As the tourism industry is undergoing dramatic change that is influenced with IT capabilities, tour and travel should think about ways combine different travel component in the real time to meet customers' needs.

Tour and travel agents may use intranet systems to achieve better integration within the firms. There are several befit that intranet may bring to tour and travel agents these include:

1. To share information and document electronically within the firm
2. Improve communication among staff within the firm
3. To facilitate decision making process within the firm

To achieve a better interaction with suppliers, business partners, customers and competitions, tour and travel agents may use extranet for business benefit purposes such as:

1. To allow customers have access on firm's online resources.
2. To collaborate electronically with suppliers and distributors by sharing resources that is available online.
3. To create alliances with competing tour and travel agents using electronic resources to meet customer needs.

According to Kim (2004), various barriers may hinder tour and travel agents to

adapt e-commerce in their business. These include:

1. Limited knowledge of available technology
2. Cost of initial investment
3. Lack of confidence in the benefits of e-commerce
4. Cost of system maintenance.
5. Shortage of skilled human resources
6. Resistance to adaption of e-commerce.

However, the web is changing customer need and behavior. Customers have become more powerful and they are looking value for many. Hence, to remain competitive, tour and travel tourism has to know the best ways to make wise IT investment decisions that enhance their customer service and use reduce operating costs.

In summary, Malaysian is an increasingly popular tourism destination in the Southeast Asia due to its natural resources and cultural diversities. Travel and tourism presently constitutes the second largest foreign exchange earning, after manufacturing, with a significant contribution the Malaysian GDP in. Therefore, IT could enable tourism organizations in Malaysia to achieve a global reach of worldwide customers in a cost effective way. IT has could assist tourism organizations to transform offline promotions and distribution functions to an electronic marketplace. IT enables tour and travel agents to interactively with customers suppliers, distributors and competitors to where access to information is achieved, while interactivity between the customers and suppliers provides other opportunities. For these reasons, Therefore, the it is important to understand factors that contribute into strategic alignment between IT and business strategy to utilize IT capabilities in tourism sector so that the tourism sector to would transform Malaysia into a knowledge-based and value-driven economy.

5.4 Chapter Summary

This chapter has provided discussion the main findings of this study. Firstly, it discussed the descriptive data analyses that relate to the background information of the firms, and the respondents' demographics. The underlying strategic alignment factors highlighted by the tour and travel agents include coordination of IT planning with business planning; communication between IT and business managers; human resource skills maturity; flexibility of IT infrastructure and organizational change adaptability. This chapter has also discussed the perceived relationship between strategic alignment and the use of IT for competitive advantage. The empirical data provide significant support that strategic alignment is a positive predictor of using IT for competitive advantage as perceived by the Malaysian tour and travel agents. In comparison with the alternative model the comparison test supported the revised second-order factor model which had best overall model fit compared with the alternative first-order factor model. Therefore, the second-order factor model demonstrated an adequate model fit with the sample data. Hence, the hypothesis that the proposed second-order factor model fit the data was supported. Lastly, this chapter has presented several implications for both researchers and practitioners.

CHAPTER 6

CONCLUSION

6.1 Introduction

The previous chapter has provided discussion on the main findings of this study. The underlying strategic alignment factors include coordination of IT planning with business planning, communication between IT and business managers, human resource skills maturity, flexibility of IT infrastructure and organizational change adaptability. The previous chapter also discussed the perceived Relationship between strategic alignment and the use of IT for competitive advantage. This chapter presents a summary of the research, provides main contributions, outlines limitations and suggests future work.

6.2 Summary of the Research

Malaysia is one of top tourism destination in the Southeast Asian countries due to its natural resources and cultural diversities. The travel and tourism the second largest foreigner exchange earning after manufacturing with a significant contribution of 7.4% in Malaysian GDP in 2007. Therefore, the budget allocation in travel and tourism industry has increased over recent successive years.

However, no effort has been made to develop an assessment model to strategically align IT and business in the tourism sector in Malaysia. Therefore, the researcher was concerned about factors that contribute to strategic alignment to utilize IT capabilities in tourism sector so that IT would serve in tourism sector as a foundation condition that would transform Malaysia into a knowledge-based and value-driven economy.

The main research objectives of this thesis were to: 1) identify factors that contribute to align IT strategy with business strategy; 2) investigate the relationship between strategic alignment of IT with business strategy and the use of IT for competitive advantage and 3) develop a new second-order factor model of strategic alignment to use IT for competitive advantage.

To achieve the research objectives and provide answers for the research questions, first, an extensive literature review was conducted covering the cumulative studies on strategic alignment. As a result, five underlying strategic alignment factors were identified. Second, a new second-order factor model of strategic alignment which impacts on the use of IT for competitive advantage was developed, validated and tested with empirical data.

The findings of this study confirm that coordination of IT planning with business planning; communication between IT and business managers; human resource skills maturity; IT infrastructure flexibility and organizational change adaptability are the underlying strategic alignment factors reflected by the Malaysian IT and business managers in tour and travel agents. Another finding of this study is the strategic alignment is a positive predictor for using IT for competitive advantage. Some IT capabilities that have been highlighted by IT and business managers in tour and travel agents in Malaysia include: the reduction of production or service costs, saving time or speeding up production or service processes, innovation of products or services by improving the quality of products or services and by introducing new products into the market. Additionally, businesses can achieve better internal integration within the firm and better integration with the firm's suppliers and customers. Lastly, the revised second-order factor model had best overall model fit compared to the alternative first-order factor model. Therefore, the second-order factor model demonstrated an adequate model fit using the sample data collected from Malaysian tour and travel agents. Thus, all the research objectives were met, research questions were answered, and research hypotheses were supported. In the concluding section, a brief discussion of the research contributions, limitations, and future work is presented.

6.3 Research Contributions

This study has both theoretical and practical contributions presented below.

- **Theoretical Contribution**

In academic research, a profound theoretical framework is needed to guide research objectives, research questions and develop hypotheses. The proposed model of this study has extended the cumulative research of aligning IT strategy with business strategy through examination of how strategic IT alignment can contribute by using IT for competitive advantage. To our knowledge, what distinguishes this study from other studies, is that it is the first research of its kind to establish a link between strategic alignment and the use of IT for competitive advantage using structural equation modeling.

Another important theoretical contribution of this study is the specification of strategic alignment as a second-order construct, derived from first-order constructs, of the following factors: coordination of IT and business planning; the communication between IT and business managers; the human resource skills maturity; the IT infrastructure flexibility and organizational change adaptability. The second-order factor of strategic alignment does not have its own set of measured indicators; but is linked indirectly to those measuring first-order exogenous factors. Additionally, the revised second-order factor model was compared with the first-order model to ensure that this revised second-order factor model not only has an acceptable model fit, but also performs better than the alternative model. The chi-square ($\chi 2$) difference statistics ($\Delta\chi^2$), the fit indices, and the coefficients' determination of the two models' effect on dependent latent construct (R2) were used to assess the preferred model between the first-order factor model and second-order factor model, which best fit the sample data.

The chi-square ($\chi 2$) goodness of fit for the revised second-order factor model was compared to the chi-square ($\chi 2$) goodness of fit for the first-order factor model. It would offer support for the revised second-order factor model if the $\Delta\chi^2$ test is significant, and the $\chi 2$ value for the second-order factor model is significantly lower than the first order factor model. The revised second-order factor model ($\chi 2$ =203.479) achieved significantly better fit ($\Delta\chi^2 = 456.86$, $p < .0.001$) compared to the first-order factor model

($\chi 2$ =660.339). Moreover, the coefficients' determination of the two models' effect on dependent latent construct (R2) was compared. The revised second-order factor model explains a 15% more variance in the use of IT for competitive advantage compared with first-order factor model (R2 = 47 VS R2 = 32). Furthermore, the goodness of fit indices' measures have indicated a better model fit indices for the second-order factor model compared with the first-order factor model.

This finding shows the importance of underlying strategic alignment, and strategic alignment to determine the use of IT capabilities for competitive advantage as perceived by the IT and business managers in tour and travel agents in Malaysia. This study also reaffirms resource based view theory, which is widely applied in the UAS and European countries, is also applicable in Asian and developing countries such as Malaysia.

- **Practical Contribution**

The rapid advance of IT capabilities and changing business needs, to achieve strategic alignment between business and information technology (IT) strategies has been a priority for information system practitioners and business executives. Therefore, the research model developed, validated and tested in this study provides a tool for practitioners and managers in Malaysian tour and travel agents know and assess underlying strategic alignment factors, and the influence of strategic alignment on the use of IT for competitive advantage.

In summary, the Malaysian tour and travel agents should prioritize these underlying strategic alignment factors and turn these IT capabilities into competitive use by linking IT strategy with business strategy.

6.4 Limitations and Future Work

The study has made theoretical contribution and practical contribution, and achieved all research objectives however, it is inevitably subject to limitations. There are several limitations noted in this study that should be outlined, to provide suggestions for future research.

- There are several factors identified as underlying strategic alignment factors, and future researchers could identify other factors with empirical validations.

- Some of the factors that have been identified as underlying strategic alignment factors e.g. " managing IT and business managers' relationship" and "IT resource governance power structure" were dropped due to a poor alpha reliability score. Nevertheless, items measuring these two constructs could be reworded to clarify their intent.

- Other researchers could refine some other items were deleted during model validation stage based on poor loadings, poor reliability score or model modification index and they could be refined.

- The data used for this study was specifically collected from Malaysian tour and travel agents. Further efforts could extend these factors across different sectors to make the findings more generalizeable and thereby deepen the theoretical foundation.

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APPENDIX A

Result of Skewness and Kurtosis

Items measured	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
IT managers regularly attends business planning meetings	202	-.192	.171	-.654	.341
IT managers contribute to the formation of business goals	202	-.216	.171	-.843	.341
IT managers have regular contact with top management	202	-.338	.171	-.782	.341
IT managers have easy access to business managers	202	-.246	.171	-.890	.341
Business managers play an important role in the corporate IT steering committee	202	.211	.171	-.779	.341
Business managers have frequently contact with IT management	202	-.208	.171	-.852	.341
Business managers become knowledgeable about IT opportunities within the firm	202	-.187	.171	-1.008	.341
Business managers regard spending on IT as strategic investments rather than expenses to be controlled	202	-.171	.171	-.932	.341
We have defined programs to manage our relationships	202	.629	.171	-.282	.341
We manage our relationships on an ad-hoc basis	202	-.261	.171	-.781	.341
There is a sense of conflict and mistrust between IT and business managers	202	-.439	.171	-.672	.341
IT managers do not understand the business	202	.518	.171	-.593	.341

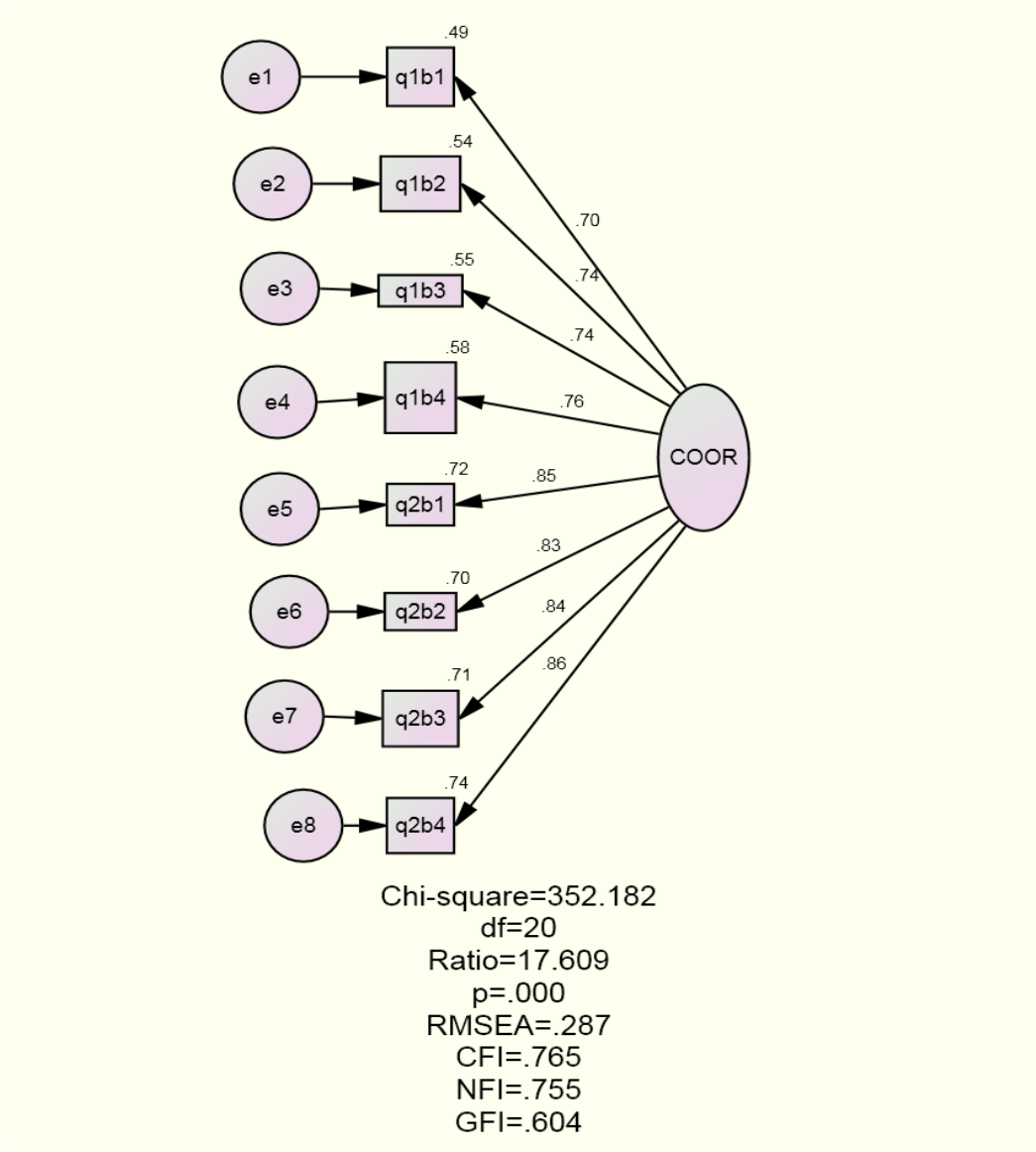
IT managers have a good understanding the business	202	-.554	.171	-.430	.341
Understanding of the business by IT managers is encouraged	202	-.633	.171	-.449	.341
Business managers do not understand IT	202	.212	.171	-.604	.341
Business managers have a good understanding of IT	202	.073	.171	-.811	.341
Understanding of IT by business managers is required and promoted	202	-.070	.171	-.819	.341
Domain knowledge shared between IT and business managers is an ad hoc basis	202	-.118	.171	-.693	.341
Understanding of IT by business managers is required and promoted	202	-.070	.171	-.819	.341
Domain knowledge shared between IT and business managers is an ad hoc basis	202	-.118	.171	-.693	.341
Domain knowledge shared between IT and business managers is a consistent structured framework	202	-.426	.171	-.545	.341
There is a formal knowledge sharing between business and IT managers	202	-.488	.171	-.469	.341
There is a formal program to retain IT and business professionals	202	-.130	.171	-.940	.341
IT hiring is based on technical expertise	202	-.328	.171	-.874	.341
Business hiring is based on business skills	202	-.797	.171	.492	.341
Effective programs are in place to attract and retain IT professionals with both technical expertise and business skills	202	-.586	.171	-.353	.341
Effective programs are in place to attract and retain business professionals with both business skills and technical expertise	202	-.813	.171	.147	.341
Effective programs are in place to attract and retain business professionals with both business skills and technical expertise	202	-.813	.171	.147	.341
A utility providing basic IT services at	202	-.291	.171	202	-.291

minimum cost					
A utility providing basic IT services at minimum cost	202	-.291	.171	-1.244	.341
Driven by the requirements of the current business strategy	202	.286	.171	-1.101	.341
A resource to enable and drive fast response to the changes in the market place	202	.558	.171	-.649	.341
Centralized, whereby the IT department or other central department has primary authority for architecture, standards, and application resource decisions	202	-.341	.171	-.870	.341
Decentralized, whereby each functional department has primary authority for their own IT infrastructure, standards, and application resources decisions	202	-.529	.171	-.905	.341
Federated, whereby the IT department or other central unit has primary responsibility for architecture, common systems, and standards decisions, while each functional department has authority for making application resource decisions.	202	-.405	.171	-.799	.341
We tend to resist change *	202	-.309	.171	-.697	.341
We tend to have change readiness programs by providing training on necessary skills to adapt to change	202	-.341	.171	-.870	.341
we tend to be reactive, rather planning for change *	202	-.029	.171	-1.150	.341
we tend to be proactive, and anticipate change	202	-.583	.171	-.109	.341
IT is used for reducing our production/service costs.	202	-.405	.171	-.799	.341
IT is used for time saving/speeding up our production/service processes.	202	-.624	.171	-.345	.341
IT is used for product/ services innovation	202	-.771	.171	.360	.341

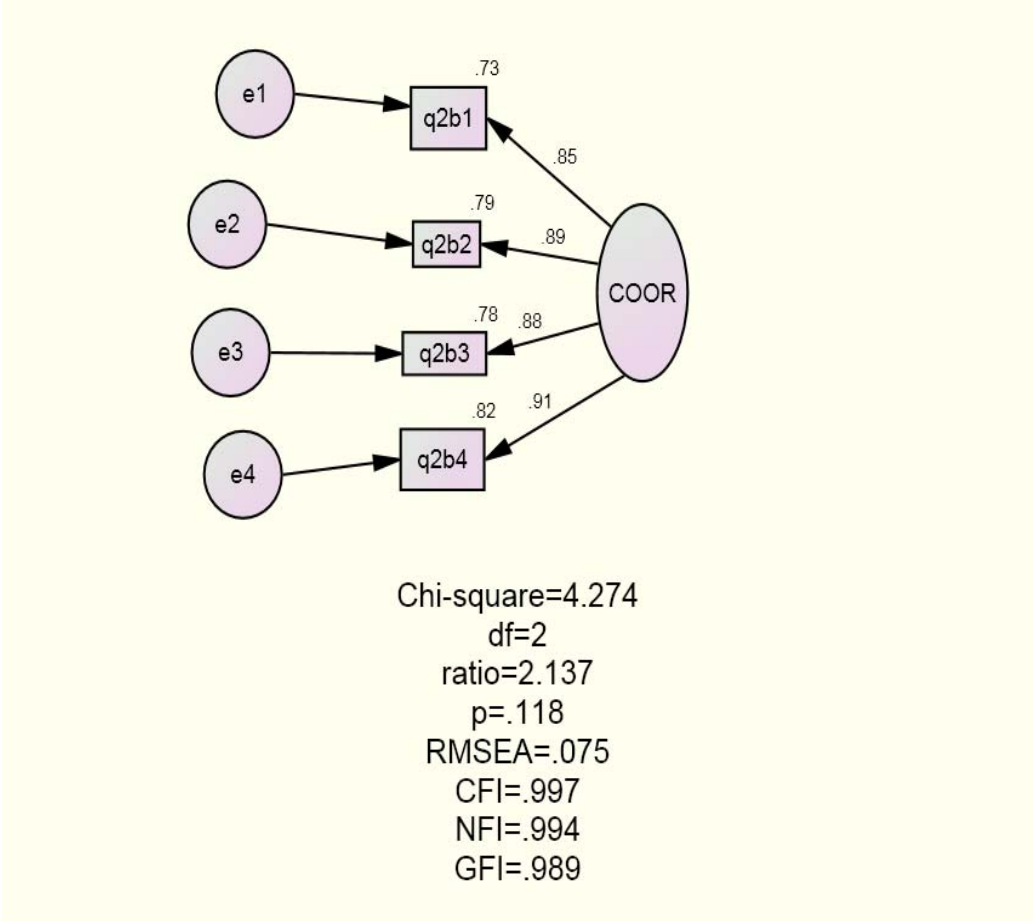
by improving the quality of our products/services, and introducing new products/services					
IT is used for achieving better internal integration within our firm (interdepartmental and intradepartmental)	202	-.616	.171	-.349	.341
IT is used for achieving better integration with our suppliers	202	-.583	.171	-.109	.341
IT is used for achieving better integration with our customers	202	-.675	.171	-.298	.341

APPENDIX B

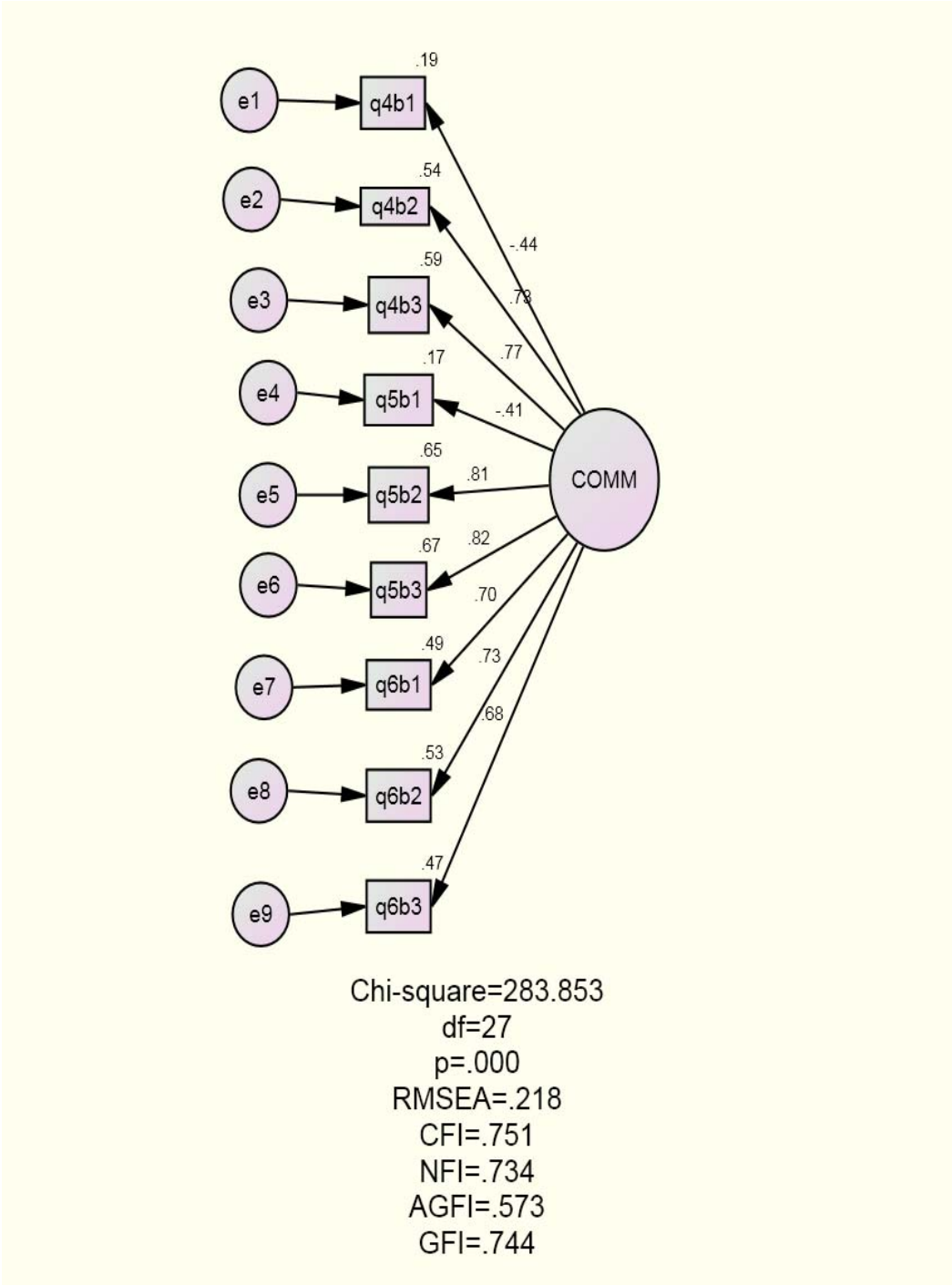
Model specification



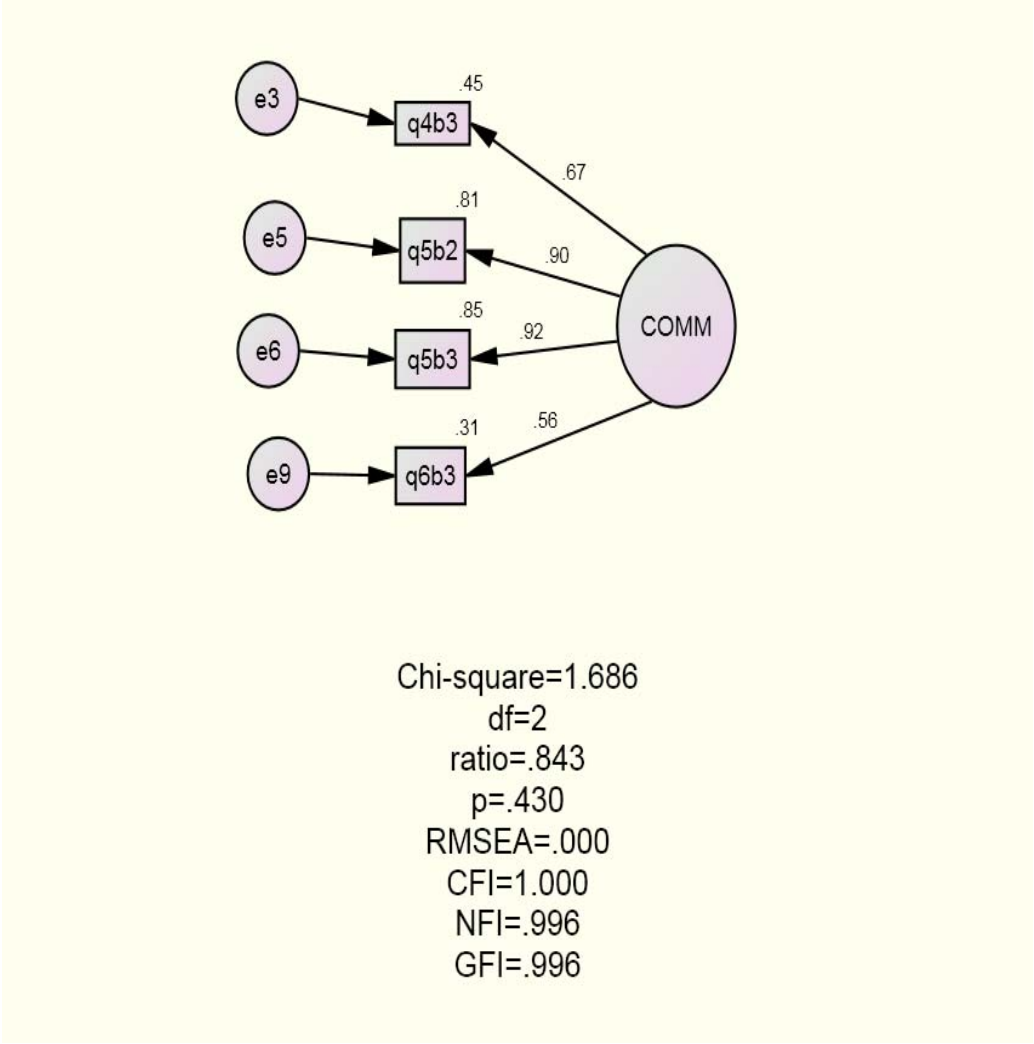
Appendix B Figure 1 Coordination of IT Planning with Business Planning Construct (all items included)



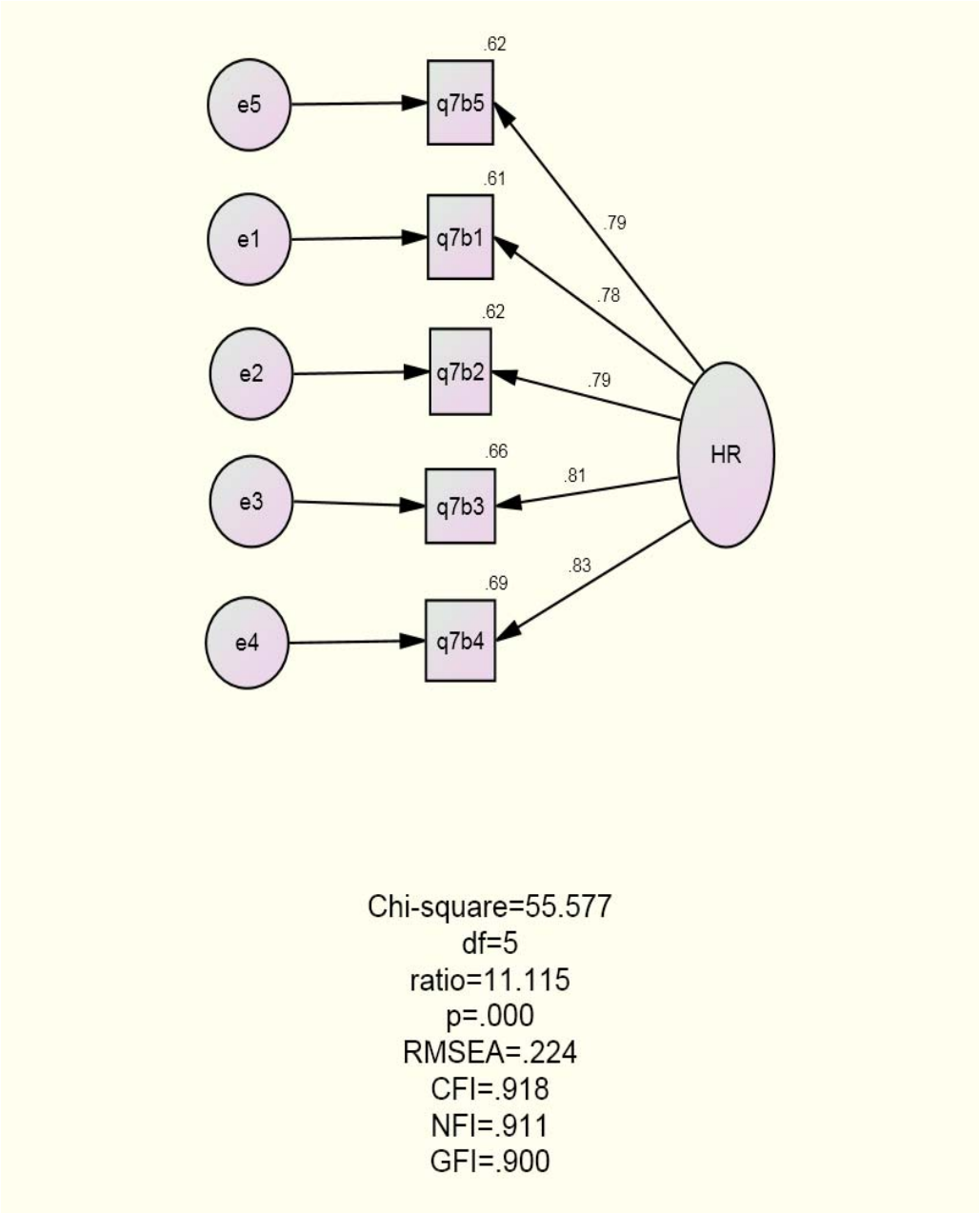
Appendix B Figure 2.Coordination of IT Planning with Business Planning Construct (after deleting items q1b1, q1b2, q1b3, q1b4)



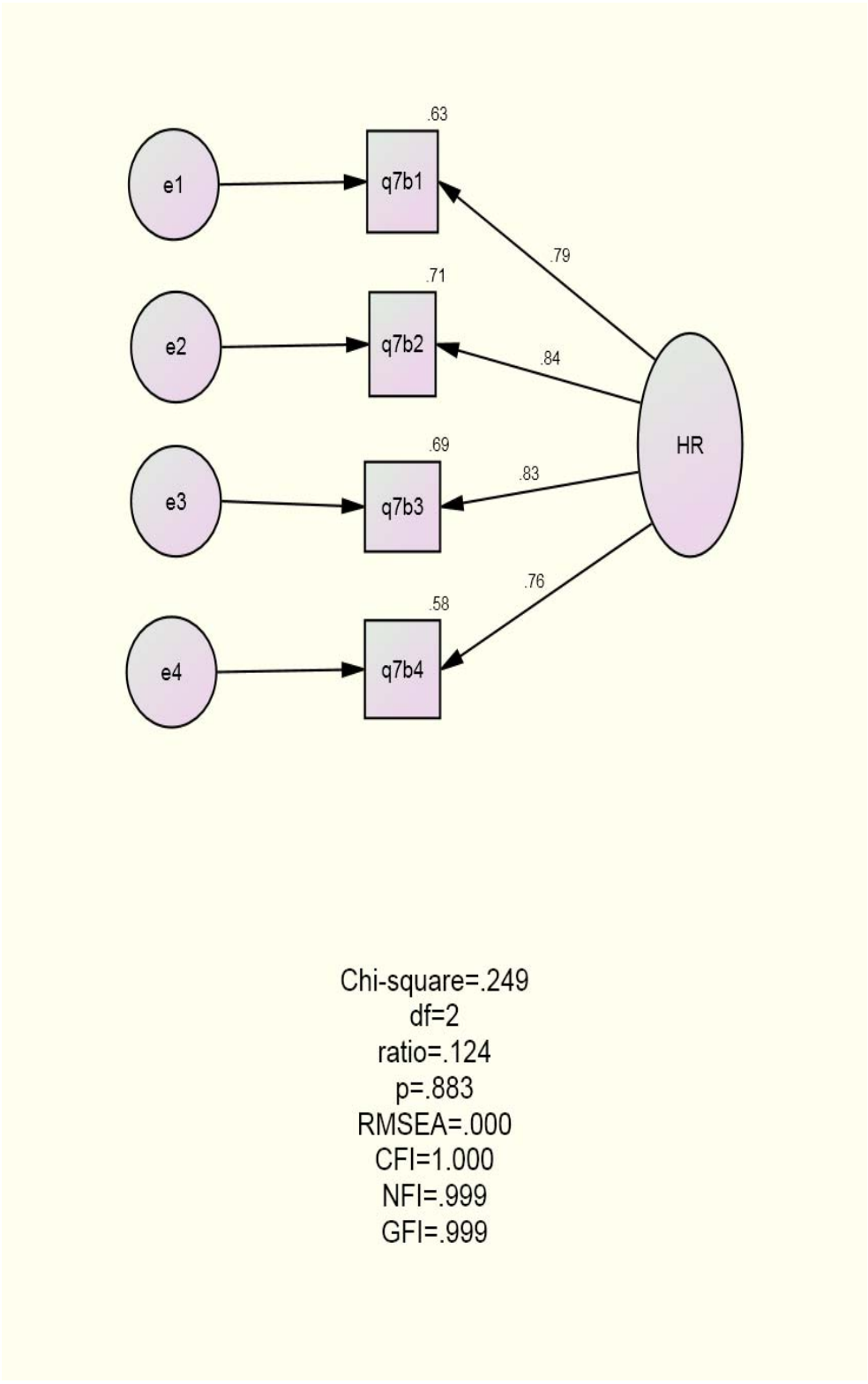
Appendix B Figure 3. Communication between IT and Business Managers Construct (all items included)



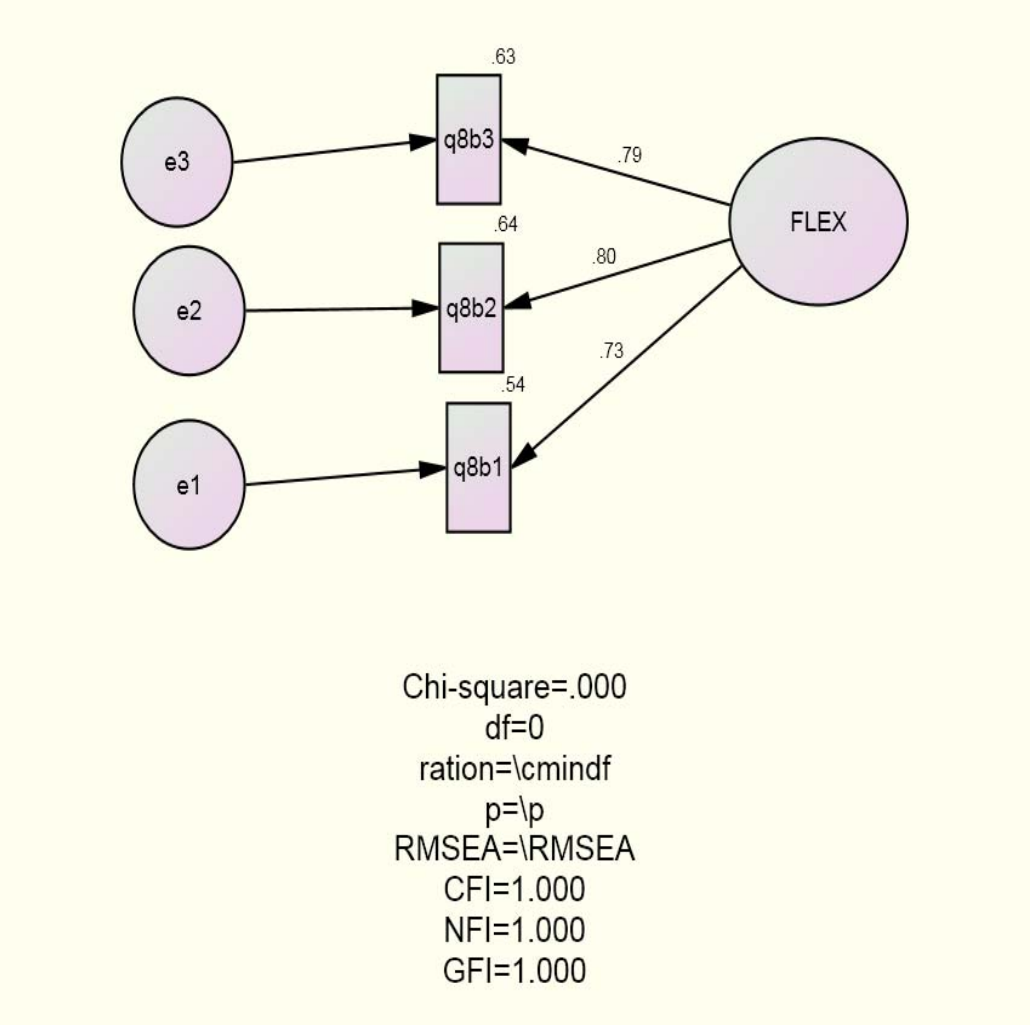
Appendix B Figure 4 Communication between IT and Business Managers Construct (after deleting items q4b1, q4b2, q5b1, q6b1, q6b2)



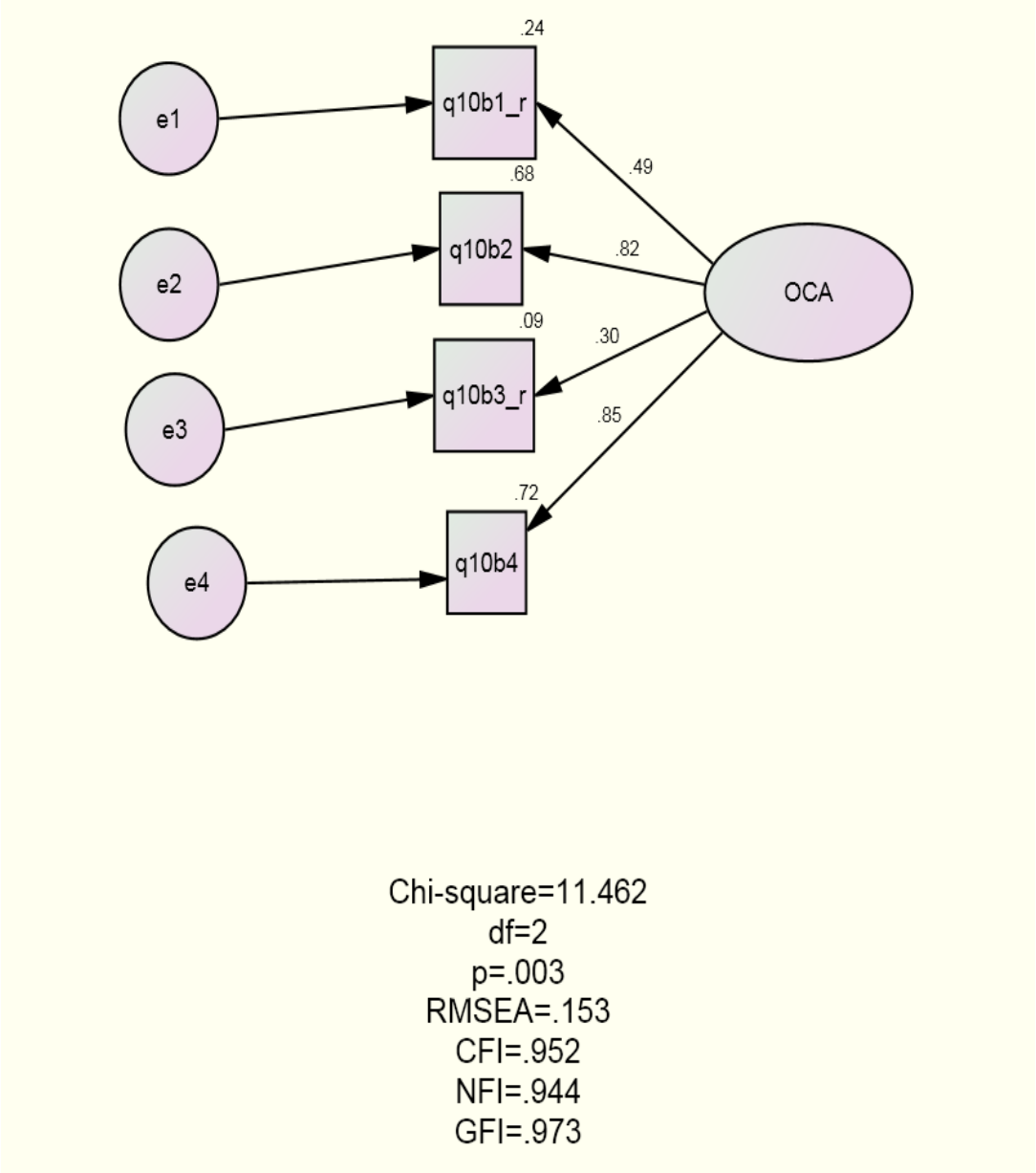
Appendix B Figure 5 Human Resource Skill Maturity Construct (all items included)



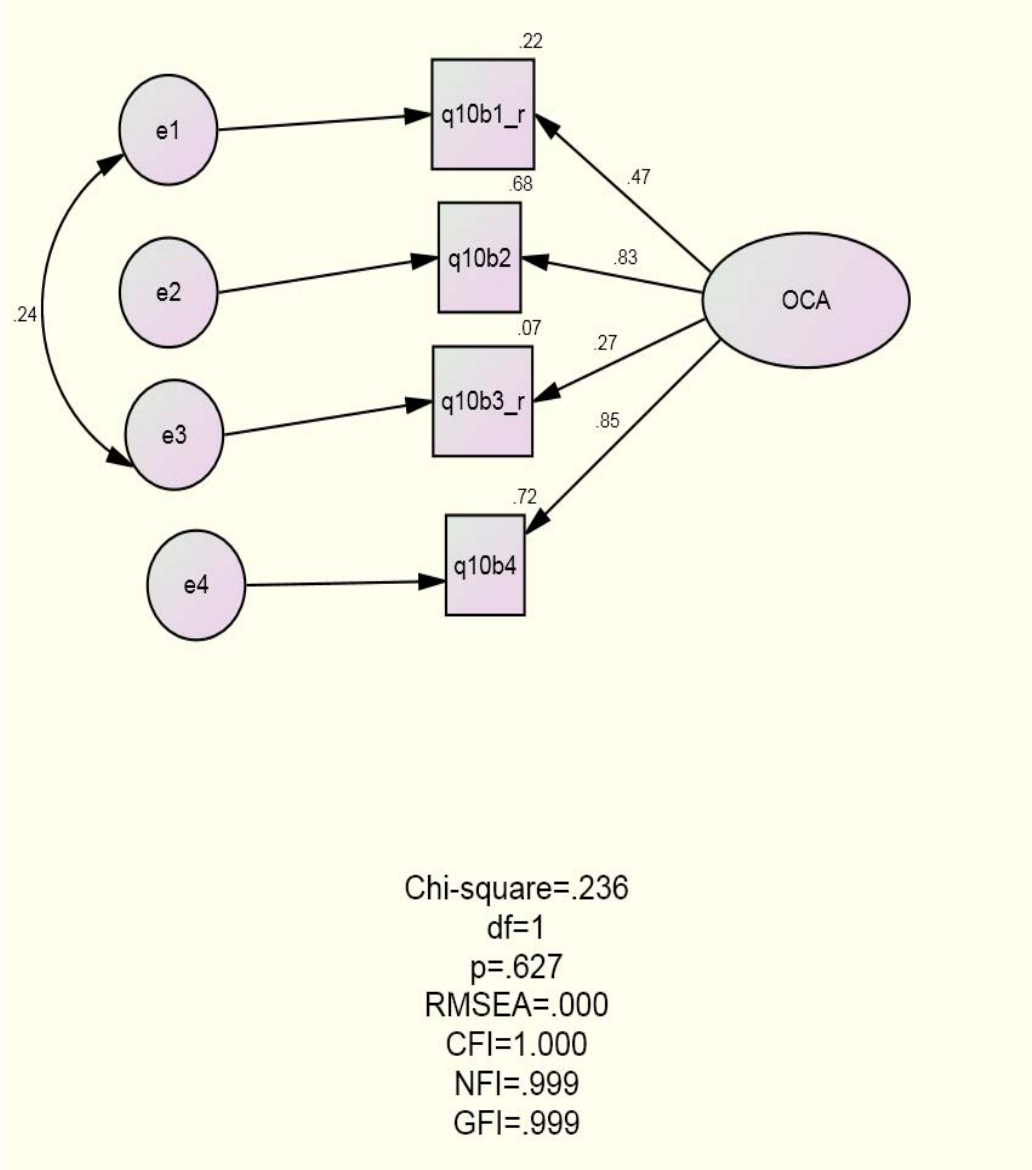
Appendix B Figure 6 Human resource skill maturity construct (after deleting item q7b5)



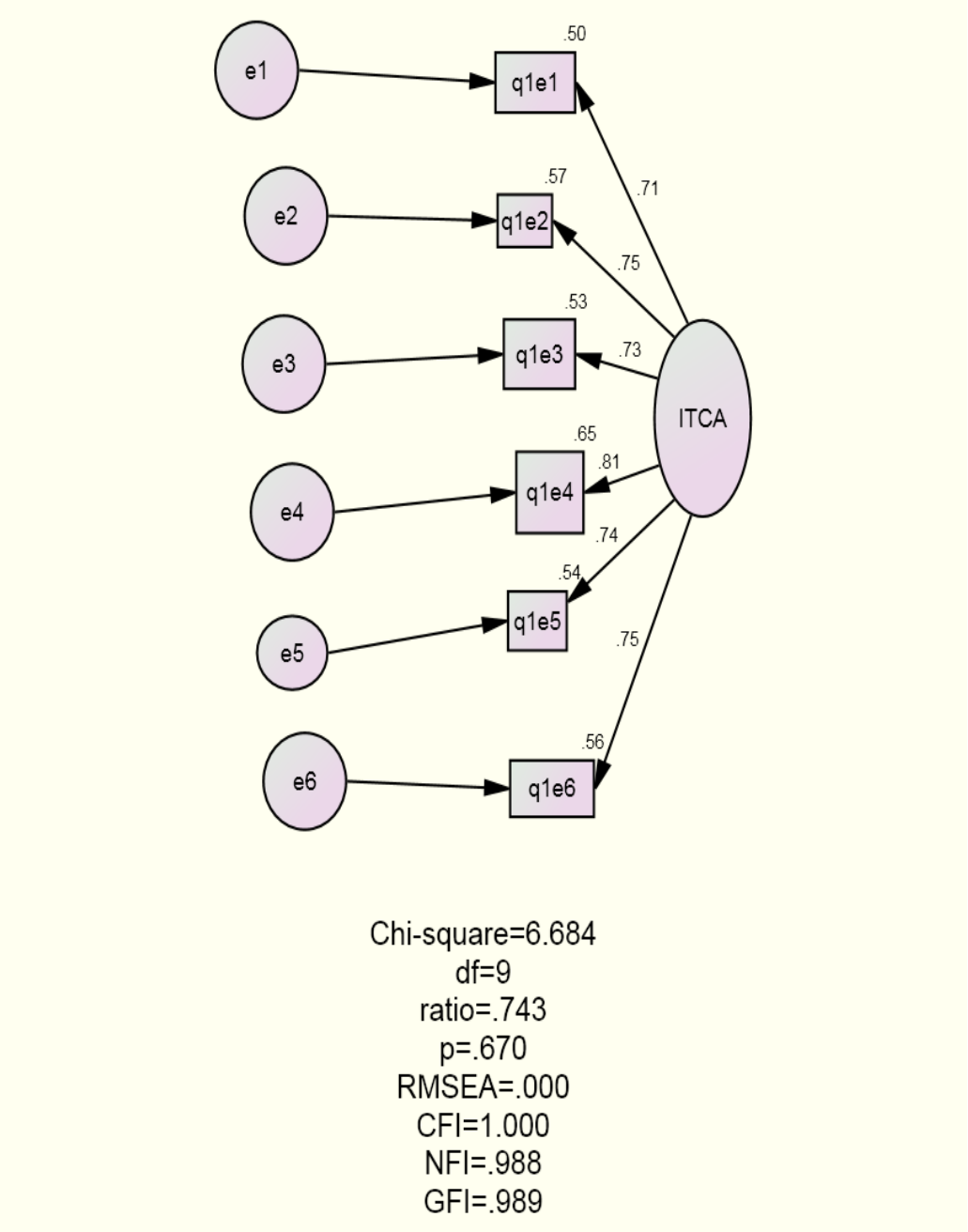
Appendix B Figure 7 IT Infrastructure Flexibility Construct (perfect fit, no item deleted)



Appendix B Figure 8 Organizational Change Adoptability Construct (all items included)



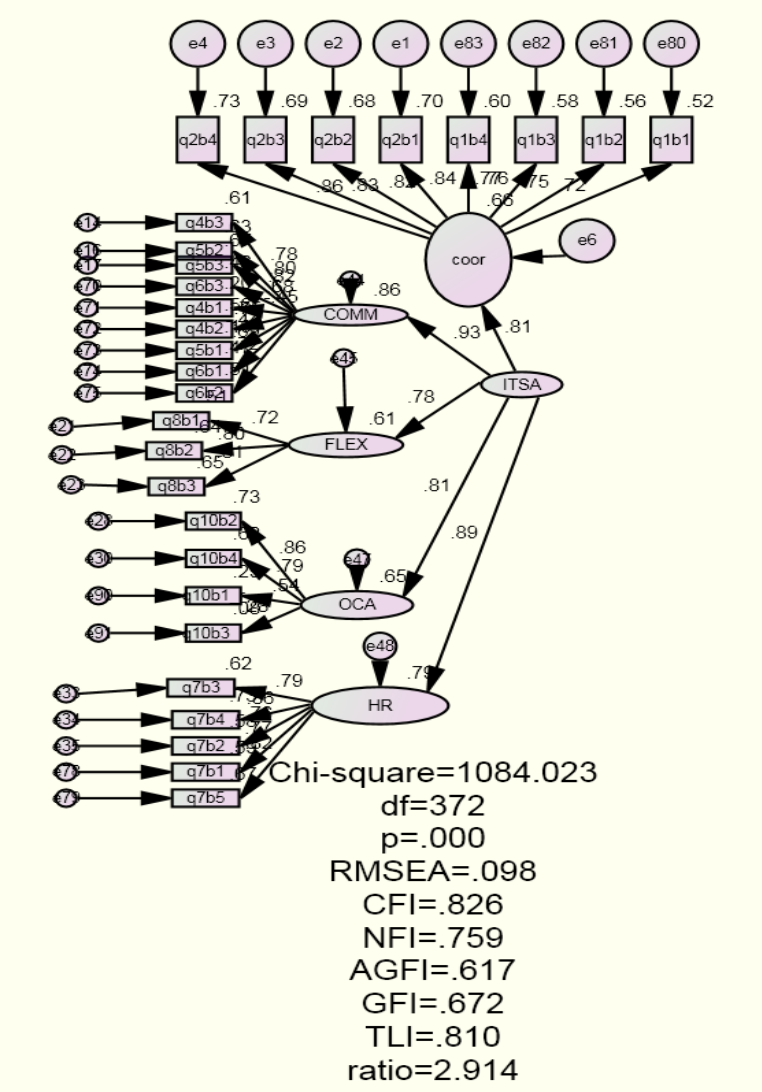
Appendix B Figure 9 Organizational Change Adoptability Construct (covariance is established between error terms of e1 and e3)



Appendix B Figure 10 Use of IT for Competitive Advantage (no item was deleted)

APPENDIX C

Measurement Models (Confirmatory Factor Analysis)



Measurement model (CFA1)

Regression Weights: (CFA1)

Path			Estimate	S.E.	C.R.	P
COMM	<---	ITSA	.807	.066	12.143	***
FLEX	<---	ITSA	.658	.067	9.856	***
OCA	<---	ITSA	.848	.086	9.872	***
HR	<---	ITSA	.746	.068	10.991	***
coor	<---	ITSA	.791	.069	11.506	***
q5b3	<---	COMM	1.065	.082	12.936	***
q5b2	<---	COMM	1.000			
q4b3	<---	COMM	1.016	.083	12.204	***
q8b3	<---	FLEX	1.000			
q8b2	<---	FLEX	.983	.087	11.285	***
q8b1	<---	FLEX	.786	.078	10.098	***
q10b4	<---	OCA	1.000			
q10b2	<---	OCA	.980	.084	11.637	***
q7b2	<---	HR	1.000			
q7b4	<---	HR	1.118	.088	12.734	***
q7b3	<---	HR	1.010	.087	11.592	***
q2b4	<---	coor	1.000			
q2b3	<---	coor	.998	.066	15.101	***
q2b2	<---	coor	.988	.067	14.816	***
q2b1	<---	coor	.912	.060	15.185	***
q6b3	<---	COMM	.894	.088	10.185	***
q4b1	<---	COMM	-.583	.091	-6.394	***
q4b2	<---	COMM	.891	.077	11.571	***
q5b1	<---	COMM	-.597	.095	-6.274	***
q6b1	<---	COMM	.782	.075	10.420	***
q6b2	<---	COMM	.932	.085	10.967	***
q1b4	<---	coor	.930	.069	13.384	***
q1b3	<---	coor	.899	.069	13.001	***
q1b2	<---	coor	.896	.070	12.770	***
q1b1	<---	coor	.761	.064	11.959	***
q7b1	<---	HR	.952	.084	11.286	***
q7b5	<---	HR	1.095	.091	12.085	***
q10b1_r	<---	OCA	.569	.077	7.345	***
q10b3_r	<---	OCA	.343	.092	3.732	***

Standardized Regression Weights: (CFA1)

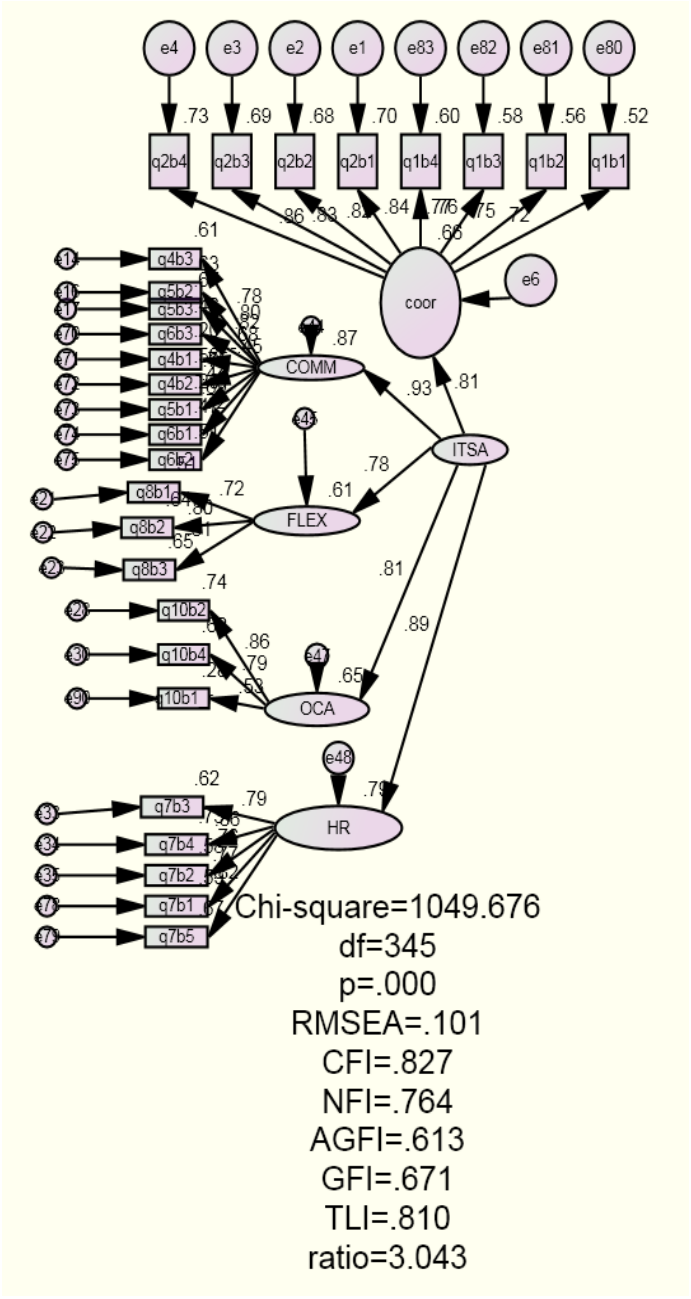
Path			Estimate
COMM	<---	ITSA	.930
FLEX	<---	ITSA	.781
OCA	<---	ITSA	.805
HR	<---	ITSA	.890
coor	<---	ITSA	.815
q5b3	<---	COMM	.816
q5b2	<---	COMM	.796
q4b3	<---	COMM	.780
q8b3	<---	FLEX	.806
q8b2	<---	FLEX	.801
q8b1	<---	FLEX	.716
q10b4	<---	OCA	.788
q10b2	<---	OCA	.856
q7b2	<---	HR	.760
q7b4	<---	HR	.855
q7b3	<---	HR	.789
q2b4	<---	coor	.856
q2b3	<---	coor	.833
q2b2	<---	coor	.823
q2b1	<---	coor	.835
q6b3	<---	COMM	.676
q4b1	<---	COMM	-.449
q4b2	<---	COMM	.749
q5b1	<---	COMM	-.442
q6b1	<---	COMM	.689
q6b2	<---	COMM	.718
q1b4	<---	coor	.774
q1b3	<---	coor	.759
q1b2	<---	coor	.751
q1b1	<---	coor	.718
q7b1	<---	HR	.770
q7b5	<---	HR	.818
q10b1_r	<---	OCA	.537
q10b3_r	<---	OCA	.281

Variances: (CFA1)

	Estimate	S.E.	C.R.	P
ITSA	1.000			
e44	.102	.031	3.301	***
e45	.277	.056	4.944	***
e47	.389	.082	4.722	***
e48	.146	.035	4.185	***
e6	.317	.053	6.023	***
e17	.431	.051	8.446	***
e16	.436	.050	8.654	***
e14	.500	.057	8.791	***
e23	.382	.057	6.686	***
e22	.382	.056	6.799	***
e21	.417	.051	8.175	***
e30	.676	.095	7.106	***
e28	.389	.073	5.308	***
e35	.513	.058	8.818	***
e34	.322	.042	7.595	***
e33	.436	.051	8.571	***
e4	.345	.042	8.302	***
e3	.415	.048	8.602	***
e2	.437	.050	8.700	***
e1	.340	.040	8.571	***
e70	.717	.077	9.362	***
e71	1.014	.103	9.826	***
e72	.470	.052	9.016	***
e73	1.110	.113	9.835	***
e74	.512	.055	9.314	***
e75	.617	.067	9.187	***
e83	.546	.060	9.088	***
e82	.559	.061	9.170	***
e81	.587	.064	9.215	***
e80	.512	.055	9.357	***
e78	.435	.050	8.735	***
e79	.418	.051	8.237	***
e90	.884	.094	9.361	***
e91	1.526	.154	9.888	***

Squared Multiple Correlations: (CFA1)

	Estimate
coor	.664
HR	.792
OCA	.649
FLEX	.610
COMM	.865
q10b3_r	.079
q10b1_r	.289
q7b5	.668
q7b1	.594
q1b1	.516
q1b2	.563
q1b3	.577
q1b4	.599
q6b2	.515
q6b1	.474
q5b1	.195
q4b2	.561
q4b1	.202
q6b3	.457
q2b1	.698
q2b2	.678
q2b3	.693
q2b4	.732
q7b3	.622
q7b4	.732
q7b2	.578
q10b2	.732
q10b4	.621
q8b1	.512
q8b2	.642
q8b3	.650
q4b3	.609
q5b2	.633
q5b3	.665



Measurement model (CFA2)

Regression Weights: (CFA2)

			Estimate	S.E.	C.R.	P
COMM	<---	ITSA	.809	.066	12.172	***
FLEX	<---	ITSA	.658	.067	9.863	***
OCA	<---	ITSA	.847	.086	9.829	***
HR	<---	ITSA	.744	.068	10.972	***
coor	<---	ITSA	.791	.069	11.505	***
q5b3	<---	COMM	1.065	.082	12.965	***
q5b2	<---	COMM	1.000			
q4b3	<---	COMM	1.015	.083	12.212	***
q8b3	<---	FLEX	1.000			
q8b2	<---	FLEX	.983	.087	11.290	***
q8b1	<---	FLEX	.785	.078	10.097	***
q10b4	<---	OCA	1.000			
q10b2	<---	OCA	.990	.085	11.579	***
q7b2	<---	HR	1.000			
q7b4	<---	HR	1.118	.088	12.731	***
q7b3	<---	HR	1.010	.087	11.589	***
q2b4	<---	coor	1.000			
q2b3	<---	coor	.998	.066	15.120	***
q2b2	<---	coor	.988	.067	14.836	***
q2b1	<---	coor	.912	.060	15.201	***
q6b3	<---	COMM	.893	.088	10.183	***
q4b1	<---	COMM	-.582	.091	-6.393	***
q4b2	<---	COMM	.891	.077	11.582	***
q5b1	<---	COMM	-.597	.095	-6.279	***
q6b1	<---	COMM	.781	.075	10.419	***
q6b2	<---	COMM	.930	.085	10.969	***
q1b4	<---	coor	.929	.069	13.381	***
q1b3	<---	coor	.898	.069	12.995	***
q1b2	<---	coor	.896	.070	12.765	***
q1b1	<---	coor	.760	.064	11.952	***
q7b1	<---	HR	.952	.084	11.283	***
q7b5	<---	HR	1.095	.091	12.086	***
q10b1_r	<---	OCA	.558	.078	7.159	***

Standardized Regression Weights: (CFA2)

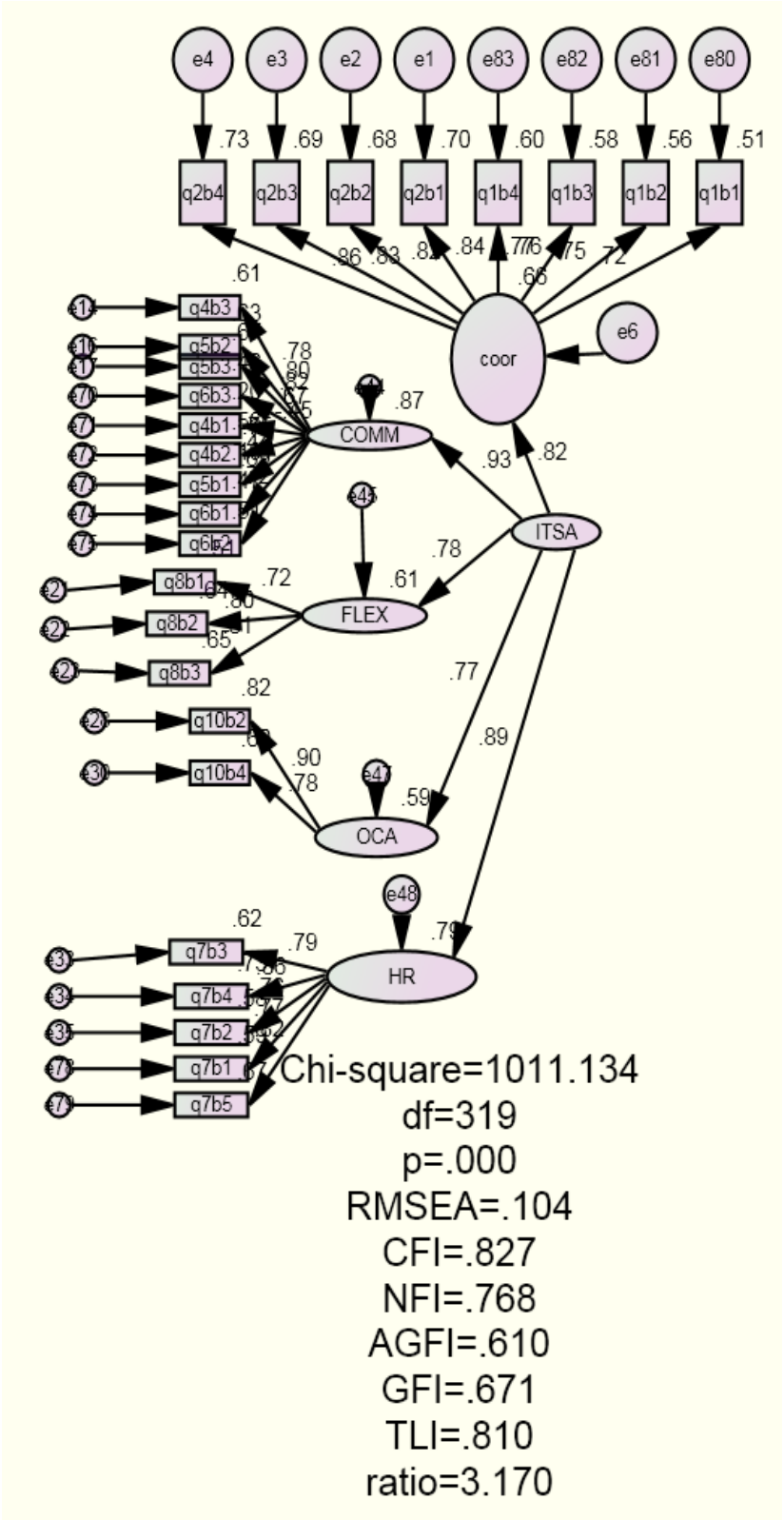
			Estimate
COMM	<---	ITSA	.931
FLEX	<---	ITSA	.781
OCA	<---	ITSA	.808
HR	<---	ITSA	.888
coor	<---	ITSA	.815
q5b3	<---	COMM	.816
q5b2	<---	COMM	.796
q4b3	<---	COMM	.780
q8b3	<---	FLEX	.806
q8b2	<---	FLEX	.801
q8b1	<---	FLEX	.716
q10b4	<---	OCA	.786
q10b2	<---	OCA	.861
q7b2	<---	HR	.760
q7b4	<---	HR	.855
q7b3	<---	HR	.788
q2b4	<---	coor	.856
q2b3	<---	coor	.833
q2b2	<---	coor	.824
q2b1	<---	coor	.835
q6b3	<---	COMM	.675
q4b1	<---	COMM	-.449
q4b2	<---	COMM	.749
q5b1	<---	COMM	-.442
q6b1	<---	COMM	.688
q6b2	<---	COMM	.717
q1b4	<---	coor	.773
q1b3	<---	coor	.759
q1b2	<---	coor	.750
q1b1	<---	coor	.718
q7b1	<---	HR	.770
q7b5	<---	HR	.818
q10b1_r	<---	OCA	.525

Variances: (CFA2)

	Estimate	S.E.	C.R.	P
ITSA	1.000			
e44	.100	.031	3.261	.001
e45	.276	.056	4.943	***
e47	.383	.082	4.692	***
e48	.148	.035	4.217	***
e6	.317	.053	6.032	***
e17	.429	.051	8.443	***
e16	.435	.050	8.652	***
e14	.501	.057	8.796	***
e23	.382	.057	6.687	***
e22	.382	.056	6.800	***
e21	.417	.051	8.179	***
e30	.683	.096	7.125	***
e28	.375	.074	5.058	***
e35	.513	.058	8.816	***
e34	.322	.042	7.591	***
e33	.436	.051	8.569	***
e4	.344	.041	8.298	***
e3	.415	.048	8.599	***
e2	.436	.050	8.697	***
e1	.339	.040	8.569	***
e70	.718	.077	9.366	***
e71	1.014	.103	9.827	***
e72	.470	.052	9.018	***
e73	1.110	.113	9.835	***
e74	.513	.055	9.318	***
e75	.617	.067	9.191	***
e83	.547	.060	9.091	***
e82	.560	.061	9.172	***
e81	.588	.064	9.217	***
e80	.512	.055	9.359	***
e78	.436	.050	8.734	***
e79	.417	.051	8.231	***
e90	.899	.096	9.403	***

Squared Multiple Correlations: (CFA2)

	Estimate
coor	.663
HR	.789
OCA	.652
FLEX	.610
COMM	.867
q10b1_r	.276
q7b5	.669
q7b1	.593
q1b1	.515
q1b2	.563
q1b3	.576
q1b4	.598
q6b2	.514
q6b1	.473
q5b1	.195
q4b2	.561
q4b1	.202
q6b3	.456
q2b1	.698
q2b2	.679
q2b3	.694
q2b4	.733
q7b3	.622
q7b4	.732
q7b2	.578
q10b2	.742
q10b4	.617
q8b1	.512
q8b2	.642
q8b3	.650
q4b3	.608
q5b2	.634
q5b3	.666



Measurement model (CFA3)

Regression Weights: (CFA3)

Path			Estimate	S.E.	C.R.	P
COMM	<---	ITSA	.810	.067	12.169	***
FLEX	<---	ITSA	.657	.067	9.830	***
OCA	<---	ITSA	.794	.089	8.887	***
HR	<---	ITSA	.744	.068	10.957	***
coor	<---	ITSA	.792	.069	11.514	***
q5b3	<---	COMM	1.065	.082	12.949	***
q5b2	<---	COMM	1.000			
q4b3	<---	COMM	1.016	.083	12.227	***
q8b3	<---	FLEX	1.000			
q8b2	<---	FLEX	.983	.087	11.271	***
q8b1	<---	FLEX	.787	.078	10.097	***
q10b4	<---	OCA	1.000			
q10b2	<---	OCA	1.050	.096	10.935	***
q7b2	<---	HR	1.000			
q7b4	<---	HR	1.118	.088	12.724	***
q7b3	<---	HR	1.010	.087	11.587	***
q2b4	<---	coor	1.000			
q2b3	<---	coor	.998	.066	15.144	***
q2b2	<---	coor	.988	.067	14.850	***
q2b1	<---	coor	.912	.060	15.220	***
q6b3	<---	COMM	.892	.088	10.171	***
q4b1	<---	COMM	-.582	.091	-6.383	***
q4b2	<---	COMM	.892	.077	11.595	***
q5b1	<---	COMM	-.596	.095	-6.272	***
q6b1	<---	COMM	.781	.075	10.414	***
q6b2	<---	COMM	.930	.085	10.967	***
q1b4	<---	coor	.928	.069	13.371	***
q1b3	<---	coor	.897	.069	12.987	***
q1b2	<---	coor	.895	.070	12.758	***
q1b1	<---	coor	.759	.064	11.938	***
q7b1	<---	HR	.952	.084	11.282	***
q7b5	<---	HR	1.095	.091	12.089	***

Standardized Regression Weights: (CFA3)

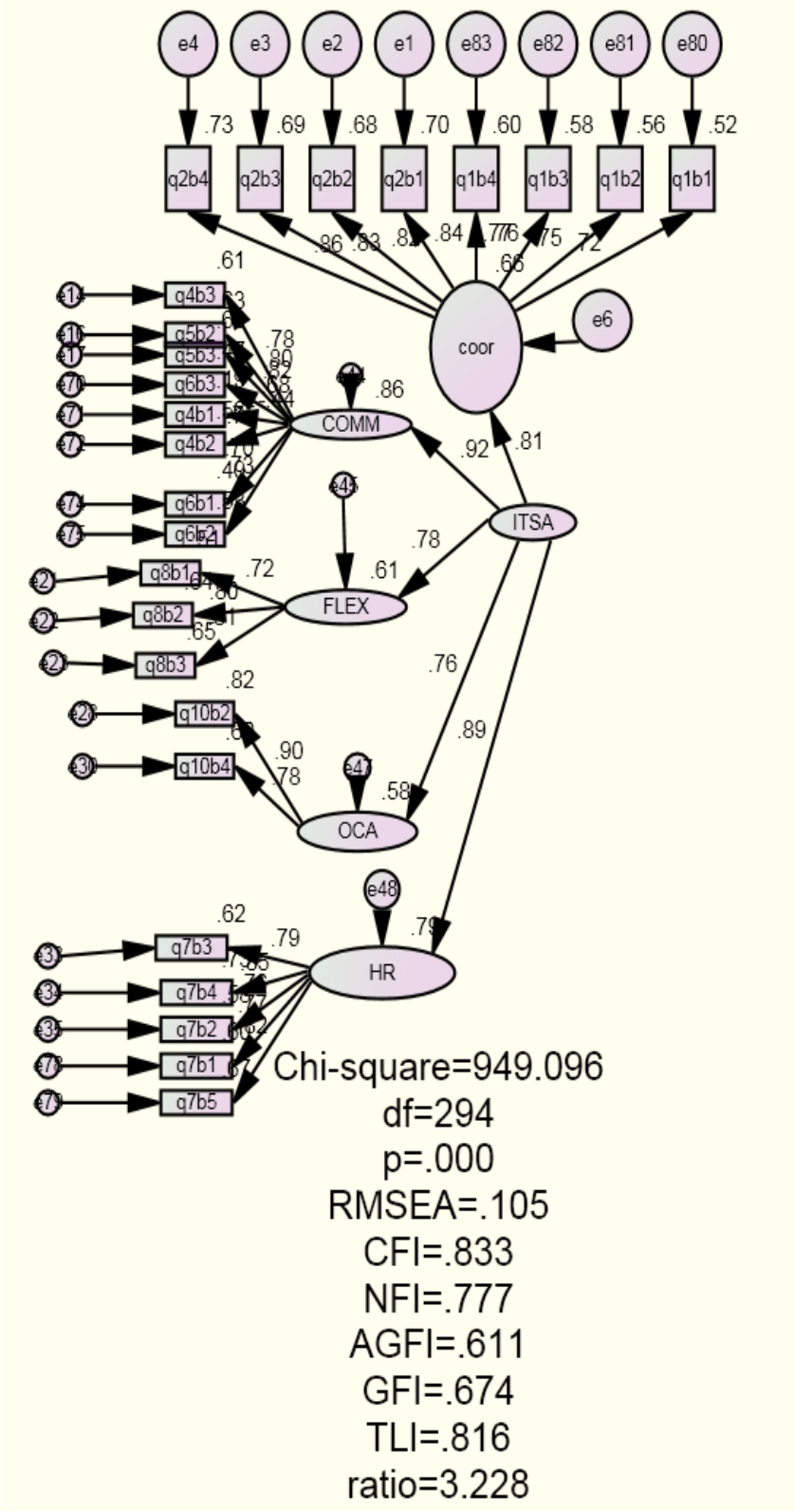
Variables		Path	Estimate
COMM	<---	ITSA	.932
FLEX	<---	ITSA	.780
OCA	<---	ITSA	.766
HR	<---	ITSA	.887
coor	<---	ITSA	.815
q5b3	<---	COMM	.816
q5b2	<---	COMM	.796
q4b3	<---	COMM	.781
q8b3	<---	FLEX	.806
q8b2	<---	FLEX	.801
q8b1	<---	FLEX	.716
q10b4	<---	OCA	.776
q10b2	<---	OCA	.903
q7b2	<---	HR	.760
q7b4	<---	HR	.855
q7b3	<---	HR	.788
q2b4	<---	coor	.856
q2b3	<---	coor	.833
q2b2	<---	coor	.824
q2b1	<---	coor	.836
q6b3	<---	COMM	.675
q4b1	<---	COMM	-.448
q4b2	<---	COMM	.749
q5b1	<---	COMM	-.441
q6b1	<---	COMM	.688
q6b2	<---	COMM	.717
q1b4	<---	coor	.773
q1b3	<---	coor	.759
q1b2	<---	coor	.750
q1b1	<---	coor	.717
q7b1	<---	HR	.770
q7b5	<---	HR	.818

Variances: (CFA3)

	Estimate	S.E.	C.R.	P
ITSA	1.000			
e44	.100	.031	3.205	.001
e45	.278	.056	4.943	***
e47	.444	.086	5.166	***
e48	.149	.035	4.207	***
e6	.316	.053	6.007	***
e17	.431	.051	8.446	***
e16	.435	.050	8.649	***
e14	.499	.057	8.786	***
e23	.382	.057	6.690	***
e22	.382	.056	6.791	***
e21	.416	.051	8.164	***
e30	.709	.102	6.943	***
e28	.268	.086	3.137	.002
e35	.513	.058	8.813	***
e34	.322	.042	7.591	***
e33	.436	.051	8.565	***
e4	.344	.041	8.296	***
e3	.413	.048	8.593	***
e2	.436	.050	8.695	***
e1	.339	.040	8.565	***
e70	.719	.077	9.366	***
e71	1.014	.103	9.827	***
e72	.468	.052	9.011	***
e73	1.110	.113	9.835	***
e74	.513	.055	9.317	***
e75	.617	.067	9.189	***
e83	.548	.060	9.094	***
e82	.560	.061	9.175	***
e81	.589	.064	9.220	***
e80	.513	.055	9.362	***
e78	.436	.050	8.730	***
e79	.417	.051	8.223	***

Squared Multiple Correlations: (CFA3)

Variables	Estimate
coor	.665
HR	.787
OCA	.587
FLEX	.608
COMM	.868
q7b5	.669
q7b1	.593
q1b1	.514
q1b2	.562
q1b3	.575
q1b4	.597
q6b2	.514
q6b1	.473
q5b1	.195
q4b2	.562
q4b1	.201
q6b3	.455
q2b1	.699
q2b2	.679
q2b3	.695
q2b4	.733
q7b3	.622
q7b4	.731
q7b2	.578
q10b2	.815
q10b4	.603
q8b1	.513
q8b2	.642
q8b3	.649
q4b3	.610
q5b2	.634
q5b3	.665



Measurement model (CFA4)

Regression Weights: (CFA4)

Variables		Path	Estimate	S.E.	C.R.	P
COMM	<---	ITSA	.803	.067	12.043	***
FLEX	<---	ITSA	.656	.067	9.820	***
OCA	<---	ITSA	.791	.090	8.828	***
HR	<---	ITSA	.746	.068	10.981	***
coor	<---	ITSA	.791	.069	11.485	***
q5b3	<---	COMM	1.065	.083	12.894	***
q5b2	<---	COMM	1.000			
q4b3	<---	COMM	1.014	.084	12.141	***
q8b3	<---	FLEX	1.000			
q8b2	<---	FLEX	.984	.087	11.259	***
q8b1	<---	FLEX	.788	.078	10.102	***
q10b4	<---	OCA	1.000			
q10b2	<---	OCA	1.052	.097	10.877	***
q7b2	<---	HR	1.000			
q7b4	<---	HR	1.115	.088	12.724	***
q7b3	<---	HR	1.010	.087	11.622	***
q2b4	<---	coor	1.000			
q2b3	<---	coor	.998	.066	15.104	***
q2b2	<---	coor	.989	.067	14.811	***
q2b1	<---	coor	.912	.060	15.183	***
q6b3	<---	COMM	.903	.088	10.279	***
q4b1	<---	COMM	-.566	.092	-6.185	***
q4b2	<---	COMM	.890	.077	11.517	***
q6b1	<---	COMM	.792	.075	10.557	***
q6b2	<---	COMM	.944	.085	11.119	***
q1b4	<---	coor	.930	.070	13.378	***
q1b3	<---	coor	.899	.069	12.996	***
q1b2	<---	coor	.897	.070	12.764	***
q1b1	<---	coor	.761	.064	11.947	***
q7b1	<---	HR	.952	.084	11.315	***
q7b5	<---	HR	1.092	.090	12.089	***

Standardized Regression Weights: (CFA4)

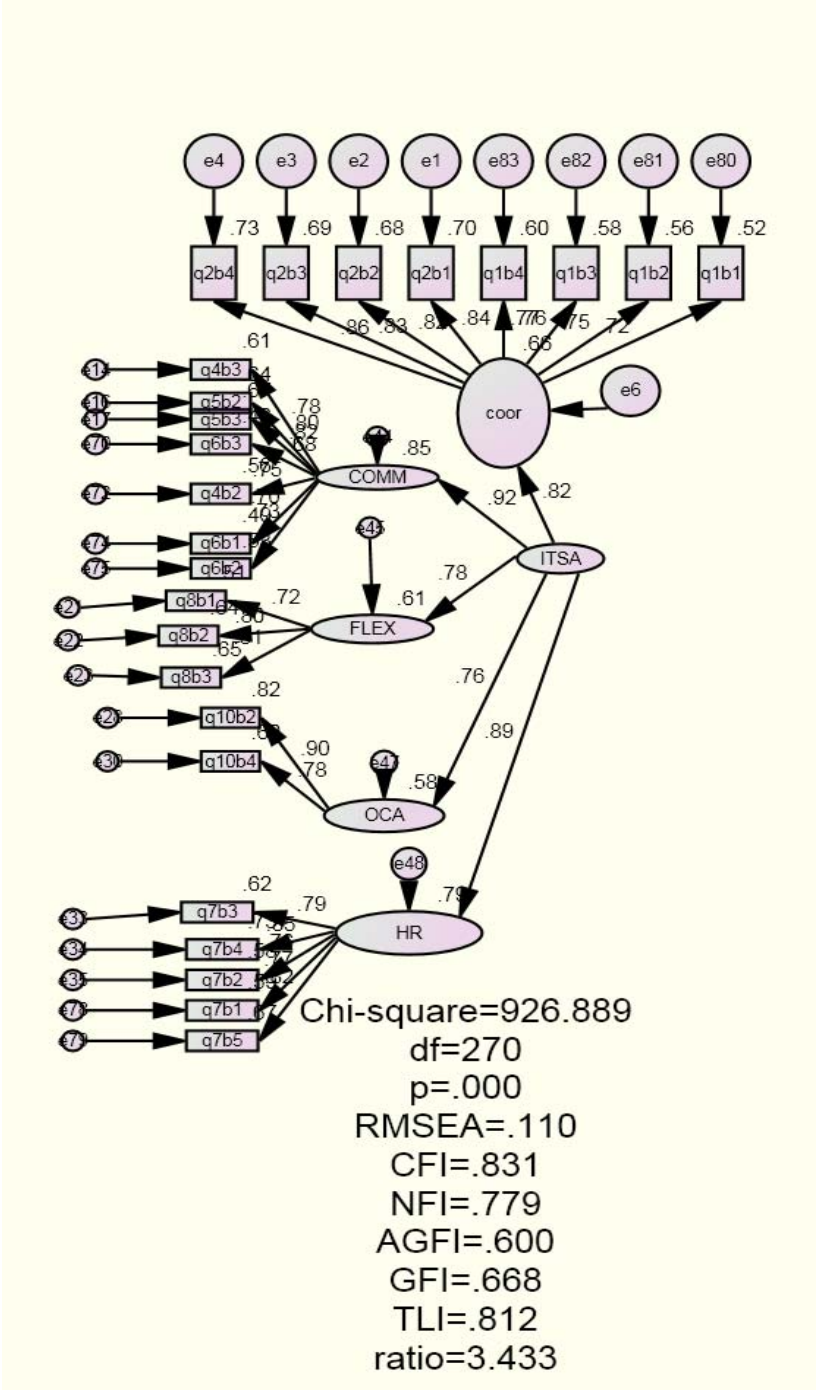
Variables	Path		Estimate
COMM	<---	ITSA	.925
FLEX	<---	ITSA	.780
OCA	<---	ITSA	.763
HR	<---	ITSA	.889
coor	<---	ITSA	.815
q5b3	<---	COMM	.815
q5b2	<---	COMM	.795
q4b3	<---	COMM	.779
q8b3	<---	FLEX	.805
q8b2	<---	FLEX	.801
q8b1	<---	FLEX	.717
q10b4	<---	OCA	.775
q10b2	<---	OCA	.904
q7b2	<---	HR	.761
q7b4	<---	HR	.854
q7b3	<---	HR	.790
q2b4	<---	coor	.855
q2b3	<---	coor	.833
q2b2	<---	coor	.823
q2b1	<---	coor	.835
q6b3	<---	COMM	.682
q4b1	<---	COMM	-.436
q4b2	<---	COMM	.747
q6b1	<---	COMM	.697
q6b2	<---	COMM	.727
q1b4	<---	coor	.774
q1b3	<---	coor	.759
q1b2	<---	coor	.751
q1b1	<---	coor	.718
q7b1	<---	HR	.772
q7b5	<---	HR	.817

Variances: (CFA4)

	Estimate	S.E.	C.R.	P
ITSA	1.000			
e44	.109	.032	3.385	***
e45	.277	.056	4.926	***
e47	.448	.087	5.173	***
e48	.148	.036	4.154	***
e6	.316	.053	5.983	***
e17	.431	.051	8.408	***
e16	.437	.051	8.622	***
e14	.503	.057	8.772	***
e23	.383	.057	6.697	***
e22	.382	.056	6.790	***
e21	.415	.051	8.152	***
e30	.711	.103	6.929	***
e28	.266	.086	3.084	.002
e35	.512	.058	8.804	***
e34	.325	.043	7.612	***
e33	.434	.051	8.551	***
e4	.346	.042	8.303	***
e3	.414	.048	8.596	***
e2	.437	.050	8.698	***
e1	.339	.040	8.567	***
e70	.706	.076	9.321	***
e71	1.028	.105	9.836	***
e72	.472	.052	8.998	***
e74	.500	.054	9.259	***
e75	.600	.066	9.117	***
e83	.546	.060	9.087	***
e82	.559	.061	9.169	***
e81	.587	.064	9.215	***
e80	.512	.055	9.357	***
e78	.434	.050	8.719	***
e79	.419	.051	8.234	***

Squared Multiple Correlations: (CFA4)

Variables	Estimate
coor	.664
HR	.790
OCA	.583
FLEX	.609
COMM	.856
q7b5	.667
q7b1	.595
q1b1	.516
q1b2	.563
q1b3	.577
q1b4	.599
q6b2	.528
q6b1	.486
q4b2	.558
q4b1	.190
q6b3	.465
q2b1	.698
q2b2	.678
q2b3	.694
q2b4	.732
q7b3	.624
q7b4	.729
q7b2	.579
q10b2	.817
q10b4	.601
q8b1	.514
q8b2	.642
q8b3	.649
q4b3	.606
q5b2	.633
q5b3	.665



Measurement model (CFA5)

Regression Weights: (CFA5)

Variables		Path	Estimate	S.E.	C.R.	P
COMM	<---	ITSA	.802	.067	12.024	***
FLEX	<---	ITSA	.656	.067	9.809	***
OCA	<---	ITSA	.792	.090	8.844	***
HR	<---	ITSA	.745	.068	10.969	***
coor	<---	ITSA	.791	.069	11.486	***
q5b3	<---	COMM	1.065	.082	12.964	***
q5b2	<---	COMM	1.000			
q4b3	<---	COMM	1.013	.083	12.184	***
q8b3	<---	FLEX	1.000			
q8b2	<---	FLEX	.983	.087	11.251	***
q8b1	<---	FLEX	.788	.078	10.102	***
q10b4	<---	OCA	1.000			
q10b2	<---	OCA	1.050	.096	10.884	***
q7b2	<---	HR	1.000			
q7b4	<---	HR	1.114	.088	12.714	***
q7b3	<---	HR	1.010	.087	11.622	***
q2b4	<---	coor	1.000			
q2b3	<---	coor	.998	.066	15.100	***
q2b2	<---	coor	.989	.067	14.813	***
q2b1	<---	coor	.913	.060	15.180	***
q6b3	<---	COMM	.898	.088	10.257	***
q4b2	<---	COMM	.890	.077	11.572	***
q6b1	<---	COMM	.791	.075	10.583	***
q6b2	<---	COMM	.940	.085	11.116	***
q1b4	<---	coor	.930	.070	13.377	***
q1b3	<---	coor	.899	.069	12.999	***
q1b2	<---	coor	.897	.070	12.761	***
q1b1	<---	coor	.761	.064	11.945	***
q7b1	<---	HR	.952	.084	11.308	***
q7b5	<---	HR	1.093	.090	12.095	***

Standardized Regression Weights: (CFA5)

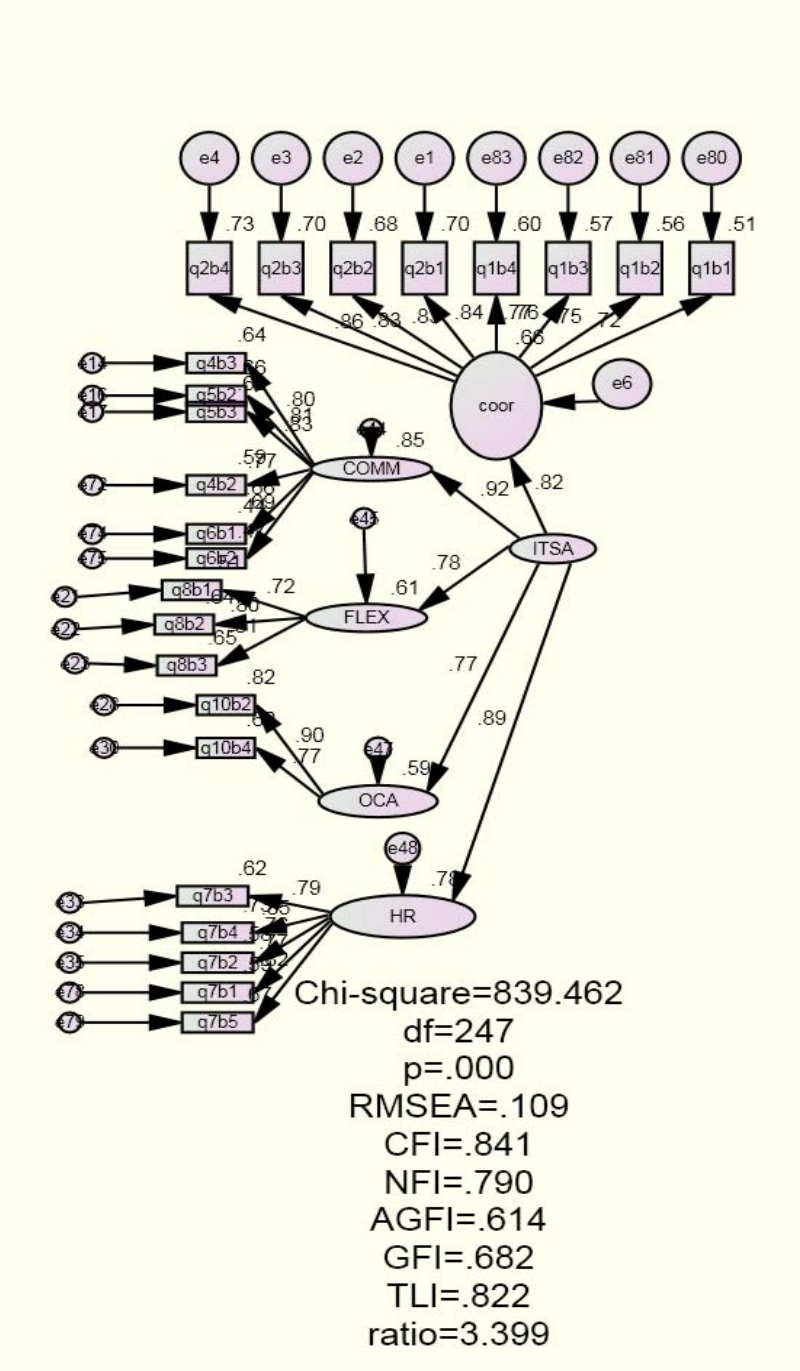
			Estimate
COMM	<---	ITSA	.921
FLEX	<---	ITSA	.780
OCA	<---	ITSA	.764
HR	<---	ITSA	.889
coor	<---	ITSA	.815
q5b3	<---	COMM	.817
q5b2	<---	COMM	.798
q4b3	<---	COMM	.779
q8b3	<---	FLEX	.806
q8b2	<---	FLEX	.801
q8b1	<---	FLEX	.717
q10b4	<---	OCA	.776
q10b2	<---	OCA	.903
q7b2	<---	HR	.761
q7b4	<---	HR	.854
q7b3	<---	HR	.790
q2b4	<---	coor	.855
q2b3	<---	coor	.833
q2b2	<---	coor	.824
q2b1	<---	coor	.835
q6b3	<---	COMM	.680
q4b2	<---	COMM	.749
q6b1	<---	COMM	.698
q6b2	<---	COMM	.726
q1b4	<---	coor	.774
q1b3	<---	coor	.760
q1b2	<---	coor	.751
q1b1	<---	coor	.718
q7b1	<---	HR	.771
q7b5	<---	HR	.817

Variances: (CFA5)

	Estimate	S.E.	C.R.	P
ITSA	1.000			
e44	.115	.033	3.473	***
e45	.278	.056	4.924	***
e47	.447	.087	5.160	***
e48	.148	.036	4.148	***
e6	.316	.053	5.962	***
e17	.428	.051	8.351	***
e16	.433	.051	8.568	***
e14	.502	.057	8.738	***
e23	.383	.057	6.687	***
e22	.383	.056	6.791	***
e21	.415	.051	8.148	***
e30	.709	.103	6.916	***
e28	.268	.086	3.111	.002
e35	.512	.058	8.801	***
e34	.326	.043	7.614	***
e33	.433	.051	8.546	***
e4	.346	.042	8.304	***
e3	.415	.048	8.597	***
e2	.437	.050	8.696	***
e1	.339	.040	8.567	***
e70	.710	.076	9.314	***
e72	.469	.052	8.965	***
e74	.500	.054	9.241	***
e75	.602	.066	9.104	***
e83	.546	.060	9.087	***
e82	.558	.061	9.168	***
e81	.587	.064	9.215	***
e80	.512	.055	9.357	***
e78	.434	.050	8.718	***
e79	.418	.051	8.222	***

Squared Multiple Correlations: (CFA5)

	Estimate
coor	.665
HR	.789
OCA	.584
FLEX	.608
COMM	.849
q7b5	.668
q7b1	.595
q1b1	.516
q1b2	.563
q1b3	.577
q1b4	.599
q6b2	.527
q6b1	.487
q4b2	.561
q6b3	.462
q2b1	.698
q2b2	.678
q2b3	.694
q2b4	.732
q7b3	.624
q7b4	.729
q7b2	.579
q10b2	.816
q10b4	.602
q8b1	.515
q8b2	.642
q8b3	.649
q4b3	.608
q5b2	.636
q5b3	.668



Measurement model (CFA6)

Regression Weights: (CFA6)

Variables		Path	Estimate	S.E.	C.R.	P
COMM	<---	ITSA	.815	.067	12.229	***
FLEX	<---	ITSA	.660	.067	9.860	***
OCA	<---	ITSA	.794	.090	8.854	***
HR	<---	ITSA	.741	.068	10.903	***
coor	<---	ITSA	.793	.069	11.500	***
q5b3	<---	COMM	1.060	.079	13.365	***
q5b2	<---	COMM	1.000			
q4b3	<---	COMM	1.022	.080	12.775	***
q8b3	<---	FLEX	1.000			
q8b2	<---	FLEX	.978	.087	11.271	***
q8b1	<---	FLEX	.783	.077	10.105	***
q10b4	<---	OCA	1.000			
q10b2	<---	OCA	1.054	.097	10.903	***
q7b2	<---	HR	1.000			
q7b4	<---	HR	1.117	.088	12.684	***
q7b3	<---	HR	1.012	.087	11.584	***
q2b4	<---	coor	1.000			
q2b3	<---	coor	.998	.066	15.181	***
q2b2	<---	coor	.989	.066	14.913	***
q2b1	<---	coor	.912	.060	15.255	***
q4b2	<---	COMM	.896	.074	12.058	***
q6b1	<---	COMM	.739	.074	10.007	***
q6b2	<---	COMM	.877	.084	10.487	***
q1b4	<---	coor	.926	.069	13.362	***
q1b3	<---	coor	.895	.069	12.962	***
q1b2	<---	coor	.893	.070	12.744	***
q1b1	<---	coor	.757	.064	11.909	***
q7b1	<---	HR	.951	.085	11.251	***
q7b5	<---	HR	1.098	.091	12.092	***

Standardized Regression Weights: (CFA6)

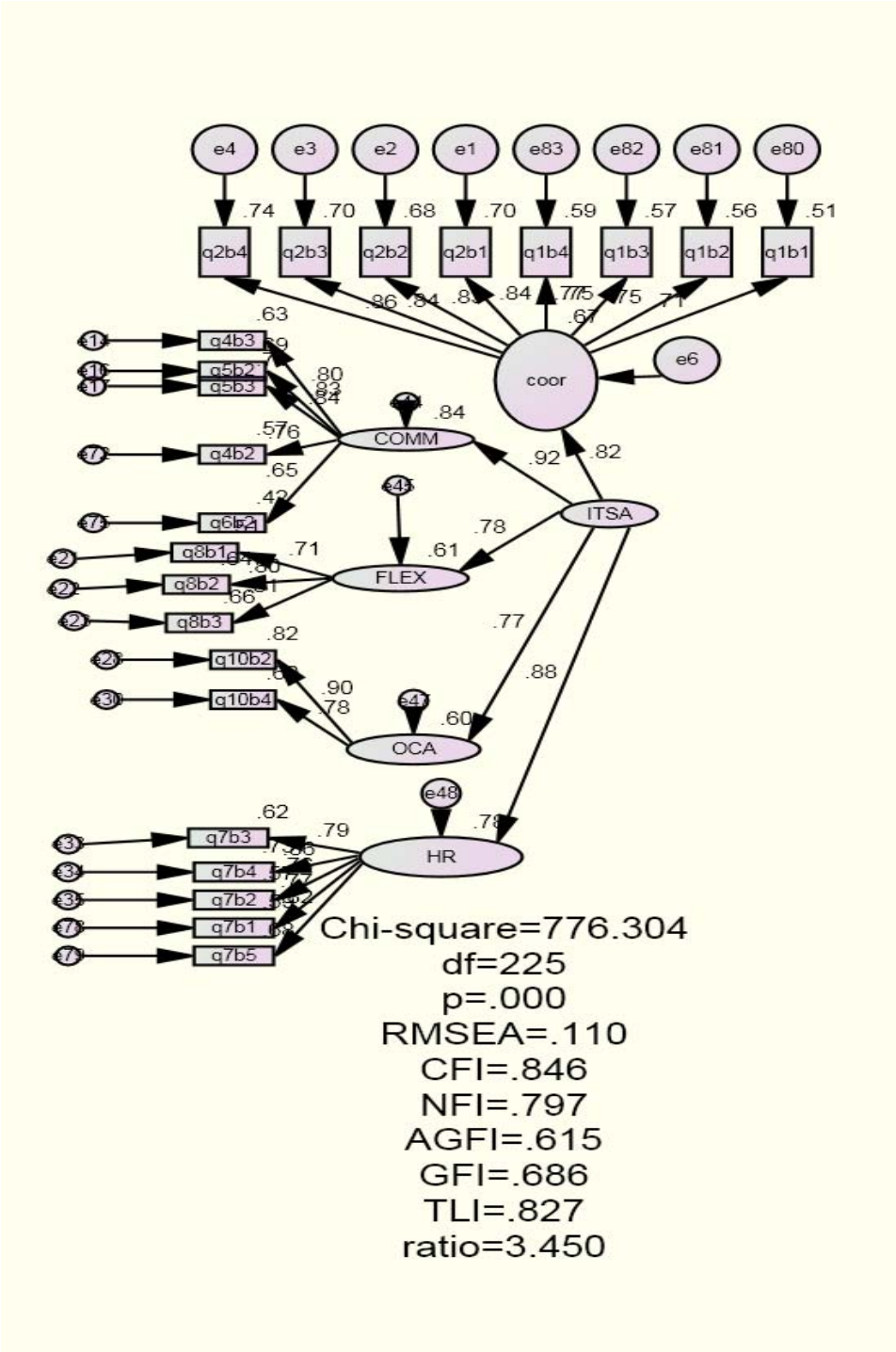
Variables		Path	Estimate
COMM	<---	ITSA	.922
FLEX	<---	ITSA	.781
OCA	<---	ITSA	.767
HR	<---	ITSA	.885
coor	<---	ITSA	.815
q5b3	<---	COMM	.825
q5b2	<---	COMM	.810
q4b3	<---	COMM	.799
q8b3	<---	FLEX	.809
q8b2	<---	FLEX	.799
q8b1	<---	FLEX	.716
q10b4	<---	OCA	.775
q10b2	<---	OCA	.905
q7b2	<---	HR	.760
q7b4	<---	HR	.854
q7b3	<---	HR	.789
q2b4	<---	coor	.857
q2b3	<---	coor	.834
q2b2	<---	coor	.825
q2b1	<---	coor	.836
q4b2	<---	COMM	.765
q6b1	<---	COMM	.661
q6b2	<---	COMM	.687
q1b4	<---	coor	.772
q1b3	<---	coor	.757
q1b2	<---	coor	.749
q1b1	<---	coor	.716
q7b1	<---	HR	.770
q7b5	<---	HR	.819

Variances: (CFA6)

	Estimate	S.E.	C.R.	P
ITSA	1.000			
e44	.117	.034	3.402	***
e45	.278	.057	4.920	***
e47	.441	.086	5.142	***
e48	.152	.036	4.194	***
e6	.317	.053	5.964	***
e17	.410	.050	8.141	***
e16	.410	.049	8.352	***
e14	.463	.055	8.477	***
e23	.378	.057	6.622	***
e22	.385	.056	6.835	***
e21	.417	.051	8.172	***
e30	.714	.102	6.969	***
e28	.263	.086	3.065	.002
e35	.514	.058	8.807	***
e34	.324	.043	7.590	***
e33	.434	.051	8.544	***
e4	.342	.041	8.285	***
e3	.412	.048	8.586	***
e2	.433	.050	8.680	***
e1	.338	.039	8.559	***
e72	.443	.050	8.787	***
e74	.547	.059	9.348	***
e75	.671	.073	9.246	***
e83	.550	.060	9.099	***
e82	.563	.061	9.183	***
e81	.590	.064	9.225	***
e80	.516	.055	9.368	***
e78	.437	.050	8.726	***
e79	.414	.051	8.189	***

Squared Multiple Correlations: (CFA6)

Variables	Estimate
coor	.665
HR	.784
OCA	.588
FLEX	.610
COMM	.850
q7b5	.671
q7b1	.592
q1b1	.512
q1b2	.561
q1b3	.573
q1b4	.596
q6b2	.472
q6b1	.437
q4b2	.585
q2b1	.700
q2b2	.681
q2b3	.696
q2b4	.734
q7b3	.623
q7b4	.730
q7b2	.577
q10b2	.819
q10b4	.600
q8b1	.512
q8b2	.639
q8b3	.654
q4b3	.638
q5b2	.655
q5b3	.681



Measurement model (CFA7)

Regression Weights: (CFA7)

variable		Path	Estimate	S.E.	C.R.	P
COMM	<---	ITSA	.829	.066	12.466	***
FLEX	<---	ITSA	.659	.067	9.839	***
OCA	<---	ITSA	.800	.090	8.932	***
HR	<---	ITSA	.736	.068	10.823	***
coor	<---	ITSA	.795	.069	11.517	***
q5b3	<---	COMM	1.055	.074	14.174	***
q5b2	<---	COMM	1.000			
q4b3	<---	COMM	.995	.076	13.090	***
q8b3	<---	FLEX	1.000			
q8b2	<---	FLEX	.976	.087	11.267	***
q8b1	<---	FLEX	.781	.077	10.089	***
q10b4	<---	OCA	1.000			
q10b2	<---	OCA	1.052	.096	10.968	***
q7b2	<---	HR	1.000			
q7b4	<---	HR	1.122	.089	12.656	***
q7b3	<---	HR	1.013	.088	11.532	***
q2b4	<---	coor	1.000			
q2b3	<---	coor	.998	.065	15.276	***
q2b2	<---	coor	.990	.066	15.019	***
q2b1	<---	coor	.911	.059	15.332	***
q4b2	<---	COMM	.865	.071	12.188	***
q6b2	<---	COMM	.811	.081	9.969	***
q1b4	<---	coor	.922	.069	13.343	***
q1b3	<---	coor	.890	.069	12.925	***
q1b2	<---	coor	.889	.070	12.725	***
q1b1	<---	coor	.753	.063	11.876	***
q7b1	<---	HR	.950	.085	11.174	***
q7b5	<---	HR	1.104	.091	12.088	***

Standardized Regression Weights: (CFA7)

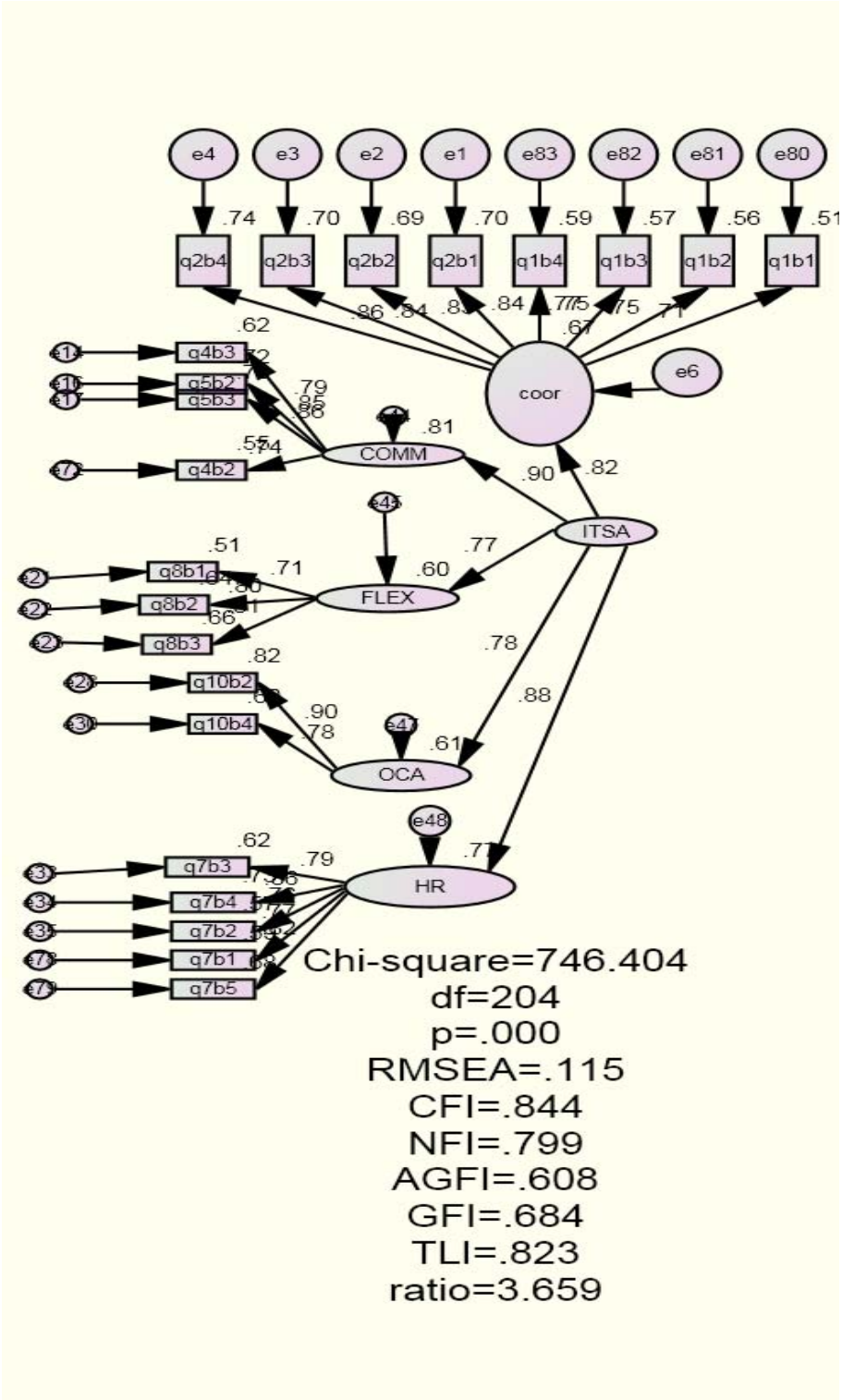
Variable		Path	Estimate
COMM	<---	ITSA	.916
FLEX	<---	ITSA	.780
OCA	<---	ITSA	.773
HR	<---	ITSA	.882
coor	<---	ITSA	.816
q5b3	<---	COMM	.842
q5b2	<---	COMM	.829
q4b3	<---	COMM	.797
q8b3	<---	FLEX	.810
q8b2	<---	FLEX	.799
q8b1	<---	FLEX	.714
q10b4	<---	OCA	.775
q10b2	<---	OCA	.904
q7b2	<---	HR	.758
q7b4	<---	HR	.856
q7b3	<---	HR	.788
q2b4	<---	coor	.858
q2b3	<---	coor	.835
q2b2	<---	coor	.827
q2b1	<---	coor	.837
q4b2	<---	COMM	.758
q6b2	<---	COMM	.651
q1b4	<---	coor	.770
q1b3	<---	coor	.755
q1b2	<---	coor	.747
q1b1	<---	coor	.713
q7b1	<---	HR	.767
q7b5	<---	HR	.822

Variances: (CFA7)

	Estimate	S.E.	C.R.	P
ITSA	1.000			
e44	.133	.037	3.555	***
e45	.280	.057	4.920	***
e47	.432	.085	5.088	***
e48	.156	.037	4.223	***
e6	.317	.053	5.939	***
e17	.375	.048	7.757	***
e16	.371	.047	7.968	***
e14	.467	.055	8.410	***
e23	.376	.057	6.590	***
e22	.386	.056	6.827	***
e21	.418	.051	8.179	***
e30	.712	.102	6.987	***
e28	.266	.085	3.121	.002
e35	.517	.059	8.813	***
e34	.322	.043	7.548	***
e33	.436	.051	8.544	***
e4	.339	.041	8.264	***
e3	.409	.048	8.573	***
e2	.428	.049	8.663	***
e1	.336	.039	8.553	***
e72	.455	.052	8.780	***
e75	.732	.078	9.350	***
e83	.554	.061	9.112	***
e82	.568	.062	9.198	***
e81	.594	.064	9.235	***
e80	.519	.055	9.378	***
e78	.441	.050	8.740	***
e79	.409	.050	8.145	***

Squared Multiple Correlations: (CFA7)

Variables	Estimate
coor	.666
HR	.777
OCA	.597
FLEX	.608
COMM	.838
q7b5	.675
q7b1	.588
q1b1	.509
q1b2	.558
q1b3	.569
q1b4	.593
q6b2	.424
q4b2	.574
q2b1	.701
q2b2	.684
q2b3	.698
q2b4	.737
q7b3	.622
q7b4	.732
q7b2	.574
q10b2	.817
q10b4	.601
q8b1	.510
q8b2	.639
q8b3	.655
q4b3	.635
q5b2	.688
q5b3	.708



Measurement model (CFA8)

Regression Weights: (CFA8)

Variables		Path	Estimate	S.E.	C.R.	P
COMM	<---	ITSA	.833	.067	12.511	***
FLEX	<---	ITSA	.656	.067	9.753	***
OCA	<---	ITSA	.807	.090	8.997	***
HR	<---	ITSA	.733	.068	10.755	***
coor	<---	ITSA	.799	.069	11.563	***
q5b3	<---	COMM	1.048	.070	14.938	***
q5b2	<---	COMM	1.000			
q4b3	<---	COMM	.961	.073	13.156	***
q8b3	<---	FLEX	1.000			
q8b2	<---	FLEX	.975	.087	11.232	***
q8b1	<---	FLEX	.780	.077	10.069	***
q10b4	<---	OCA	1.000			
q10b2	<---	OCA	1.051	.095	11.017	***
q7b2	<---	HR	1.000			
q7b4	<---	HR	1.124	.089	12.651	***
q7b3	<---	HR	1.013	.088	11.503	***
q2b4	<---	coor	1.000			
q2b3	<---	coor	.998	.065	15.346	***
q2b2	<---	coor	.990	.066	15.101	***
q2b1	<---	coor	.911	.059	15.395	***
q4b2	<---	COMM	.830	.069	12.100	***
q1b4	<---	coor	.919	.069	13.321	***
q1b3	<---	coor	.886	.069	12.889	***
q1b2	<---	coor	.886	.070	12.706	***
q1b1	<---	coor	.750	.063	11.845	***
q7b1	<---	HR	.949	.085	11.133	***
q7b5	<---	HR	1.106	.091	12.090	***

Standardized Regression Weights: (CFA8)

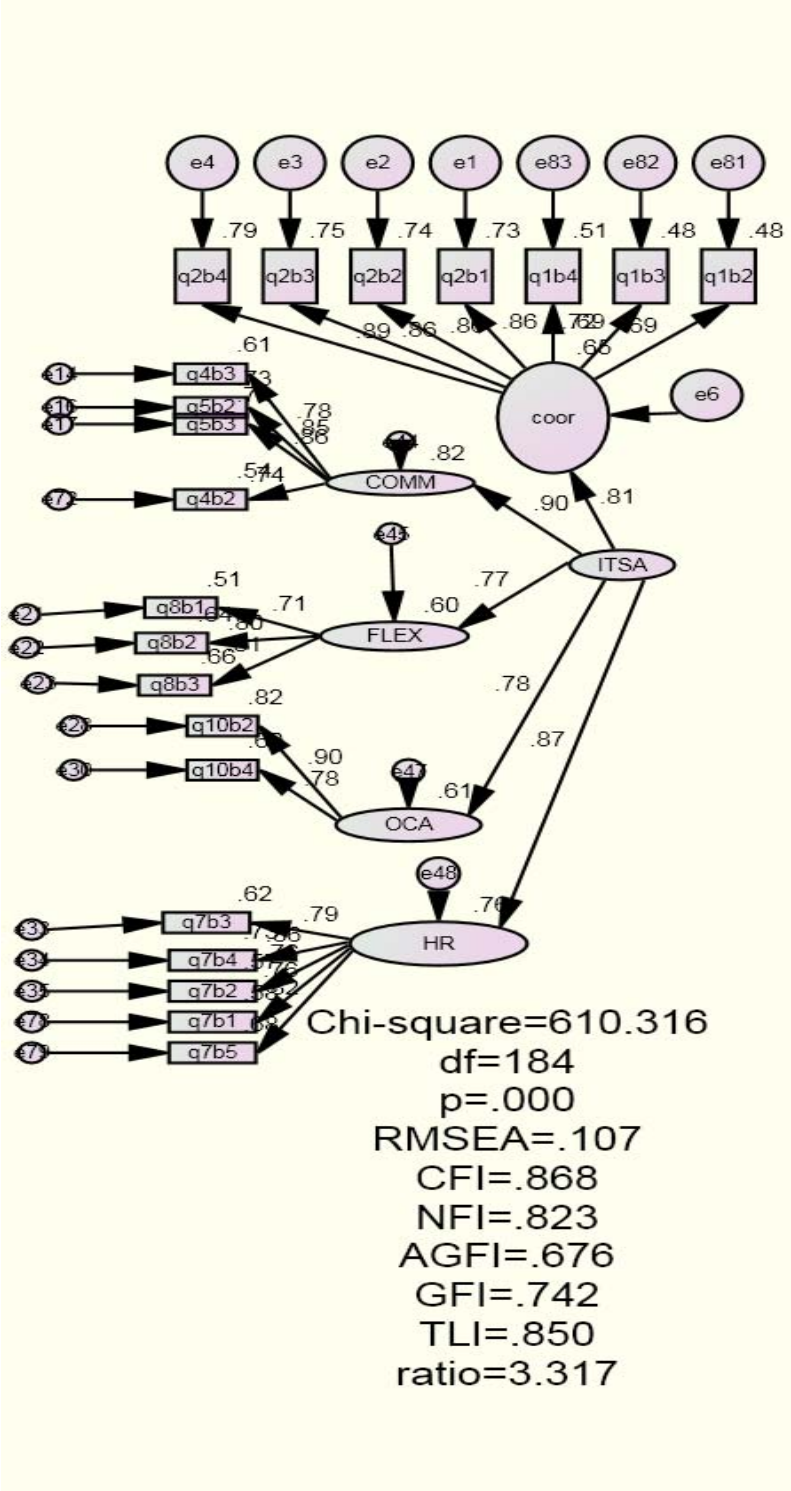
Variables		Path	Estimate
COMM	<---	ITSA	.900
FLEX	<---	ITSA	.775
OCA	<---	ITSA	.779
HR	<---	ITSA	.878
coor	<---	ITSA	.819
q5b3	<---	COMM	.856
q5b2	<---	COMM	.849
q4b3	<---	COMM	.787
q8b3	<---	FLEX	.810
q8b2	<---	FLEX	.799
q8b1	<---	FLEX	.714
q10b4	<---	OCA	.776
q10b2	<---	OCA	.904
q7b2	<---	HR	.757
q7b4	<---	HR	.856
q7b3	<---	HR	.788
q2b4	<---	coor	.859
q2b3	<---	coor	.837
q2b2	<---	coor	.829
q2b1	<---	coor	.838
q4b2	<---	COMM	.743
q1b4	<---	coor	.769
q1b3	<---	coor	.752
q1b2	<---	coor	.746
q1b1	<---	coor	.711
q7b1	<---	HR	.765
q7b5	<---	HR	.823

Variances: (CFA8)

	Estimate	S.E.	C.R.	P
ITSA	1.000			
e44	.163	.042	3.919	***
e45	.287	.058	4.941	***
e47	.423	.084	5.022	***
e48	.160	.038	4.236	***
e6	.313	.053	5.858	***
e17	.344	.047	7.302	***
e16	.333	.045	7.466	***
e14	.487	.058	8.425	***
e23	.375	.057	6.539	***
e22	.387	.057	6.810	***
e21	.419	.051	8.167	***
e30	.711	.101	7.004	***
e28	.267	.085	3.159	.002
e35	.518	.059	8.807	***
e34	.320	.043	7.508	***
e33	.437	.051	8.540	***
e4	.336	.041	8.251	***
e3	.406	.047	8.563	***
e2	.425	.049	8.649	***
e1	.334	.039	8.545	***
e72	.478	.054	8.819	***
e83	.557	.061	9.124	***
e82	.573	.062	9.210	***
e81	.597	.065	9.244	***
e80	.522	.056	9.386	***
e78	.444	.051	8.743	***
e79	.407	.050	8.113	***

Squared Multiple Correlations: (CFA8)

Variables	Estimate
coor	.671
HR	.771
OCA	.606
FLEX	.600
COMM	.810
q7b5	.677
q7b1	.586
q1b1	.506
q1b2	.556
q1b3	.566
q1b4	.591
q4b2	.552
q2b1	.702
q2b2	.687
q2b3	.700
q2b4	.739
q7b3	.620
q7b4	.734
q7b2	.574
q10b2	.816
q10b4	.602
q8b1	.510
q8b2	.638
q8b3	.657
q4b3	.619
q5b2	.720
q5b3	.732



Measurement model (CFA9)

Regression Weights: (CFA9)

Variable		Path	Estimate	S.E.	C.R.	P
COMM	<---	ITSA	.841	.067	12.643	***
FLEX	<---	ITSA	.653	.067	9.710	***
OCA	<---	ITSA	.809	.090	9.018	***
HR	<---	ITSA	.728	.068	10.672	***
coor	<---	ITSA	.814	.070	11.705	***
q5b3	<---	COMM	1.048	.069	15.206	***
q5b2	<---	COMM	1.000			
q4b3	<---	COMM	.950	.072	13.130	***
q8b3	<---	FLEX	1.000			
q8b2	<---	FLEX	.976	.087	11.230	***
q8b1	<---	FLEX	.779	.078	10.042	***
q10b4	<---	OCA	1.000			
q10b2	<---	OCA	1.050	.095	11.033	***
q7b2	<---	HR	1.000			
q7b4	<---	HR	1.126	.089	12.618	***
q7b3	<---	HR	1.014	.088	11.469	***
q2b4	<---	coor	1.000			
q2b3	<---	coor	.995	.057	17.376	***
q2b2	<---	coor	.994	.057	17.304	***
q2b1	<---	coor	.898	.053	17.036	***
q4b2	<---	COMM	.819	.068	12.050	***
q1b4	<---	coor	.828	.067	12.409	***
q1b3	<---	coor	.790	.067	11.823	***
q1b2	<---	coor	.794	.068	11.742	***
q7b1	<---	HR	.949	.086	11.084	***
q7b5	<---	HR	1.110	.092	12.078	***

Standardized Regression Weights: (CFA9)

Variable		Path	Estimate
COMM	<---	ITSA	.904
FLEX	<---	ITSA	.772
OCA	<---	ITSA	.780
HR	<---	ITSA	.873
coor	<---	ITSA	.806
q5b3	<---	COMM	.860
q5b2	<---	COMM	.853
q4b3	<---	COMM	.782
q8b3	<---	FLEX	.810
q8b2	<---	FLEX	.800
q8b1	<---	FLEX	.713
q10b4	<---	OCA	.776
q10b2	<---	OCA	.903
q7b2	<---	HR	.756
q7b4	<---	HR	.857
q7b3	<---	HR	.787
q2b4	<---	coor	.890
q2b3	<---	coor	.863
q2b2	<---	coor	.862
q2b1	<---	coor	.855
q4b2	<---	COMM	.738
q1b4	<---	coor	.716
q1b3	<---	coor	.694
q1b2	<---	coor	.691
q7b1	<---	HR	.764
q7b5	<---	HR	.824

Variances: (CFA9)

	Estimate	S.E.	C.R.	P
ITSA	1.000			
e44	.159	.042	3.810	***
e45	.289	.058	4.953	***
e47	.420	.084	5.000	***
e48	.165	.039	4.291	***
e6	.358	.057	6.221	***
e17	.335	.046	7.227	***
e16	.324	.044	7.399	***
e14	.497	.058	8.498	***
e23	.375	.057	6.530	***
e22	.385	.057	6.774	***
e21	.420	.051	8.176	***
e30	.710	.101	7.004	***
e28	.268	.084	3.179	.001
e35	.521	.059	8.811	***
e34	.319	.043	7.483	***
e33	.438	.051	8.534	***
e4	.268	.035	7.675	***
e3	.345	.042	8.219	***
e2	.350	.042	8.248	***
e1	.302	.036	8.348	***
e72	.487	.055	8.873	***
e83	.662	.071	9.382	***
e82	.683	.072	9.457	***
e81	.702	.074	9.467	***
e78	.446	.051	8.747	***
e79	.404	.050	8.082	***

Squared Multiple Correlations: (CFA9)

	Estimate
coor	.649
HR	.762
OCA	.609
FLEX	.596
COMM	.817
q7b5	.679
q7b1	.584
q1b2	.478
q1b3	.482
q1b4	.513
q4b2	.544
q2b1	.731
q2b2	.742
q2b3	.745
q2b4	.792
q7b3	.620
q7b4	.734
q7b2	.571
q10b2	.816
q10b4	.602
q8b1	.508
q8b2	.639
q8b3	.656
q4b3	.611
q5b2	.728
q5b3	.740

Modification Indices (CFA9)

Covariances: (CFA9)

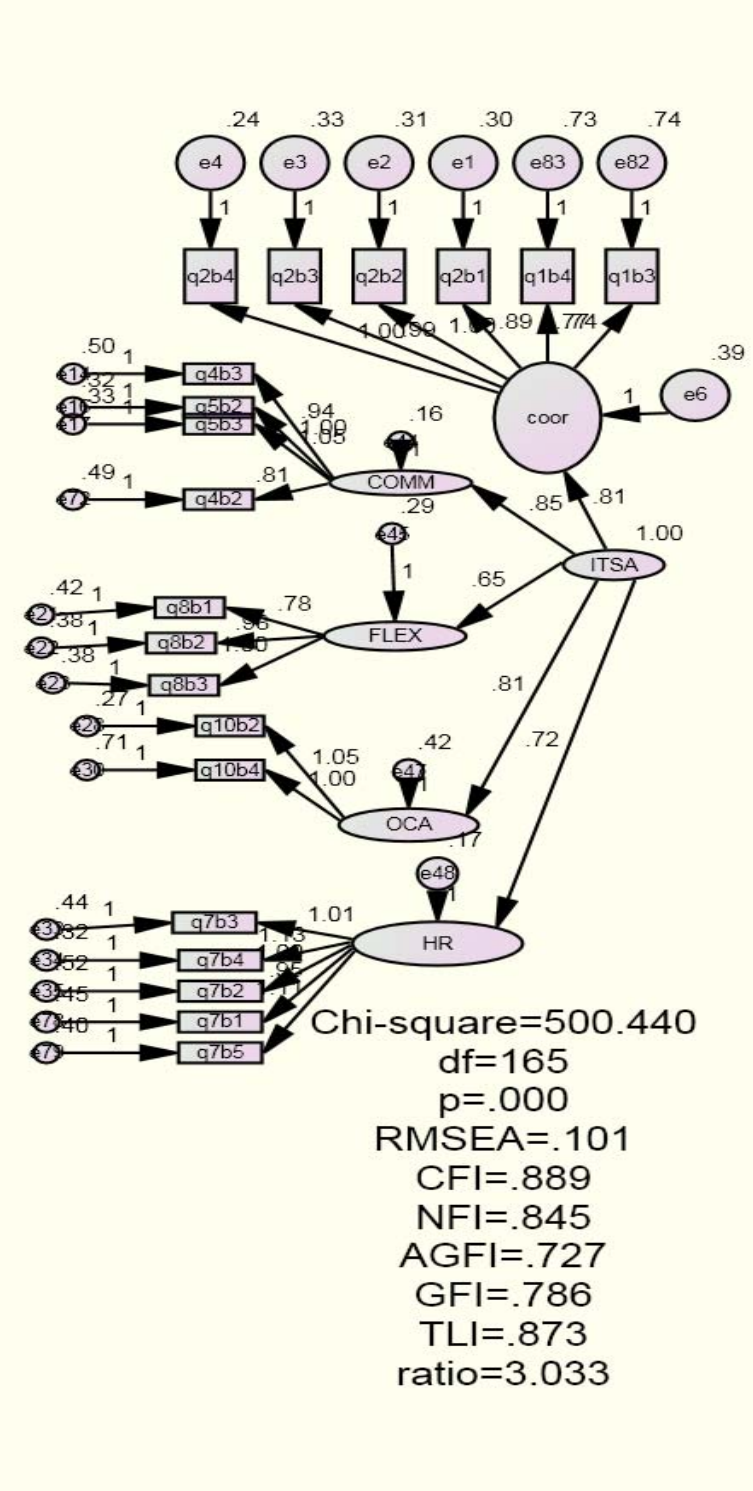
			M.I.	Par Change
e79	<-->	e44	5.474	.070
e81	<-->	e48	6.816	.089
e82	<-->	e48	6.601	.086
e82	<-->	e78	10.920	.141
e82	<-->	e81	39.303	.323
e83	<-->	e81	67.032	.416
e83	<-->	e82	85.481	.464
e72	<-->	e81	4.318	.093
e72	<-->	e82	7.945	.124
e2	<-->	e78	5.295	-.075
e2	<-->	e81	19.887	-.174
e2	<-->	e82	8.501	-.112
e2	<-->	e83	8.905	-.114
e2	<-->	e72	4.562	-.072
e3	<-->	e79	4.964	.071
e3	<-->	e81	4.749	-.085
e3	<-->	e82	8.767	-.113
e3	<-->	e83	17.272	-.157
e3	<-->	e1	5.503	.062
e4	<-->	e81	9.386	-.108
e4	<-->	e82	17.650	-.146
e4	<-->	e83	7.014	-.091
e4	<-->	e2	15.131	.101
e33	<-->	e47	8.169	-.118
e33	<-->	e78	6.041	.087
e34	<-->	e79	14.072	.115
e34	<-->	e78	9.495	-.097
e34	<-->	e33	4.127	-.064
e35	<-->	e79	18.800	-.161
e35	<-->	e78	12.491	.134
e35	<-->	e82	13.603	.169
e35	<-->	e83	5.185	.103
e35	<-->	e3	5.170	-.079
e35	<-->	e4	8.039	-.089
e35	<-->	e33	15.868	.151
e21	<-->	e81	4.748	.093
e14	<-->	e82	8.650	.134
e14	<-->	e83	5.491	.105
e14	<-->	e72	59.676	.302
e14	<-->	e23	4.272	.080
e16	<-->	e82	9.800	-.122
e16	<-->	e83	8.625	-.113

e16	<-->	e72	10.841	-.109
e16	<-->	e3	4.407	.062
e16	<-->	e14	10.895	-.112
e17	<-->	e47	4.596	.083
e17	<-->	e78	7.256	-.090
e17	<-->	e82	8.046	-.113
e17	<-->	e72	23.123	-.163
e17	<-->	e2	4.599	.065
e17	<-->	e14	11.834	-.120
e17	<-->	e16	44.390	.194

Regression Weights: (CFA9)

			M.I.	Par Change
q7b5	<---	q7b2	7.360	-.121
q7b1	<---	q1b3	5.834	.105
q7b1	<---	q7b2	4.843	.100
q1b2	<---	q7b1	6.274	.147
q1b2	<---	q1b3	19.326	.232
q1b2	<---	q1b4	30.771	.289
q1b2	<---	q2b2	4.328	-.108
q1b2	<---	q7b3	5.520	.133
q1b2	<---	q7b2	5.398	.128
q1b2	<---	q8b1	5.619	.156
q1b3	<---	q7b1	11.130	.193
q1b3	<---	q1b2	19.505	.228
q1b3	<---	q1b4	39.242	.322
q1b3	<---	q4b2	4.520	.123
q1b3	<---	q7b2	12.926	.195
q1b3	<---	q4b3	4.192	.108
q1b4	<---	q1b2	33.281	.295
q1b4	<---	q1b3	42.054	.334
q1b4	<---	q7b2	5.237	.123
q4b2	<---	q1b3	4.864	.100
q4b2	<---	q4b3	20.401	.208
q4b2	<---	q5b3	4.707	-.099
q2b1	<---	q7b3	4.271	-.081
q2b2	<---	q1b2	9.946	-.124
q2b2	<---	q1b3	4.213	-.082
q2b2	<---	q1b4	4.125	-.079
q2b3	<---	q1b3	4.346	-.082
q2b3	<---	q1b4	8.002	-.110
q2b4	<---	q1b2	4.715	-.077
q2b4	<---	q1b3	8.786	-.106
q2b4	<---	q7b2	4.621	-.080
q7b3	<---	q7b2	6.171	.113
q7b3	<---	q10b2	4.656	-.090
q7b2	<---	q7b5	5.108	-.109
q7b2	<---	q7b1	4.673	.113
q7b2	<---	q2b3	4.253	-.096
q7b2	<---	q2b4	4.801	-.104
q7b2	<---	q7b3	5.319	.116
q4b3	<---	q1b3	5.423	.108
q4b3	<---	q4b2	24.839	.258
q5b2	<---	q1b3	6.755	-.104
q5b2	<---	q1b4	5.790	-.094
q5b2	<---	q4b2	4.585	-.095
q5b2	<---	q5b3	9.560	.125

q5b3	<---	q7b1	5.209	-.104
q5b3	<---	q1b3	4.758	-.089
q5b3	<---	q4b2	9.807	-.142
q5b3	<---	q4b3	4.177	-.085
q5b3	<---	q5b2	10.214	.138



Measurement model (CFA10)

Regression Weights: (CFA10)

Variable	Path		Estimate	S.E.	C.R.	P
COMM	<---	ITSA	.845	.067	12.712	***
FLEX	<---	ITSA	.653	.067	9.692	***
OCA	<---	ITSA	.813	.090	9.067	***
HR	<---	ITSA	.724	.068	10.612	***
coor	<---	ITSA	.812	.070	11.613	***
q5b3	<---	COMM	1.049	.068	15.348	***
q5b2	<---	COMM	1.000			
q4b3	<---	COMM	.944	.072	13.111	***
q8b3	<---	FLEX	1.000			
q8b2	<---	FLEX	.978	.087	11.232	***
q8b1	<---	FLEX	.778	.078	10.025	***
q10b4	<---	OCA	1.000			
q10b2	<---	OCA	1.046	.095	11.067	***
q7b2	<---	HR	1.000			
q7b4	<---	HR	1.127	.089	12.609	***
q7b3	<---	HR	1.015	.089	11.456	***
q2b4	<---	coor	1.000			
q2b3	<---	coor	.990	.054	18.216	***
q2b2	<---	coor	.999	.054	18.514	***
q2b1	<---	coor	.886	.051	17.484	***
q4b2	<---	COMM	.814	.068	12.017	***
q1b4	<---	coor	.775	.067	11.576	***
q1b3	<---	coor	.742	.067	11.109	***
q7b1	<---	HR	.949	.086	11.064	***
q7b5	<---	HR	1.111	.092	12.073	***

Standardized Regression Weights: (CFA10)

Variable	Path		Estimate
COMM	<---	ITSA	.906
FLEX	<---	ITSA	.772
OCA	<---	ITSA	.783
HR	<---	ITSA	.869
coor	<---	ITSA	.793
q5b3	<---	COMM	.863
q5b2	<---	COMM	.855
q4b3	<---	COMM	.779
q8b3	<---	FLEX	.810
q8b2	<---	FLEX	.801
q8b1	<---	FLEX	.712
q10b4	<---	OCA	.778
q10b2	<---	OCA	.901
q7b2	<---	HR	.756
q7b4	<---	HR	.857
q7b3	<---	HR	.787
q2b4	<---	coor	.902
q2b3	<---	coor	.872
q2b2	<---	coor	.878
q2b1	<---	coor	.855
q4b2	<---	COMM	.735
q1b4	<---	coor	.680
q1b3	<---	coor	.661
q7b1	<---	HR	.763
q7b5	<---	HR	.825

Variances: (CFA10)

	Estimate	S.E.	C.R.	P
ITSA	1.000			
e44	.156	.042	3.725	***
e45	.290	.059	4.949	***
e47	.418	.084	4.971	***
e48	.170	.039	4.339	***
e6	.388	.060	6.431	***
e17	.329	.046	7.181	***
e16	.320	.043	7.367	***
e14	.502	.059	8.534	***
e23	.375	.057	6.534	***
e22	.383	.057	6.749	***
e21	.421	.051	8.183	***
e30	.705	.101	6.983	***
e28	.272	.084	3.248	.001
e35	.522	.059	8.808	***
e34	.318	.043	7.464	***
e33	.438	.051	8.528	***
e4	.240	.033	7.291	***
e3	.325	.040	8.054	***
e2	.312	.039	7.927	***
e1	.301	.036	8.327	***
e72	.492	.055	8.901	***
e83	.732	.077	9.499	***
e82	.742	.078	9.549	***
e78	.447	.051	8.746	***
e79	.403	.050	8.065	***

Squared Multiple Correlations: (CFA10)

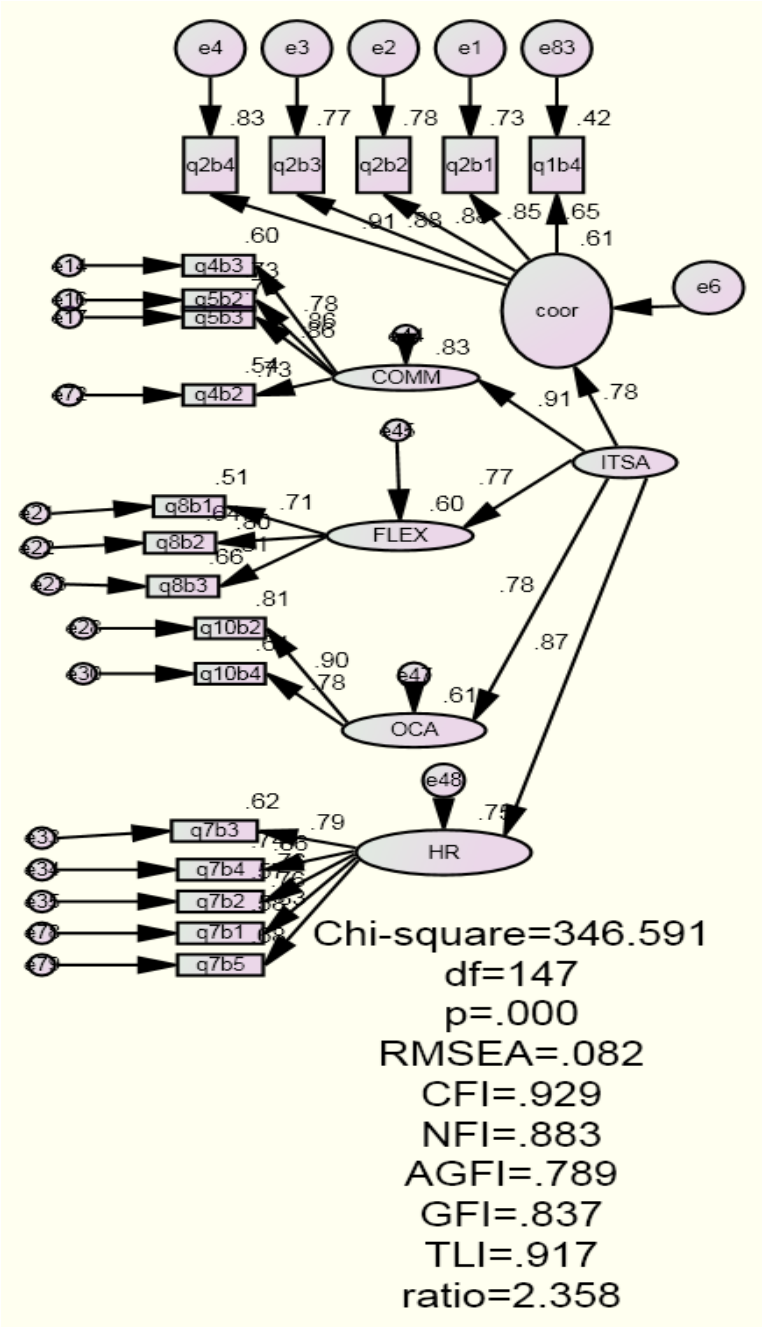
Variable	Estimate
coor	.629
HR	.755
OCA	.613
FLEX	.595
COMM	.821
q7b5	.680
q7b1	.583
q1b3	.438
q1b4	.462
q4b2	.540
q2b1	.732
q2b2	.771
q2b3	.760
q2b4	.814
q7b3	.620
q7b4	.735
q7b2	.571
q10b2	.813
q10b4	.605
q8b1	.507
q8b2	.641
q8b3	.656
q4b3	.607
q5b2	.731
q5b3	.744

Covariances: (CFA 10)

			M.I.	Par Change
e79	<-->	e44	5.359	.069
e82	<-->	e6	4.475	-.096
e82	<-->	e48	8.519	.102
e82	<-->	e78	11.318	.149
e83	<-->	e6	4.546	-.097
e83	<-->	e82	93.124	.526
e72	<-->	e48	4.048	.059
e72	<-->	e82	8.744	.136
e2	<-->	e78	4.689	-.067
e2	<-->	e82	4.874	-.085
e2	<-->	e83	4.400	-.080
e3	<-->	e79	4.371	.065
e3	<-->	e83	8.532	-.113
e4	<-->	e82	10.519	-.113
e4	<-->	e2	5.490	.056
e33	<-->	e47	7.991	-.117
e33	<-->	e78	6.147	.088
e34	<-->	e79	13.887	.114
e34	<-->	e78	9.409	-.097
e34	<-->	e33	4.169	-.064
e35	<-->	e79	18.871	-.162
e35	<-->	e78	12.651	.135
e35	<-->	e82	13.599	.175
e35	<-->	e83	5.427	.110
e35	<-->	e4	6.706	-.079
e35	<-->	e33	15.970	.152
e14	<-->	e82	9.218	.144
e14	<-->	e83	6.040	.116
e14	<-->	e72	60.642	.306
e14	<-->	e23	4.392	.081
e16	<-->	e82	9.329	-.123
e16	<-->	e83	8.134	-.114
e16	<-->	e72	10.561	-.108
e16	<-->	e14	10.706	-.111
e17	<-->	e48	4.094	-.053
e17	<-->	e47	4.150	.078
e17	<-->	e78	7.257	-.089
e17	<-->	e82	7.694	-.114
e17	<-->	e72	22.972	-.163
e17	<-->	e14	11.797	-.119
e17	<-->	e16	42.467	.187

Regression Weights: (CFA10)

			M.I.	Par Change
q7b5	<---	q2b3	4.049	.085
q7b5	<---	q7b2	7.398	-.122
q7b1	<---	q1b3	6.130	.108
q7b1	<---	q7b2	4.910	.101
q1b3	<---	HR	5.563	.184
q1b3	<---	q7b1	14.202	.226
q1b3	<---	q1b4	47.747	.368
q1b3	<---	q4b2	6.582	.154
q1b3	<---	q7b2	15.890	.225
q1b3	<---	q4b3	6.126	.136
q1b4	<---	FLEX	4.206	.162
q1b4	<---	q1b3	50.169	.382
q1b4	<---	q7b2	7.692	.156
q1b4	<---	q8b1	4.308	.139
q1b4	<---	q8b3	4.286	.123
q1b4	<---	q4b3	5.138	.124
q4b2	<---	q1b3	5.254	.104
q4b2	<---	q4b3	21.007	.211
q4b2	<---	q5b3	4.575	-.098
q2b3	<---	q1b4	4.414	-.080
q2b4	<---	q1b3	5.741	-.083
q7b3	<---	q7b2	6.217	.113
q7b3	<---	q10b2	4.574	-.089
q7b2	<---	q7b5	5.109	-.109
q7b2	<---	q7b1	4.744	.114
q7b2	<---	q2b3	4.159	-.095
q7b2	<---	q2b4	4.703	-.103
q7b2	<---	q7b3	5.353	.116
q4b3	<---	q1b3	5.869	.113
q4b3	<---	q4b2	25.532	.262
q5b2	<---	q1b3	6.483	-.101
q5b2	<---	q1b4	5.546	-.092
q5b2	<---	q4b2	4.520	-.094
q5b2	<---	q5b3	8.980	.120
q5b3	<---	q7b1	5.310	-.104
q5b3	<---	q1b3	4.553	-.087
q5b3	<---	q4b2	9.863	-.142
q5b3	<---	q4b3	4.222	-.085
q5b3	<---	q5b2	9.643	.133



Measurement model (CFA11)

Regression Weights: (CFA11)

Variable	Path		Estimate	S.E.	C.R.	P
COMM	<---	ITSA	.850	.066	12.781	***
FLEX	<---	ITSA	.652	.067	9.682	***
OCA	<---	ITSA	.815	.090	9.085	***
HR	<---	ITSA	.720	.068	10.559	***
coor	<---	ITSA	.809	.070	11.495	***
q5b3	<---	COMM	1.049	.068	15.491	***
q5b2	<---	COMM	1.000			
q4b3	<---	COMM	.939	.072	13.089	***
q8b3	<---	FLEX	1.000			
q8b2	<---	FLEX	.979	.087	11.233	***
q8b1	<---	FLEX	.778	.078	10.016	***
q10b4	<---	OCA	1.000			
q10b2	<---	OCA	1.044	.094	11.075	***
q7b2	<---	HR	1.000			
q7b4	<---	HR	1.128	.090	12.595	***
q7b3	<---	HR	1.015	.089	11.447	***
q2b4	<---	coor	1.000			
q2b3	<---	coor	.985	.052	18.787	***
q2b2	<---	coor	.996	.052	19.218	***
q2b1	<---	coor	.873	.050	17.634	***
q4b2	<---	COMM	.809	.067	11.986	***
q1b4	<---	coor	.730	.067	10.834	***
q7b1	<---	HR	.949	.086	11.042	***
q7b5	<---	HR	1.112	.092	12.063	***

Standardized Regression Weights: (CFA11)

Variable	Path		Estimate
COMM	<---	ITSA	.909
FLEX	<---	ITSA	.771
OCA	<---	ITSA	.784
HR	<---	ITSA	.865
coor	<---	ITSA	.782
q5b3	<---	COMM	.865
q5b2	<---	COMM	.857
q4b3	<---	COMM	.777
q8b3	<---	FLEX	.810
q8b2	<---	FLEX	.801
q8b1	<---	FLEX	.712
q10b4	<---	OCA	.779
q10b2	<---	OCA	.900
q7b2	<---	HR	.755
q7b4	<---	HR	.858
q7b3	<---	HR	.788
q2b4	<---	coor	.911
q2b3	<---	coor	.876
q2b2	<---	coor	.884
q2b1	<---	coor	.852
q4b2	<---	COMM	.732
q1b4	<---	coor	.647
q7b1	<---	HR	.763
q7b5	<---	HR	.825

Variances: (CFA11)

	Estimate	S.E.	C.R.	P
ITSA	1.000			
e44	.153	.042	3.646	***
e45	.290	.059	4.944	***
e47	.417	.084	4.957	***
e48	.174	.040	4.376	***
e6	.416	.063	6.602	***
e17	.324	.045	7.138	***
e16	.316	.043	7.333	***
e14	.508	.059	8.571	***
e23	.376	.057	6.538	***
e22	.382	.057	6.734	***
e21	.422	.052	8.186	***
e30	.703	.101	6.961	***
e28	.275	.084	3.287	.001
e35	.523	.059	8.807	***
e34	.317	.043	7.448	***
e33	.437	.051	8.520	***
e4	.218	.032	6.894	***
e3	.316	.040	7.933	***
e2	.296	.038	7.742	***
e1	.308	.037	8.355	***
e72	.496	.056	8.928	***
e83	.791	.083	9.578	***
e78	.448	.051	8.746	***
e79	.402	.050	8.052	***

Squared Multiple Correlations: (CFA11)

Variable	Estimate
coor	.612
HR	.748
OCA	.614
FLEX	.595
COMM	.825
q7b5	.681
q7b1	.582
q1b4	.419
q4b2	.536
q2b1	.726
q2b2	.782
q2b3	.767
q2b4	.831
q7b3	.620
q7b4	.735
q7b2	.570
q10b2	.811
q10b4	.606
q8b1	.506
q8b2	.642
q8b3	.656
q4b3	.603
q5b2	.735
q5b3	.748

Modification Indices

Covariances: (CFA11)

			M.I.	Par Change
e79	<-->	e44	5.279	.068
e83	<-->	e6	6.891	-.126
e72	<-->	e48	4.513	.063
e3	<-->	e48	4.627	.054
e33	<-->	e47	7.920	-.117
e33	<-->	e78	6.209	.088
e34	<-->	e79	13.739	.114
e34	<-->	e78	9.307	-.096
e34	<-->	e33	4.274	-.065
e35	<-->	e79	18.826	-.162
e35	<-->	e78	12.832	.137
e35	<-->	e83	5.894	.119
e35	<-->	e4	4.507	-.063
e35	<-->	e33	16.044	.152
e14	<-->	e83	6.792	.128
e14	<-->	e72	61.570	.311
e14	<-->	e23	4.514	.083
e16	<-->	e83	8.128	-.117
e16	<-->	e72	10.346	-.106
e16	<-->	e14	10.504	-.110
e17	<-->	e48	4.346	-.054
e17	<-->	e78	7.243	-.089
e17	<-->	e72	22.807	-.162
e17	<-->	e14	11.657	-.118
e17	<-->	e16	40.539	.181

Regression Weights: (CFA11)

		M.I.	Par Change
q7b5 <---	q2b3	4.126	.086
q7b5 <---	q7b2	7.395	-.122
q7b1 <---	q7b2	4.990	.102
q1b4 <---	HR	5.485	.188
q1b4 <---	OCA	4.926	.146
q1b4 <---	FLEX	5.938	.200
q1b4 <---	q7b1	6.069	.152
q1b4 <---	q4b2	5.466	.145
q1b4 <---	q7b3	5.297	.137
q1b4 <---	q7b2	10.210	.186
q1b4 <---	q10b2	5.133	.120
q1b4 <---	q8b1	5.493	.162
q1b4 <---	q8b3	5.747	.147
q1b4 <---	q4b3	7.202	.152
q4b2 <---	q4b3	21.622	.215
q4b2 <---	q5b3	4.448	-.097
q7b3 <---	q7b2	6.258	.114
q7b3 <---	q10b2	4.513	-.088
q7b2 <---	q7b5	5.082	-.109
q7b2 <---	q7b1	4.823	.115
q7b2 <---	q2b3	4.054	-.094
q7b2 <---	q2b4	4.598	-.102
q7b2 <---	q7b3	5.370	.117
q4b3 <---	q1b4	4.183	.094
q4b3 <---	q4b2	26.205	.267
q5b2 <---	q1b4	5.383	-.090
q5b2 <---	q4b2	4.479	-.093
q5b2 <---	q5b3	8.425	.116
q5b3 <---	q7b1	5.407	-.104
q5b3 <---	q4b2	9.905	-.141
q5b3 <---	q4b3	4.231	-.085
q5b3 <---	q5b2	9.076	.128

Regression Weights: (CFA12)

Variable	Path		Estimate	S.E.	C.R.	P
COMM	<---	ITSA	.852	.066	12.819	***
FLEX	<---	ITSA	.652	.067	9.669	***
OCA	<---	ITSA	.815	.090	9.085	***
HR	<---	ITSA	.719	.068	10.532	***
coor	<---	ITSA	.797	.071	11.270	***
q5b3	<---	COMM	1.049	.067	15.559	***
q5b2	<---	COMM	1.000			
q4b3	<---	COMM	.936	.072	13.078	***
q8b3	<---	FLEX	1.000			
q8b2	<---	FLEX	.979	.087	11.231	***
q8b1	<---	FLEX	.778	.078	10.009	***
q10b4	<---	OCA	1.000			
q10b2	<---	OCA	1.042	.094	11.069	***
q7b2	<---	HR	1.000			
q7b4	<---	HR	1.129	.090	12.590	***
q7b3	<---	HR	1.016	.089	11.440	***
q2b4	<---	coor	1.000			
q2b3	<---	coor	.990	.052	18.927	***
q2b2	<---	coor	.999	.052	19.255	***
q2b1	<---	coor	.871	.050	17.472	***
q4b2	<---	COMM	.806	.067	11.974	***
q7b1	<---	HR	.949	.086	11.034	***
q7b5	<---	HR	1.113	.092	12.059	***

Standardized Regression Weights: (CFA12)

Variable	Path		Estimate
COMM	<---	ITSA	.910
FLEX	<---	ITSA	.771
OCA	<---	ITSA	.783
HR	<---	ITSA	.864
coor	<---	ITSA	.771
q5b3	<---	COMM	.866
q5b2	<---	COMM	.858
q4b3	<---	COMM	.775
q8b3	<---	FLEX	.809
q8b2	<---	FLEX	.802
q8b1	<---	FLEX	.711
q10b4	<---	OCA	.779
q10b2	<---	OCA	.900
q7b2	<---	HR	.755
q7b4	<---	HR	.858
q7b3	<---	HR	.788
q2b4	<---	coor	.912
q2b3	<---	coor	.880
q2b2	<---	coor	.887
q2b1	<---	coor	.850
q4b2	<---	COMM	.730
q7b1	<---	HR	.763
q7b5	<---	HR	.825

Variances: (CFA12)

	Estimate	S.E.	C.R.	P
ITSA	1.000			
e44	.151	.042	3.583	***
e45	.290	.059	4.941	***
e47	.419	.085	4.952	***
e48	.176	.040	4.385	***
e6	.434	.065	6.680	***
e17	.322	.045	7.120	***
e16	.313	.043	7.312	***
e14	.510	.059	8.589	***
e23	.376	.058	6.540	***
e22	.381	.057	6.721	***
e21	.422	.052	8.187	***
e30	.701	.101	6.940	***
e28	.277	.084	3.307	***
e35	.523	.059	8.806	***
e34	.317	.043	7.439	***
e33	.438	.051	8.517	***
e4	.218	.032	6.748	***
e3	.305	.039	7.742	***
e2	.291	.038	7.578	***
e1	.313	.038	8.317	***
e72	.498	.056	8.940	***
e78	.448	.051	8.745	***
e79	.402	.050	8.046	***

Squared Multiple Correlations: (CFA12)

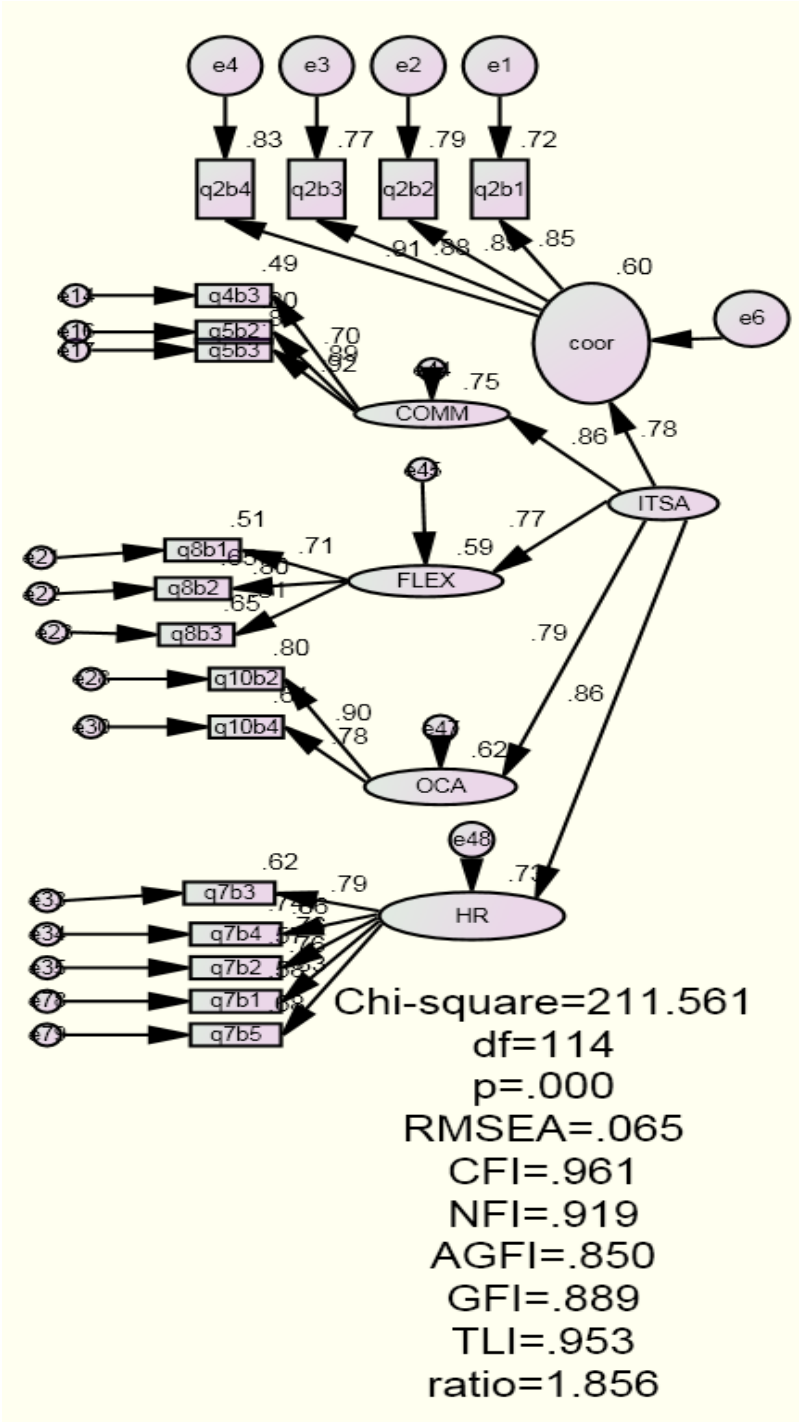
Variable	Estimate
coor	.594
HR	.746
OCA	.614
FLEX	.595
COMM	.828
q7b5	.681
q7b1	.582
q4b2	.534
q2b1	.722
q2b2	.786
q2b3	.774
q2b4	.831
q7b3	.620
q7b4	.736
q7b2	.570
q10b2	.809
q10b4	.607
q8b1	.506
q8b2	.643
q8b3	.655
q4b3	.601
q5b2	.737
q5b3	.750

Covariances: (CFA12)

			M.I.	Par Change
e79	<-->	e44	5.257	.068
e72	<-->	e48	4.723	.065
e3	<-->	e48	5.563	.059
e33	<-->	e47	7.788	-.116
e33	<-->	e78	6.242	.088
e34	<-->	e79	13.671	.113
e34	<-->	e78	9.306	-.096
e34	<-->	e33	4.297	-.065
e35	<-->	e79	18.811	-.162
e35	<-->	e78	12.895	.137
e35	<-->	e33	16.098	.153
e14	<-->	e72	62.004	.313
e14	<-->	e23	4.590	.083
e16	<-->	e72	10.306	-.106
e16	<-->	e14	10.433	-.109
e17	<-->	e48	4.472	-.055
e17	<-->	e78	7.263	-.089
e17	<-->	e72	22.687	-.161
e17	<-->	e14	11.514	-.117
e17	<-->	e16	39.614	.178

Regression Weights: (CFA12)

			M.I.	Par Change
q7b5	<---	q2b3	4.183	.087
q7b5	<---	q7b2	7.395	-.122
q7b1	<---	q7b2	5.018	.102
q4b2	<---	q4b3	21.920	.217
q4b2	<---	q5b3	4.386	-.097
q7b3	<---	q7b2	6.284	.114
q7b3	<---	q10b2	4.461	-.088
q7b2	<---	q7b5	5.072	-.109
q7b2	<---	q7b1	4.850	.115
q7b2	<---	q2b4	4.510	-.101
q7b2	<---	q7b3	5.388	.117
q4b3	<---	q4b2	26.517	.269
q5b2	<---	q4b2	4.485	-.093
q5b2	<---	q5b3	8.175	.114
q5b3	<---	q7b1	5.474	-.105
q5b3	<---	q4b2	9.903	-.141
q5b3	<---	q4b3	4.208	-.084
q5b3	<---	q5b2	8.798	.126



Measurement model (CFA13)

Regression Weights: (CFA13)

Variable	Path		Estimate	S.E.	C.R.	P
COMM	<---	ITSA	.844	.067	12.513	***
FLEX	<---	ITSA	.645	.068	9.512	***
OCA	<---	ITSA	.825	.090	9.160	***
HR	<---	ITSA	.713	.068	10.416	***
coor	<---	ITSA	.805	.071	11.339	***
q5b3	<---	COMM	1.064	.058	18.198	***
q5b2	<---	COMM	1.000			
q4b3	<---	COMM	.808	.069	11.691	***
q8b3	<---	FLEX	1.000			
q8b2	<---	FLEX	.987	.088	11.176	***
q8b1	<---	FLEX	.781	.078	9.966	***
q10b4	<---	OCA	1.000			
q10b2	<---	OCA	1.035	.093	11.093	***
q7b2	<---	HR	1.000			
q7b4	<---	HR	1.129	.090	12.591	***
q7b3	<---	HR	1.016	.089	11.444	***
q2b4	<---	coor	1.000			
q2b3	<---	coor	.989	.052	18.935	***
q2b2	<---	coor	.999	.052	19.283	***
q2b1	<---	coor	.870	.050	17.454	***
q7b1	<---	HR	.946	.086	11.008	***
q7b5	<---	HR	1.112	.092	12.057	***

Standardized Regression Weights: CFA13)

Variable	Path		Estimate
COMM	<---	ITSA	.865
FLEX	<---	ITSA	.766
OCA	<---	ITSA	.790
HR	<---	ITSA	.856
coor	<---	ITSA	.778
q5b3	<---	COMM	.916
q5b2	<---	COMM	.895
q4b3	<---	COMM	.698
q8b3	<---	FLEX	.806
q8b2	<---	FLEX	.804
q8b1	<---	FLEX	.712
q10b4	<---	OCA	.782
q10b2	<---	OCA	.897
q7b2	<---	HR	.755
q7b4	<---	HR	.858
q7b3	<---	HR	.788
q2b4	<---	coor	.912
q2b3	<---	coor	.880
q2b2	<---	coor	.887
q2b1	<---	coor	.849
q7b1	<---	HR	.761
q7b5	<---	HR	.825

Variances: (CFA13)

	Estimate	S.E.	C.R.	P
ITSA	1.000			
e44	.240	.050	4.784	***
e45	.293	.060	4.920	***
e47	.410	.085	4.835	***
e48	.185	.042	4.392	***
e6	.423	.065	6.503	***
e17	.207	.040	5.128	***
e16	.237	.039	6.071	***
e14	.656	.071	9.202	***
e23	.382	.058	6.574	***
e22	.377	.057	6.614	***
e21	.421	.052	8.158	***
e30	.694	.101	6.880	***
e28	.285	.084	3.415	***
e35	.522	.059	8.785	***
e34	.316	.043	7.395	***
e33	.437	.051	8.492	***
e4	.217	.032	6.740	***
e3	.305	.039	7.746	***
e2	.290	.038	7.573	***
e1	.314	.038	8.328	***
e78	.451	.052	8.738	***
e79	.402	.050	8.016	***

Squared Multiple Correlations: (CFA13)

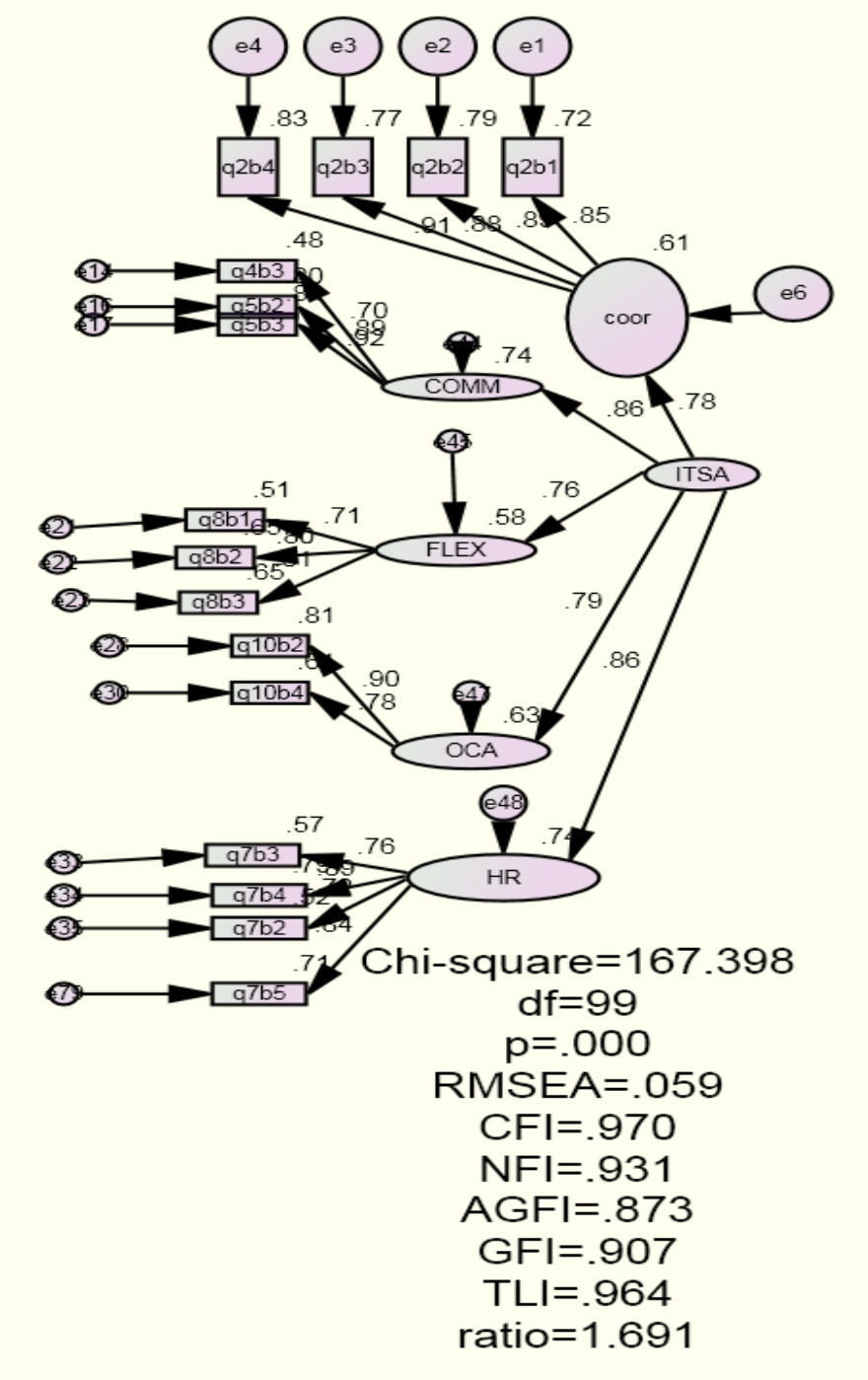
Variable	Estimate
coor	.605
HR	.733
OCA	.624
FLEX	.586
COMM	.748
q7b5	.681
q7b1	.579
q2b1	.721
q2b2	.786
q2b3	.774
q2b4	.831
q7b3	.621
q7b4	.736
q7b2	.571
q10b2	.804
q10b4	.611
q8b1	.507
q8b2	.647
q8b3	.650
q4b3	.487
q5b2	.801
q5b3	.839

Covariances: (Group number 1 - Default model)

			M.I.	Par Change
e79	<-->	e44	6.920	.086
e3	<-->	e48	5.450	.059
e33	<-->	e47	7.955	-.118
e33	<-->	e78	6.405	.090
e34	<-->	e79	13.635	.113
e34	<-->	e78	9.017	-.095
e34	<-->	e33	4.467	-.067
e35	<-->	e44	4.046	-.073
e35	<-->	e79	19.093	-.163
e35	<-->	e78	13.069	.138
e35	<-->	e33	15.998	.152
e14	<-->	e48	11.299	.116
e14	<-->	e44	13.372	-.144
e14	<-->	e23	6.122	.107
e16	<-->	e78	4.764	.065
e17	<-->	e78	9.123	-.090

Regression Weights: (CFA13)

Variable	Path		M.I.	Par Change
q7b5	<---	q2b3	4.130	.086
q7b5	<---	q7b2	7.485	-.122
q7b5	<---	q5b2	4.199	.093
q7b1	<---	q7b2	5.068	.103
q7b3	<---	q7b2	6.226	.114
q7b3	<---	q10b2	4.427	-.088
q7b2	<---	q7b5	5.136	-.109
q7b2	<---	q7b1	4.940	.116
q7b2	<---	q2b3	4.082	-.094
q7b2	<---	q2b4	4.574	-.102
q7b2	<---	q7b3	5.337	.116
q8b3	<---	q4b3	4.291	.094
q4b3	<---	HR	7.569	.205
q4b3	<---	FLEX	5.474	.179
q4b3	<---	q7b5	5.401	.123
q4b3	<---	q7b1	9.026	.172
q4b3	<---	q7b3	6.154	.137
q4b3	<---	q7b4	6.415	.137
q4b3	<---	q7b2	6.219	.134
q4b3	<---	q8b1	4.306	.133
q4b3	<---	q8b3	8.926	.170
q5b3	<---	q7b1	6.852	-.105



Measurement model (CFA14)

Regression Weights: (CFA14)

			Estimate	S.E.	C.R.	P
COMM	<---	ITSA	.841	.068	12.443	***
FLEX	<---	ITSA	.643	.068	9.476	***
OCA	<---	ITSA	.827	.090	9.183	***
HR	<---	ITSA	.681	.069	9.883	***
coor	<---	ITSA	.807	.071	11.372	***
q5b3	<---	COMM	1.068	.059	18.210	***
q5b2	<---	COMM	1.000			
q4b3	<---	COMM	.807	.069	11.639	***
q8b3	<---	FLEX	1.000			
q8b2	<---	FLEX	.986	.088	11.158	***
q8b1	<---	FLEX	.782	.078	9.968	***
q10b4	<---	OCA	1.000			
q10b2	<---	OCA	1.037	.093	11.121	***
q7b2	<---	HR	1.000			
q7b4	<---	HR	1.226	.103	11.951	***
q7b3	<---	HR	1.024	.100	10.265	***
q2b4	<---	coor	1.000			
q2b3	<---	coor	.990	.052	18.934	***
q2b2	<---	coor	.999	.052	19.297	***
q2b1	<---	coor	.870	.050	17.441	***
q7b5	<---	HR	1.196	.105	11.442	***

Standardized Regression Weights: (CFA14)

Variable	Path		Estimate
COMM	<---	ITSA	.862
FLEX	<---	ITSA	.763
OCA	<---	ITSA	.792
HR	<---	ITSA	.860
coor	<---	ITSA	.780
q5b3	<---	COMM	.918
q5b2	<---	COMM	.893
q4b3	<---	COMM	.696
q8b3	<---	FLEX	.806
q8b2	<---	FLEX	.804
q8b1	<---	FLEX	.713
q10b4	<---	OCA	.781
q10b2	<---	OCA	.898
q7b2	<---	HR	.718
q7b4	<---	HR	.887
q7b3	<---	HR	.755
q2b4	<---	coor	.912
q2b3	<---	coor	.880
q2b2	<---	coor	.887
q2b1	<---	coor	.849
q7b5	<---	HR	.844

Variances: (CFA14)

	Estimate	S.E.	C.R.	P
ITSA	1.000			
e44	.243	.050	4.837	***
e45	.296	.060	4.939	***
e47	.405	.084	4.814	***
e48	.163	.039	4.129	***
e6	.420	.065	6.483	***
e17	.202	.040	5.008	***
e16	.240	.039	6.129	***
e14	.660	.072	9.214	***
e23	.382	.058	6.561	***
e22	.377	.057	6.616	***
e21	.421	.052	8.146	***
e30	.696	.101	6.923	***
e28	.283	.083	3.395	***
e35	.589	.066	8.956	***
e34	.257	.041	6.258	***
e33	.495	.057	8.683	***
e4	.217	.032	6.745	***
e3	.305	.039	7.747	***
e2	.289	.038	7.567	***
e1	.314	.038	8.333	***
e79	.363	.049	7.463	***

Squared Multiple Correlations: (CFA14)

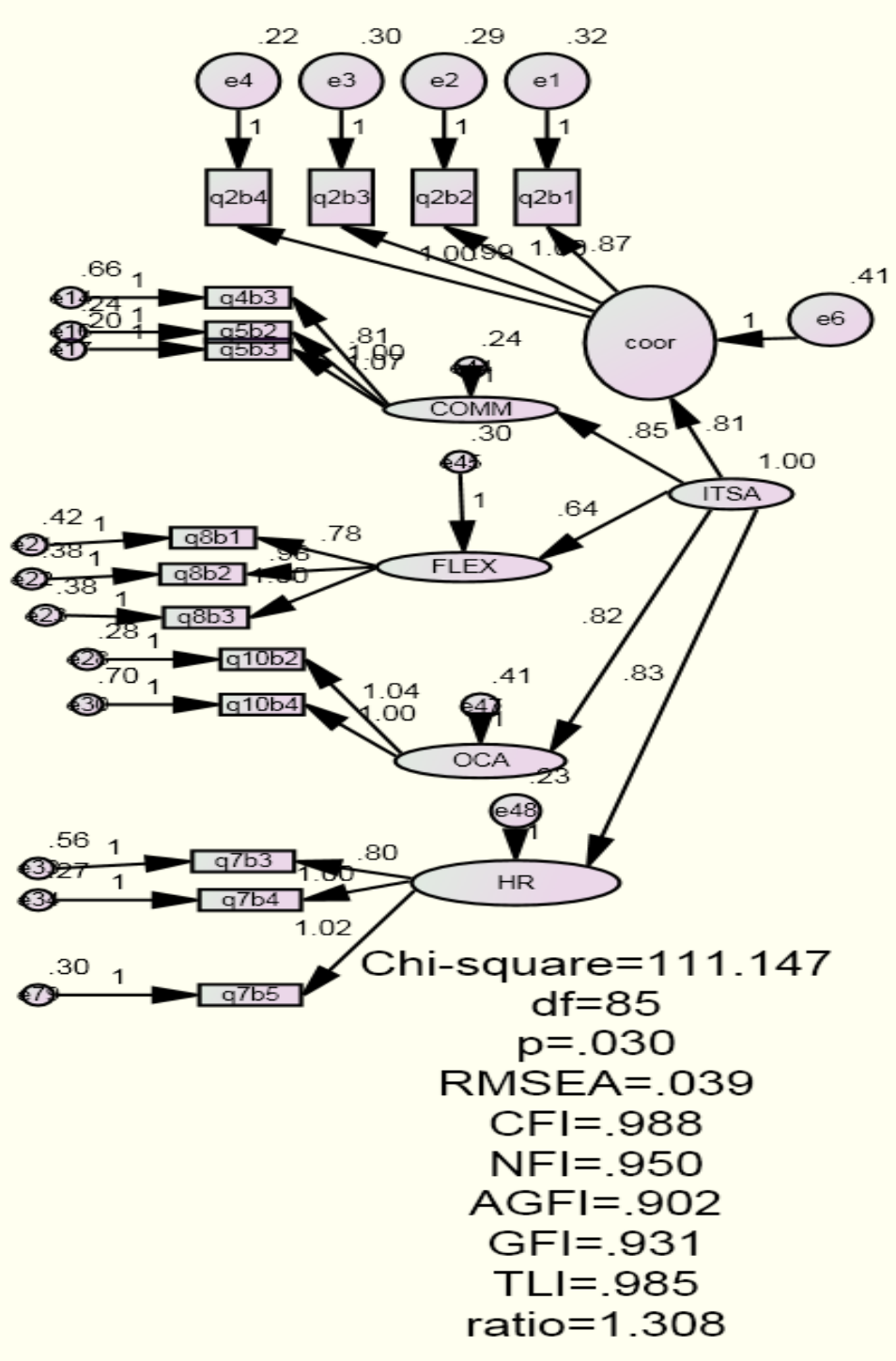
Variable	Estimate
coor	.608
HR	.740
OCA	.628
FLEX	.582
COMM	.744
q7b5	.712
q2b1	.720
q2b2	.787
q2b3	.774
q2b4	.831
q7b3	.571
q7b4	.786
q7b2	.516
q10b2	.806
q10b4	.610
q8b1	.508
q8b2	.646
q8b3	.650
q4b3	.484
q5b2	.798
q5b3	.843

Modification Indices (CFA14)

			M.I.	Par Change
e79	<-->	e44	6.513	.082
e3	<-->	e48	5.714	.058
e33	<-->	e47	6.504	-.112
e34	<-->	e44	6.696	-.075
e35	<-->	e79	13.124	-.139
e35	<-->	e33	28.088	.224
e14	<-->	e48	9.436	.101
e14	<-->	e45	4.016	.084
e14	<-->	e44	12.590	-.140
e14	<-->	e23	6.261	.108

Regression Weights: (CFA14)

			M.I.	Par Change
q7b5	<---	q7b2	5.923	-.106
q7b3	<---	q7b2	12.485	.169
q7b2	<---	q7b3	10.783	.174
q8b3	<---	q4b3	4.428	.095
q4b3	<---	HR	6.722	.204
q4b3	<---	FLEX	5.580	.181
q4b3	<---	q7b5	5.412	.123
q4b3	<---	q7b3	6.435	.141
q4b3	<---	q7b4	6.363	.137
q4b3	<---	q7b2	6.533	.138
q4b3	<---	q8b1	4.391	.135
q4b3	<---	q8b3	9.104	.172



Measurement model (CFA15)

Regression Weights: (CFA15)

			Estimate	S.E.	C.R.	P
COMM	<---	ITSA	.846	.067	12.543	***
FLEX	<---	ITSA	.638	.068	9.406	***
OCA	<---	ITSA	.821	.090	9.112	***
HR	<---	ITSA	.835	.068	12.267	***
coor	<---	ITSA	.811	.071	11.448	***
q5b3	<---	COMM	1.067	.058	18.258	***
q5b2	<---	COMM	1.000			
q4b3	<---	COMM	.807	.069	11.647	***
q8b3	<---	FLEX	1.000			
q8b2	<---	FLEX	.984	.088	11.138	***
q8b1	<---	FLEX	.780	.078	9.953	***
q10b4	<---	OCA	1.000			
q10b2	<---	OCA	1.039	.094	11.062	***
q7b4	<---	HR	1.000			
q7b3	<---	HR	.802	.068	11.749	***
q2b4	<---	coor	1.000			
q2b3	<---	coor	.990	.052	18.964	***
q2b2	<---	coor	.999	.052	19.303	***
q2b1	<---	coor	.869	.050	17.427	***
q7b5	<---	HR	1.018	.065	15.640	***

Standardized Regression Weights: (CFA15)

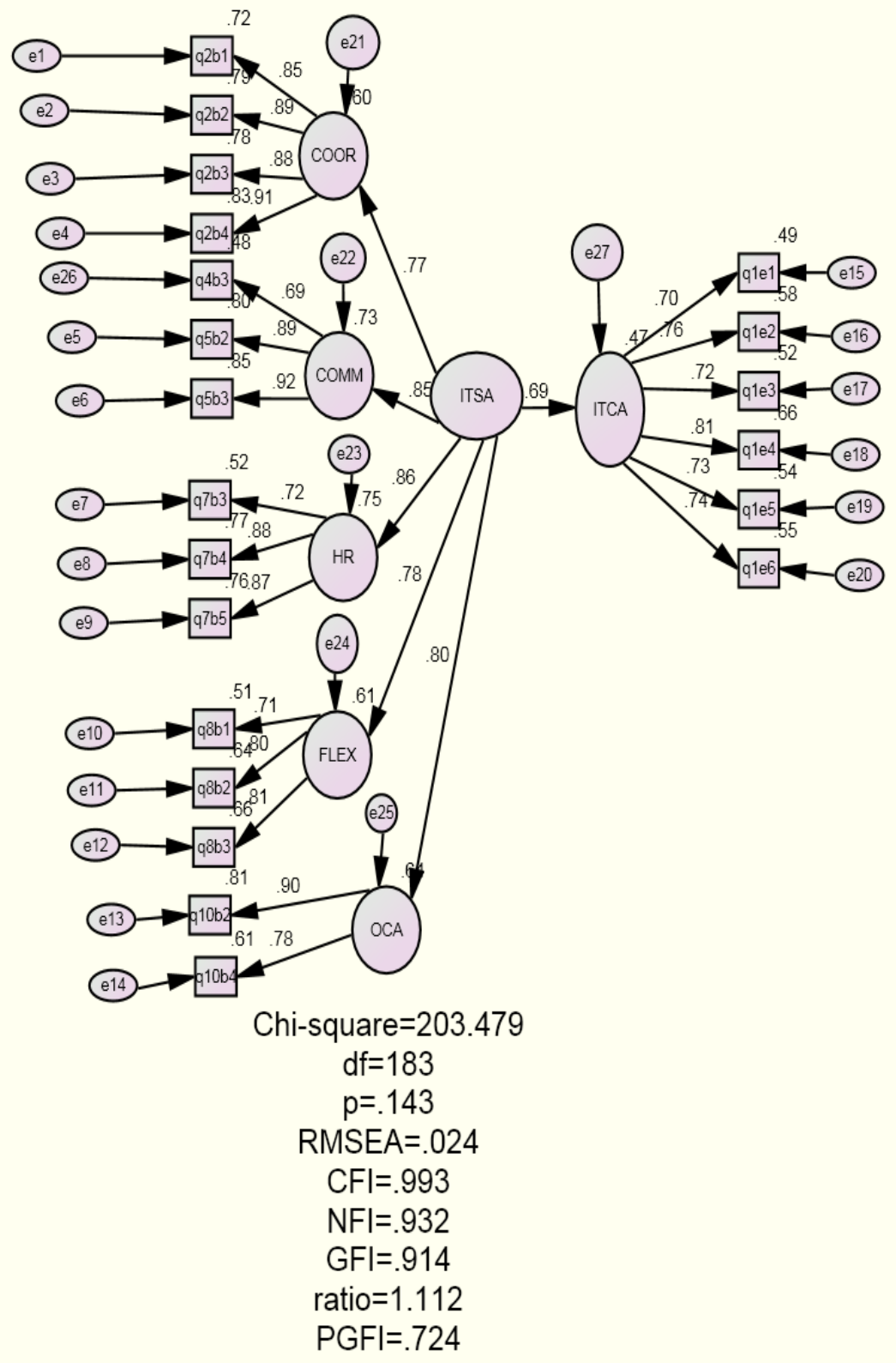
Variable	Path		Estimate
COMM	<---	ITSA	.867
FLEX	<---	ITSA	.757
OCA	<---	ITSA	.788
HR	<---	ITSA	.868
coor	<---	ITSA	.783
q5b3	<---	COMM	.918
q5b2	<---	COMM	.894
q4b3	<---	COMM	.696
q8b3	<---	FLEX	.807
q8b2	<---	FLEX	.803
q8b1	<---	FLEX	.712
q10b4	<---	OCA	.780
q10b2	<---	OCA	.898
q7b4	<---	HR	.878
q7b3	<---	HR	.719
q2b4	<---	coor	.912
q2b3	<---	coor	.880
q2b2	<---	coor	.887
q2b1	<---	coor	.848
q7b5	<---	HR	.873

Variances: (CFA15)

	Estimate	S.E.	C.R.	P
ITSA	1.000			
e44	.236	.050	4.755	***
e45	.304	.061	4.993	***
e47	.412	.085	4.863	***
e48	.229	.052	4.427	***
e6	.414	.064	6.454	***
e17	.203	.040	5.059	***
e16	.239	.039	6.136	***
e14	.660	.072	9.217	***
e23	.380	.058	6.514	***
e22	.378	.057	6.610	***
e21	.422	.052	8.145	***
e30	.698	.101	6.907	***
e28	.281	.084	3.343	***
e34	.274	.045	6.116	***
e33	.557	.063	8.854	***
e4	.217	.032	6.744	***
e3	.305	.039	7.744	***
e2	.290	.038	7.576	***
e1	.315	.038	8.344	***
e79	.299	.047	6.293	***

Squared Multiple Correlations: (CFA15)

Variable	Estimate
coor	.613
HR	.753
OCA	.621
FLEX	.573
COMM	.752
q7b5	.763
q2b1	.719
q2b2	.787
q2b3	.775
q2b4	.832
q7b3	.517
q7b4	.772
q10b2	.807
q10b4	.609
q8b1	.507
q8b2	.645
q8b3	.652
q4b3	.484
q5b2	.799
q5b3	.842



Final hypothesised structural model

Appendix D

Questionnaire

Section A: Firm Background

1. Which year the firm was established?
Year_____

2. What was the firm's turnover in the last financial year (2008-2009)?

- ☐ Between RM 200,000 - RM500,000
- ☐ Between RM500,000 - RM1 million
- ☐ Between RM1million - RM5 million
- ☐ Between RM5 million - RM10 million

3. What is the percentage of your firm's annual capital expenditure on IT per annum?

- ☐ Between 0-10%
- ☐ Between 11-20%
- ☐ Between 21-30%
- ☐ Between 31-40%
- ☐ Between 41-50%
- ☐ Over 50%

4. How many full-time employees does the firm employ?
_____

5. How many part-time, seasonal employees does the firm employ?
_____

6. What is your current position within the firm? (please specify)
_____

7. Please answer the following two statements

a) To what extent you are involved in business strategy formation in your firm?

☐Very much involved	☐Involved	☐Neutral	☐Not involved	☐Not involved at all

b) To what is extent are you involved in IT strategy formation in your firm?

☐Very much involved	☐Involved	☐Neutral	☐Not involved	☐Not involved at all

8. Please tick the information systems which are presently used by your firm. (You may tick more than one if appropriate).

Enterprise systems (Enterprise resources planning): These systems collect data from various key business processes, such as: reservation, finance and accounting, sales and marketing, human resources,	○
Supply Chain Management System(SCM): These systems provide information to help suppliers, purchasing firms, distributors, and logistics companies share information about orders, production, inventory levels, and delivery of products and services.	○
Customer Relationship Management System(CRM): These systems provide information to coordinate all the business processes that deal with customers in sales, marketing, and services to optimize revenue, customer satisfaction, and customer retention	○
Knowledge management systems(KM): These systems collect relevant knowledge and experience in the firm, and make it available wherever and whenever it is needed to improve business processes and management decisions	○
Office Automation Systems(OAS): These systems Provide workers with effective ways to process personal and organizational data, perform calculations, and create documents, for example (MS Word, MS Excel, Email, Voice mail, internet, intranet)	○

9. Does your firm employ full-time IT personnel?

○ Yes ○ No

10. Who manages IT resources in your firm (please tick only one)?

☐ IT managers
☐ Business managers
☐ IT consultant
☐ Others
☐ All the above
☐ Not applicable

Section B. level of alignment between IT strategy and business strategy

Coordinating IT planning with business planning

1. To what extent do IT managers participate in business planning?

1 = Never, **2**= seldom **3** = sometimes, **4**= often, **5**= always

IT managers regularly attends business planning meetings	**1**	**2**	**3**	**4**	**5**
IT managers contribute to the formation of business goals	**1**	**2**	**3**	**4**	**5**
IT managers have regular contact with top management	**1**	**2**	**3**	**4**	**5**
IT managers have easy access to business managers	**1**	**2**	**3**	**4**	**5**

2. To what extent do business managers participate in IT planning?

1 = Never, **2**= seldom **3** = sometimes, **4**= often, **5**= always

Business managers play an important role in the corporate IT steering committee	**1**	**2**	**3**	**4**	**5**
Business managers have frequently contact with IT management	**1**	**2**	**3**	**4**	**5**
Business managers become knowledgeable about IT opportunities within the firm	**1**	**2**	**3**	**4**	**5**
Business managers regard spending on IT as strategic investments rather than expenses to be controlled	**1**	**2**	**3**	**4**	**5**

Managing IT and business managers' relationship

3. To what extent are formal processes in place that focus on enhancing the relationship that exists between IT and business managers?

1 = strongly disagree, **2**= disagree, **3** = Neutral, **4**= agree, **5**= strongly agree

We have defined programs to manage our relationships	**1**	**2**	**3**	**4**	**5**
We manage our relationships on an ad-hoc basis	**1**	**2**	**3**	**4**	**5**
There is a sense of conflict and mistrust between IT and business managers	**1**	**2**	**3**	**4**	**5**

Effective communication between IT and business executives

4. To what extent do IT mangers understand the organization's business environment?

1 = strongly disagree, **2**= disagree, **3** = Neutral, **4**= agree, **5**= strongly agree

IT managers do not understand the business	**1**	**2**	**3**	**4**	**5**
IT managers have a good understanding the business	**1**	**2**	**3**	**4**	**5**
Understanding of the business by IT managers is encouraged	**1**	**2**	**3**	**4**	**5**

5. To what extent do the business managers understand the IT environment?

1 = strongly disagree, **2**= disagree, **3** = Neutral, **4**= agree, **5**= strongly agree

Business managers do not understand IT	**1**	**2**	**3**	**4**	**5**
Business managers have a good understanding of IT	**1**	**2**	**3**	**4**	**5**
Understanding of IT by business managers is required and promoted	**1**	**2**	**3**	**4**	**5**

6. To what extent there is domain knowledge shared between IT and business managers?

1 = strongly disagree, **2**= disagree, **3** = Neutral, **4**= agree, **5**= strongly agree

Domain knowledge shared between IT and business managers is an ad hoc basis	**1**	**2**	**3**	**4**	**5**
Domain knowledge shared between IT and business managers is a consistent structured framework	**1**	**2**	**3**	**4**	**5**
There is a formal knowledge sharing between business and IT managers	**1**	**2**	**3**	**4**	**5**

Human resource skills

7. The following statements pertain to firm's ability to attract and retain business and IT professionals. Please choose the appropriate scale for each of the following statements

1 = Never, **2**= seldom **3** = sometimes, **4**= often, **5**= always

There is a formal program to retain IT and business professionals	**1**	**2**	**3**	**4**	**5**
IT hiring is based on technical expertise	**1**	**2**	**3**	**4**	**5**
Business hiring is based on business skills	**1**	**2**	**3**	**4**	**5**
Effective programs are in place to attract and retain IT professionals with both technical expertise and business skills	**1**	**2**	**3**	**4**	**5**
Effective programs are in place to attract and retain business professionals with both business skills and technical expertise	**1**	**2**	**3**	**4**	**5**

IT infrastructure flexibility

8. our firm views IT infrastructure primarily as…

1 = strongly disagree, **2**= disagree, **3** = Neutral, **4**= agree, **5**= strongly agree

A utility providing basic IT services at minimum cost	**1**	**2**	**3**	**4**	**5**
Driven by the requirements of the current business strategy	**1**	**2**	**3**	**4**	**5**
A resource to enable and drive fast response to the changes in the market place	**1**	**2**	**3**	**4**	**5**

Organizational power structure of IT function

9. IT resources in our firm are….

1 = strongly disagree, **2**= disagree, **3** = Neutral, **4**= agree, **5**= strongly agree

Centralized, whereby the IT department or other central department has primary authority for architecture, standards, and application resource decisions	**1**	**2**	**3**	**4**	**5**
Decentralized, whereby each functional department has primary authority for their own IT infrastructure, standards, and application resources decisions	**1**	**2**	**3**	**4**	**5**
Federated, whereby the IT department or other central unit has primary responsibility for architecture, common systems, and standards decisions, while each functional department has authority for making application resource decisions.	**1**	**2**	**3**	**4**	**5**

Organizational change adaptability

10. In this firm we tend to…

1 = Never, **2**= seldom **3** = sometimes, **4**= often, **5**= always

We tend to resist change	**1**	**2**	**3**	**4**	**5**
We tend to have change readiness programs by providing training on necessary skills to adapt to change	**1**	**2**	**3**	**4**	**5**
we tend to be reactive, rather planning for change	**1**	**2**	**3**	**4**	**5**
we tend to be proactive, and anticipate change	**1**	**2**	**3**	**4**	**5**

Section C. IT use for competitive advantage

1. In this firm IT is used….

1 = strongly disagree, **2**= disagree, **3** = Neutral, **4**= agree, **5**= strongly agree

IT is used for reducing our production/service costs.	**1**	**2**	**3**	**4**	**5**
IT is used for time saving/speeding up our production/service processes.	**1**	**2**	**3**	**4**	**5**
IT is used for product/ services innovation by improving the quality of our products/services, and introducing new products/services	**1**	**2**	**3**	**4**	**5**
IT is used for achieving better internal integration within our firm (interdepartmental and intradepartmental)	**1**	**2**	**3**	**4**	**5**
IT is used for achieving better integration with our suppliers	**1**	**2**	**3**	**4**	**5**
IT is used for achieving better integration with our customers	**1**	**2**	**3**	**4**	**5**

Section D. your personal background

1. How long you have been with company …….?
2. Your gender: 1) male 2) female.
3. Age group: 1) 20-29, 2) 30-39, 3) 40-49, 4) 50 and above
4. Education Level: 1) High school , 2) College, 3) University

If you like to have a copy of the summary of findings, please write your name and email address below:

Please feel free to add any comment in the space below:

Thank you for your cooperation. Your contribution to this study is gratefully acknowledged.

APPENDIX E

PUBLICATION RECORD

[1] Mohammed Abdi, and P.D.D.Dominic, " IT investment for competitive advantage" *presented in National Postgraduate Conference on Engineering, Science and technology (NPC2009),* 23-24 March, 2009.

[2] Mohammed Abdi, and P.D.D.Dominic, "Antecedents for successful IT alignment" *presented in International Conference Software engineering & Computer Systems (ICSECS, 2009)*, 19-21 October, 2009.

[3] Mohammed Abdi, and P.D.D.Dominic, "Strategic IT alignment with business strategy: service oriented architecture approach" *presented in International symposium on information technology, (ITSIM, 2010), 15-17 June, 2010.*

[4] Mohammed Abdi, P.D.D.Dominic, Downe, Alan G., Loke, S.P. and Thamaraiselvan, N. "The influence of strategic alignment on the use of IT for competive advantage: Malaysian Tour and Travel agent case study" *International journal of Business Excellence (IJBEX) Inderscience (Under Review)*