RMIT UNIVERSITY

RELATIONSHIPS BETWEEN LOGISTICS COMPETENCY, CAREER SUCCESS AND CAREER SATISFACTION OF LOGISTICS AND SUPPLY CHAIN PROFESSIONALS OF 3PL PROVIDERS IN CHINA

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

QING NIE

Master of Economics Awarded by Nankai University, Tianjin, China

School of Accounting, Information Systems and Supply Chain

College of Business and Law

RMIT University

AUGUST 2020

STATEMENT OF AUTHORSHIP

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

Qing (Nancy) Nie

03 August 2020

DEDICATION

This dissertation is dedicated to

my beloved parents

and

the loves of my life

ACKNOWLEDGEMENTS

This journey of knowledge was filled with excitement, frustration and satisfaction. The road to a PhD is often a solitary journey, but it could not be accomplished without the support of supervisors, friends and family. I would like to acknowledge those who assisted and supported me on this very challenging and rewarding journey.

First, my deepest appreciation goes to my principal supervisor, Professor Shams Rahman, for his invaluable and unfailing support, advice, guidance and encouragement in bringing this research work to a successful completion. I highly respect Professor Rahman for his academic achievements, broad knowledge, transcendent ideas and wealth of experience. He made me feel confident in undertaking my PhD work. I regard Professor Rahman as a personal friend in my life and an inspiration in the academic world. I would also like to thank my second supervisor, Dr Huan Vo-Tran, for his guidance and support; and all of the members of my PhD committee at RMIT, for their valuable advice and informal talks, and encouragement.

Second, this achievement is a major milestone in my life, for which I am extremely grateful to RMIT University for awarding me the opportunity to pursue the study; the School of Business Information Technology and Logistics at RMIT University for valuable help during the course of this research. I would also like to express my sincere thanks to Shanghai University of International Business and Economics for allowing me to begin this study at RMIT University. In addition, I would like specially to acknowledge Dr Yuan and Dr Song for their time and providing me strength at times of weakness and when I felt discouraged.

Third, I would like to thank my beloved mum for her peaceful influence during times of frustration; for her joy in times of sorrow; for her faith when I stray. I am grateful to my sisters, brothers, nieces and nephews for bringing joy to my life. Their unconditional love and constant support over the years is something for which I cannot thank them enough.

Last but not least, this thesis is expressly dedicated to a number of special friends and colleagues who consistently give me support and unfailing encouragement, for lending their ears in listening to my grudges, and sharing the good and bad moments throughout the journey.

I love you all!

ABSTRACT

The emerging area of logistics and supply chain (L&SC) competency development has received considerable attention both in academia and business. However, there are many unanswered questions regarding the relationship between logistics competency, career success and career satisfaction (CS). While the beneficial impact of logistics professionals' competency on performance—such as operational and financial—from the organisational perspective is generally acknowledged, very little research has been undertaken addressing the impact of competencies (and skills) on the CS of L&SC managers, especially in the context of the third-party logistics (3PL) industry. This remains a critical gap in the supply chain literature. The purpose of this research is therefore to investigate the relationships between logistics competency, career success and CS of logistics professionals of 3PL providers in China drawn from competency theory and social capital theory.

The study begins by establishing a L&SC manager competency framework based on a comprehensive literature review in the research domain. The primary antecedents associated with the competency framework are then developed, and the magnitude of the effect of these constructs on L&SC manager career success is assessed. Four skill categories of competency are established through the literature review and verified by the suggestions of industry representatives; these are logistics general management (LGM), logistics analytical (LA), logistics information systems (LIS) and logistics sustainability (LS) competencies. The higher-level career success construct consists of four aspects: employability, promotion, salary and marketability. This study presents a conceptual framework of L&SC managers' skill categories as important antecedents of competency that may affect the constituents of career aspiration and CS. The model is analysed employing the partial least squares (PLS) technique of structural equation modelling (SEM) using a sample of 708 survey questionnaire responses. Of the total responses, 200 were from Chinese state-owned 3PLs, 177 from multinational corporations and 331 from private Chinese 3PL organisations.

Results of the analysis reveal that LGM competency positively affects employability and promotion; LA competency positively affects both salary and marketability; LIS competency positively affects salary; and LS competency positively affects both promotion and marketability. Results also demonstrate that employability, salary and promotion are positively associated with CS. The study also separately analyses, and tests hypothesised relationships for the three groups of firms: Chinese state-owned 3PLs, private Chinese 3PLs and multinational 3PLs. These results are then compared, identifying varying degrees of relationships between the constructs of logistics competency, career success and CS. From the academic standpoint, the validated conceptual model proposed in this study is beneficial to support future research in the area of talent development in general, especially in the area of L&SC management. Regarding management implications, the results of this study are helpful for L&SC education and training providers to design appropriate incentive and motivational packages.

PUBLICATIONS

1. Nie, Q. and Rahman, S. (2014) Graduate Students' Perceptions of Supply Chain Skills for Supply Chain Managers", *Benchmarking: An International Journal*, 21, 2, 276-299.
2. Nie, Q. (2017), Chinese 3PL Providers' Skills Challenge: A Systematic Assessment, Conference presentation at the *11th Conference of the China Federation of Logistics and Purchasing*, 22 July, Hefei, China.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

3PL	Third-party logistics
AVE	Average variance extracted
B2C	business-to-consumer
BLM	Business, logistics and management
CFA	Confirmatory factor analysis
CFLP	China Federation of Logistics and Purchasing
CMV	Common method variance
CP3PL	Chinese private third-party logistics
CR	Composite reliability
CS	Career satisfaction
CSCMP	Council of Supply Chain Management Professionals
CSE	Core self-evaluation
HR	Human resources
HRM	Human resource management
IS	Information systems
IT	Information technology
LA	Logistics analytical
LGM	Logistics general management
LIS	Logistics information systems
LS	Logistics sustainability
L&SC	Logistics and supply chain
L&SCM	Logistics and supply chain management
LVP	Latent variable path
MAIS	Management analytical information sustainability
MNC	Multinational corporation
MN3PL	Multinational third-party logistics
PLS	Partial least squares
PRC	Peoples' Republic of China
SC	Supply chain
SCM	Supply chain management
SCANS	Secretary's Commission on Achieving Necessary Skills
SEM	Structural equation modelling

SO3PL	State-owned third-party logistics
US	United States
VIF	Variance inflation factor
WTO	World Trade Organisation

CHAPTER 1: INTRODUCTION

1.1 Introduction

This study investigates relationships between the logistics competency, career success and career satisfaction (CS) of logistics professionals in third-party logistics (3PL) providers in China. The aim of this chapter is to provide an overview of the study. Section 1.2 introduces the research background regarding both the logistics industry and managers' competency. The scope of the study is addressed in Section 1.3. Section 1.4 presents the research objective and questions of the study, and the rationale for the study is discussed in Section 1.5. Section 1.6 presents an outline of the structure of this thesis, and the chapter ends with an overall summary in Section 1.7.

1.2 Research Background

China is the second largest economy in the world (Mahpula et al., 2013; Li et al, 2016). Over the past two decades, economic growth in China has been steady and has averaged more than 9.5% per annum; it continues to grow but at a slower pace (around 6.8%) in recent years (Trading-Economics, 2017) under the impacts of slow global economic recovery from the global financial crisis. Meanwhile, the growth rate of the logistics industry in China was 25% between 1994 and 2004 (Koh and Tan, 2005), but growth receded with the economic downturn (see Figure 1-1).

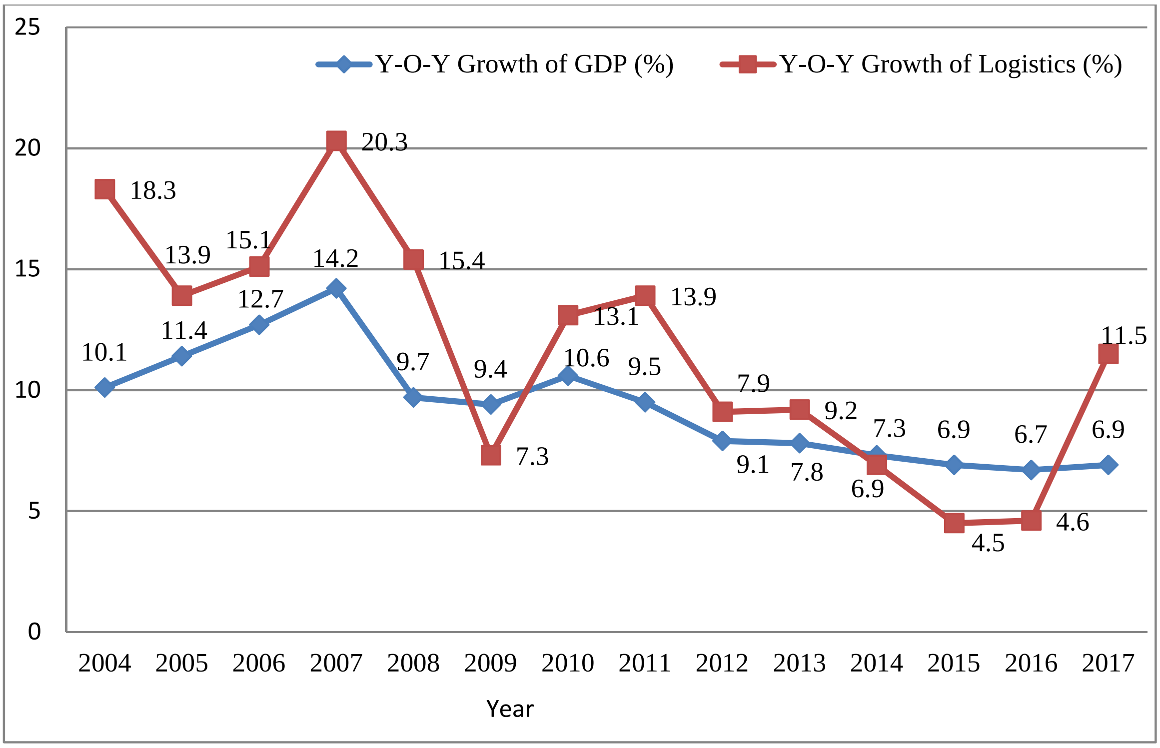


Figure 1-1: China's Gross Domestic Product and logistics industry growth rate from 2004 to 2017 *Source: National Bureau of Statistics of China*

China's transformation from a manufacturing-driven and export-led economy to one underpinned by services and domestic consumption is firmly underway (Sheng and Geng, 2016). To sustain the growth rate of the Chinese economy, an efficient logistics and supply chain (L&SC) system is important (Sohal & Rahman, 2013). However, higher logistics costs and low efficiency are serious problems in China (Huo, Zhao and Hua, 2017). According to the National Development and Reform Commission of China, the logistics cost proportion of China's Gross Domestic Product (GDP) was 18.8% in 2004, 17.8% in 2010, 16.0% in 2015, 14.9% in 2017 and in 2016, which is much higher than the levels for other developed economies (e.g. in the United States [US] it is around 8%) and even some developing ones (China Daily, 2017; Yang et al., 2016). China ranks 26th on the 2018 Logistics Performance Index among 160 countries and regions (LPI Report of World Bank, 2018), lagging far behind developed countries. In addition, the logistics market of China remains highly fragmented. Although the top 10 3PL providers hold approximately 10% of the market share there are several inefficiencies in these organisations (UnibankInf, 2015). In recognition of this fact, the Chinese government has designated logistics as a strategic industry (Lau and Zhang, 2006; Zhou et al., 2008) and issued its *Medium and Long-term Plan (2014-2020)* for the development of the logistics industry. The aim of this strategic planning is to gain a competitive advantage by reducing logistics cost and building an efficient, safe and technically advanced logistics network, as well as delivering superior services (China Daily, 2017). The *One Belt, One Road* initiative and the establishment of a free trade zone as proposed by the Chinese government are expected to provide enormous economic opportunities and the potential to improve the capacity and efficiency of China's logistics systems.

To increase efficiency and win a competitive advantage, organisations are eager to improve their operations by collaborating with organisations that are connected. This requires managers with appropriate competency to manage such supply chain (SC) and logistics systems efficiently. Lack of a skilled workforce in the logistics industry not only leads to inefficiency, but also affects the growth of the industry (Kam et al., 2011). In other words, a weak manager might also make a weak logistics manager and SC strategist while a strong manager could bring rich benefits to L&SC organisations. The shortage of managers with necessary L&SC competency is considered one of main reasons for higher cost and inefficiencies in China (Lang, 2007; Cui, 2014). *China Daily* (12 November 2013) reported that China lacks executive managers—Chinese companies will need 75,000 executive managers with global experience in the next 5–10 years, but there are currently only 3000–5000 available. Two-thirds of multinational firms in China are faced with the difficulty of finding executives with top grade skills. A McKinsey study (2016) revealed also that fewer than 10% of local employees are well qualified to work for a MNC in China. Over the past two decades, a number of studies in human capital and L&SC have been undertaken to identify skill sets required by L&SC professionals, specifically logistics managers. These studies were conducted mainly in the context of North America, the United Kingdom and Australia (Larson, 2001; Myers et al., 2004; Poist and Murphy, 1991; Mangan and Christopher, 2005). Such studies in the Western world argue that selecting the right people, especially the most qualified managers, for undertaking pivotal SC and logistics responsibilities is especially critical to achieving most L&SC objectives, enhancing firm performance and improving market competitiveness for a firm (van Hoek, Chatham and Wilding, 2002; Myers, Griffith, and Daugherty, 2004; Richey and Wheeler, 2004; Wu, 2007; Aquino and Draper, 2008; Slone et al., 2010; Ellinger, 2011).

However, very limited research has addressed managers' competency in China. Rahman and Yang (2012) conducted a study to identify and prioritise the relevant competencies that L&SC professionals should demonstrate. Another example is Shi and Handfield (2012), who undertook an in-depth qualitative analysis of the SC talent market in China and explored possible root causes associated with the challenges that human resources (HR) managers face when recruiting and retaining managers. Given such circumstances, the topic deserves more detailed exploration in the context of China. Further, the similar studies, from the perspective of logistics professionals in 3PL firm addressing the logistics career development path or explored the relationships between logistics skills and competency, career success and CS in 3PL firms in China, have little been found in literatures.

Considering the effects of managers' competency on L&SC management (L&SCM) performance and competitiveness, as well as the scarcity of research in this filed, the aim of this research is not only to identify the skills and competencies required or used by managers working in 3PL firms operating in China, but also to investigate and assess the relationships between managers' competency and career success and CS from the perspective of managers in 3PL firms operating in China, which will provide extended knowledge and an understanding of managers' competency and career development in the L&SCM field. Further, this study proposes a theoretical research framework to analyse the relationships between logistics competency, career success and CS.

The logistics process is very much human centric (Myers, et.al. 2004). Many studies have described managerial work as a complex, dynamic and situation-dependent phenomenon (Mintzberg, 1973;

Collin, 1989; Carlson, 1991; Boyatxis, 2011; Chong, 2008, 2013). Research in the context of L&SCM is still in its early stages (Derwik, Hellstrom and Karlsson, 2016). What is more, managerial work in the context of the L&SC field has changed rapidly and has become more fiercely competitive than ever before owing to the external transformation driven by globalisation, advanced technology and increased customer demand (Fawcett and Magnan, 2002; Fawcett et al., 2007). L&SC managers, who directly affect their enterprises' operational and financial performance, play a critical role in achieving operational and strategic goals in the SC (Van Hoek, Chatham, and Wilding 2002) and contribute to the competitive edge of enterprises (Vokurka 2011). L&SC managers must have the expertise to manage people and logistics functions in a complex environment (Tate et al, 2010). Therefore, it is of great importance to explore the competency of SC managers (Gammelgaard and Larson 2001; Mangan and Christopher 2005).

A report by AMR Research Inc. (Aquino and Draper, 2008) showed that firms faced a huge obstacle in achieving SC expertise—a shortage of trained SCM professionals at all levels. The key findings of the Supply Chain Council were that leaders view SCM as a business discipline; and that a common SC talent model is the foundation for improvement. Universities have an opportunity to take a leadership role in this regard.

A few research has emphasised the increasing importance of selecting, training and retaining competent SC managers (Harvey et al. 2013). Studies on L&SC managers' competency have been undertaken from various perspectives (Harvey and Richey, 2001; Richey and Wheeler 2004; Myers et al., 2004; Dischinger et al., 2006). However, it is apparent that L&SC managers nowadays are responsible for more complex functionalities with a broader coverage than that described in the APICS (2009) *Supply Chain Manager Competency Model*, since economic globalisation results in longer and more complex SCs, longer time of purchasing and, in essence, more severe competition and challenges (Zhu et al., 2008; Vokurka, 2011). One of the major challenges to management in the next decade will be the scarcity of trained logisticians (Gammelgaard and Larson, 2001).

Additionally, the major planning problem for logistics educators is the identification of the required competency for career success, which must be emphasised in university and training curricula to meet the changing job opportunities of students (Dadzie and Johnston, 1984). Educational development for L&SC differs around the world. Countries involved in logistics in the Asia region, as well as developing countries, lag behind their Western counterparts (Dadzie, 1998b). China plays an important role in the global economy, and firms in China have taken the responsibility of providing global logistics operations and services for their Western trading partners (Chiou et al., 2002). Establishing China as a global logistics operations hub has been prioritised by the Chines government as one of the most important economic missions for the nation.

Traditional education can no longer provide effective training for SC practitioners to acquire the necessary competency. In short, there exists a gap between academia and real-world SCM (Richey and Wheeler 2004; Vokurka 2011). It is necessary to conduct a more comprehensive study of SC manager competency. Further, it is valuable to investigate the relationships between the L&SC competency, career success and CS of logistics managers in 3PL.

1.3 Scope of the Study

This study focuses on the context of skills and competency of senior-level L&SC managers of 3PLs in China. 3PLs are chosen in this study because of their contributions to and stimulus for economic growth and employment opportunities in China, especially in this era of rapidly developing e-business and transformation to rely more on domestic consumption (Hensher et al., 2015). This is further explained in Chapter 2. The scope of this study is limited to those 3PL enterprises on the member list of the Council of Supply Chain Management Professionals (CSCMP), China, and the China Federation of Logistics & Purchasing. In this study, the data were collected from a single respondent from each participating 3PL with knowledge and experience in logistics and supply chain management (L&SCM), procurement, operations management and production.

1.4 Research Objective and Questions

The overarching objective of this study is to investigate the relationships between logistics competency, career success and career satisfaction (CS) of logistics professionals in 3PL providers in China. To achieve the research objective, I propose the following three research questions for this study:

RQ1: Which competency/skill categories are significantly related to perceived employability, promotion, salary and marketability; and what are the dimensions to explain career success of L&SC managers working in 3PL firms in China?

RQ2: Are employability, promotion, salary and marketability related to CS of L&SC managers working in 3PL firms in China?

RQ3: Are the relationships between logistics competency, career success and CS different for L&SC managers working in Chinese state-owned 3PL (SO3PL), Chinese private 3PL (CP3PL) and multinational 3PL (MN3PL) firms operating in China?

1.5 Rationale for the Research

Over the last three decades, the profession of L&SCM has undergone a profound business transformation. Although managerial competency has been studied extensively (Boyatzis, 2011; Chong, 2008, 2013; Collin, 1989), the topic in the context of L&SCM is still in its infancy (Derwik et al., 2016). Research evidence shows that L&SCM competency has a substantial effect on business performance and financial competitiveness (Aquino & Draper, 2008; Bowersox, Closs, Stank, & Keller, 2000; Ellinger et al., 2011). In addition, demands from the industry regarding L&SC manager competency have changed in recent decades owing to profound business transformations in the field; for example, the globalisation of SCs, ongoing outsourcing and the widespread adoption of lean practices (Christopher, 2012). Most of the relevant literature investigates L&SC manager competency from the perspective of firm performance; for example, finances and strategic success (Shou and Wang, 2017; Kiessling *et al.*, 2014). To the best of my knowledge, few studies have explored the competency from managers' career success and satisfaction. This is especially important in China as human factors play a very crucial role in management: people are concerned more with job satisfaction than the performance of the company (Wu *et al*., 2013; Cottrill, 2010).

Considering the effect of managers' competency on business performance and competitiveness in L&SCM, as well as the scarcity of research in the field, this topic deserves greater attention.

In general, 3PLs can use the findings from this research to shape their L&SC managers' competency. Specifically, they will be able to make informed choices about:

1. Which skills should be developed to build a clear career path for L&SC professionals?
2. What are the effects of L&SC managers' competency on managers' career aspirations?
3. How do career aspirations relate to CS?

1.6 Thesis Structure

This thesis is comprised of eight chapters. Chapter 1 covers the research background, the scope of the study, its objective and research questions. A rationale for the research is also presented, followed by the thesis structure.

Chapter 2 briefly discusses the scenario of the 3PL industry currently operating in China. The chapter also presents a performance overview for the logistics industry, especially 3PLs in China, including MN3PLs, SO3PLs and CP3PLs. The discussion includes issues associated with these to highlight their significance.

Chapter 3 presents a comprehensive review of literature that focuses on theoretical concepts, empirical research and associated evidence relating to the current study. The chapter first discusses relevant competency and human capital theories for L&SC professionals. A modified research framework flowing from the literature review is then presented, including specific hypotheses development.

Chapter 4 presents the primary research methodology underpinning this study, which includes details on the research paradigm, empirical research design and research instrument development, as well as an overview of the questionnaire. Further, the population and sampling design, process of survey development and procedure of data analysis are discussed separately.

Chapter 5 presents a descriptive data analysis of the respondents and the result of skills ranking for Chinese logistics professionals. The preliminary data examination procedures, which include assessing missing data, identifying outliers and testing data normality are also presented.

Chapter 6 presents the data analysis and discussion of the statistical findings, which aims to interpret the statistical results. It makes a major contribution by presenting an analysis of the conceptual model, including structural equation modelling (SEM) (a partial least squares [PLS] technique) to assess the research model and validate the hypotheses.

Chapter 7 interprets and discusses the findings from the statistical analysis in the preceding chapter. The discussion is organised to answer the research questions and hypotheses developed in Chapter 1 and Chapter 3. The chapter clarifies the creation of the 3PL manager competency model for this research and reports the impact of each competency on career success (including four factors: employability, salary, promotion and marketability) and the effect of career success on CS. The relationships between all paired nodes within the model are discussed.

Chapter 8 concludes the thesis with conclusions, implications, limitations and recommendations for future research. The chapter discusses the conclusions of the research based on the research findings elaborated in the preceding chapter, along with the research model, research questions and research hypotheses. The theoretical and management implications of the research findings are also briefly discussed.

1.7 Summary

The nature and operational strategy of L&SC have been changing for many years. It is very clear that for further development, the logistics industry needs smarter employees and a higher level of competency to reduce costs and increase efficiency. Simply put, the productivity of an employee, particularly a manager, has a significant impact on performance outcomes, which may be the cause of the recent focus on talent development as strategy for a firm's effective performance and competitiveness. Flowing from that, this study chose to address the specific question of relationships developed between L&SC competency, career success and CS. The research question derived therefore is:

> What are the critical skills of L&SC managers among MN3PLs, SO3PLs and CP3PLs in China and their effects on career success; that is, can the significance of these skills be measured in terms of employability, salary, promotion and marketability; and would these higher-level terms be indicators of CS for L&SC managers?

Justification for this research revolves around the potential value the answers to this research question can bring to L&SC practitioners, educators, researchers and strategists. The explanation of the scope of the work, methodology and thesis structure sections may provide readers with some guidance to help navigate the remainder of the report.

CHAPTER 2: OVERVIEW OF THE LOGISTICS INDUSTRY—3PLs IN CHINA

2.1 Introduction

Driven by rapid economic growth over last two decades the logistics industry in China has grown rapidly but is still at an infant stage (Hensher, Zhang, & Rose, 2015; KPMG, 2016). The aim of this chapter is to provide an overview of the 3PL industry in China.

The development of the logistics industry in China is outlined in Section 2.2. Section 2.3 presents profiles for China's domestic and MN3PL providers. Section 2.4 is a focal point of this chapter, as it details some of the trends emerging in the 3PL market in China and discusses the impact of drivers and challenges for 3PLs in China. Concluding remarks are provided in Section 2.5.

2.2 Development of China's 3PL Industry

3PL is a core concept in contemporary China. 3PL evolved in the 1990s along with globalisation and the development of information technology (IT) (Yang, 2014). 3PL was first introduced and widely used in developed countries such as North America, Europe and Australia as a result of fierce competition. 3PL has become a widespread practice in many industries including in developing countries. In the past few decades, 3PL has attracted a surge of academic interest. By reviewing related literature, I find that 3PL has been examined from different aspects. Therefore, various definitions and interpretations of 3PL exist in the literature since, including few in Table 2-1.

Table 2-1: Definitions of 3PL

Authors	Definition of 3PL logistics
Lieb et al.,1993	Outsourced logistics involves the use of external companies (3PL providers) to perform logistics functions that have traditionally been performed within an organisation. Functions performed by 3PL providers can encompass the entire logistics process or selected activities within the process.
Leahy et al.,1995	3PL is associated with the offering of multiple, bundled services, rather than just isolated transport or warehousing functions.
Stank and Maltz, 1996	A 3PL may be defined as any firm providing a good or service that is not owned by the purchaser of the good or service.
Murphy and Poist, 1998	3PL involves a relationship between a shipper and a third party that has more customised offerings than basic services, encompasses a broader number of service functions and is characterised by a longer-term, more mutually beneficial relationship.
Coyle et al., 2003	A 3PL may be defined as an external supplier that performs all or part of a company's logistics functions.
Evangelista et al., 2013	3PL are activities carried out by a logistics service provider on behalf of a shipper and consisting of at least transportation. Other activities can also be integrated into the service offering: for example, warehousing and inventory management; information-related activities such as tracking and tracing; and value-added SC activities such as secondary assembly and installation of products.

Different definitions tend to emphasise different aspects of outsourcing arrangements. This thesis uses Lieb's (1993) definition of 3PL because it is broad and inclusive in nature and easily understood. Lieb (1993, p. 6) defines 3PL as:

> the outsourced logistics involves the use of external companies (3PL providers) to perform logistics functions that have traditionally been performed within an organisation. The functions performed by the 3PL providers can encompass the entire logistics process, or selected activities within the process.

For the purposes of this study, 3PL is also referred to as contract logistics, integrated logistics and outsourced logistics.

Logistics refers to the process of planning, implementing and controlling procedures for the efficient and effective transportation and storage of goods including services and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements (CSCMP, 2010). Recognition of the importance of logistics to various industries is generally acknowledged as having occurred in the early 2000s (Liu, 2012), especially since China became a member of the World Trade Organisation (WTO) (Huo et. al., 2017). Realising that an efficient logistics system is of paramount importance for further economic growth and modernisation of the country, the Chinese government has designated logistics as a strategic industry (Sohal & Rahman, 2013; People's Republic of China [PRC], 2016) and systematically invested in the development and improvement of its logistics infrastructure during the implementation of the country's 13th *Five-year Plan (2016–2020)* (Jiang, 2016; Mahpula et. al., 2013; Mingjun, 2016). Further, the Chinese government in 2014 announced its *Medium and Long-term Planning on Logistics Development (2014–2020)*, which has cost reductions in China's logistics industry as one of its major targets: specifically, the share of logistics cost in the GDP should be no more than 16% by 2020. Figure 2-1 shows logistics costs and their share in the GDP from 2004 to 2017 in China. It demonstrates that although logistics costs continue to rise, their share of GDP has shown a sharp decline since 2013.

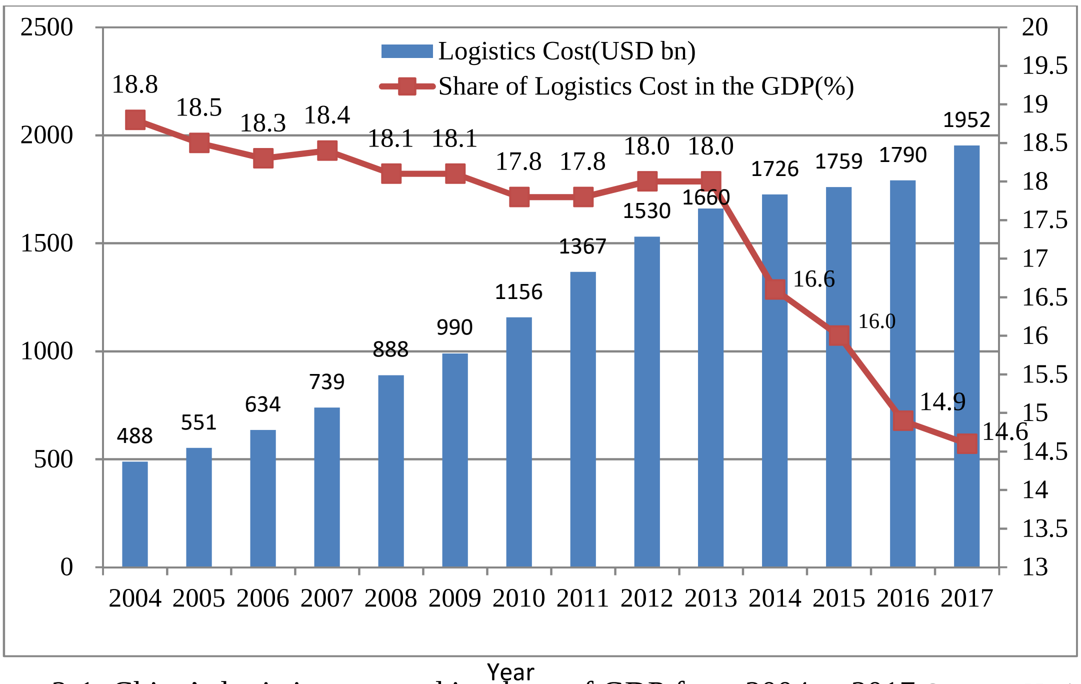


Figure 2-1: China's logistics cost and its share of GDP from 2004 to 2017 *Source: National Bureau of Statistics of China (2018)*

China is considered a popular place to outsource (Matteo, 2003) because of its rapid economic growth and huge pressure of competition. Low-cost and high-technology manufacturing have made China the leading destination for outsourcing (Brown, 2005). With its accession to the WTO in 2001, China became a more favourable country for multinational companies, which further stimulates the development of the logistics industry and outsourcing (Agarwal and Wu, 2004). Since the release of the *Medium and Long-term Planning on Logistics Development (2014–2020)* in 2014, China's logistics industry has entered a new development stage focusing on cost reduction and efficiency improvement, resource integration at the strategic development level and enhancement of its core competitive edge (Deloitte on Research, 2017). In 2015, the State Council announced action guidance on 'Internet plus' and included 'Internet plus efficient logistics' in its 11 priority initiatives. According to the Agility Emerging Markets Logistics Index (2018), China for several years has ranked first among 50 emerging markets with respect to the annual Emerging Markets Logistics Index (see Table 2-2). The index ranks 50 emerging economies based on underlying data and is supported by an independent survey of almost 1000 executives in the L&SC industry. Among the 50 countries, China ranks third on the Business Environment Index and fourth on the Transportation and Logistics Infrastructure Index. The total value of demand for logistics increased from RBM 177.2 trillion (US$ 28.5 trillion) in 2012 to around RMB 230 trillion in 2016 (US$ 34.6 trillion) (Research & Markets, 2017), representing average annual growth of 9.50% during this period. The 3PL market in China has a significant share (21.91%) of the global 3PL market. This is expected to grow at a compound annual growth rate close to 10.16% over 2017–2021 and be valued at over USD 250 billion by 2021 (Business Wire, 2016).

Table 2-2: Rankings on the Emerging Markets Logistics Index

RANK	COUNT	2018 Index	2017 Index	2016 Index	2015 Index	2014 Index
1	China	8.00	7.88	8.00	8.09	9.11
2	Saudi Arabia	6.29	6.48	6.67	6.76	6.77
3	Brazil	6.03	6.23	6.46	6.71	6.80
4	Indonesia	6.50	6.41	6.50	6.70	6.59
5	India	7.12	7.14	6.83	6.66	6.75
6	United Arab Emirates	7.01	6.48	7.02	6.63	6.50
7	Russia	6.10	6.09	6.09	6.57	6.45
8	Malaysia	6.63	6.66	6.71	6.36	6.14
9	Mexico	6.06	6.15	6.25	6.3	6.09
10	Turkey	6.03	6.09	6.05	6.06	6.01
11	Chile	5.86	5.88	6.01	5.93	5.92
12	Qatar	6.02	5.78	5.88	5.87	5.88
13	Oman	5.75	5.62	5.63	5.70	5.70
14	Thailand	5.68	5.53	5.77	5.58	5.46
15	South Africa	5.07	5.26	5.43	5.46	5.38

Source: Agility Emerging Markets Logistics Index

China's 3PL development has been profoundly affected by the rapid growth of e-commerce (Jiao, 2014; Choy et al., 2014). China became the second largest Internet market and the largest mobile phone market in the world in 2002 (Wong et al., 2004). In 2013, the transaction value of China's e-commerce reached RMB 10 trillion (US$ 1.62 trillion); thus, China by then had overtaken the US as the e-commerce market leader (Forrester, 2015; eMarketer, 2015). Its transaction value rose to RMB 16.4 trillion (US$ 2.63 trillion) in 2015 and to RMB 30 trillion (US$ 4.82 trillion) in 2018 (Fung Business Intelligence, 2016). China's online retail trade (business-to-consumer [B2C]) volume also increased rapidly during the same period (see Figure 2-2). According to the China Internet Network Information Center, by 2017, 730 million consumers in China had Internet access, 95% of whom access the internet from their mobile devices. E-commerce has been transformed further towards M-commerce (mobile commerce).

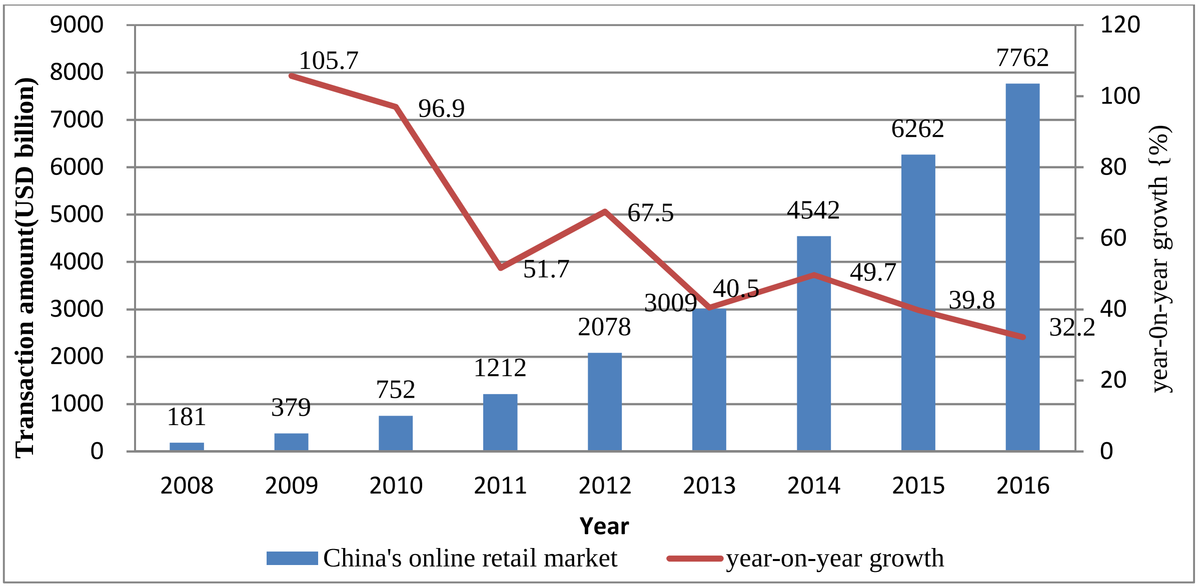


Figure 2-2: China's online retail trade volume from 2008 to 2016 *Source: China's E-commerce report, 2015 and 2016 data from Ali Research Institute and consolidated by the research group.*

Online cross-border shopping has become the most popular and fashionable lifestyle among young consumers in China (Winters, 2016). A survey conducted by Nielsen (2016) showed that 38% of customers in Tier 1 cities and 27% in Tier 2 cities rely on cross-border online shopping. The expanding market presents a sizable opportunity for logistics providers to expand their business (Jiao, 2015). It was estimated that by 2020, the revenues of China's cross-border e-commerce transactions would rise to RMB 12 trillion (US$ 1.94 trillion), accounting for 37.6% of the total international trade of China (China E-Commerce Research Center). The Chinese government has released several policies to reduce logistics barriers, streamline trade facilitation and simplify tax-related regulations to encourage the growth of cross-border B2C imports, as part of its efforts to move towards a consumption-based economy and away from an investment-driven economy. Since March 2015, 13 cities (Hangzhou, Ningbo, Zhengzhou, Tianjin, Shanghai, Chongqing, Hefei, Guangzhou, Chendu, Dalian, Qingdao, Shengzhen and Suzhou) have been launched as national-level comprehensive cross-border e-commerce pilot zones by the Chinese government (China Daily, 2017). In these zones, goods are stored temporarily after shipping in bulk from abroad. Tariff payments are made only after the goods are sold to consumers and leave the zone, which will bring benefits and business opportunities for 3PL providers.

Meanwhile, the evolution of Chinese urbanisation is likely to gradually improve logistics conditions in the central and western regions of China (Figure 2-3). As a fundamental, pillar and comprehensive industry for the national economy in the 21st century, modern logistics plays a critical role in the development of the regional economy, which in return drives development of the modernisation of the logistics industry. In fact, an urgent issue has become how to build a modern regional logistics system that fits with the goals of regional economic development in terms of characteristics of the regional economy; and how to determine the mode for modern regional logistics development based on growth patterns in the regional economy and strategies for regional development.

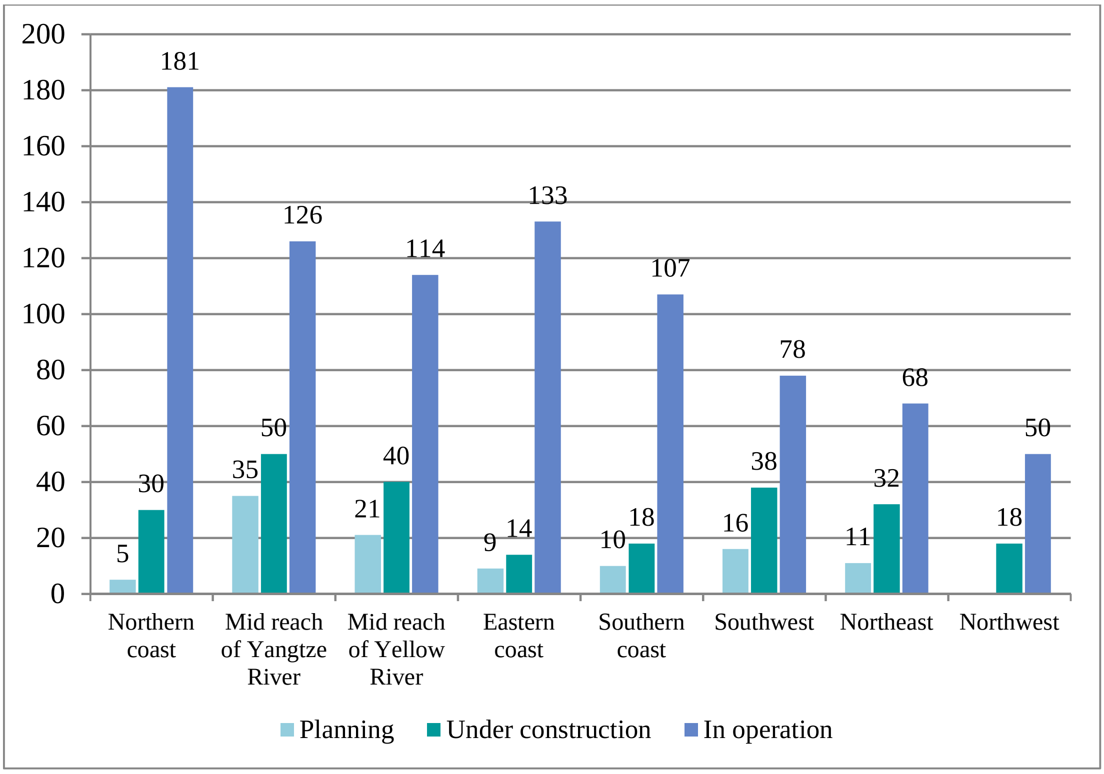


Figure 2-3: Status of logistics parks in eight major economic regions in China in 2016 *Source: The Fourth National Logistics Parks (Bases) Survey Report*

China's *One Belt, One Road* initiative, advanced by President Xi Jinping, is the latest driver of 3PL development. Logistics has been considered a bottleneck for the development of 64 countries along the route of the One *Belt and One Road* (OBOR) *Initiative*, and an important engine for future development. The initiative includes macro-level strategic designs for national logistics, which require both the integration of domestic logistics resources and connectedness with international logistics channels. Producing chain effects between OBOR *Initiative* populations and resources, leveraging the strong platform effect of the Internet to link up fragmented regional interests of en route countries and implementing strategic plans and network construction for the OBOR *Initiative* would be new measures worth trying in line with current economic trends. The initiative contributes largely to exports and is expected to continue boosting logistics demand in the future. Most provinces and cities along the route of the OBOR *Initiative*, particularly the mid-western area surrounded by the *Silk Road Economic Belt*—represented by Zhengzhou, Xi'an, Lanzhou and Urumqi—are accelerating the development of their logistics industry with a vision of building themselves up as logistics hubs along the OBOR *Initiative* route. After establishing transportation and logistics hubs, particular export-processing enterprises targeting Europe and other regions may choose to produce, process, disassemble and package locally; this would also agglomerate populations in the mid-western area, accelerating its process of urbanisation.

Clearly, the Chinese 3PL scenario is highly complex (Mahpula et al., 2013; Giuffrida et al., 2017), not only because of the vast geographical area and diversity of the territory and its relatively poor infrastructure but also because of some specific cultural features (Jiang and Prater, 2002; Daly and Cui, 2003; Liu, 2014). China's economic growth and transformation provide more opportunities and potential to 3PL providers but also plenty of challenges including high cost and low efficiency (Zhang and Figliozzi, 2010).

2.3 Profile of China's Domestic and Multinational 3PLs

A 3PL firm is defined as one that provides multiple logistics services for customers and streamlines the movement of parts and materials from suppliers to manufacturers, and finished products from manufacturers to distributors and retailers (Council of Supply Chain Management, 2012). 3PL firms play a crucial role in integrating logistics activities and adding value to satisfy customer demand and maintain competitiveness in markets (Murphy and Poist, 2000; Knemeyer et al., 2003). In China, since the introduction of 3PL logistics services in the mid-1990s and after China joined the WTO in 2001, 3PL has developed rapidly (Chin et al., 2007; Sha & Guan, 2008). It was reported by the China Federation of Logistics & Purchasing in 2016 that there were 300,000 corporate logistics enterprises and more than 50.12 million employees working in the logistics industry. The Chinese government regulates and supervises them via its Classification and Evaluation Index for logistics enterprises (GB/T 19680-2013). Based on this index, logistics firms in China are grouped into star levels, from one to five stars, after annual auditing and evaluation. As of 2016, there were more than 4000 star-level corporate logistics firms, representing around 8–10% of logistics firms in China on the basis of standards. Among these, the top 50 corporate logistics firms share 11.5% of gross logistics revenue of China. Only listed star-level logistics service providers are included in the current study. Based on their structure, ownership and area of operations, 3PL providers in China can be classified into four types of firm (Mahpula et al., 2013; Deloitte Research, 2015; Sha & Guan, 2008):

- Type I are large state-owned enterprises, restructured from traditional warehousing providers, transportation companies and postal service companies. State-owned logistics enterprises are the dominant sector among the top 50 logistics firms in China, such as China Ocean Shipping Group Company, Sinotrans, China Shipping Group, China Post, China Railway Freight and Air China Cargo.
- Type II are privately-owned logistics firms, which are huge in number and spread across every market segment, including road transportation, domestic express delivery and warehousing. Some examples of these are Baogong Logistics Group, EAS and PGL, which

emerged mainly from the mid-1990s onwards to grab market share by offering lower prices.

- Type III are categorised as MN3PLs established through investment of capital from foreign countries, Hong Kong Special Administrative Region (HK SAR), Macau and Taiwan. Some well-known MN3PLs are FedEx, DHL, UPS, Kerry Logistics, Datong, KINTETSU, HAVI, Maersk, EAC, Hutchison and Whampoa, Inchcape, Sea-Land, Huashang and Sankyu. Typical investors in MN3PL firms are among the world's top 500 logistics service providers with a global network and rich talent pool.
- Type IV are logistics divisions of manufacturers and distributors that primarily provide services to internal customers, examples of which are Haier, Annto and Attend Logistics.

Among the top 50 logistics firms in China according to the China Federation of Logistics and Purchasing (CFLP) ranking, there are higher threshold requirements as the revenue of enterprises increases. In 2016, on top of the list was China Ocean Shipping Group Company, with a logistics business revenue of RMB 144.15 billion (US$ 21.7 billion). New Times International Transport Service Co. Ltd ranked 50th with a logistics business revenue of RMB 2.24 billion (US$ 0.34 billion)—a threshold with an increase of RMB 210 million (US$ 31.6 million). The business modes of China's domestic 3PLs are listed in Table 2-3.

Table 2-3: Business modes of domestic 3PLs in China

Main business	Companies	Description
Regional distribution, city distribution, trunk transportation	Rokin Logistics, Shuanghui Logistics, Zhongrong Logistics	Factors in success involve temperature control and setting up a wide range of cold chain transportation networks
Offers storage, preserving and transfer services for cooler cargo	SinoTransPFS, Swire Cold Chain Logistics	Focused on technical issues of the refrigerating cabinets and capabilities in inventory management
Low-temperature city warehousing, city distribution	Express Channel Food Logistics, Shanghai Xintiantian Dazhong Cold Logistics, Shenzhen Shuguang Logistics	Focused on the cold chain within a single region with some regional limitations
Provides comprehensive services including low-temperature	China Merchants, Americold Grand Logistics, China-cold Logistics	Usually large-scale enterprises, can provide a full range of services
Connected with wholesale market and distribution centre, primarily engages in cold chain warehousing	Unicom, Baishazhou, Higreen, Jiangsu, Runheng	Requires abilities in efficient market management of services and goods for multiple clients
Provides overall solutions for the core enterprise and covers the whole cold chain	Lanesync	Provides diversified SC service for clients, including purchase and finance

Source: Compiled by the author

Traditional Chinese 3PLs have evolved from national state-owned enterprises in the warehousing and transportation sectors, which previously held a monopoly position for a long period, with advantages in specialised segments such as household appliances, electronics, chemicals and exposition logistics. These enterprises generally have advantages in market segments with restricted access by other types of logistics enterprises (Deloitte Research, 2017). Being mostly asset intensive and relying on state policy benefits and market shares accumulated for many years in traditional business sectors, these enterprises enjoy mature development in their distribution of networks, asset allocation and warehouse space, with stable market prominence. Traditional logistics businesses still contribute to a major share of revenue for these SO3PLs. This study is set in the context of the first three types of domestic 3PLs, i.e., SO3PL, Chinese private CP3PL and MN3PL firms. Manufacturers are omitted from this research as they are not typical 3PLs according to Lieb’s definition.

With respect to private 3PLs, there are a great number of such enterprises in every market segment including road transportation, domestic express delivery and warehousing. Some enterprises also develop national networks in certain fields with certain market shares, including Yuan Tong Express, Shen Tong Express and Yun Da Express. These private 3PLs are mainly distributed in segment sectors with relatively low margins, gaining their competitive edge by offering low prices.

The entry of MN3PL enterprises in China has had a demonstrably far-reaching influence on the Chinese logistics industry and they remain the main service providers for the Chinese export-oriented logistics market (Mahpula et al., 2013) These MN3PLs are companies owned by investors in foreign countries and HK SAR, Macau and Taiwan, and include Fedex, DHL, UPS, Kerry and GLP. They are among the world's top 500 enterprises, with networks spanning the globe, extensive experience in logistics, numerous logistics staff, strong capabilities in corporate management, keen market insights, mature business operation philosophy, solid client resources and diverse funding channels.

MN3PLs have introduced advanced logistics concepts, superior technologies, sector-specific knowledge and experience, and new management systems into the Chinese market, which has enabled local businesses to access not only full logistics services but also modern logistics concepts (Liu et al., 2008; Millar, 2014).

The national development and the challenges of managing 3PLs have attracted a great deal of attention over the last two decades (Leuschner et al., 2014). A growing number of firms is outsourcing some or all of their logistics activities to 3PL providers, as they seek to achieve reduced costs, improved service and enhanced ability while focusing on their own core activities (Maloni and Carter, 2006).

According to a survey of around 2000 executives, by Langley (2012), over 45% of shipping and transportation logistics and 39% of warehouse logistics are outsourced to 3PL providers. China's 3PL industry is demonstrably expanding faster than that of other developing countries (Wee Kwan Tan et al., 2014). Some cities, such as Shanghai, Tianjin, Guangzhou and Shenzhen, regard the logistics industry as one of their most important economic sectors, and thus they provide preferential policies and resources to promote the 3PL industry. Recently, this trend has extended to numerous regions across China (Hong et al., 2007; Jing and Cai, 2010).

2.4 The Impact of Drivers and Challenges on 3PLs in China

According to TechNavio (2014), the key impacts of drivers and challenges can be graded on the basis of the intensity and duration of their influence on the current market landscape of China. Some of these trends are briefly discussed below:

- **Use of freight online-to-offline (O2O) enterprises to improve core competitiveness**

  The market is expected to see an inevitable trend in intensive development driven by elimination of enterprises that lack core competitiveness via integration and financing, commitment to excellent quality of platforms and seeking of more complementary cooperation in functions and markets. Meanwhile, diversified highway logistics can be realised based on active transformation of traditional logistics enterprises and enterprises with Internet connected, and cooperation between the two.

- **Realised online logistics management based on big data**

  Intelligent logistics enables logistics systems to simulate human intelligence by using integrated intelligent technologies for informationisation, cyberisation, intelligentialisation and electronisation of logistics, and transformation of traditional logistics to modern logistics. Data analysis is indispensable for the development and realisation of the two trends in logistics. Besides, big data is essential for the realisation of excellent logistics and intelligent logistics. All these highlight the importance of big data for the upgrading and development of logistics.

- **Information-based warehousing systems relying on intelligent logistics warehousing**

  According to the 2016 *Report on Global Third-Party Logistics*, of the main management indicators for the evaluation of 3PL suppliers, warehousing ability, transportation management, visibility of logistics process, and exchange of electronic data are considered the four most essential. In response to big data and big logistics, the leading system integrators in China are investing in innovative logistics operation services for new drivers of profit growth. Cloud-based warehousing networks relying on intelligent logistics warehousing systems is one of the key strategies.

- **Logistics professionals are in need of lean management**

  With the development of high-end manufacturing, more scale-up and intensive development of production, and distribution and flexibility-oriented development of SCs, enterprises have higher requirements for logistics efficiency in the Internet age. Integrated logistics such as cold chain, medicine and automobile logistics are urgently needed. The 2010 *Plan for Formulating and Revising National Standards* issued by the Standardisation Administration of the PRC covers cold chain logistics, steel logistics, automobile and auto parts logistics, emergency logistics, shelves and warehousing technologies. The potential market for intelligent logistics system is worth more than RMB 100 billion (US$ 16.3 billion).

- **System integrators are playing a core role throughout the supply chain**

  Compared with other players in the development of intelligent logistics, providers of logistics system solutions make the most profit. Data on international giants in 2014 indicate that these giants have grown as core equipment suppliers and have advantages in hardware technologies. Such enterprises include Daifuku, Dematic and KSEC Logistics. Other enterprises have developed as logistics software developers with strong competitiveness in the development of software technologies. Typical representatives include Swisslog and New Trend International. According to the latest (2014) ranking, Daifuku ranked top in the global market with a revenue of US$ 2.54 billion, replacing SSI Schaefer, which previously topped the list of automatic system integrators. Daifuku, SSI Schaefer, Dematic and Vanderlande have operated businesses with factories in China for many years.

Rahman et al. (2017) proposed a framework consisting of a structured hierarchy of challenge categories and challenges to identify the critical challenges facing 3PLs in China. Following an extensive literature review, their study identified 14 challenges for MN3PL providers operating in China. These challenges were grouped into four higher-level challenge categories: financial, technological, HR and business landscape. These challenge categories and challenges were then incorporated into a developed hierarchical conceptual model underpinned by theories such as transaction cost economies (TCE), resource-based theory (RBT) and neo-institutional theory (NIT). To assess the critical challenges faced by MN3PL service providers, five senior executives representing five MN3PL firms operating in China were interviewed. The participating firms and interviewees were selected non-randomly through the use of purposeful sampling and snowballing techniques. The results for the 14 challenges indicated four that proved the most critical: which *guanxi*, price pressure, government regulations and high transportation costs. It is easily understood why price presure, government regulations and high transportation costs are considered as the most critical challenges by managers since these three items are highly related to the competitiveness and competency in logistics operation. While *Guanxi* as a Chinese social concept is thought as one of the four most critical challenges by managers, reflects the importance of person to person relationships as a social capital in the logistics and supply chain management in China context. All the critical challenges belonged to either the business landscape or financial challenge categories.

2.5 Summary

Rising incomes and increasing domestic consumption along with the boom in e-commerce and new initiatives have resulted in higher demand for logistics in all segments in China. China is now focusing on elevating 3PLs into a higher value chain of SCs. Logistics development has grown tremendously and is now one of the main contributors to the economy of China. The importance of the current study was further explained in this chapter. An overview of domestic logistics enterprises and MN3PLs involved in the industry was provided, which highlighted the importance of this research area. This discussion leads to Chapter 3, which focuses on the critical antecedents of L&SC manager competency, employability and CS underpinning this study.

CHAPTER 3: LITERATURE REVIEW, RESEARCH FRAMEWORK AND HYPOTHESIS DEVELOPMENT

3.1 Introduction

A literature review involves documentation of a comprehensive review of the published and unpublished work from secondary sources of data, in areas of specific interest to the researcher (Sekaran, 2000). The purpose of the literature review here was to provide a comprehensive background for understanding the current research topic. Books, journals, conference proceedings, doctoral theses and government publications were used as sources of information on L&SCM, L&SC professionals' skills and the relationship between competency, career success and CS. By organising, integrating and evaluating previously published material, the researcher records the progress of current research towards clarifying the issue raised.

Following this introduction section, Section 3.2 gives an overview of the theories that form the foundation of this study. Sections 3.3–3.5 consider in detail L&SC managers' competency, employability, salaries, promotion, marketability and CS, respectively. Section 3.6 explains the research framework of this study. A discussion of the research hypotheses is presented in Section 3.7. The chapter concludes with a chapter summary in Section 3.8.

3.2 Theoretical Foundations of the Research

This section discusses the two theories that act as foundations for this study:

3.2.1 Competency Theory and Development

The concept of competency has a rich history and is best known from current practices of competency-based education and competency management in organisations. There is a vast amount of theoretical and research literature on competency. The most comprehensive piece of research on the relationship between competency and performance was that of Bartram (2005).. Competency theory and development are becoming increasingly important in today's turbulent business environment. (Suikki et al., 2006)

Hamel and Prahalad (1994) define competency as a bundle of skills and technologies that enables a company to provide benefits for customers, rather than a single skill or technology (see also Ivergard, 2000; Sydanmaanlakka, 2003). Therefore, core competency is a source of competitive advantage. Whether we use some partial or full definition of competency or not, in a business sense competency means something used to deliver some benefit for beneficiary. More accurately, Westera (2001) provides two perspectives on competency: theoretical and operative. The theoretical perspective is that competency is conceived as a cognitive structure that facilitates specified behaviour. The operational perspective covers a broad range of higher-order skills and behaviours that represent the ability to cope with complex unpredictable situations; this definition includes knowledge, skills, attitudes, metacognition and strategic thinking. and presupposes conscious and intentional decision making (Figure 3-1) (see also Nordhaug, 1991).

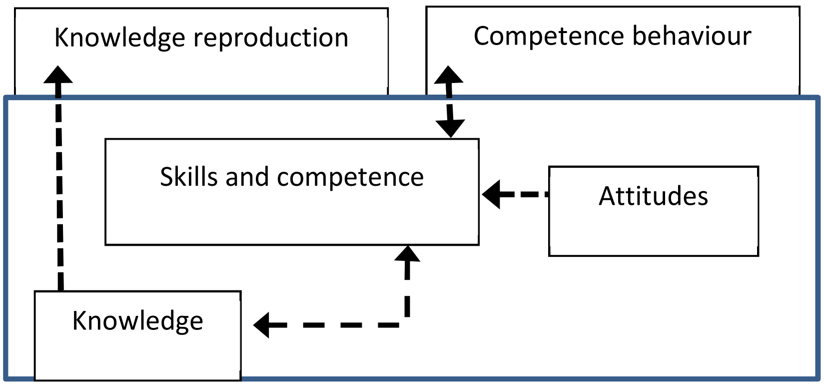


Figure 3-1: Schematic view of common definitions of competency and its features

Source: Nordhaug (1991), Westera (2001)

Technical competencies are work specific but not organisation specific (e.g. computer programming) and are usually taught via formal training. Unique competencies are both organisational and task specific. These competencies are learnt by induction and work experience. They develop from individual factors, organisational culture, and professional and task-specific skills (Nordhaug, 1991; Allden et al. 2018; Cameron, & Shaun, 2019).

Drejer (2000, 2001) proposed using Kolb's (1984) model (experiential learning model: concrete experience, reflective observation, abstract conceptualisation and active experimentation) on a group of persons involved as part of competency development. The Dreyfus and Dreyfus (1986) model, where a person starts off as a novice, becomes an advanced beginner and then proficient, competent and finally expert, is used also. Having chosen Kolb's (1984) cycle as a model for understanding the dynamic process of competency, development is a logical step based on the initial assumption that it is Busithat competency level and development must be studied (see Figure 3-2).

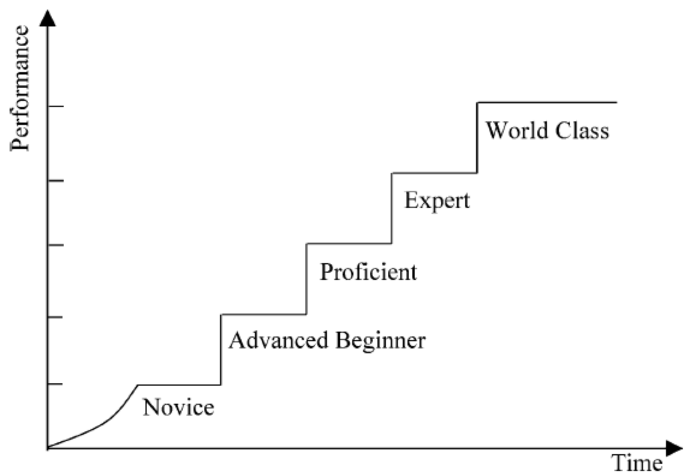


Figure 3-2: The levels of competency development *Source: Kolb (1984)*

White et al. (1996) offer organisational perspectives and skills when guiding managers through the turbulence of the corporate environment. They argue that change and uncertainty are the new touchstones of leadership excellence. The business world of today and tomorrow can be seen as a series of fast-flowing rapids full of excitement, challenge, adventure and uncertainty, where risks will be higher and rewards greater.

3.2.2 Social Capital Theory of Career Development

Coleman (1990) defines social capital as any aspect of social structure that creates value and facilitates the actions of the individuals within that social structure. Just as the creation of physical capital involves changes in materials to facilitate production, and human capital involves changes in an individual's skills and capabilities, social capital is created when the relationships among people change in ways that facilitate instrumental action.

Organisational researchers have begun to develop increasingly comprehensive models of career success using demographic, human capital, work family, motivational, organisational and industry variables (e.g. Dreher & Ash, 1990; Judge & Bretz,1994: Judge, et al., 1995; Kirchmeyer, 1998). Although this work has provided considerable evidence regarding the determinants of career outcomes, the role of informal interpersonal behaviours has not been fully explored (Judge& Bretz, 1994; Pfeffer, 1989). Popular advice for getting ahead in one's career rarely fails to mention the importance of networking for the achievement of career goals (e.g. Bolles, 1992; Kanter, 1977). Indeed, Luthans, Hodgetts and Rosenkrantz (1988) found that the most successful managers in their study spent 70% more time engaged in networking activities and 10% more time engaged in routine communication activities than their less successful counterparts. Recent advances in social capital theory have begun to provide a finer-grained analysis of the ways in which individuals' social networks affect their careers in organisations (Burt, 1992, 1997; Ibarra, 1995; Podolny & Baron, 1997; Sparrowe & Popielarz, 1995). This theoretical perspective has the potential to considerably enhance scholars' knowledge of the role of social processes in career success.

In general, career success is defined as 'the positive psychological or work-related outcomes or achievements one accumulates as a result of work experiences' (Seibert, Crant, & Kraimer, 1999, p. 417). A conceptual distinction between so-called objective and subjective measures of career success is very frequently made. Criteria for objective success may include salary, salary growth, promotions and hierarchical status, while criteria for subjective success include CS, comparative judgments and job satisfaction (see Arnold & Cohen, 2008). Many career researchers argue that it is important to assess both aspects because the meaning of a career can only be understood if different criteria are taken into account (Arthur, Khapova & Wilderom, 2005; Heslin, 2005). Objective and subjective measures correlate positively, but these correlations are only moderate (Dette, Abele, & Renner, 2004; Ng et al., 2005). There are also findings suggesting that the predictors of objective career success differ from the predictors of subjective success and that even within different facets of objective and subjective success, predictors differ. Ng et al. (2005), for instance, argue that individual difference variables account more for subjective parameters than for objective ones.

In Sections 3.3–3.5 I expand on the discussion of competency and career success from the perspective of L&SCM. Specifically, I review skill models for L&SC managers. In addition, I attempt to identify the ‘connections’ between L&SC managers’ competency and their career success—for example, job satisfaction—according to these fundamental theories.

3.3 Logistics and Supply Chain Skills and Competency Models

In recent years, a rich body of literature has emerged on talent development in the L&SC context. Most studies investigate the importance of certain skills and competency for a L&SC manager (Williams and Currey, 1990; Minahan, 1998; Razzaque and Sirat, 2001; Parker and Anderson, 2002; Mangan and Christopher, 2005; Murphy and Poist, 1991, 2007; Rahman and Yang, 2012; Wilson and Barbat, 2015; Shou and Wang, 2017; Bak et al. 2019; Campos et al., 2019). Others also examine the relationship between L&SC manager competency and firm-specific characteristics, including the overall success of L&SCM or design (Cooke, 1992; Drew and Smith, 1998; Gammelgaard and Larson, 2001; Myers et al., 2004; Mangan and Christopher, 2005; Christopher, 2012; Prajogo and Sohal, 2013; Dalziel, 2019), customer orientation (Richey et al., 2006; Periatt et al., 2007; Dubey et al., 2018), financial performance and worth (Carr and Smeltzer, 2000; Myers et al., 2004; Richey et al., 2006; Dobroszek et al., 2019). Below I discuss the sources of these models.

3.3.1.1 Murphy and Poist: Business, Logistics and Management Model

According to the earliest work of Murphy and Poist (1991), the business, logistics and management (BLM) model suggests that skill requirements fall into three broad categories: 1) Business skills and the knowledge that both directly and indirectly relates to business. Examples include knowledge of the functional areas that comprise business as well as such diverse subjects as economics, psychology and sociology. 2) Logistics skills are the knowledge of the numerous and diverse fields of logistics. 3) Management skills are needed for planning and organising, along with personal attributes that enable managers to be successful in the logistics environment.

A total of 83 individual skills are included in the BLM model: 33 in the business cluster, 18 in logistics and 32 in management. This model has since become the backbone of research on skills and competency of L&SC managers (Thai et al., 2012). Murphy and Poist (2006) later revised their model (Murphy and Poist, 2007), and this was adopted by Thai et al. (2012, p. 168). They add four skills (strategic planning, risk management, multiculturalism, quality management) to the business category, four (outsourcing, integrated logistics, multimodalism/intermodalism, green logistics) to the logistics category and four (ability to implement, performance management, non-verbal communication, innovation and dynamic) to the management category.

Studies based on BLM indicate that management skills are the most important, followed by logistics skills and business skills, and suggest that 'logisticians should be managers first and logisticians second' (Murphy and Poist, 1991, p. 76). The ranking of some skills in business and management skill sets changed between 1991 and 2007, but there have been no significant changes in the ranking of skills in logistics competency. In business competency, L&SC was the most important business skill in 2007 while this skill was unknown in the 1991 study. Oral communication, production management and international business obtained significantly higher ranking in 2007 than in 1991. The large ranking improvement in business skills was related to future opportunities and threats. The ranking of five skills in business competency decreased significantly; these were self-confidence, self-motivation, ability to plan, managerial control and ability to organise (Prajogo and Sohal, 2013, p. 1534).

3.3.1.2 Giunipero and Pearcy: 7-factor Model

Giunipero and Pearcy (2000) report results of a survey on ‘world-class’ purchasing/supply management skills. They gathered importance ratings on 30 skills from 136 purchasing professionals. They analysed these skills and extracted seven skill factors to form their model. Although they adapted the framework of Killen and Kamauff’s (1995) model, their items focus solely on skills; they assessed an extensive set of skills and categorised them into different sets of factors. The seven factors eventually derived were: 1) strategic, 2) process management, 3) team, 4) decision making, 5) behavioural, 6) negotiation, and 7) quantitative. The purchasing and SC managers rated the five most important skills as 1) interpersonal communications, 2) ability to make decisions, (3) ability to work in teams, 4) negotiations and 5) customer focus. These skills are reflective of the dynamic, interactive nature of the purchasing and SC function and its role as a boundary spanner. Contemporary L&SC organisations require SC interfaces both internally with others in the organisation and externally with suppliers and customers.

3.3.1.3 Mangan and Christopher: ‘T-shaped’ Model

The idea of a ‘T-shaped’ model is that as well as bringing specific L&SCM skills to the job (the vertical long bar of the ‘T’), L&SC managers need to have a wide understanding of related areas such as business process engineering, asset management and activity-based costing (the horizontal short bar) (see Mangan and Christopher, 2005, p. 181). Mangan and Christopher (2005) indicate that L&SC managers need to have in-depth expertise in the L&SC discipline combined with enough breadth to see the connections with others. The T-shaped model is clearly defined by Kovas, Tatham and Larson (2012). They include 10 skills in the general management skill set, 7 in interpersonal, 6 in problem solving and personality traits, 10 in functional logistics and 16 in the humanitarian context. Kovas and colleagues indicate that those 16 context-specific skills could be added to many, if not all, other fields in which L&SC managers are employed; for example, public management, health care, business logistics, military logistics and academia.

3.3.1.4 APICS: Logistics Managers Competency Model

The structure of the APICS Logistics Managers Competency Model follows guidelines established by the Employment and Training Administration of the US Department of Labor. The model is organised into tiers of competency and includes detailed descriptions of the activities and behaviours associated with each competency. The Competency Model Clearinghouse defines competency as ‘the capability to apply or use a set of related knowledge, skills, and abilities required to successfully perform critical work functions' or tasks in a defined work setting’. In many cases, the competencies outlined are adapted from the APICS Operations Management Body of Knowledge Framework (Jacob, 2011). A total of 48 ‘zero-level’ competencies are included in the model, clustered into three sets: ‘occupation related’; ‘profession related’; and ‘foundational’. Further, there are two subsets within profession-related competencies —‘distribution and logistics managers’ knowledge areas and technical competencies’; and ‘operations management knowledge areas and technical competencies’—and three within foundational competencies—‘workplace and leadership competencies’; ‘academic competencies’; and ‘personal effectiveness competencies’.

In general, L&SC research has linked competency to various capabilities. For example, Ramsay (2001) and Hunt and Davis (2008) single out purchasing as a capability, while Autry et al. (2005) and Lai et al. (2008) mention IT and logistics information systems (LIS), Azadegan et al. (2008) focus on manufacturing capability and Tatham and Houghton (2011) discuss an emergency response capability. L&SC themselves have been seen as a dynamic capability (Zhao et al. 2001;

Autry et al. 2005; Esper et al. 2007). Competency and sets of competencies are linked directly to single-task capabilities, which are then aggregated to specialised ones in hierarchies (Grant, 2009). The most basic of capability hierarchies is based on the distinction between ‘zero-level ordinary’ capabilities for the short term and ‘higher-level substantive’ capabilities to solve problems and even change ordinary capabilities (Barreto 2010). Disaggregating ‘L/SC capability’, Olavarrieta and Ellinger (1997) highlight distribution system and postponement dexterity alongside teamwork, supplier relationship management, technology, new product development, service delivery and order fulfilment. Zhao et al. (2001) break down ‘L/SC capability’ into customer-focused and information-focused elements, to which Esper et al. (2007) add supply management, integration, measurement and, ultimately, logistics learning. In general, there is no consensus in the literature on how ‘L & SC capability’ should be disaggregated into specific competencies, nor is there any consensus about which competencies to place into which competency sets. Alternative levels and conceptualisations of dynamic L&SC capabilities all depend on the nature, specific role, relevant context, heterogeneity assumptions and purpose (Barreto, 2010).

While increasing global orientation and SC complexity demand that SC professionals possess a different scope of skills, knowledge and abilities in breadth and depth than in the past, most of the literature focuses on the competencies SC managers require to add value and contribute to their firms’ competitive advantage. Accordingly, Ellinger and Ellinger (2014) outline the skills needed to effectively manage SCs, particularly problem solving, managing ambiguity and being strong, multi-level communicators and global citizens. Other researchers have conducted longitudinal studies; for example, Murphy and Poist (2006, 2007) investigated the skill sets of senior-level logistics managers and executive recruiters and found that general managerial attributes, specific logistics skills (functional and technical attributes) and general business skills are necessary SCM requirements. In contrast with researchers who advocate for traditional SCM competency, Wu et al. (2013) rank communication, financial analysis, customer relationship management, people skills, good health, an understanding of laws and regulations, and cross-functional marketing skills as required skills for global SC managers based on industry evaluation.

Table 3-1 summarises the key identified competencies of L&SC professionals along with their country/region, selection criteria and research methodologies, derived from 52 journal articles. As a factor in maintaining and strengthening competitiveness in global, dynamic environments, human resource management (HRM) has emerged as a top strategic priority in SCM and in firms' efforts to achieve sustainable growth through leveraging human capital (Ellinger et al.,2005; Ketchen and Hult, 2007; Sweeney, 2013). The role of HRM has attracted much attention in SCM as the logistics process within a SC is essentially 'human centric' (Myers et al., 2004, p. 212), The knowledge, skills and abilities of employees, as well as their education, are of major importance (Gammelgaard and Larson, 2001; Murphy and Poist, 2006; Wu et al.,2013). Talented human resources in SCM offer a unique source of sustainable competitive advantage by improving SC performance (Barnes and Liao, 2012; Autry and Whipple, 2013; Thornton et al., 2013; Ellinger and Ellinger, 2014). Thus, talented high-potential employees have to be managed effectively to foster both individual and firm performance (Feisel et al., 2011; Schuler et al., 2011). This is consistent with Stank et al. (2011, p. 942), who identify the 'right talent' as one of the five pillars that form the foundation of the new supply chain agenda.

Table 3-1: Summary of literature on skills and competencies for L&SC managers

No.	Sources	Skills & competencies	Evaluation criteria	Data collecting method (sample size)	Country/region
1	Shou and Wang (2017)	Planning, inventory management, communication, cost control, collaboration, supervision, leadership, process management, customer service, third-party management, negotiation, analytical skills	Mostly mentioned (more than 35% of samples)	Job advertisement (900)	Global
2	Derwik, Hellstrom and Karlsson (2016)	Use of forecasting or facilities location expertise, multitasking ability, problem solving, information gathering, leadership, self-management, company experience	Maximise SC performance	Case study (6)	Sweden
3	Dubey and Gunasekaran (2015a)	Knowledge: SC management, international regulations, customer relationship management. Skills: team management, awareness of others' needs, conflict management, interpersonal skills, business ethics	To be SC manager	Survey (210)	India
4	Dubey and Gunasekaran (2015b)	Knowledge of green logistics/SC, green accounting, exposure to latest technology, exposure to quantitative, learning ability, leadership, teamwork, global citizen, sensitive to external & internal environment, ability to work without complaining & blaming	To be a sustainable SC manager	Qualitative analysis	Global
5	Niine and Koppel (2015)	Manage thinking, learn & manage information, support foundational characteristics, communicate & collaborate, manage attitude	Profile of 'logistics system engineer'	Qualitative analysis	Global
6	Wilson and Barbat (2015)	Opportunity finder, innovation initiator, solving a problem, seizing an opportunity, influencing a decision, be mentally agile with strong powers of persuasion, knowledge of the SC, understanding of client needs, technology & know-how, market knowledge	To be a strategic SC relationship manager	Case study (3)	France
7	Kiessling, Harvey and Akdeniz (2014)	Multi-communicator, relationship handler, integrator, computer skills	Required for 21st century L&SCM	Qualitative analysis	Global
8	Knight, Tu and Preston (2014)	Communication skills, negotiation skills, influencing & persuasion, problem-solving skills, coordinating skills, forecasting skills, supplier cost targeting	Skill importance	Survey (72)	Taiwan

No.	Sources	Skills & competencies	Evaluation criteria	Data collecting method (sample size)	Country/region
9	Rahman and Nie (2014)	Team orientation, inventory management, IT skills, SC-oriented knowledge, ability to see the 'big picture', SC costing skills, distribution planning, demand forecasting, integration of information flow internally, cross-functional coordination skills	Importance for L&SC managers	Survey (93)	China
10	Ellinger and Ellinger (2013)	Higher-order problem solving, managing ambiguity, multi-level communicator, world citizen	To be an effective SC manager	Qualitative analysis	Global
11	Lorentz (2013)	Demand forecasting & supply planning, sourcing & supplier management, customer & distribution channel management, production planning & control, IS for logistics & production planning	Skill importance	Survey (154)	Finland
12	Prajogo and Sohal (2013)	Communication & teamwork, ability in decision making, project management skills, ability to manage risks, knowledge of environmental issues	Success of SC management	Survey (148)	Australia
13	Wu et al. (2013)	International perspective, foreign language, communication, decision making, risk management, cross-cultural sensitivity, application & integration of resources, negotiation, ability to make profit, market sensitivity	Skill required of an effective global logistician	Survey (91)	Taiwan
14	Christopher (2012),	Adept with classic tools & techniques for managing ongoing operations, understand complex systems theory & process management in horizontal organisational structures, effective team leadership, change management & influencing skills	Successfully managing the complexity in the SC	Qualitative analysis	Global
15	Kovács, Tatham and Larson (2012)	People management, oral communication, inventory management, reporting, training of others, purchasing & procurement, written communication, transportation management, fleet management, information literacy	To be a humanitarian logistician	Survey (174)	UK (37%) & more than 30 countries
16	Rahman and Yang (2012)	Customer service, team orientation, understanding of SC concepts, transport management, ability to see the big picture, cross-functional coordination skills, inventory management, change management, foreign language (English), conflict management	Important skills	Survey (85)	China

No.	Sources	Skills & competencies	Evaluation criteria	Data collecting method (sample size)	Country/region
17	Boute, van Dierdonck and Vereecke (2011)	Communication, decision making, people management & leadership, coordination & cooperation, negotiation, planning & inventory management, logistics expertise, knowledge of international business practices, technical skills related to product and processes, knowledge of process analysis techniques, laws & environmental issues	Importance of skills, today and within 3 years	Survey (52)	Belgium & Netherlands
18	Muhammad and Ha-Brookshire (2011)	Organisational/multitasking skills, computer skills, communication skills, knowledge of vendor management, product development & management, internal collaboration, bilingual	Required skills for sourcing personnel	Job advertisements (48)	US
19	Ngai, Chau and Chan (2011)	Knowledge of SC functions, knowledge of business environment, ability to communicate, ability to integrate SCs	SC agility	Case study (3)	HK SAR
20	Thai, Cahoon and Tran (2011)	Personal integrity, managing client relationships, problem-solving ability, cost control & ability to plan	To be an effective logistics professional	Survey (147)	Australia
21	Vokurka (2011)	Personal effectiveness competencies, academic competencies, workplace & leadership, operations management competencies, SC knowledge, technical competencies	As required	Qualitative analysis/Interview	US
22	Cottrill (2010)	Thinking creatively, appreciating the big picture, quantitative analysis, problem solving, high-order diplomacy & commercial awareness skills, ability to learn from past experience, multi-level communication, world citizen	What skills are in demand?	Qualitative analysis	US
23	Fawcett et al. (2010)	A cross-functionalist, a choreographer, a coach, a champion	To be the indispensable SC leader	Qualitative analysis	Global
24	Kayakutlu and Büyüközkan (2010)	Result orientation, role commitment, continuous learning, networking, creativity	Achieve supply value chain effectiveness	Case study (3)	Turkey

No.	Sources	Skills & competencies	Evaluation criteria	Data collecting method (sample size)	Country/region
25	Slone, Dittmann and Mentzer (2010)	Global orientation, cross-functional, cross company understanding, leadership skills, technical & analytics savvy, superior business skills	To be an effective SC manager	Qualitative analysis	Global
26	Keller and Ozment (2009)	Decision making, problem solving, social/communication, basic managerial skills, basic logistics skills, speed of problem solving, time management, quantitative/technical/IS, SCM core, solution-oriented, ability to manage, sensitivity to & awareness of diversity, focus/will/capability to change	Logistics manager skills	Qualitative analysis	Global
27	Ahn and McLean (2008)	Port & logistics IT understanding & using ability, IT network & operating ability, ship company & cargo owner management ability, service quality improvement ability, customs procedure system ability	Most needed for port and logistics industry personnel	Survey (145)	Korea
28	Bisogni (2008)	Communication, research & planning, human relations, organisation, management & leadership, work survival, global vision	Competencies needed	Qualitative analysis	Global
29	Sauber, McSurely and Tummala (2008)	ERP system & software, latest technology, environmental issues, SC planning (MDS, MPS and MRP)	Not included in MBA courses	Group review (47)	US
30	Burcher, Lee and Sohal (2007)	Improve efficiency, Solve management problems, personal initiative, innovation, strategic logistics planning, systems design, B2B e-commerce, demand forecasting	Greater control	Survey (303/168)	Australia/UK
31	Murphy and Poist (2007)	Motivate others, personal integrity, decision making, ability to persuade, oral communication, customer service, inventory management, transportation & traffic management, business ethics, business writing	Significance to a senior-level logistician	Survey (32)	US
32	Periatt et al. (2007)	Openness, neuroticism, agreeableness, conscientiousness, extraversion	Effective customer orientation	Survey (354)	US

No.	Sources	Skills & competencies	Evaluation criteria	Data collecting method (sample size)	Country/region
33	Cousins, Lawson and Squire (2006)	Skills to monitor & interpret changes, capabilities to help partners, skills to improve the total cost, perseverance, imagination, decisiveness & interpersonal skills	Organisational performance, e.g. SC integration, product & financial performance	Survey (151)	UK
34	Dischinger et al. (2006)	Functional skills including procurement, demand/supply planning, manufacturing, global logistics & customer fulfilment, technology selection, implementation & application, leadership skills related to communication, negotiation, problem solving, team leadership & project management, global management, assess & organise solutions, implement changes	Critical to SC management	Interview	US
35	Giunipero, Handfield and Eltantawy (2006)	Leadership, decision making, influencing, compromising, project scoping, goal setting & execution, presentation, public speaking, listening & writing, web-enabled research & sourcing analysis, cost accounting & making the business case	Skills needed for supply managers of the future	Case study (41)	US
36	Richey, Tokman and Wheeler (2006)	High intelligence, need to achievement, adaptability,	Attain superior financial, market based & logistics performance	Survey (96)	US
37	Mangan and Christopher (2005)	Finance, IT, management/strategy, operations/SCM, focus on processes/flows, legal, security & international trade, multimodal logistics, logistics in emerging markets, competencies/skills, analytical, interpersonal, leadership, change management, project management	Competencies required by SC managers	Interview (10)/Survey (23)	US, UK, Netherlands & Ireland
38	Myers et al. (2004)	Social, decision making, problem solving, time management	Performance & worth	Survey (157)	US
39	Parker and Anderson (2002)	'Hard' project management skills, 'soft' project management skills, product development, systems engineering, business case evaluation, complexity management, IT, operations management	Skills identified	Case study (HP firm)	US

No.	Sources	Skills & competencies	Evaluation criteria	Data collecting method (sample size)	Country/region
40	van Hoek, Chatham and Wilding (2002)	Self-awareness, self-management, self-motivation, empathy towards others, social skills, leadership, analysis skills, performance evaluation skills	New capabilities of SC managers	Qualitative analysis	Global
41	Faes and Knight and Matthyssens (2001)	Integrity & honesty, self-confidence, initiator, perseverance, technical expertise, leadership, self-discipline, ability to listen, environmental awareness, adaptability	Important to be an 'ideal' purchaser	Survey (183)	Dutch
42	Gammelgaard and Larson (2001)	Teamwork, problem solving, SC awareness, ability to see the 'big picture', listening/speaking/oral communication, prioritising, motivation, cross-functional awareness, leadership	Importance for SCM	Survey (124)	US
43	Harvey and Richey (2001)	Understand organisational cultures between companies (organisational IQ), joint ventures & strategic alliances, cognitive IQ, network IQ, innovative IQ, intuitive IQ, political IQ, emotional IQ	Being a global SC manager	Qualitative analysis	Global
44	Mangan, Gregory and Lalwani (2001)	Communication, people management, problem solving, negotiating, analytical, project management, computer	Skill importance	Survey (44)	Ireland
45	Razzaque and Sirat (2001)	Ability to plan, personal integrity, source management, ability to adapt to change, problem-solving ability, self-motivation, knowledge of traffic/transport management, customer service, ability to organise	Significance to a senior-level logistician	Survey (222)	Singapore & Malaysia
46	Giunipero and Pearcy (2000)	Interpersonal communication, ability to make decisions, ability to work in teams, analytical, negotiation, managing change, customer focus, influencing & persuasion, strategic, understanding business conditions	'World-class' purchasing and supply management skills	Survey (136)	US
47	Carr and Smeltzer (2000)	People skills, technical skills, analytical/communication skills	Supplier responsiveness, financial performance	Survey (163)	US

No.	Sources	Skills & competencies	Evaluation criteria	Data collecting method (sample size)	Country/region
48	Minahan (1998)	Be a team player, know everyone's business, target total cost, become an information expert	To be a talent buyer	Qualitative analysis	US
49	Cilliers and Nagel (1994)	Customer service, warehousing & storage, inventory control, traffic & transportation, procurement, plant & warehouse site location, distribution communications, order processing, material handling, production scheduling	Importance as part of logistics	Survey (33)	South Africa
50	Cooke (1992)	Analytical abilities, ability to build relationships in a SC, ability to update built skills, know what is going on globally, being the first-line supervisor	Success of Logistics	Interview	US
51	Murphy and Poist (1991)	Personal integrity, motivate others, ability to organise, ability to plan, self-motivation, transportation & traffic management, customer service, warehouse management, business ethics, business strategy	Significance to a senior-level logistician	Survey (65)	US
52	Williams and Currey (1990)	Communication skills, leadership & people skills, computer literacy, factual knowledge	Desired attributes of logistics managers	Newspaper advertisements (70)	Australia

3.4 Management, Analysis, Information and Sustainability Competency Model

From the literature review in Sections 3.2–3.3, it is clear that the concept that ‘senior level logisticians are managers first and logisticians second’ (Murphy and Poist, 1991, p. 76) has been broadly verified by different scholars in various contexts; for example, Murphy and Poist (2006) and Razzaque and Bin Sirat (2001). The literature surrounding L&SC professional competency (see Section 3.3) indicates that the most frequently monitored competencies are general management and analytical (business) competencies (Murphy and Poist, 1991, 1996, 1997, 2006, 2007; Johnson and Pyke, 2000; Waters and Rinsler, 2014; Dubey and Gunasekaran, 2015). Further, the changing role of today’s L&SC manager requires them to develop new skills. However, the changing L&SC managers’ role does not primarily involve coordinating transportation, packaging, warehousing and inventory management (Murphy and Poist, 2006). Rather, this changing role is driven by a number of factors, including the IT boom (Lee and Sohal, 2005; Lambert et al.2008; Tian, 2009; Kam et al. 2010; Rahman and Yang, 2012; Shi and Handfield, 2012; Thai et al.2012) and sustainability development requirements. However, the analysis of job advertisements in 3PLs points in two different directions: (1) the emphasis on IS competencies because of the e-commerce boom in China, and (2) the requirement for broader environmental knowledge, especially in sustainable L&SC development (Larson, 2009). The general requirement for environmental knowledge places an emphasis on sustainability competency.

Adapting to the current logistics development in China, I chose to use four sets of competencies as the antecedents of L&SC manager career success in this study. These are logistics general management (LGM), logistics analytical (LA), LIS and logistics sustainability (LS) competency. The main idea behind this logistics management analytical information sustainability (MAIS) competency model is, however, the combination of business managerial skills with technological and environmental knowledge areas, both of which are arguably needed in L&SCM of 3PLs in

China. It is also reflected in the call for logistics manager training (Thomas & Mizushima, 2005) as well as job descriptions of senior-level logisticians (CILT, 2008), which include anything from specific customs handling procedures to negotiation skills with warlords.

This study considered critical findings from earlier studies while also presenting some new insights and findings in this research. The skills presented and validated in this study were thus selected (see Table 3-2) as the basis for conducting a critical review and analysis to determine which skills would be most appropriate for L&SC managers in China. I identified a total of 36 L&SC skills related to the MAIS framework. These skills were thoroughly scrutinised to exclude aspects of management recognised as strategies rather than skills and competencies in L&SCM. This led to the deletion of items such as JIT and outsourcing. The skills were also scrutinised to avoid repetition and ensure appropriateness in the current Chinese business environment. This resulted in the deletion of 12 items and rewording of four items.

A total of 24 skill items are used in this study, of which 24 are related to L&SC competency. I grouped these skills into the four competencies in the MAIS model. Skills relating to planning and organising, as well as personal attributes that will enable them to be successful in the logistics environment are included in LGM competency; skills relating to logical thinking and breaking down complex problems into their component parts are included in the LA competency category; knowledge relating to the newest IS technologies and computerisation, for example RFID and database programming, are included in the LIS competency category; and knowledge relating to environmental and sustainable issues within L&SCM are included in the LS competency category.

The relevance of HR issues for contemporary logistics management is reflected in the recent academic literature. For example, a review of three leading scholarly journals (*International Journal of Physical Distribution & Logistics Management*, *Journal of Business Logistics* and *Transportation Journal*) between 2001 and 2016 indicated that around 5.5% of all articles address HR issues. Tables 3-2 and 3-3 enable a closer examination of the skills mentioned in the literature, and their relevance to the skills in the MAIS model.

Table 3-2: Literature on LGM skills

	Logistics general management (LGM) skills																	
	LGM1. Understanding transport regulations	**LGM2. Customer service**	**LGM3.Team orientation**	**LGM4. Understanding of SC orientation**	**LGM5. Ability to see the ‘Big picture’**	**LGM6. Cross-functional coordination skill**	**LGM7. Foreign language (English)**	**LGM8. Change management**	**LGM9. Conflict management**	**LGM10.Written communication**	**LGM11.Knowledge of the industry**	**LGM12.Ability to prioritise**	**LGM13.Negotiating skill**	**LGM14.Oral communication**	**LGM15.Knowledge of cultural differences**	**LGM16.Knowledge of the infrastructure**	**LGM17. People skill**	**LGM18.CTPAT**
Shou and Wang (2017)							●				●		●		●	●		
Derwik *et al.* (2016)									●			●						
Dubey and Gunasekaran (2015a)		●		●							●						●	
Dubey and Gunasekaran (2015b)			●	●												●		
Niine and Koppel (2015)											●	●						
Wilson and Barbat (2015)	●	●				●						●	●	●		●		
Kiessling *et al.* (2014)											●	●	●		●			
Knight *et al.*(2014)				●					●	●	●				●	●	●	
Rahman and Nie (2014)	●	●	●	●			●		●	●		●		●	●	●	●	
Ellinger and Ellinger (2013)							●	●										
Lorentz (2013)	●			●	●	●		●				●	●					
Prajogo and Sohal (2013)		●					●	●			●			●			●	
Wu et al. (2013)	●	●							●					●				
Christopher (2012),	●				●				●				●			●	●	●
Kovács *et al.* (2012)									●			●	●					
Rahman and Yang (2012)	●	•	•	•		●		●	●	•	•	•		●		●	●	
Boute *et al.* (2011)			●					●			●	●						
Muhammad and Ha-Brookshire (2011)						●		●										
Ngai, Chau and Chan (2011)			●	●							●	●	•		●			
Thai, Cahoon and Tran (2011)				●				●	●	•	•						●	
Vokurka (2011)				●	●		●	●						●			●	
Cottrill (2010)	●							●	●		●				●	●		
Fawcett et al. (2010)	●			●	●							●						
Kayakutlu and Büyüközkan (2010)	●		●					●	●	•			●				●	
Slone *et al.* (2010)					●	●						●						
Keller and Ozment (2009)								●			●				●	●		
Ahn and McLean (2008)						●	●				●					●		
Bisogni (2008)			●										●	●		●		
Sauber *et al.* (2008)				●				●	●	•		●		●	●	•		
Burcher *et al.* (2007)		●			●		●				●	●						

	Logistics general management (LGM) skills																	
	LGM1. Understanding transport regulations	LGM2. Customer service	LGM3.Team orientation	LGM4. Understanding of SC orientation	LGM5. Ability to see the 'Big picture'	LGM6. Cross-functional coordination skill	LGM7. Foreign language (English)	LGM8. Change management	LGM9. Conflict management	LGM10.Written communication	LGM11.Knowledge of the industry	LGM12.Ability to prioritise	LGM13.Negotiating skill	LGM14.Oral communication	LGM15.Knowledge of cultural differences	LGM16.Knowledge of the infrastructure	LGM17. People skill	LGM18.CTPAT
Murphy and Poist (2007)			●			●			●									
Periatt et al. (2007)				●				●	●		●						●	
Cousins *et al.* (2006)		●						●		●	●	●	●					
Dischinger *et al.* (2006)			●					●					●	●	●		●	
Giunipero *et al.* (2006)		●		●													●	
Richey *et al.* (2006)		●							●		●					●		
Mangan and Christopher (2005)			●						●						●			
Myers *et al.* (2004)			●	●	●				●									
Parker and Anderson (2002)	●	●								●		●						
van Hoek *et al.* (2002)			●	●		●	●		●		●			●	●		●	
Faes *et al.* (2001)	●	●		●	●											●	●	
Gammelgard and Larson (2001)				●	●		●							●				
Harvey and Richey (2001)	●				●		●	●			●		●			●	●	
Mangan *et al.* (2001)		●	●		●								●			●	●	
Razzaque and Sirat (2001)									●									
Giunipero and Pearcy (2000)						●		●							●			
Carr and Smeltzer (2000)								●		●	●			●				
Minahan (1998)		●						●		●	●	●	●			●		
Cilliers and Nagel (1994)	●			●					●									
Cooke (1992)					●	●						●	●				●	
Murphy and Poist (1991)	●			●			●						●					
Williams and Currey (1990)				●	●				●		●							

Source: Compiled by Author

Table 3-3: Literature on LA, LIS and LS skills

Rahman and Nie	**Knight *et al.*(2014)**	**Kiessling *et al.***	**Wilson and Barbat**	**Niine and Koppel**	**Dubey and Gunasekara**	**Dubey and Gunasekara**	**Derwik *et al.* (2016)**	**Shou and Wang**		
●									**LA1. Inventory management**	
●							●		**LA2. Quality management**	
●					●				**LA3. Production planning & control**	
●				●	●	●			**LA4. Project management**	
			●		●				**LA5. Supply chain cost management**	
●							●		**LA6. Statistical analysis ability**	
●					●	●			**LA7. Ability to manage risk**	
				●			●		**LA8. Distribution planning**	
●									**LA9. Demand forecasting**	
●			●	●	●				**LA10. Warehousing management**	LA
			●			●	●	●	**LA11. Facilities location planning**	
●					●	●			**LA12. Quantitative modelling skill**	
			●						**LA13. Use of logistics-related software**	
		●		●		●	●		**LA14. Order processing**	
●	●								**LA15. Benchmarking ability**	
●			●					●	**LA16. Purchasing**	
●									**LA17. Materials handling**	
●		●							**LA18. Container security initiatives**	
●		●	●	●	●		●		**LA19. 24-hour manifest rules**	
						●		●	**LIS1. Knowledge of the latest technology**	
●				●					**LIS2. EDI/barcode/RFID**	LIS
						●		●	**LIS3. Database management**	
	●		●						**LIS4. Information system management**	
●					●				**LS1. Return goods handling**	
						●		●	**LS2. Global Reporting Initiative reports**	
		●	●	●					**LS3. Salvage & scrap disposal**	
●			●		●		●		**LS4. ISO 14000 Standards**	
●	●					●			**LS5. Reverse supply chain**	LS
●									**LS6. Knowledge of environmental issues**	
●			●	●		●		●	**LS7. Corporate social responsibility (CSR)**	
●			●			●		●	**LS8. Waste management**	
●			●					●	**LS9. Life cycle assessment**	

Ellinger andEllinger (2013)		●									●			●		●		●	●		●								●	●		
Lorentz (2013)		●				●						●	●		●	●									●	●	●	●			●	
Prajogo and Sohal (2013)						●	●							●		●				●		●	●		●		●			●		
Wu et al. (2013)		●		●		●			●			●															●					
Christopher (2012),	●				●		●	●							●	●	●			●	●	●						●				
Kovács *et al.* (2012)		●													●						●					●	●		●			●
Rahman and Yang (2012)		●	●		●					●	●	●	●	●			●	●				●		●			●			●	●	
Boute *et al.* (2011)										●		●		●		●						●										
Muhammad & Ha-Brooks (2011)		●			●				●			●			●								●				●					
Ngai, Chau and Chan (2011)									●		●	●						●		●	●						●				●	
Thai, Cahoon and Tran (2011)				●	●	●		●							●	●				●				●	●			●				
Vokurka (2011)			●	●	●			●	●			●						●					●							●		●
Cottrill (2010)				●				●			●		●		●			●				●	●				●		●			
Fawcett et al. (2010)								●				●				●	●									●						
Kayakutlu& Büyüközkn (2010)							●			●	●		●										●				●		●			
Slone *et al.* (2010)					●		●						●			●	●									●			●			●
Keller and Ozment (2009)	●				●		●			●			●		●	●		●		●												
Ahn and McLean (2008)	●						●			●														●					●			
Bisogni (2008)	●	●			●				●					●	●	●			●	●		●	●		●	●	●					●
Sauber et al., (2008)		●				●								●											●							
Burcher, Lee and Sohal (2007)		●															●	●		●							●				●	
Murphy and Poist (2007)	●	●			●									●				●	●		●											

Periatt et al. (2007)	●						●		●	●			●						●	●							●		●			
Cousins et al., (2006)					●		●																									
Dischinger et al. (2006)				●		●				●		●			●			●	●		●	●		●							●	
Giunipero et al., (2006)	●		●			●		●	●			●								●			●				●				●	
Richey et al., (2006)					●								●	●																		
Mangan and Christopher (2005)										●		●									●					●		●				
Myers et al. (2004)	●		●	●						●					●		●	●	●				●		●	●					●	
Parker and Anderson (2002)				●		●							●							●								●	●			
van Hoek et al., (2002)				●						●		●		●								●		●		●					●	●
Faes et al., (2001)		●						●		●			●				●							●						●		
Gammelgaard and Larson (2001)						●	●	●		●								●				●	●	●	●							●
Harvey and Richey (2001)	●				●	●		●								●	●				●									●	●	
Mangan et al., (2001)		●										●					●	●			●											
Razzaque and Sirat (2001)						●								●			●						●	●							●	
Giunipero and Pearcy (2000)	●				●		●			●				●				●		●		●	●						●			
Carr and Smeltzer (2000)				●						●		●							●			●					●	●	●		●	
Minahan (1998)	●		●	●							●		●							●			●	●								
Cilliers and Nagel (1994)				●					●		●			●	●					●	●			●						●	●	
Cooke (1992)	●							●								●		●						●					●			
Murphy and Poist (1991)								●		●					●				●	●				●	●		●				●	
Williams and Currey (1990)	●				●	●		●		●	●		●		●					●						●						

3.5 Constructs of Career Success and Career Satisfaction

Career success has received significant attention in studies of the workplace. This is because of the general recognition that it has important implications for individual behaviours and work outcomes. In general, the literature distinguishes between objective and subjective measures of career success. While objective career success is measured by indicators like organisational position or attained promotions (Arthur *et al.*, 2005), subjective career success is measured as workers' individual perceptions of their own success, based on evaluations of personal accomplishments and future prospects (Dries, Pepermans, and Carlier, 2008).

In the career literature, career success is partitioned into extrinsic and intrinsic dimensions (Gattiker and Larwood, 1988; Judge et al., 1995; Melamed, 1996). Extrinsic success represents the objective component of career success and refers to observable career accomplishments or outcomes such as pay, promotions, ascendancy and occupational status (Jaskolla et al., 1985). Following Seibert, Kraimer and Liden (2001) and De Vos, Hauw and Heijden (2011). These objective indicators and conceptualised career success use three measures: current salary, promotions and marketability.

In this section, I discuss four components of career success: employability, promotion, salary and marketability.

3.5.1 Employability

The concept of employability is defined in the literature by many researchers and in many different ways (McQuaid and Lindsay, 2005; De Grip, Van Loo, & Sanders, 2004; Fugate *et al.*, 2004; Thijssen and Van der Heijden, 2003 and van der Heijde and van der Heijen, 2006). In this study, I consider employability as 'the individual's likelihood of obtaining and retaining a job in the labour market' (Forrier, Sels, and Stynen, 2009, p. 740). It can be stated that individuals who possess employability will perceive a situation as less threatening, and consequently experience less strain. On the basis of an extensive literature review, Wittekind, Raeder and Grote (2010) suggest three main variables of employability: job-related qualifications; willingness to develop new competencies or change jobs; and knowledge of the labour market. These variables are described in more detail below:

1. *Job-related qualifications*. The influence of job-related qualifications on employability is indicated by the fact that an individual's qualifications, knowledge, skills and experience are likely to increase their earnings or productivity.
2. *Willingness to develop new competencies or change jobs*. This requires a positive attitude towards changes in jobs, job content, tasks and participation in training. If organisations carry out re-organisation, employees have to adapt to a new work situation and may acquire new competencies. Further, employees who are willing to adapt to different kinds of changes will consider a broader spectrum of opportunities; for example, jobs that require the acquisition of additional skills.
3. *Knowledge of the labour market*. In particular, this refers to opportunity awareness and self-presentation skills. The important role of opportunity awareness, in other words, information about employment opportunities, should yield a return in the form of higher earnings. Further, opportunity awareness shows some overlap with job search effort, which refers to the amount of energy, time and persistence that a job seeker devotes to the job search.

Janssens, Sels and van den Brande (2003) used these three items to assess employability. Van der Heijde and Van der Heijden (2006) identify five dimensions of employability: occupational expertise; anticipation and optimisation; personal flexibility; corporate sense; and balance. However, with the exception of occupational expertise and personal flexibility, these dimensions are aspects of general competency. Hence, researchers, including De Vos, Hauw and Heijden

(2011), tend to measure employability using expertise and flexibility. In that study, to measure employability, respondents were asked to indicate to what extent they believed they had the necessary capabilities and expertise to adequately perform various tasks and to carry out the responsibilities of a job to study; to measure flexibility, respondents were asked to what extent they believed they had the capacity to easily adapt to changes in the internal and external labour market. In the current study employability is conceptualised following De Vos, Hauw and Heijden's (2011) work. A summary of the literature relating to employability competency is provided in Table 3-4.

Table 3-4: Summary of the employability construct literature

Construct	Source
Employability	Schultz (1971); Rosen (1987); Becker (1993); Versloot et al. (1998); Van Lammeren (1999);Wanberg, and Kantrowitz (2001); Forrier and Sels (2003); Rosen (1987); Becker (1993); Versloot et al. (1998);Harvey (2001); Kanfer, Wanberg, and Kantrowitz (2001); Forrier and Sels (2003); Janssens, Sels, and Van den Brande (2003); Thijssen and Van der Heijden (2003); Fugate et al. (2004)

3.5.2 Promotion

Promotion is defined as 'any increases in level and/or any significant increases in job responsibilities or job scope' (Seibert, Kraimer and Liden, 2001, p. 227). Seibert, Kraimer and Liden (2001) used two objective indicators, namely current salary and promotions, to measure career success. A summary of the literature relating to the promotion construct is provided in Table 3-5.

Table 3-5: Summary of the promotion construct literature

Construct	Source
Promotion	Lynch (1990); Lorange & Roos (1991); Wilson (1995); Brouthers et al., (1995); Angeles & Nath (2001); Lejeune & Yakova (2005); Cao & Zhang (2011); Cavusgil & Deligonul (2012)

3.5.3 Salary

Salary refers to current annual salary including bonuses and other direct income. Self-reports of income have been shown to correlate highly with archival company records (Judge *et al.,* 1995; Turban and Dougherty, 1994). A summary of the literature for the salary construct is provided in Table 3-6.

Table 3-6: Summary of the salary construct literature

Construct	Source
Salary	Gerhart and Milkovich (1989); Greenhaus, Parasuraman, and Wormley (1990); Bird (1994); Turban and Dougherty (1994);Judge *et al.* (1995); Seibert, Kraimer and Liden (2001); Eby *et al.* (2003); Arthur *et al.* (2005); Ballot (2007); Wu (2007); De Vos and Soens (2008); Dries, Pepermans, and Carlier (2008);De Vos, Hauw and Heijden (2011);Onar *et al.* (2013)

3.5.4 Marketability

Marketability is defined as the belief that an individual is valuable to their current or other employers (De Vos and Soens, 2008; De Vos, Hauw and Heijden, 2011). De Vos, Hauw and Heijden (2011) used marketability to measure career success. Given that the current business context is characterised by instability and uncertainty, the extent to which individuals believe they are seen as marketable by employers (current and future) is a relevant measure of career success (De Vos, Hauw and Heijden, 2011). A summary of the literature relating to the marketability construct is provided in Table 3-7.

Table 3-7: Summary of the marketability construct literature

Construct	Source
Marketability	Al-Khalifa & Peterson (1999); McWilliams & Siegel (2000); Hillman et al., (2001); Rose & Thomsen (2004); Schnietz & Epstein (2005); Branco & Rodrigues (2006); Chen et al., (2012)

3.5.5 Career Satisfaction

Intrinsic success represents the subjective component of career success and refers to individuals' feelings about and reactions to their own careers and is usually assessed in terms of psychological success measures such as CS, career commitment and job satisfaction (Gattiker and Larwood, 1988; Judge et al., 1995). Subjective career success reflects the natural flow of the individual's perceptions of satisfaction and success in their work activities or career roles. The emphasis is on the person rather than the organisation. Specifics of the self (achievement of personal goals and needs) dictate the ways in which an individual's anticipated paths are established. As Hall (1996) notes, subjective career success becomes more relevant when an individual has a potentially greater responsibility in their career development. From the subjective point of view, individuals view their career success as a function of their own internal standards and perceptions of satisfaction and success in social networks of relationships. Therefore, CS is usually considered an indicator of success, and is a term used to describe how content an individual is with their job (Seibert, Kraimer and Liden, 2001).

3.6 Research Framework

Drawing from the literature review, a research framework was developed and is shown in Figures 3-3 and 3-4.

Figure 3-3: Higher-level research framework

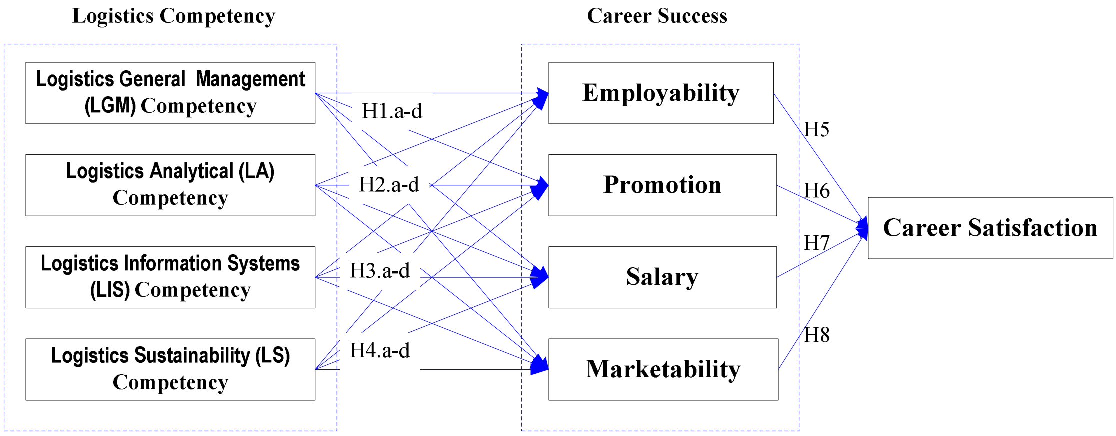


Figure 3-4: Research framework of the study

The main variables within the research framework are as follows.

MAIS, as discussed in Section 3.4, refers to the knowledge, skills and abilities required by 3PL managers in China. In this study, it is measured using four constructs: LGM competency, LA competency, LIS competency and LS competency.

Four constructs are used to define career success: employability, promotion, salary and marketability.

Last, CS refers to the internal standards and perceptions of satisfaction and success in social networks of relationships.

3.7 Research Hypotheses

Working from the literature review and conceptual framework, this section focuses on developing hypotheses that relate to the antecedents of CS for L&SC managers. This study developed 20 hypotheses to investigate and analyse the research questions posed in Chapter 1.

3.7.1 Management, Analysis, Information and Sustainability, and Employability

Employability has been studied from both an individual (e.g. Forrier & Sels,2003; Fugate & Kinicki, 2008; Van derHeijden, Boon, Van der klink, & Meijs, 2009) and an organisational perspective (e.g. Nauta,Van Vianen, Van der Heijden, Van Dam, & Willemsen, 2009; Scholarios et al., 2008). The organisational perspective refers to HR practices aimed at optimising the deployment of staff to increase the organisation's flexibility and competitive advantage (Nauta et al., 2009). The individual perspective focuses on individual dispositions and behaviours (Forrier & Sels, 2003; Fugate & Kinicki, 2008; Fugate et al., 2004). The present study incorporates the individual perspective by examining L&SC managers' perceptions of their competency development and addressing their actual job-related qualifications and knowledge of the job market.

Employability requires adaptability to new job demands or shifts in expertise, and the ability to acquire skills through lateral rather than upwards career moves in varied organisational contexts (Scholarios et al., 2008). Although employability scholars underscore the importance of competency development (De Cuyper et al., 2008; Forrier &Sels, 2003) to date most studies have used an individual difference framework when studying employability (Nauta et al., 2009). MAIS refers to those skills, knowledge and ability of the organisation and the employee to maintain or enhance the employee's functional, learning and career competency. It encompasses an integrative approach to developmental skills, involving both the organisation and the employee (Sandberg, 2000; Van der Heijde & Van der Heijden, 2006). Following this conceptualisation, I propose that all of the sub-constructs within MAIS are positively associated with employability perceptions.

First, job-related qualifications are regarded as a key variable in employability models (De Grip et al., 2004; Eby et al., 2003; Forrier & Sels, 2003; Fugate et al., 2004; Hillage & Pollard, 1998; Kluytmans & Ott, 1999; McQuaid & Lindsay, 2005; van der Heijde & van der Heijden, 2006).

The influence of job-related qualifications on employability can be demonstrated by the application of human capital theory. This theory suggests that an individual's human capital—that is, their qualifications, knowledge, skills and ability—are likely to increase their earnings or productivity (Becker, 1993; Rosen, 1987; Schultz, 1971).

Second, as suggested by Schneider, Brief and Guzzo (1996), an individual's domain-specific knowledge or skills may enhance perceptions of their employability, an assumption supported by Campion, Cheraskin and Stevens (1994) who reported a positive association between knowledge/skills and employability. Nauta et al. (2009) found that an organisational culture, for example awareness of environmental issues or social responsibility, has a positive effect on employability orientation (operationalised as the employee's receptivity towards employability within their current organisation).

Third, other sub-constructs within employability about which most researchers agree include the willingness to develop new competencies or change jobs, a positive attitude towards change in jobs, job content, tasks and participation in training (De Grip et al., 2004; Fugate et al., 2004; Hillage &Pollard, 1998; Kluytmans &Ott, 1999; McQuaid&Lindsay,2005; van Dam, 2003, 2004). If organisations carry out re-organisation, employees must adapt to a new work situation (e.g. the performance of a new job or task) and potentially acquire new competencies. Further, employees who are willing to adapt to different kinds of change (change management) will consider a broader spectrum of opportunities; for example, jobs that require the acquisition of additional skills, such as knowledge of the latest technology (van Dam, 2004).

In addition, Becker (1993) points out how investment in information about job opportunities (e.g. using time to examine job advertisements) would yield a return in the form of higher earnings. Further, opportunity awareness shows some overlap with job search effort, which has frequently been included as a predictor of re-employment success in unemployment research. Job search effort refers to the amount of energy, time and persistence that a job seeker devotes to the job search (Kanfer, Wanberg & Kantrowitz, 2001). Data indicate that job search effort is related to re-employment success (Kanfer et al., 2001; Saks & Ashforth, 2000).

The US Department of Labor (1991) during the Reagan administration conducted the first large-scale study of what employers want. The Secretary's Commission on Achieving Necessary Skills (SCANS) surveyed business managers to determine the performance demands of modern employment. The SCANS survey identified five broad categories of critical competencies that the researchers referred to as 'work place know-how': (a) resources—being able to identify and allocate resources; (b) interpersonal skills—being able to work with others; (c) information—being able to acquire and use information; (d) systems—being able to understand complex interrelationships; and (e) technology—being able to work with a variety of technologies.

MAIS skills are actually a combination of 'knowing how', 'knowing why' and 'knowing whom' (Eby et al., 2003), which accumulate over time and contribute to both the organisation's and the individual's knowledge base (Arthur et al., 1999; Bird, 1996; DeFillippi & Arthur, 1996).

Building on these findings, I expect that all of the competency categories will enhance L&SC managers' employability also, specifically:

H1.a: LGM competency positively affects employability of L&SC managers working in 3PL firms.

H2.a: LA competency positively affects employability of L&SC managers working in 3PL firms.

H3.a: LIS competency positively affects employability of L&SC managers working in 3PL firms.

H4.a: LS competency positively affects employability of L&SC managers working in 3PL firms.

3.7.2 Management, Analysis, Information and Sustainability, and Promotion, Salary and Marketability

From the discussion in Section 3.2, it is clear that human capital theory can be used as a theoretical basis for understanding the individual approach to career success. Human capital theory (Becker, 1975) suggests that individuals who invest the most in human capital attributes such as education, training and experience are expected to show a higher level of work performance and subsequently achieve higher organisational rewards. According to this theory, an L&SC manager's career progression and success is contingent upon the quantity and quality of human assets they bring to the labour market (Becker, 1964) and the skills and experiences that individuals bring to their work are related to their compensation, for example, salary (Agarwal, 1981).

To the extent that human capital factors influence the performance of employees, higher-level of personal attributes would enable them to better perform their job, and promotion opportunities and salary should increase accordingly to compensate them for the additional amount of human capital required by their job. The literature offers substantial empirical support for the positive linkage between human capital variables and career success (Nget al., 2005; Tharenou, 2001).

Given the increasing need for L&SC managers to proactively self-manage, or craft, their careers, it is becoming ever-more important for them to possess the necessary skills that enable them to thrive. That is, because individuals themselves are nowadays primarily responsible for achieving career success, it is crucial that they master career-related skills, such as the components of the MAIS model, to help them navigate their career.

Two things make MAIS unique to be the antecedent of objective career success of L&SC managers in China. The first is the emphasis on developing a broad and flexible skill base that is transportable across different 3PLs. In addition, there is an emphasis on occupational learning rather than job-related learning (DeFillippi & Arthur, 1996; Gunz, Evans, & Jalland, 2000). The development of

MAIS competency can be enhanced when individuals are oriented towards continuous learning (DeFillippi & Arthur, 1996). The MAIS competency model is unique in that the emphasis is not only on opportunity development in terms of job-related skills and professional development but also self-awareness or a general willingness to try new things. Therefore, the skills within MAIS can be noted as the contextual factors that empower L&SC managers, leading to higher levels of motivation and performance (Hackman & Oldham, 1980; Spreitzer, 1996). Improved work performance and value adding should enhance an individual's career outcomes, for example, salary, promotion and marketability (Burt, 1992, 1997; London & Stumpf, 1983; Medoff & Abraham, 1981).

The above discussion leads to the following hypotheses regarding the relationships between the four competency categories within MAIS and objective career success in terms of promotion, salary and marketability.

- **MAIS →Promotion**

H1.b: LGM competency positively affects promotion of L&SC managers working in 3PL firms.

H2.b: LA competency positively affects promotion of L&SC managers working in 3PL firms.

H3.b: LIS competency positively affects promotion of L&SC managers working in 3PL firms.

H4.b: LS competency positively affects promotion of L&SC managers working in 3PL firms.

- **MAIS →Salary**

H1.c: LGM competency positively affects salary of L&SC managers working in 3PL firms.

H2.c: LA competency positively affects salary of L&SC managers working in 3PL firms.

H3.c: LIS competency positively affects salary of L&SC managers working in 3PL firms.

H4.c: LS competency positively affects salary of L&SC managers working in 3PL firms.

- **MAIS → Marketability**

H1.d: LGM competency positively affects marketability of L&SC managers working in 3PL firms.

H2.d: LA competency positively affects marketability of L&SC managers working in 3PL firms.

H3.d: LIS competency positively affects marketability of L&SC managers working in 3PL firms.

H4.d: LS competency positively affects marketability of L&SC managers working in 3PL firms.

3.7.3 Employability and Career Satisfaction

CS is commonly used as one of the most relevant indicators of subjective career success (Eby, Butts, &Lockwood, 2003; Heslin, 2005), and is defined as a feeling of pride and personal accomplishment that comes from knowing that one has done one's personal best (Hall, 1996). Surprisingly, despite strong research interest in the antecedents of CS, empirical research on the relationship between self-perceived employability and CS is lacking (Ng, Eby, Sorensen, & Feldman, 2005).

In the current L&SC career context, characterised by instability and uncertainty, the extent to which managers believe they are seen as satisfactory is a relevant indicator of subjective career success (Bird, 1994; De Vos & Soens, 2008; Eby et al., 2003). Marketability is conceptually distinct from employability in that the latter comprises the employee's competency (in terms of knowledge, skills and abilities)—that is, their potential to fulfil, acquire or create new work, if necessary—while marketability refers to a positive career outcome related to this potential; that is, the perceptions regarding one's added value in the (internal or external) labour market. I anticipate that employability will be positively associated with both career outcomes. In my competency-based definition, employability is conceived as a human capital variable and human capital theory suggests that investing in one's skills should lead to greater value in job performance; for example, satisfaction (Becker, 1964). My conceptual model builds on this premise by stating that, in a broader sense, human capital elements such as competency will be positively related to career success (Ng et al., 2005; Rosenbaum, 1994). However, to date, empirical research examining this relationship is scarce. Eby et al., (2003) observed a positive association between employees' skill building and CS. Ng et al. (2005) did not find support for this relationship in their meta-analysis on the antecedents of career success but they only included education level as a competency-based indicator of human capital. In the current study I empirically address their claim that a broader range of skill predictors is associated with CS (Ng et al., 2005). Specifically, I propose the following hypothesis:

H5: Employability is positively associated with CS of L&SC managers working in 3PL firms.

3.7.4 Promotion, Salary, Marketability and Career Satisfaction

Support for a positive relationship between objective career success (e.g. salary and promotion) and subjective career success (e.g. CS) is based on attribution theory (Johns, 1999): promotions and salary increases are attributed to internal causes engendering positive self-perceptions and affect (Stumpf & Tymon, 2012). Social comparison theory (Festinger, 1954) further suggests that promotions and salary level relative to others may lead to an enhanced self-perception and greater feelings of career success. Both theories consider the objective career success outcomes of promotions and salary change as causes of career success.

In a meta-analysis of predictors of career success, Ng et al. (2005: p.375) hypothesised that 'Objective and subjective career success are positively related yet empirically distinct'. Using the same constructs for career success, they found that the correlation between salary and CS was 0.30 (a sample-size-weighted correlation across 23 studies and 10,903 people). The correlation between promotion and CS was 0.22 (12 studies, 8701 people). When examining additional aspects of subjective career success in a causal framework, Stumpf and Tymon (2012) found that past promotions predicted three measures of subjective career success—human capital, core self-evaluation (CSE) and satisfaction with their career; past salary change predicted human capital.

In contrast, the cognitive biases of anchoring and consistency support a relationship between promotion and salary change, and manager assessments of one's human capital value (Kahneman, 2011). Because someone is promoted (or is at a higher level) and has greater compensation, they are assumed to be more competent (consistency) and their human capital more valued by their manager (anchoring). One's CSE has been found to correlate with income (Judge & Hurst, 2007). The main interactive effects of CSE with income are consistently stronger than the main effects of socio-economic status and academic achievement variables, suggesting that CSE in youth has a powerful influence on one's career path and subsequent earnings. Implicit in this conclusion is that past objective career success feeds CSE, which in turn supports future career success. In their meta-analysis of predictors of objective and subjective career success, Ng et al. (2005, p. 375) hypothesised that 'Objective and subjective career success are positively related yet empirically distinct'.

Based on this discussion I propose the following three hypotheses:

H6: Promotion is positively associated with CS of L&SC managers working in 3PL firms.

H7: Salary is positively associated with CS of L&SC managers working in 3PL firms.

H8: Marketability is positively associated with CS of L&SC managers working in 3PL firms.

3.8 Summary

In this chapter I first provided a comprehensive literature review related to the antecedents of

L&SC managers' CS; that is, L&SC competency, employability, salary, promotion and marketability. A number of studies have shown how competency, employability, salary and promotion can affect the L&SC manager's CS. This study attempts to identify these competencies as L&SC manager antecedents on the basis of competency and human capital theories in the 3PL industry in China. Most studies have demonstrated that skills are the most important assets and resources that the L&SC manager should obtain, as they demonstrate the organisation's uniqueness, and by developing such skills, organisations can be more prepared to face real-world market competition.

This chapter also focused its discussion on the research framework and hypotheses. It developed a research framework that presents a total of 20 hypotheses of interest relating to L&SC competency, employability, salary, promotion, marketability and CS. It also discussed the establishment of research hypotheses. The discussion leads to Chapter 4 on survey design and implementation.

CHAPTER 4: RESEARCH METHODOLOGY— SURVEY DESIGN AND IMPLEMENTATION

4.1 Introduction

Chapter 3 outlined the development of a conceptual framework and 20 hypotheses based on the review and analysis of an extensive literature relevant to this study. This chapter presents the methodology, focusing on instrument development and implementation to examine the conceptual model proposed in Chapter 3.

Section 4.2 provides an overview of the research paradigm of this study, the choice of which is discussed in Section 4.3. Section 4.4 explains the research design and stages employed in this research. Section 4.5 discusses the research instrument development, an overview of the questionnaire is provided in Section 4.6, while Section 4.7 deliberates on the population, sampling and units of analysis used in this study. Section 4.8 provides a discussion on the survey development process including the literature review, pre-test, pilot study and larger-scale survey. Section 4.9 presents the procedures for data analysis. Section 4.10 presents the ethical considerations involved in this research, and last, Section 4.11 summarises the chapter.

4.2 Research Paradigm

The design of a research study begins with selection of a topic and research paradigm (Creswell, 2013). Research paradigms can be viewed from many angles. Bryman and Bell (2007) view a paradigm or philosophy as the significant justification for pursuing a basic understanding of a particular topic. In brief, a paradigm can be regarded as the 'basic belief system or worldview that guides the investigator' (Guba & Lincoln, 1994, p. 105). The classic definition of a research paradigm is given by Kuhn (1970), who states that a research paradigm is the set of common beliefs and agreements shared between scientists about how problems should be understood and addressed.

In addition, Guba (1990) emphasises that research paradigms can be characterised through their ontology, epistemology and methodology. Technically, ontology is ‘reality’, epistemology is the relationship between that reality and the researcher, and methodology is the technique used by the researcher to discover that reality. More importantly, ontology and epistemology guide the researcher to create a holistic outlook of how knowledge is viewed, and which suitable approach can be used to acquire that knowledge and the appropriate methodological strategies for discovering the knowledge. The relationships between these are illustrated in Figure 4-1.

Ontology	**Epistemology**	**Theoretical perspective**	**Methodology**	**Methods**	**Sources**
What is reality? →	What and how can I know reality/ knowledge? →	What approach can we use to acquire knowledge? →	What procedure can we use to acquire knowledge? →	What analytical tools can we use to acquire knowledge? →	What data can we collect?

Figure 4-1: The linkages between ontology, epistemology and methodology *Source: Hay (2002), Crotty (1998) and Patel (2015)*

To determine the best or most appropriate research paradigms and approaches to undertake in this study, relevant research paradigms were examined. The purpose was to assess which research group or research behaviour best described this study. For this reason, the relevant research paradigms based on the elements of ontology, epistemology and common methodologies were addressed. Four research paradigms were tabulated to highlight the differences among them as proposed by Sobh and Perry (2006). In light of this summary, this study was considered to be best undertaken via a positivist approach.

The positivist paradigm has been defined by many scholars over several decades. Burrell and Morgan (1979) and Hirschheim (1985) define it as epistemology, which seeks to explain and predict what happens in the social world by searching for regularities and causal relationships between its constituent elements. A positivist approach implies that a researcher begins with a general cause-and-effect relationship developed on the basis of the relevant causal law in general theory.

Table 4-1: Four research paradigms

Element	Paradigm			
	Positivism	**Constructivism**	**Critical theory**	**Realism**
Ontology	Reality is real and apprehensible	Multiple local and specific 'constructed' realities	'Virtual' reality shaped by social, economic, ethnic, political, cultural, and gender values, crystallised over time	Reality is 'real' but only imperfectly and probabilistically apprehensible; thus triangulation from many sources is required to try to know it
Epistemology	Findings true research is objective by viewing reality through a 'one-way mirror'	Created findings; researcher is a 'passionate participant' within the world being investigated	Value-mediated findings; researcher is a 'transformative intellectual' who changes the social world within which participants live	Findings probably true; researcher is value aware and needs to triangulate any perceptions they are collecting
Common methodologies	Mostly concerned with testing theory; thus, mainly quantitative methods such as survey, experiments and verification of hypotheses	In-depth unstructured interviews, participant observation, action research and grounded theory research	Action research and participant observation	Mainly qualitative methods such as case studies and convergent interviews

Source: Sobh & Perry (2006)

The positivist paradigm assumes that the social world can be studied in the same way as the natural world, and it aims to test a theory or describe an experience (O'Leary, 2004). Positivism predominates in science, including the social sciences, and assumes that science quantitatively measures independent facts about a single apprehensible reality (Healy and Perry, 2000).

Therefore, data and their analysis are value free, and data do not change because they are being observed. Methodologically, all research under the positivist paradigm should be quantitative; methods include surveys, trials, experiments and verification of hypotheses. Rigorous analysis is employed in such studies and research hypotheses are carefully tested through analysis of a data set. Table 4-2 summarises the elements of the positivist approach.

Table 4-2: General elements of the positivist approach

Element	Description
Methodological	All research should be quantitative; only research that is quantitative can be the basis for valid generalisations and laws
Value freedom	The choice of what to study, and how to study it, should be determined by objective criteria rather than by human beliefs and interests
Causality	The aim should be to identify causal explanations and fundamental laws that explain human behaviour
Operationalisation	Concepts need to be operationalised in a way that enable facts to be measured quantitatively
Independence	The role of the researcher is independent of the subject being investigated
Reductionism	Problems are better understood if they are reduced to the simplest possible elements

Source: Crossan (2003)

4.3 Justification for Paradigm Choice

This study was conducted based on the positivist approach and employed quantitative methodology. This choice can be justified as follows. First, the study seeks to develop and validate a theoretical model comprising testable hypotheses. The study applied the scientific method, which is the foundation of positivist research strategies. Orlikowski and Baroudi (1991) view a study as positivist when evidence emerges from formal propositions, quantifiable measures of variables and hypothesis testing inferences about a phenomenon or subject from the sample to a stated population. This method allows researchers to test their hypotheses based on objective measures and provide support for their findings (Wicks & Freeman, 1998). The other advantage of applying the scientific method is that a quantitative approach entails the verification of hypotheses, providing strong reliability and validity (Amaratunga et al., 2002; Cavana, Delahaye & Sekaran, 2001).

Second, the positivist assumption stresses that concepts must be operationalised in a way that enables facts to be measured quantitatively (Crossan, 2003). In this study, the variables being investigated are the logistics competency, employability and CS of logistics professionals in 3PL providers in China. Therefore, it was vital to conduct a survey involving key personnel. Consequently, this study employed a questionnaire instrument to quantify the measurement of variables and uses rigorous statistical methods to test predetermined hypotheses concerning relationships between variables. Specifically, model validation at the measurement and structural model level requires assessment of construct validity and reliability using a SEM technique or PLS. The researcher’s role is to interpret analysis results in light of hypotheses and ensure that data are not misrepresented.

Finally, according to the positivist assumption, the role of the researcher is to be independent when a topic or subject is being examined. The researcher and reality are separate, and the results should be replicable regardless of who conducts the investigation; the replication of the results is mainly for verification purposes (Creswell, 2009). Consequently, this study employed a positivist approach as this offered a new opportunity and viewpoint to specifically investigate the relationship between logistics professionals’ development and their competency in different types of 3PL providers in China.

4.4 Research Design

This study adopted a deductive quantitative approach as the methodology to investigate the relationships between logistics competency, employability, salary, marketability, promotion and CS of logistics professionals in 3PL providers in China. The use of this methodology aligned with the research operationalisation based on positivist assumptions. The study employed a sequential exploratory research design, which is characterised by extensive literature review, quantitative data collection, data analysis and thesis writing. Figure 4-2 illustrates the relevant information required at each stage of the research design.

In the first stage of the research design, an exploratory study was conducted with an extensive review of the literature as the primary method. The exploratory study reviewed all relevant existing models and collected information from prior studies concerning the dimensions of 3PL practical and theoretical studies, and logistics professionals' competency models and theory on career success (i.e. marketability, promotion, employability). The results from the literature review assisted the researcher in developing a conceptual model and formulating the overarching research objectives, research questions and hypotheses. The variables chosen in the model were operationalised and referred to in the development of research instruments. A pool of new items was developed to examine the relationships between logistics competency, employability/marketability/promotion/salary and CS, and the new items were sorted and modified in an interpretive process by the researchers. Next, the items were categorised according to the underlying dimensions in the questionnaire.

The second stage involved data collection, which consisted of four sequential activities: pre-test, pilot test, refinement of research instruments and the main survey. The pre-test and pilot tests were carried out before the main survey to ensure the best possible research measures were developed and applied. The results generated from these two activities were used to refine the measurement items in the questionnaire, particularly regarding content validity and reliability. A main survey was undertaken after the questionnaire's refinement was completed; this study utilised the main survey and cross-sectional data to test the proposed conceptual model and hypotheses. The required sample number was derived from the need to perform SEM and was based on the sampling method used.

The third stage involved processing and examining the collected data using statistical methods. The collected data were screened to check whether they had been correctly entered, that there were no missing values or free outliers, and to confirm that the distribution of the variables was normal. The objective of screening activities is to avoid failure of model estimation and crashing of fitting programs (Kline, 2005). At this stage, the cleaned data go through the statistical analysis process, specifically confirmatory factor analysis (CFA) and covariance-based SEM. The data in this study were evaluated for completeness of responses, confirmation of the proposed conceptual model and to ensure that the results were within the acceptable range.

Drawing upon the existing literature of this study, a conceptual model was developed to address the research questions. Based on prior studies, the methods used to conduct research should be in line with the research questions (Punch, 2003; Cooper & Schindler, 2008). Thus, it is important that a quantitative approach, specifically the survey method, was employed in this thesis. The final stage pertains to thesis writing, which focuses on interpreting results and reporting in an academic manner. A thesis should be properly structured, cover all stages involved and, most importantly, be readable.

Since this study is concerned with investigating the relationships among logistics professionals' competency, employability and CS in Chinese 3PL providers, a questionnaire-based survey was deemed appropriate (Clarke 1999; Neuman, 2011). In the context of statistical analysis, SEM is used to test and estimate causal relationships among variable. The advantages of employing SEM as an analytical tool of choice are:

- It allows the testing of both a measurement model and a structural model simultaneously and affords an assessment of the model fit and individual parameters through an array of fit-indices and tools (Koufteros, Babbar & Kaighobadi, 2009).

- It allows the researcher to estimate the strength of interrelationships among those constructs or latent constructs (Gallagher, Ting & Palmer, 2008)
- It is a useful tool for research that involves multivariate data analysis. Generally, applying SEM becomes less difficult for testing hypotheses in most cases.
- It has been extensively applied in theory testing and empirical model building in the social and behavioural sciences because of its ability to impute relationships between unobserved constructs (latent variables) from observable variables (Hancock, 2015). A number of researchers over the past 10 years have applied SEM in various disciplines including business (McQuitty, 2004), marketing (Qureshi & Compeau, 2009) and operations management.

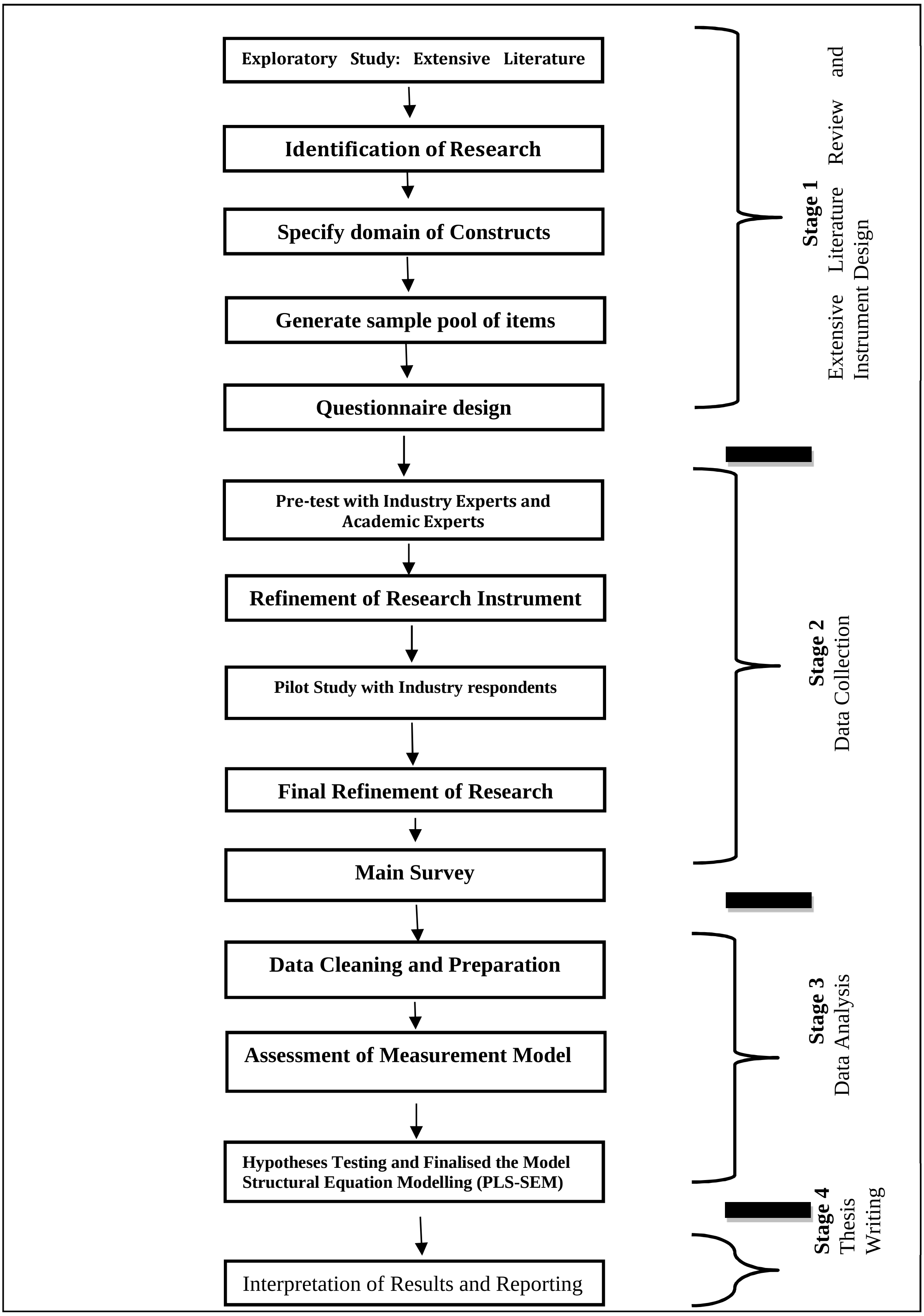


Figure 4-2: Research design and stages

4.5 Survey Instrument Development

A survey questionnaire was used as an instrument for the study since surveys are relatively quick to complete, economical to apply and easy to analyse (Bowling 1997). Generally, an operational instrument should include all the measurement content of the constructs. In this study, developing a survey questionnaire as an instrument was conducted in three stages (Figure 4-3) as suggested by Moore and Benbasat (1991). The first stage was item generation, in which the purpose was to generate an initial pool of items for each of the dimensions as first-order constructs, second-order constructs and dependent variables by identifying them from existing validated scales, as well as creating additional items. The second stage consisted of operationalisation of the constructs and scale development. In this stage, a suitable scale was identified to be used for the overall instrument. The final stage involved instrument testing, in which the instrument was checked for content validity and reliability. At the same time, the instrument was also revised for clarity and readability. These stages are explained in more detail in Sections 4.8, and 4.9.

Generally, a suitable questionnaire is simple, straight to the point and readable (Frazer &Lawley 2000). The principle aim, when formulating a question is to ensure that it means the same to the surveyor and respondent, who should be able to respond with as much accuracy as possible (Meadows 2003). Wording and the arrangement of questions are also important when designing the instrument. The type of question, language used, and order of items may all lead to a biased response. Rattray and Jones (2007) suggest it is best to avoid presenting controversial or emotive items at the beginning of the questionnaire.

Further, the appearance and layout of a questionnaire can influence a respondent’s decision on whether to respond. The main issues around the appearance and layout of questionnaires are the length of questionnaire, question, response category format, print details, pagination and instructions (Rattray & Jones 2007). A longer questionnaire may lead to fatigue or carelessness of potential respondents; however, questionnaires on topics that are relevant or interesting can be longer than questionnaires on more general topics (Oppenheim 2000; McColl et al. 2001). As a guide, a well-designed questionnaire should meet the research objectives, facilitate data collection and processing, and achieve and maintain the respondents' involvement (Miller 1999).

Step 1: Item generation

- **Items selected and rationalised based on validated items in past literature**
- **Items also generated based on an extensive review of literature and input from industry experts**

Step 2: Operationalisation of constructs and scaling

- **Measurement items gathered according to the number of constructs**
- **Constructs categorised as first-order, second order and endogenous**
- **Set of questionnaires consisting of all measurement items drafted**

Step 3: Instrument testing

- **Pre-test conducted through face-to-face survey with industry experts and academics to assess face and content validity**
- **Pilot study conducted to assess internal consistency of items and validity of scales using reliability test and $\alpha \geq 0.70$**

Figure 4-3: Survey development stages

4.5.1 Item Generation

Items to measure all the constructs (first-order constructs, second-order constructs and dependent variables) were generated using several approaches. First, the items were adapted from a list of potential validated items from the literature involving logistics professional skills, HRM and SCM studies. The second approach involved taking the items through an extensive review of the literature and input from industry experts. Some of the constructs were developed from previous studies on competency. The selected validated questions were then changed slightly to accommodate the sample chosen for this study. In developing a survey instrument, selecting existing validated measures is a common approach since the instruments have already been assessed for their validity and reliability (Kitchenham & Pfleeger, 2002).

A pool of new items was also developed to measure the constructs in the study. The existing and newly created items were placed in a common pool. An initial pool of new items was sorted and modified in an interpretive process. Once this was achieved, the items were categorised according to the underlying constructs. Again, the items were re-evaluated to eliminate those that appeared to be redundant or ambiguous. A total of 48 items was used to measure all the constructs in this study. Table 4-3 lists the numbers of items used to measure each of the constructs.

Table 4-3: Number of items used to measure constructs

Construct	**No.** items	Source
LGM competency	10	Tieman (2013); Bruil (2010); New items based onLodhi (2009); Riaz&Chaudry (2004); Standards Malaysia (2009); Bonne &Verbeke (2008); Sangka et al. (2019); Joash and Rose (2020).
LA competency	6	Abdul, Ismail & Mustapha (2013); New items based on Standards Malaysia (2009); Wagner et al. (2020); Kotzab et al. (2018).
LIS competency	4	Tieman (2013); Bruil (2010); New items based on Lodhi (2009); Riaz&Chaudry (2004); Standards Malaysia (2009); Flöthmann et al (2018).
LS competency	4	Ali & Al-Owaihan (2008); Tsalikis&Lassar (2009); Ali (1992)
Employability	8	AbTalib& Johan (2012); Lodhi (2009), Ahmed, Ahmed & Salman (2005) Tieman (2013); Bruil (2010); New items based on Lodhi (2009); Riaz&Chaudry (2004); Standards Malaysia (2009)
Promotion	3	Finn & Louviere (1992); Brewer, Sprouls&Russon (1994); New items based on Riaz&Chaudry (2004); Bonne & Verbeke (2007); Standards Malaysia (2009)
Salary	3	Riaz&Chaudry (2004); Marzuki (2012); Talib, Ali & Jamaludin (2008)
Marketability	6	Guan & Ma (2003); Paulraj& Chen (2007)
Career satisfaction	4	Talib, Zailani&Zainuddin (2010); New items based on Bonne &Verbeke (2007); Riaz&Chaudry (2004); Standards Malaysia (2009)

All the measured items were used for the pilot survey and then for the main survey, after three tests were applied. First, item reliability was examined to ensure the items were reliable, with the value meeting the minimum acceptable threshold (Cronbach's alpha $\geq$0.7). Second, all items underwent further examination regarding content validity to ensure that they measured what they were intended to measure. Finally, theoretical foundations and assumptions were referenced in finalising the items so that they reflected the domain of the identified constructs in this study.

4.5.2 Operationalisation of Constructs and Scaling

This section explains how each of the constructs tested in this study were operationalised. To acquire the information to empirically confirm the proposed conceptual framework, the operationalisation of constructs must be clearly applied. A set of questions that consisted of all measurement items was drafted. Multi-item constructs were employed to allow a comprehensive evaluation and minimise the level of measurement bias (Podsakoff et al., 2003). One of the reasons multi-items constructs were applied was that single items usually lack correlation with the attribute being measured and are easily related to other attributes (Churchill, 1979). Three to 10 items were applied to each construct, leading to a total of 48 questionnaire items to be answered by respondents. The range number of items used fulfilled the requirements suggested by Hair et al. (2010).

Four competencies of logistics professionals as a set of skills were measured using the 24 items: LGM competency, LA competency, LIS competency and LS competency. LGM competency was defined by 10 skill items. LA competency was measured by six skill items. LIS competency and LS competency were each defined by four items. Respondents were asked to evaluate how critical each of the dimensions was to define the competency model.

Employability, marketability, promotion, salary and CS act as the dependent or endogenous variables in this study. Employability was measured using eight items. The marketability construct was defined by six items and the CS construct was assessed by four items. Another two endogenous variables named salary and promotion were assessed with at least three items each.

In the context of scale development, constructs were operationalised using a Likert scale. A Likert scale is the best possible scale for measuring latent variables (Clason & Dormody, 1994). It is suggested that Likert-type scales are suitable for research related to SCM and logistics skills (Tan, 2002; Yusuf et al., 2004; Murphy & Poist, 2006; Swafford, Ghosh & Murthy, 2008) and applying SEM for data analysis (Tabachnick and Fidell, 2011). All the constructs were measured using a seven-point Likert scale, which ranged from (1) 'strongly disagree' to (7) 'strongly agree'. The key reason for applying a seven-point Likert scale was to overcome variability among respondents and create a better approximation of a normal response curve (Cooper & Schindler, 2008). Another reason for using such as scale was to avoid central tendency error due to respondents ranking their priorities in the neutrality dimension (Hampden-Turner & Trompenaars, 1997).

4.5.3 Instrument Testing

The next stage of the survey instrument development was instrument testing. In this study, the instrument used was a questionnaire. The aim of this stage was to test content and face validity. This was done to ensure that the questionnaire was adequately compiled, and provided an opportunity to revise its length, wording, clarity and instructions. Further, the instrument was tested for reliability of the scales since the questionnaire contained many items. This instrument testing was conducted using a two-stage approach involving a pre-test and pilot study.

At the pre-test stage, the survey instrument was given to an expert panel to evaluate its content and face validity, instructions, clarity of items and representativeness. The experts were selected based on their vast experience and background in the subject matter. In this study, a total of 10 experts participated in the pre-test, of which six were industry experts (one from a Chinese SO3PL; three from MN3PLs; and two from CP3PLs) and four senior academics with expertise and outstanding achievements.

Once the survey instrument had been refined based on the expert panel's advice, a pilot study with 40 respondents was conducted. In the pilot study, the primary purpose was to ensure that the scales demonstrated the appropriate level of reliability and to assess any further difficulties respondents might experience in completing the questionnaire. The accepted level of reliability was determined based on the objective of the study (Moore & Benbasat, 1991). For this study, the target level of minimum reliability was set at 0.7 or greater. Further details of the pilot study are provided in Section 4.8.3.

4.6 Questionnaire

The questionnaire is one of the most widely used data collection techniques among survey strategies, as well as for large samples (McCelland, 1994). The questionnaire can be defined as 'a preformulated written set of questions to which respondents record their answer usually, within rather closely defined alternatives' (Sekaran & Bougie 2009, p.197). This study employed questionnaires as an instrument for gathering data.

The questionnaire for this study consisted of two parts. The first part (the demographic profile of respondents and their organisations) asked respondents to indicate their responses by crossing in the boxes provided. The second part listed questions concerning the first-order constructs or dimensions that define the relationship between the logistics competency, employability and CS of logistics professionals in 3PL providers in China. It was estimated that the respondents would require around 40 minutes to complete the questionnaire. Respondents were instructed to circle their answers with items based on a seven-point Likert scale. Point '1' on the scale indicated 'strongly disagree', while '7' represented 'strongly agree' in response to the statements. The following sections present a detailed discussion of each section of the questionnaire.

4.6.1 Part A: Sections 1 and 2

This part contained two sections and 14 questions asking respondents about their demographic and organisational backgrounds. In many studies, organisational and respondent backgrounds are considered obligatory questions for a survey. Thus, this study asked questions related to the background of the organisation and operations management, with the purpose of:

- understanding the respondents' profiles,
- analysing the background of the organisation and its accomplishments
- developing related information that may be used as part of this study.

However, the study avoided asking for sensitive information in the interests of protecting the confidentiality of respondents. The questions were formed to comply with requirements of RMIT University's Human Research Ethics Committee. A copy of the Ethics approval is attached with this thesis (Project No. 19708) (Appendix C). There were 14 questions covering five types of general characteristics:

- role of the respondent
- education level of the respondent
- managerial experience of the respondent
- organisation category
- service category.

Part A (Sections 1 and 2) of the survey questionnaire used fixed-alternative questions to identify the background and nature of business management of the participating organisations. Zikmund (2003) addresses two types of fixed-alternative questions to be considered: simple dichotomy and determinant choice questions. These questions relate to descriptive data that needs to be analysed with descriptive statistics. Table 4-4 summarises the types of questions asked in this section of the questionnaire.

Table 4-4: Type of questions relating to respondent profiles

Characteristic	Item	Type of question
Role of respondent	1) What is your position in the organisation?	Determinant choice
Education level of respondent	2) What is your level of education?	Determinant choice
	3) In which country did you receive your final degree?	Determinant choice
	4) How long have been in education overseas?	Determinant choice
Managerial experience of respondent	5i) Do you have managerial experience?	Simple dichotomy
	5ii) If yes, how many years of managerial experience?	Determinant choice
	6i) Do you have managerial experience in 3PL firms?	Simple dichotomy
	6ii) If yes, how many years of managerial experience?	Determinant choice
Organisation category	7) How many employees are in your organisation?	Determinant choice
	8) How many years has your organisation been operating?	Determinant choice
	9) What are your last 3 financial year's average annual sales?	Determinant choice
	10) What is your type of organisation (based on paid-up capital)?	Determinant choice
Service category	11) What type of services does your organisation provide?	Determinant choice
	12) Which industries are your customers mainly in?	Determinant choice
	13) Which regions are your customers mainly in?	Determinant choice
	14) What is the location of your business operation?	Determinant choice

4.6.2 Part B: Section 1

This section was designed to measure respondents' competency; the respondents were required to answer 24 questions about their competency.

4.6.3 Part B: Section 2

This section was designed to measure four first-order constructs: employability, promotion, salary and marketability. A total of 20 questions were presented to be answered by respondents.

4.6.4 Part B: Section 3

In this section, four items are used to assess the CS construct. The CS construct was the third layer in the PLS-SEM model. The researcher aims to test the relationship between this construct and logistics competency and logistics professionals' employability in the Chinese logistics industry.

A cover letter outlining the ethics approval (Project no.19708, Appendix C), purpose of the study and researcher's contact information was included on the front page of the instrument. Attached to the questionnaire was a participant information and consent form that highlighted the importance of their participation in this research and assurance of anonymity.

Since the study was performed in China and the respondents were largely non-English speakers, the final version of the questionnaire was translated into their native Chinese Mandarin, to ensure clear communication to respondents and expedite responses (see Appendix A). Then, the questionnaire was back translated into English to ensure translation uniformity (Brislin 1970; Eng 2016). This translation was performed by a certified linguistic specialist. A properly translated questionnaire minimises discrepancies due to cultural and linguistic differences (Kim & Han 2004). The final version of the questionnaire is presented in Appendix B (English version).

4.7 Population and Sampling Design

This section specifically discusses the target population and sampling procedures. The population is the entire group of people, events or things of interest that the researcher wishes to investigate (Sekaran & Bougie 2010). The population chosen for this study was those organisations that met the following criteria:

- registered as a member of the CFLP and/or
- registered as a member of the CSCMP, China.

4.7.1 Sampling Frame

The sampling frame can be defined as ‘a (physical) representative of all the elements in the population from which the sample is drawn’ (Sekaran & Bougie, 2010, p. 267); for example, a company database, random-digit dialling or membership roster (Hair et al., 2009). The sampling frame for this study is taken from the CFLP and the CSCMP, China, database. These databases were chosen as their information was updated annually, providing the most accurate data including the name, contact number and email address, company product list, postal address, website and owner of the business. Meanwhile, the organisations registered in these two directories varied in size and type, including micro-small, medium and large companies, and state-owned, private and multinational firms operating in the logistics industry sector in China.

4.7.2 Sampling Technique

This study employed the probability sampling design known as simple random sampling to determine the sample to be studied (Sekaran & Bougie, 2010). The rationale for employing simple random sampling was that it reduces bias by giving an equal and independent chance to every member of the population of being sampled (Kumar 2011; Lohr 2009). Simple random sampling was applied to select the respondents based on the directory records which is considered as a valid method (Sekaran & Bougie, 2010). Twenty-nine provinces, four municipalities and HK SAR were selected from among China’s administrative regions, which covered most areas of China. For this study, 2500 3PL providers were selected to receive the questionnaire. The aim was to ensure the universality and diversity of samples, and to obtain a minimum sample size appropriate for running the PLS-SEM (Hair et al. 2010).

4.7.3 Sample Size

Sample size can be defined as the actual number of subjects chosen as a sample to represent the population (Sekaran 2003). In a statistical analysis, sample size is critical as it has a bearing on the level of sampling error. The sample size must be properly determined to allow inferences to be made about the population for any study activity.

Some researchers recommend that the appropriate sample size for most research is 30–500; however, in multivariate research the suitable sample size is several times (preferably 10-fold) larger than the number of variables in the study (Roscoe 1975; Sekaran 2003).

In SEM, it has been noted that a larger sample size is required to ensure that power, parameter estimates and errors are stable (Schumacker & Lomax 2010). According to Tabachnick and Fidell (2007), a smaller sample size may cause the covariance and correlations in SEM to become unstable. There is substantial debate about the absolute sample size to use for SEM. For example, Boomsma (1982) recommends that 400 is an adequate sample size for SEM. Hair et al. (1998) considers that 100 is the minimum sample size to ensure the appropriate use of maximum likelihood estimation in SEM. Anderson and Gerbing (1988) recommend a minimum of 150–200 respondents to ensure the credibility of findings. However, Chou and Bentler (1995) claim that a minimum of 200 respondents is reasonable and practical for SEM. Bentler and Chou (1987) and Hair et al. (2010) suggest that a ratio of five samples per variable is sufficient depending on the normal and elliptical distribution. Since scholars do not agree on the appropriate sample size, the sample of 708 in this study was considered sufficient and appropriate for executing PLS-SEM analysis.

4.7.4 Unit of Analysis

A unit of analysis can be defined as 'the person who answers an interviewer's questions or provides answers to written questions in a self-administered survey' (Zikmund 2003, p.175). This study focuses on analysis at the organisational level. Managers, senior managers, senior executives and directors from 3PL firms operating in China were identified as appropriate key respondents since they were involved in decision-making processes and played a significant role in their organisation's operations. This approach was intended to validate the applicability of the conceptual model in a 'real world' environment.

This study explores the critical dimensions of the relationship between competency, career success and CS in the context of the 3PL industry in China. Thus, substantial knowledge from that industry was vital. To answer the research questions, this study required respondents with sufficient experience in the logistics industry to supply relevant answers based on their significant role in making decisions for the organisation.

4.7.5 Time Horizon

The time horizon for research studies is classified into cross-sectional and longitudinal contexts. In contrast to the longitudinal scenario, data in cross-sectional studies are gathered only once, perhaps over a period of days, weeks or months. This approach was considered the most commonly used form of survey and was less expensive and easy to administer than a longitudinal survey (Emory, 1985; Graziano & Raulin, 2007; Sekaran & Bougie, 2010). Further, cross-sectional studies are generally used to test relationships between variables (Graziano & Raulin, 2007), and were used in this study to test the relationships among the constructs.

4.8 Process of Survey Development

The large-scale survey through survey questionnaire was developed based on the processes suggested by Cho et al., (2008) and Sekaran and Bougie (2010). Figure 4-4 shows the three major steps involved before conducting the main, large-scale survey in the final step of this study. The following sections comprehensively discuss each step of the study. Section 4.8.1 discusses the literature analysis (Step 1); Section 4.8.2 discusses the pre-test (Step 2); and Section 4.8.3 discusses the pilot study (Step 3). The key and final process, the data collection using large-scale survey (Step 4) is discussed in Section 4.8.4.

Step 1: **Literature analysis**	Step 2: **Pre-test**	Step 3: **Pilot study**	Step 4: **Large-scale survey**
The analysis of the literature led to the development of scale measurements for the empirical setting	The objective was to strengthen the content validity of the measurement items; 10 industry experts involved in this pre-test	The objective was to further appraise and purify the instruments and examine the internal consistency of the items	After the questionnaire had been revised and modified, the final survey was undertaken

Figure 4-4: Process of survey instrument development

4.8.1 Step 1: Literature Analysis

The questionnaire development process began with an extensive analysis of the relevant literature. Most scales used in this study were adapted from previous studies. After a thorough analysis of the literature, the researcher chose the seven-point Likert scale for the survey (see Section 4.5.2).

4.8.2 Step 2: Pre-test

Pre-test is the best platform for researchers to gauge the meaning attributed to survey questions. Failure to examine the interpretation of the questionnaire items may lead to respondents' misinterpretations, falsified answers, missing responses, and may even offend the respondent (Bowden et al., 2002). A pre-test was conducted prior to the pilot study. The rationale was to strengthen the content validity of the survey instrument by investigating the degree of relevance of each variable item and confirming the proposed items in the survey through the expert opinions of industry representatives and academics. Generally, the respondents were asked to give their feedback on the representativeness, clarity, ease of understanding and interpretation of the questions. This permitted the items to be refined, eliminated or expanded as necessary. In other words, the purpose of the pre-test was to examine the content validity and assess the appropriateness of the original instruments.

For the purpose of this research, a first-run pre-test was conducted. Six senior executives and four L&SC academics were invited to participate in the pre-test. Of the six senior executives, one was from a Chinese SO3PL; three from MN3PLs; and two from CP3PLs. The four L&SC academics were professors working at universities. Details of the 10 respondents in pre-test are provided in Table 4-5.

Table 4-5: List of participants in the pre-test

Expert	Title of expert	Type of organisation	Operating years
A	Vice president	State-owned	>15
B	Vice president	MNC	>30
C	Operations director	MNC	>40
D	Training manager	MNC	>40
E	Co-founder	Private	>5
F	IT/SC manager	Private	>10
G	Academic	University	>40
H	Academic	University	>40
I	Academic	University	>40
J	Academic	University	>40

Following the pre-test and extended literature review, the variables were further modified and refined to suit the context of the research. A second-run pre-test for the 10 respondents was then carried out to facilitate confirmation and refinement of the questionnaire. The findings resulted in clarification of the instructions and elimination and rewording of some items. For example, items that are difficult to measure in the actual context of Chinese 3PL organisations were recommended to be deleted from the questionnaires; for example, the item ‘I have the skills to manage people’ in the LGM category was replaced by ‘I have the competency to manage conflict effectively’. To make the questionnaire more suitable for the Chinese context, some items were added to the questionnaire; for example, the item ‘I am satisfied with the contribution achieved during my work to the entire society’ was appended in the CS category. A summary of the changes is provided in Table 4-6.

Table 4-6: Number of items changed based on the pre-test results

		Number of Items		
		Before	**After**	**Change**
Part A	SECTION 1: RESPONDENT PROFILE	6	6	0
	SECTION 2: ORGANISATION PROFILE	5	8	+3
	Total	11	14	+3
Part B	SECTION 1: Logistics Competency			
	1. LGM competency	10	10	0
	2. LA competency	6	6	0
	3. LIS competency	4	4	0
	4. LS competency	4	4	0
	Total	24	24	0
	SECTION 2: Career Success			
	1. Employability	8	8	0
	2. Promotion	3	3	0
	3. Salary	3	3	0
	4. Marketability	6	6	0
	Total	20	20	0
	SECTION 3: Career Satisfaction			
	1. Career Satisfaction	3	4	+1
	Total	3	4	+1

4.8.3 Step 3: Pilot Study

A pilot study was administered after revising the questionnaire to identify and estimate the inter-item internal consistency and reliability of the measured items, as well as examine the comprehensibility, degree of difficulty, clarity and reasonable time allocation for respondents to answer the questionnaire. In response to the participants' comments at the pre-test stage, the questionnaire was revised and modified. For the pilot study, questionnaires were distributed to 3PL firms located in the China (Shanghai) Pilot Free Trade Zone, which includes four existing bonded zones. Companies registered in the Shanghai Free Trade Zone were divided into six fields, two of which were the Shipping Service Industry and Commerce Trade Service Industry. Many 3PL firms belonged to the Shipping Service Industry and provided various value-added logistics services for the Commerce Trade Service Industry. The researcher was able to identify different sizes and types of 3PL providers in this zone. Thus, the area was an important location for the pilot study.

The respondents were randomly selected from enterprise handbooks and directories. Hard copies of the questionnaire were delivered by mail to senior managers who agreed to take part in the survey, in January 2016. Eighty questionnaires were distributed and a return rate of 50% (40 samples) was achieved within 2 weeks. Following a suggestion of Malhotra (2008), 40 samples for pilot study was considered adequate, since a pilot study sample is usually in the order of 15–30 respondents. Reliability of the items was estimated using Cronbach's alpha coefficients. Both Nunnally (1978) and Hair et al. (2010) suggest that the alpha level should be 0.7 or greater, which means that an α value exceeding 0.7 for a variable indicates that the variable is internally consistent and a suitable measure for the study. The α values from the pilot study varied between 0.726 and 0.908 (see Table 4-7). Since all values were greater than 0.7, they were within the acceptable threshold, suggesting reliability.

Table 4-7: Results of reliability estimates

Variable	No. items	Cronbach's alpha
LGM competency	10	0.726
LA competency	6	0.829
LIS competency	4	0.820
LS competency	4	0.908
Employability	8	0.756
Promotion	3	0.875
Salary	3	0.890
Marketability	6	0.869
Career satisfaction	4	0.815

The time taken to complete the survey questionnaire was approximately 40 minutes, which was expected under the research design. Minor modifications were also applied to the layout of the questionnaire to enhance readability before the main survey was carried out. Other statements were retained.

4.8.4 Step 4: Large-scale Survey

According to Sekaran and Bougie (2010), data collection is an important component of a research design. To accomplish the process of data collection, the fourth and final step of the overall survey development was carried out in two phases: Phase 1 was between April and July 2016; Phase 2 was between September and November 2016.

A web-based survey over the internet is considered the fastest and least expensive way of collecting data (Neuman, 2006). Thus, an online survey was administered using an internal website operated by the Research Institute of Logistics and Supply Chain at Shanghai University of International Business and Economics. The Internet is widely used and easily accessible in China. The researcher reminded the participants to fill in the questionnaire via emails or phone calls. The response rate to the survey was relatively high in this study compared to many studies in China.

4.9 Data Analysis Procedure

Data analysis was conducted in three stages: data screening, validation of the measurement model and evaluation of the structural model (Hair, Ringle & Sarstedt, 2011). Data screening is used to identify missing values and examine the data for normality and other assumptions before conducting further analysis. In this study, IBM SPSS Statistics version 22 was used for data screening. The data screening also provided information on respondents and organisation profiles. The results of data screening are presented in Chapter 5. The study aims to examine the relationships among several variables. Multivariate analysis is a statistical method used to investigate synchronous relationships among two or three phenomena. In this study, the multivariate analysis PLS-SEM was employed as an analytical tool for the assessment of measurement and structural model. It also estimates the strength and tests the nature of causal relationships (Anderson & Schwager, 2004). The next section explains the rationale for selecting the PLS-SEM approach.

4.9.1 Structural Equation Modelling

SEM is considered a comprehensive approach to testing hypotheses among observed and latent variables (Hoyle, 1995). SEM combines aspects of a factor analysis and multiple regression to examine a series of interrelated dependence relationships among the measured variables and latent constructs (variants) as well as between several latent constructs simultaneously (Hair et al., 2000). In addition, SEM validates the paths between independent (endogenous) and dependent (exogenous) variables. SEM is an extended path analysis to evaluate all the relationships, simultaneously utilising information from equations in the model (Hair et al., 2010). Since this research aims to examine the relationship between logistics competency, career success and CS in Chinese 3PL firms, SEM can be used. Covariance-based structural equation modelling (CB-SEM) and PLS-SEM are the two multivariate analyses often used to examine relationships between variables. The following sections detail the commonalities and differences between the CB-SEM and PLS-SEM methods. This study applies PLS-SEM in the analysis.

4.9.2 Partial Least Squares Structural Equation Modelling

PLS-SEM uses multiple regression as a tool to evaluate relationships between variables. PLS-SEM overcomes the limitations of multiple regressions by explaining the significance of the variance (Haenlen & Kaplan, 2004). First developed by Wold (1982), PLS-SEM was used to analyse data in a low-structure environment. In particular, PLS-SEM is used in exploratory research to predict the main constructs. PLS-SEM gained prominence because of the unrestricted computation of the relationships in both reflective and formative situations (Hoyle, 1999; Henseler, Ringle & Sinkovics, 2009). In the business discipline, PLS-SEM has gained importance over the last decade (Henseler, Ringle & Sinkovics, 2009; Hirivnak, 2009; Wetzels, Odekeren-Shroder & van Oppen, 2009; Anderson & Swaminathan 2011). This prominence can be seen in the area of SCM (Vandaele & Gemmel, 2006; Vivek & Ravindran, 2009; Braunscheidel, Suresh & Boisnier, 2010; Voon-Hsien et al., 2014; Nejati et al., 2017; Chacón Vargas et al., 2018; Foo et al., 2018; Svensson et al., 2018). In particular, PLS has been widely used to examine the relationship between variables (Johnston et al., 2004; Wuyts & Geyskens, 2005; Gimenez & Sierra, 2013; kayank et al., 2015; Kumar & Rahman, 2015; Tsanos & Zografos, 2016; Robinson et al., 2018). In line with previous SC research, PLS-SEM is used to explore the relationships between constructs in this study, as discussed in the following section.

4.9.3 Reasons for Using Partial Least Squares Structural Equation Modelling

Researchers have identified data, model properties, PLS-SEM algorithm and model evaluations as issues relevant to the application of PLS-SEM (e.g. see: Wold, 1982; Hoyle, 1999; Henseler, Ringle & Sinkovics, 2009; Hair et al., 2010; Hair, Ringle & Sarstedt, 2011). Hair et al. (2014) identifies that the data and model properties are key characteristics in the choice of PLS. An explanation of the data and model characteristics relevant to this study is provided in Table 4-8.

Table 4-8: Characteristics of the model and data relevant to PLS

	Explanation	Study context
Data characteristics		
Sample size	Large sample sizes increase precision (i.e. consistency) of PLS-SEM estimates	708 usable responses
Missing values	Highly robust as long as missing values are below a reasonable level	No missing values (responses with missing value were deleted)
Scale of measurement	Works with metric, scaled and binary data	Scaled data
Model characteristics		
Number of items in each construct measurement model	Handles constructs measured with single and multi-item measures	All constructs measured on multi-item scale
Relationship between constructs and their indicators	Easily incorporates reflective and formative measurement models	Model has first-order reflective constructs and second-order formative constructs
Model complexity	Handles complex models with many structural relationships	Attempts to examine 20 structural relationships, in a fairly complex model

From Table 4-8, it is clear that the PLS-SEM method can be used to examine the complex relationships among several variables in this study. In addition, Hair et. al. (2014) proposes rules of thumb for choosing PLS-SEM. First, PLS is intended for causal-predictive analysis (Anderson & Gerbing, 1988). The focus of the study is to examine the impact of logistics professional competency on career success and CS, so PLS was deemed appropriate. Second, the PLS method can examine the cause–effect relationship of a model with both reflective and formative constructs in a measurement model (Henseler, Ringle & Sinkovics, 2009). The model developed in Chapter 3 explains that the first-order constructs of independent variables are reflective, forming second-order constructs; thus, PLS was considered an appropriate method. The third characteristic of PLS is that it is suitable for a complex model consisting of hierarchical component models and many relationships to be examined. The model proposed in this study is a complex model to examine 20 relationships; hence PLS-SEM is a suitable method.

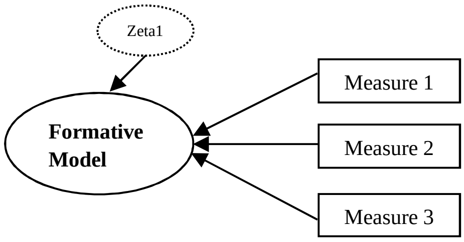
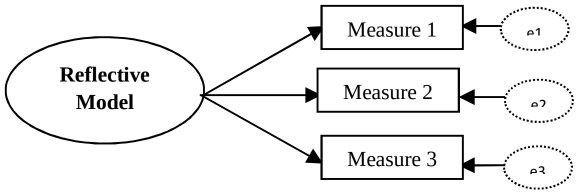
4.9.4 Reflective and Formative Construct Specification

Multidimensional constructs that are related to other constructs at a similar level of abstraction are known as hierarchical component models (Chin, 1998). The number of levels in the model and the relationships between its constructs are the characteristics that distinguish different types of hierarchical models (Becker, Klein &Wetzels, 2012).

This study needed to determine whether the measurement model was to be constructed based on a reflective or a formative model, particularly in relation to the constructs with multidimensional and multi-item structures. The implementation of each model would give different results, and therefore interpretation at this stage was crucially important. In the reflective model, the latent variable influences the indicators—thus the direction of causality is from the construct to the indicators or measures—while in the formative model, the direction is from the measures to the construct (Jarvis et al., 2003).

Indicators in the reflective model should all have the same antecedents and consequences, because they reflect the same underlying construct and are believed to be interchangeable. In contrast, the measures in formative constructs do not have to be interchangeable because they are not expected to have the same antecedents and consequences. Table 4-9 summarises the differences between formative and reflective measurement models.

Table 4-9: Differences between Formative and Reflective Measurement Models

Formative model	Reflective model
	
• Direction of causality is from measure to construct	• Direction of causality is from construct to measure
• No reason to expect the measures are correlated (internal consistency is not applied)	• Measures are expected to be correlated (measures should possess internal consistency reliability)
• However, attention should be given to nomological or criterion-related validity	
• Dropping an indicator from the measurement model may alter the meaning of the construct	• Dropping an indicator from the measurement model does not alter the meaning of the construct
• Takes measurement error into account at the construct level	• Takes measurement error into account at the item level

Source: Adapted from Jarvis et al., (2003)

4.9.5 Model Evaluation

PLS-SEM includes the measurement model and the structural model. The measurement model describes the latent variables in the model and allocates the observed variables accordingly. A structural model or path analysis investigates the hypothetical relationship among latent variables (Hair et al., 2006). According to Straub et al. (2004), reliability and construct validity are required for a structural equation model's instrument measurement, and convergent validity and discriminant validity are components of construct validity. The researcher should examine reliability, convergent validity and discriminant validity for the constructs (Hair et al., 2014).

Reliability is used to evaluate the internal consistency of a construct. The values of Cronbach's alpha and composite reliability (CR) for each construct were used in this study to measure reliability.

Convergent validity suggests that measured items in a specific construct share a high proportion of variance (Hair et al., 2006). Factor loadings should be higher than 0.6 for convergent validity. Items not meeting the 0.6 requirement for convergent validity were considered for deletion (Hair et al., 2011). Carmines and Zeller (1979) suggested the factor loadings should be higher than 0.7.

CR should be higher than 0.7. Items not meeting the 0.7 requirement for CR were considered for removal. According to Singleton and Straits (2010), computing CR values facilitates estimation of the reliability of measures.

Average variance extracted (AVE) measures the amount of variance that a given variable receives from its items (Fornell & Larcker, 1981). AVE should be higher than 0.5. Items not meeting the 0.5 requirement for AVE should be considered for deletion (Hair et al., 2011; Wong, 2013).

Discriminant validity tests were conducted to determine whether all of the constructs were different from each other. To measure discriminant validity, the researcher used the Fornell–Larcker criterion in SmartPLS. The Fornell–Larcker criterion states that discriminant validity occurs if the square root of the AVE for each latent variable is higher than the correlations among all latent variables (Hair et al., 2011; Wong, 2013).

As a PLS model is comprised of two interrelated models—a measurement model and a structural model—the models in this study were assessed separately in a two-step process (Hair, Ringle & Sarstedt 2011).

4.9.5.1 Step One: Evaluation of Measurement Model (Outer Model)

The measurement model, also known as the outer model, specifies how the latent variables and their observed indicators are related (Hair, Ringle & Sarstedt 2011; Henseler, Ringle & Sarstedt 2012). In the first step of the evaluation process, reliability and validity of the item measures are examined before testing the structural model to ensure that the measures are representing the constructs of interest (Chin 2010; Hair, Ringle & Sarstedt 2011). Reflective first-order constructs are assessed according to criteria of internal consistency, indicator reliability, convergent validity and discriminant validity, by examining the relationship between the first-order construct and its observed indicators (Hair, Ringle & Sarstedt 2011; Hair et al. 2012a).

4.9.5.2 Step Two: Evaluation of Structural Model (Inner Model)

In the second step of the evaluation process, the assessment involves examination of structural relationships. The structural model is also referred to as the inner model, which reflects the relationships between the latent variables (Hair, Ringle & Sarstedt 2011; Henseler, Ringle & Sarstedt 2012). The main focus in structural model evaluation is maximising the variance explained, or the R^2, for the endogenous latent construct and determining the effect sizes f^2, predictive relevance Q^2 and significance of all path coefficients.

The sequential steps required for PLS-SEM analysis and applied in this study are summarised in Table 4-10; they combine the suggestions of Gardiner et al. (2012), Hair et al. (2012b, 2013), and Henseler et al. (2009).

Table 4-6: Systematic evaluation criteria for PLS-SEM

Criterion	Description
1. Assessing reflective measurement model (outer model)	
Indicator reliability	An indicator's loading should be >0.7; otherwise it should be considered for removal.
Consistency reliability	Composite reliability (CR) should be >0.7 but in exploratory research values between 0.6 and 0.7 are acceptable.
Convergent validity	Average variance extracted (AVE) should be >0.5.
Discriminant validity (Fornell–Larcker criterion)	The square root of the AVE should be higher than its highest correlation with any other construct.
2. Assessing structural measurement model (inner model)	
Collinearity	Examination of each set of predictors in the structural model using variance inflation factor (VIF) and tolerance. A tolerance value of ≤0.2 and a VIF value of ≥5 indicate a potential collinearity problem.
Coefficient of determination (R^2)	The objective is high values. PLS-SEM seeks to maximise the R^2 values of the endogenous latent variables. In general, values of 0.75, 0.50 and 0.25 for the endogenous construct can be described as substantial, moderate and weak respectively. Chin (1998) recommends that R^2 values of 0.67, 0.33 or 0.19 in the inner model are acceptable.
Effect size (f^2)	Assesses an exogenous construct's contribution to an endogenous latent variable's R^2 values. The f^2 values of 0.02, 0.15 and 0.35 indicate an exogenous construct has small, medium or large effect respectively on an endogenous construct.
Predictive relevance (Q^2)	Calculated via a blindfold procedure. Q^2 **v**alues >0 provide evidence that exogenous constructs have predictive relevance for the endogenous construct under consideration.
Size and significance of path coefficients	Uses bootstrapping with a minimum of 5000 bootstrap samples. The number of cases should be equal to the number of valid observations in the original sample. Critical values for a two-tailed test are 1.65 (significance level = 10%), 1.96 (significance level = 5%), and 2.57 (significance level = 1%). Hair et al. (2014) recommends 10% for exploratory research.

4.9.6 Multi-group Analysis

In this study, three groups based on organisational ownership (Chinese SO3PL, MN3PL and CP3PL firms) are compared to investigate differences in the relationship between logistics competency, career success and CS. Because the sample size for each group is large enough and the subsample data are normally distributed (Mooi & Sarstedt, 2011; Giovanni &Vinzi, 2014;

Abbasi et al, 2015), a parametric approach is applied for multi-group analysis.

Multi-group analysis is generally regarded as a special case of modelling continuous moderating effects (Henseler & Chin, 2010; Henseler & Fassott, 2010; Sarstedt et al., 2011). Henseler et al. (2009) points out that group effects are nothing more than a variable's moderating effect whereby the categorical moderator variable expresses each observation's group membership. A multi-group analysis allows evaluation of whether predefined data groups have significant differences in their group-specific parameter estimates (e.g. path coefficients and standard errors).

SmartPLS provides outcomes from four approaches based on bootstrapping results from every group. The first approach is generally labelled the parametric approach (Henseler, 2007), introduced by Keil et al. (2000), which involves estimating model parameters for each group separately and using the standard errors obtained from bootstrapping as the input for a parametric test. The second multi-group analysis method is the permutation-based approach developed by Chin (2003) and further described by Chin and Dibbern (2010), as well as Dibbern and Chin (2005). Analogous to Edgington and Onghena (2007), the permutation-based test procedure builds on observations' random assignment to groups and is a distribution-free data test, because the parametric approach's distributional assumptions do not fit PLS path modelling's distribution-free character. Henseler (2007) proposes and describes another non-parametric procedure, which directly compares group-specific bootstrap estimates from each bootstrap sample (see also Henseler et al., 2009). The fourth approach was developed by Sarstedt et al. (2011), and named the non-parametric confidence set approach, which directly compares the group-specific bootstrap confidence intervals, regardless of whether or not data are normally distributed.

The above four presented approaches to group comparison in PLS path modelling have in common that they test the differences in parameters between two groups (Sarstedt et al., 2011). When researchers encounter situations in which they would like to compare more than two groups, Sarstedt et al. (2011) proposes they first conduct an omnibus test of group differences test of the hypothesis that a model parameter differs across groups. If this hypothesis is supported, or if there are only two groups, researchers should subsequently apply the novel confidence set approach to multi-group analysis with regard to comparing two groups of data.

4.10 Ethical Considerations

In most research situations, several parties including the researcher, respondents and funding organisations are involved and interact with each other. Researchers believe that they have the right to seek information, and respondents feel they have the right to privacy. Such situations raise several questions regarding obligations towards other parties (Zikmund, 2003). Ethical consideration is an important aspect that addresses questions related to the interests of participants in a project, research or study. Ethical matters play a significant role in data collection to signify that the interests of participants are not compromised or taken for granted (Bryman & Bell, 2007). Since this research involved collecting data from individuals, ethical consideration played a significant role.

The study followed the guidelines outlined by the RMIT Business College Human Advisory Network. The objective of this process is to ensure that the process of data collection is not only correct and efficient but is also ethically appropriate. The survey questionnaire was prepared according to the standard requirements of the RMIT University Human Research Ethics Committee and confidentiality of respondent information was assured through ethical procedures. Respondents were assured of confidentiality, anonymity and privacy through a participatory information sheet. The self-administered survey questionnaires were distributed, and the voluntary nature of participation was emphasised. Participants could withdraw partially or completely at any time or refuse to answer any question. Implied consent was adopted during the data collection, which means that when a participant returned their completed questionnaire, they had given consent to participate. All the data collected was strictly confidential and could be accessed only by the researcher and his supervisor. Collected data will be kept securely at RMIT University for 5 years.

4.11 Summary

This chapter presented the research methodologies used in this study, detailing each technique used. This research is based on a positivism paradigm, which permitted the use of a quantitative method approach. The process of quantitative data collection using an online survey was explained. The survey questionnaires were distributed to a sample of executives/managers/directors from firms registered on the CFLP or CSCMP (China) databases. Having established the methodology and developed the research instrument, a large-scale survey was conducted. The chapter then outlined the data analysis procedures. PLS-SEM was chosen as a data analysis method for this study. The analysis of collected data is presented in Chapter 5.

CHAPTER 5: DESCRIPTIVE DATA ANALYSIS AND RESULTS

5.1 Introduction

Chapter 4 provided a summary of the research methodology including analytical procedures and statistical terms and techniques applied in this study. The aim of this chapter is to present the descriptive data analysis and the results of skills ranking for Chinese logistics professionals.

This chapter describes the sample demographics of the respondents in Section 5.2. Section 5.3 presents a verification of non-response bias. The preliminary data examination procedures, which include assessing missing data, identifying outliers and testing data normality are described in Section 5.4. The chapter is concluded with an overall summary in Section 5.5.

5.2 Sample Demographics and Data Screening

The profile of the respondents and participating firms were explored as part of the data assessment. As this study used a survey questionnaire with the online survey and drop-and-collect method (Brown, 1993; Ibeh et al., 2004; Maclennan et al., 2011), response error may have been an issue, as the researcher had no control over how the survey was completed. Hence, relevant data screening techniques including descriptive statistics and verification of non-response bias are discussed in this section.

5.2.1 Response Rate

The survey was conducted in two phases. In Phase 1, questionnaires were distributed between April and July 2016. Fifteen hundred questionnaires were delivered randomly to 3PL companies in China during Phase 1 and attracted 432 responses. A follow-up 1000 surveys were delivered in Phase 2, between September and November 2016, which generated another 324 responses. Overall, the total response rate for this study was 30.2%, with 756 respondents. After preliminary assessment, 48 questionnaires were discarded: 36 had missing values and 12 were not completed by an appropriate respondent—a logistics manager. Thus, 708 responses were confirmed as valid for use and analysis in the study. Table 5-1 presents a breakdown of respondents in Phase 1 and Phase 2 of the data collection. the questionnaire.

Table 5-7: Breakdown of respondents based on data collection timing

	Phase 1 (April–July 2016)	**Phase 2 (September–November 2016)**	**Total**
Distributed	1500	1000	2500
Collected	432	324	756
Response rate (%)	28.8	32.4	30.2

5.2.2 Demographic Profiles of Respondents

The demographic profiles of 708 respondents who participated in the survey are reported in Table 5-2. Of the 708 respondents, 28.2% (200) were from Chinese SO3PL, 25% (177) from MN3PL and 46.8% (331) from CP3PL firms. To analyse the position of respondents, they were divided into three subgroups: senior level (including executive and senior manager), middle level (including manager and director) and junior level (including head) managers. The data show that the majority of the respondents were middle-level managers (48.7%), followed by senior-level managers (23.6%). Sixty-four % of respondents held middle and senior position in Chinese SO3PLs, 78% respondents were above middle level managers of MN3PLs and 74.3% were above middle level managers of CP3PLs. Of the 708 respondents 80.5% were bachelor degree holders, around 20% respondents had a master degree and a small percentage had a doctoral degree. Of respondents working in SO3PL firms, 87.5% had a bachelor degree or above. as did 85.3% respondents of those in MN3PLs and 73.7% from CP3PLs. Around 4.4% (31) of respondents had received their final degree abroad, and a vast number of these (15) were working in a MN3PL.

With respect to respondents’ managerial experience, 93.4% had more than 1 year of experience; 52.9% had more than 6 years of experience and 8.3% (59) had more than 16 years of experience. Additionally, among the respondents, 61.9% had more than 6 years of working experience in the 3PL industry and 62.5%, 67.8% and 58.3% in SO3PL, MN3PL and CP3PL firms, respectively. The majority of respondents had 6–10 years of 3PL industry working experience in Chinese SO3PLand CP3PL firms, with 37% and 36%, but the majority (31.1%) had 11–16 years in MN3PL firms.

Table 5-8: Descriptive statistics for respondents' profiles

Characteristic	**Total respondents**		**SO3PL**		**MN3PL**		**CP3PL**	
Position	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
Executive	20	2.82	4	2.00	4	2.26	12	3.63
Senior manager	147	20.76	37	18.50	43	24.29	67	20.24
Manager	234	33.05	51	25.50	55	31.07	128	38.67
Director	111	15.68	36	18.00	36	20.34	39	11.78
Head	196	27.68	72	36.00	39	22.03	85	25.68
Other	0	0.00	0	0.00	0	0.00	0	0.00
Total	708	100.00	200	100.00	177	100.00	331	100.00
Education level	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
High school	13	1.84	2	1.00	2	1.13	9	2.72
Junior college	124	17.51	23	11.50	24	13.56	77	23.26
Bachelor	425	60.03	121	60.50	107	60.45	197	59.52
Master	143	20.20	52	26.00	44	24.86	47	14.20
PhD	2	0.28	2	1.00	0	0.00	0	0.00
Other	1	0.14	0	0.00	0	0.00	1	0.30
Total	708	100.00	200	100.00	177	100.00	331	100.00
Which country did you receive your final degree	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
China	677	95.62	192	96.00	162	91.53	323	97.58
Other	31	4.38	8	4.00	15	8.47	8	2.42
Total	708	100.00	200	100.00	177	100.00	331	100.00
Overseas education years	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
<1 year	627	88.56	172	86.00	153	86.44	302	91.24
1 year	15	2.12	9	4.50	2	1.13	4	1.21
2–3 years	24	3.39	7	3.50	5	2.82	12	3.63
4–6 years	34	4.80	11	5.50	13	7.34	10	3.02
6–8 years	8	1.13	1	0.50	4	2.26	3	0.91
Total	708	100.00	200	100.00	177	100.00	331	100.00
Managerial experience	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
<1 year	47	6.64	19	9.50	6	3.39	22	6.65
1–5 years	287	40.54	75	37.50	84	47.46	128	38.67
6–10 years	261	36.86	61	30.50	75	42.37	125	37.76
11–15 years	54	7.63	19	9.50	6	3.39	29	8.76
16–20 years	35	4.94	15	7.50	3	1.69	17	5.14
>20 years	24	3.39	11	5.50	3	1.69	10	3.02
Total	708	100.00	200	100.00	177	100.00	331	100.00

Year worked in 3PL industry	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
<1 year	45	6.36	17	8.50	4	2.26	24	7.25
1–5 years	225	31.78	58	29.00	53	29.94	114	34.44
6–10 years	247	34.89	74	37.00	54	30.51	119	35.95
11–15 years	145	20.48	36	18.00	55	31.07	54	16.31
16–20 years	31	4.38	11	5.50	6	3.39	14	4.23
>20 years	15	2.12	4	2.00	5	2.82	6	1.81
Total	708	100.00	200	100.00	177	100.00	331	100.00

5.2.3 Demographic Profile of Organisations

The demographic profiles of the 708 organisations represented in the survey are reported in Table 5-3. Based on paid-up capital, three types of organisations in the Chinese 3PL service industry were targeted as respondents: 200 replies were received from Chinese SO3PL, 177 from MN3PL and 331 from CP3PL firms. Most of the surveyed organisations (77.3%) had more than 100 employees, and nearly 27% had more than 1000 employees.

Regarding operating years, 634 (89.6%) of the organisations had been operating for more than 5 years: 91.5%, 98.3% and 83.7% for Chinese SO3PL, MN3PL and CP3PL organisations, respectively. The majority (29%) of the Chinese SO3PL organisations had been operating for more than 30 years, but MN3PL and CP3PL organisations were much younger: the majority were 16–20 years and 11–15 years, respectively, for these two groups.

With regard to the major market of organisations, the majority provided services in the Chinese market (65.7%), followed by the global market (23.4%). The difference among the three types of organisations was that the major market of Chinese SO3PLs and CP3PLs was more focused on China (67% and 78.3% respectively), but MN3PLs were evenly focused on China’s domestic market (40.7%) and the global market (39.6%).

Table 5-9: Descriptive statistics for organisations' profiles

Characteristic	**Total respondents**		**SO3PL**		**MN3PL**		**CP3PL**	
No. of employees in the company	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
1—20	13	1.84	1	0.50	0	0.00	12	3.63
21–49	71	10.03	11	5.50	8	4.52	52	15.71
50–99	77	10.88	28	14.00	15	8.47	34	10.27
100–200	137	19.35	19	9.50	48	27.12	70	21.15
201–299	49	6.92	18	9.00	13	7.34	18	5.44
300–999	170	24.01	49	24.50	42	23.73	79	23.87
more than 1000	191	26.98	74	37.00	51	28.81	66	19.94
Total	708	100.00	200	100.00	177	100.00	331	100.00
No. of operating years	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
less than 3 years	25	3.53	3	1.50	1	0.56	21	6.34
3–5 years	49	6.92	14	7.00	2	1.13	33	9.97
6–10 years	145	20.48	40	20.00	13	7.34	92	27.79
11–15 years	177	25.00	42	21.00	38	21.47	97	29.31
16–20 years	116	16.38	19	9.50	46	25.99	51	15.41
21–30 years	86	12.15	24	12.00	39	22.03	23	6.95
more than 30 years	110	15.54	58	29.00	38	21.47	14	4.23
Total	708	100.00	200	100.00	177	100.00	331	100.00
Annual revenue in past 3 years	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
less than 1million	12	1.69	1	0.50	1	0.56	10	3.02
1 million–less than 2 million	21	2.97	1	0.50	4	2.26	16	4.83
2 million–less than 3 million	12	1.69	9	4.50	1	0.56	2	0.60
3 million–less than 5 million	42	5.93	8	4.00	3	1.69	31	9.37
5 million–less than 10 million	83	11.72	15	7.50	26	14.69	42	12.69
10 million–less than 50 million	139	19.63	34	17.00	37	20.90	68	20.54
50 million–less than 200 million	155	21.89	36	18.00	35	19.77	84	25.38
20 0million–less than 300 million	44	6.21	9	4.50	21	11.86	14	4.23
300 million–less than 400 million	31	4.38	12	6.00	6	3.39	13	3.93
400 million or above	169	23.87	75	37.50	43	24.29	51	15.41
Total	708	100.00	200	100.00	177	100.00	331	100.00
Type of enterprise	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
Chinese SO3PL	200	28.25	200	100.00	0	0.00	0	0.00
MN3PL	177	25.00	0	0.00	177	100.00	0	0.00
CP3PL	331	46.75	0	0.00	0	0.00	331	100.00
Total	708	100.00	200	100.00	177	100.00	331	100.00
Major market	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**

Global	166	23.45	49	24.50	70	39.55	47	14.20
Asia Pacific	77	10.88	17	8.50	35	19.77	25	7.55
China	465	65.68	134	67.00	72	40.68	259	78.25
Total	708	100.00	200	100.00	177	100.00	331	100.00

Based on a report from Development Research Centre of the State Council of the PRC, Chinese business areas were divided into 10 business zones, and the researcher attempted to cover all business zones during distribution and collection of questionnaires. A summary of locations and organisations for the study is provided in Table 5-4. The majority of organisations were located in the Yangtze River Delta Economic Zone (39.4%), followed by the Middle and Upper Reaches of the Yellow River (31.9%). The Yangtze River Delta Economic Zone includes Shanghai, Jiangsu and Zhejiang provinces and is the first and most energetic business zone in China—called the International Shipping Centre in the Chinese logistics industry. The Middle and Upper Reaches of the Yellow River is the central region of China (Shaanxi, Gansu, Ningxia, Shanxi and Henan provinces are included in this business zone) and is considered a transportation junction in domestic logistics.

To illustrate the locations and numbers of the represented organisations at the provincial level, the darker colour in the thermodynamic chart shown in Figure 5-1 means more respondents.

Table 5-10: Locations and numbers of organisations

No.	Business zone	No. organisations
1	Northeast Economic Zone	11
2	Northern Coastal Economic Zone	58
3	Yangtze River Delta Economic Zone	279
4	Pearl River Delta Economic Zone	55
5	The Yellow River Economic Zone in the middle and upper reaches	226
6	The middle and upper reaches of the Yangtze River Economic Zone	72
7	Economic Zone in the middle and upper reaches of the Pearl River	3
8	Inner Mongolia Economic Zone	2
9	Xinjiang Economic Zone	1
10	Qinghai Tibet Plateau Economic Zone	1
	Total	708

Figure 5-5: Map showing the distribution of respondents

In relation to the scale of the company, the researcher grouped organisations into large scale, middle scale, small and micro size categories. Most of the surveyed organisations (43.6%) were middle scale, followed by small size and large scale, 27.7% and 26.1% respectively. Table 5-5 presents the results.

Table 5-11: Firm size and numbers of organisations

Item		**Unit**	**Large scale**	**Middle scale**	**Small**	**Micro**
Employment size (X)		Person	X ≥ 200	100 ≤ X＜200	20 ≤ X＜100	X＜20
Revenue (Y)		Million USD	Y ≥ 45.2	1.5 ≤ Y＜45.2	0.2 ≤ Y＜1.5	Y＜0.2
Total	Number	185	309	196	18	708
	%	26.1	43.6	27.7	2.5	100%

Source: National Bureau of Statistics of the PRC (2019)

5.3 Verification of Non-response Bias

To ensure that the sample of responses obtained was representative of the population, non-response bias was examined through comparison of early (Phase 1) and late responses (Phase 2) of returned surveys (Armstrong & Overton, 1977). If late respondents differed in some way from early respondents, it most likely that some level of bias exists (Harris-Kojetin 2009). Differences in the distribution between response waves were first analysed by cross-tabulation. Statistical significance was estimated using chi-square tests. A p-value ≤0.05 was considered significant. The key demographic variables adopted in the analysis were number of employees, years working in the 3PL industry, years of management experience, education level and position. Table 5-6 shows the demographic profiles of early and late respondents, which did not differ significantly (all *p*-values >0.05). Thus, there was no significant demographic difference between the early and late respondents, and non-response bias related to was not a particular influence in this research.

Table 5-6: Chi-square test for non-response bias

Variable	χ^2	Sig.
Number of employees	49.598	0.165
Experience in Chinese 3PL industry	34.175	0.104
Managerial experience	20.332	0.729
Education level	9.515	0.849
Position	12.212	0.729

Note: $p < 0.05$

To assess non-response bias due to the timing of data collection, two-sample t-tests assuming equal variance were conducted for responses received in Phase 1 and Phase 2 (follow up) of data collection.

Responses between Phase 1 and Phase 2 respondents were compared using two-tailed t-statistics across all variables included in the survey ($p < 0.05$). The results of Levene's test for equality of variances had $p > 0.05$; thus equal variances were assumed (Pallant, 2011). The null hypothesis that the two groups (Phase 1 *v*. Phase 2) were equal was not rejected and it was concluded that there was no statistically significant difference among the identified variables, suggesting that non-response may not be a concern in this study. The results are presented in Table 5-7.

Table 5-7: Results of two-sample t-tests assuming equal variance

Variable	Levene's test for equality of variances	T-test for equality of means
	Sig.	Sig. (2-tailed)
Education level	.115	.446
Position	.872	.995
Experience in 3PL industry	.991	.184
Number of employees	.910	.736
Annual revenue in past 3 years	.707	.062
Type of enterprise	.910	.912

5.4 Data Examination and Cleaning

The data analysis was preceded by an examination of data entry and data cleaning. This was an important process to gain critical insights into the data characteristics and analysis (Hair et al., 2010). Accordingly, to achieve a high level of accuracy in the data entry process, a double-check procedure was performed. The first check involved verifying all entries case by case; as a second check, descriptive statistics for continuous data—including frequency distributions, maximum and minimum values, means and standard deviations—were calculated and verified. The frequency distribution statistics provided no evidence for mistakes in data entry and ensured accuracy of the data was 100%.

Given the strong underlying assumption of multivariate normality demanded of the SEM methodology employed in this study, violation of this assumption may lead to incorrect interpretation of findings. Data gathered from the survey were screened for missing values, normality, outliers, linearity and multicollinearity. The objective was to avoid failure of the model estimation and crashing of fitting programs (Kline, 2005).

5.4.1 Assessment of Missing Values

Missing values are a common feature of research studies involving questionnaire-based surveys in which many items are to be answered by respondents. The appropriate treatment to resolve this problem depends on the patterns of the missing values (Tabachnick & Fidell, 2011). Removing missing values that are randomly distributed is considered acceptable and can improve the overall data structure. However, fixing missing values with a systematic pattern might generate biased results.

For this study, the survey was conducted in 10 business zones covering most regions of China and resulted in 758 completed questionnaires. After assessment (as explained in Section 5.2.1), 708 questionnaires were found to provide the required information with no missing data for the variables measured by the Likert scale utilised in this research. The low removal rate may be due to use of the drop-and-collect method, which enabled the researcher to deliver and collect the completed questionnaires personally, which gave the researcher the chance to immediately check completed questionnaires for missing values. Further, the instructions given on the questionnaires were clearly written and respondents were given the opportunity to clarify any ambiguity regarding the questions with the researcher.

5.4.2 Assessment of Normality

Normality in data is often a conventional assumption in the estimation process (Bai & Ng, 2005). Although it is not so important when using the PLS-SEM approach, the researcher still assessed normality to check the quality of samples. Infraction of normality affects the interpretation of analysis results (Hair et al., 2010). Normality can be examined at univariate and multivariate levels. At the first level, normality is examined based on the distribution of individual items. Later, it is tested based on a combination of two or more items.

As suggested by Hair et al. (2010), a normal data distribution can be characterised based on skewness and kurtosis values. Data distributions with either a highly skewed nature or high kurtosis are indicative of non-normality, which has random effects on specification or estimation (Hall & Wang, 2005). This non-normality may exist due to the presence of outlier cases in the data set, as explained in the next section. An attempt was made to assess the normality of the data. In the first stage, a descriptive statistics analysis using the mean scores of components of dependent and independent variables was conducted (see Table 5-8). The results confirm that multivariate non-normality does not exist in the data set, because all skewness values fell within the acceptable range of –1 to +1 (Hair et al., 2010) and the kurtosis scores for all variables including the dependent variables did not exceed the maximum level of normality (≤ 3) and thus would have no effect on the overall findings of the study.

A further test on residuals was also conducted to screen for normality via expected normal probability and de-trended normal probability plots. When residual plots appear normal in regressions, it is not necessary to screen individual variables for normality (Pallant, 2011). An examination of normal probability plots suggested no significant deviations from normality for the present data. The results are provided in more detail in Section 5.4.4.

Table 5-8: Results of normality distribution test

Variable	N	Minimum	Maximum	Mean	SD	Skewness	Kurtosis
LGM1	708	1.0	7.0	4.545	1.7257	–.140	–1.030
LGM2	708	2.0	7.0	5.239	1.1753	–.755	.284
LGM3	708	2.0	7.0	5.306	1.1296	–.705	.404
LGM4	708	2.0	7.0	5.360	1.0945	–.684	.379
LGM5	708	2.0	7.0	5.340	1.1426	–.665	.220
LGM6	708	2.0	7.0	5.288	1.1805	–.630	.027
LGM7	708	2.0	7.0	5.047	1.1318	–.481	.037
LGM8	708	2.0	7.0	5.123	1.2165	–.506	–.235
LGM9	708	2.0	7.0	5.184	1.1666	–.581	.099
LGM10	708	1.0	7.0	4.637	1.3772	–.374	–.139
LA1	708	1.0	7.0	5.030	1.2084	–.520	–.058
LA2	708	2.0	7.0	5.167	1.2072	–.647	–.041
LA3	708	1.0	7.0	4.966	1.2582	–.496	–.145
LA4	708	2.0	7.0	5.068	1.2168	–.476	–.328
LA5	708	1.0	7.0	4.965	1.2152	–.402	–.066
LA6	708	1.0	7.0	4.811	1.2713	–.387	–.212
LIS1	708	1.0	7.0	4.688	1.3211	–.264	–.169
LIS2	708	1.0	7.0	4.767	1.2768	–.150	–.374
LIS3	708	1.0	7.0	4.872	1.2717	–.209	–.599
LIS4	708	2.0	7.0	5.010	1.3366	–.279	–.729
LS1	708	1.0	7.0	4.867	1.2884	–.384	–.317
LS2	708	1.0	7.0	4.682	1.2938	–.368	–.101
LS3	708	1.0	7.0	4.726	1.3354	–.401	–.207
LS4	708	2.0	7.0	5.215	1.2333	–.636	–.019
OE1	708	2.0	7.0	5.066	1.2011	–.536	–.245
OE2	708	2.0	7.0	5.222	1.1483	–.711	.469
OE3	708	2.0	7.0	5.342	1.1633	–.698	.120
OE4	708	2.0	7.0	5.175	1.1630	–.583	.005
OE5	708	2.0	7.0	5.113	1.1815	–.571	–.029
FL1	708	2.0	7.0	5.203	1.2074	–.565	–.134
FL2	708	2.0	7.0	5.195	1.1635	–.617	.156
FL3	708	2.0	7.0	5.308	1.1573	–.713	.099
MK1	708	2.0	7.0	5.051	1.1738	–.294	–.157
MK2	708	1.0	7.0	5.102	1.1861	–.539	.056
MK3	708	2.0	7.0	5.023	1.1974	–.351	–.353
MK4	708	1.0	7.0	4.887	1.1828	–.311	–.089
MK5	708	1.0	7.0	5.085	1.1993	–.460	–.139
MK6	708	2.0	7.0	4.990	1.2052	–.355	–.278
CS1	708	1.0	7.0	5.081	1.1907	–.453	–.133
CS2	708	2.0	7.0	5.090	1.1651	–.403	–.281
CS3	708	2.0	7.0	5.079	1.2426	–.408	–.424
CS4	708	1.0	7.0	5.001	1.2946	–.528	–.179
P1	708	1.0	7.0	5.240	1.2251	–.522	.005
P2	708	1.0	7.0	5.158	1.2361	–.546	.127
P3	708	1.0	7.0	4.806	1.2465	–.258	–.252
S1	708	1.0	7.0	4.729	1.2575	–.176	–.474
S2	708	1.0	7.0	4.575	1.3926	–.264	–.555
S3	708	1.0	7.0	4.592	1.4157	–.258	–.562

5.4.3 Assessment of Outliers

An outlier is a case with such an extreme value for one variable (a univariate outlier) or such a strange combination of scores for two or more variables (multivariate outlier) that the case distorts statistics (Hair et al. 2010; Tabachnick & Fidell, 2011). Cases with scores that are very different from the rest are considered outliers (Kline, 2005). Identifying the presence of outliers in data is necessary, since they may cause errors in model, parameter and standard error estimations (Gallagher et al., 2008).

Outliers can be detected by examining Mahalanobis distance (D) statistics. Mahalanobis D^2 distances were generated for each case using SPSS regression. To determine if cases are multivariate outliers, critical chi-square value are identified using the number of independent variables as the degrees of freedom. A maximum D^2 larger than the critical chi-square value indicates the presence of multivariate outliers. Table 5-9 presents the critical values for evaluating D^2.

Table 5-9: Critical values for evaluating Mahalanobis distance values

No. independent variables (df)	Critical value
2	13.82
3	16.27
4	18.47
5	20.52
6	22.46
7	24.32
8	26.13
9	27.88
10	29.59

Source: Pearson and Hartley (1996)

This process was followed for identifying multivariate outliers by evaluating D = 22.46 ($p < 0.001$), which is greater than the critical value (Tabachnick & Fidell 2007). Examination of D^2 values indicated that the maximum D-value was 23.80, which slightly exceeds the critical value of 22.46. Further analysis was carried out using Cook's distance to check whether this outlier had an undue influence on the results as a whole. According to Tabachnick and Fidell (2007), cases with values greater than 1 are a potential problem. Table 5-10 shows that the maximum Cook's distance value was 0.00015, suggesting that no cases were multivariate outliers. Therefore, all 708 cases were considered free from outliers and remained in the data set for analysis.

Table 5-12: Multivariate outliers and Cook's distance test results

Case	D^2	Cook's distance
119	23.8037	0.00015
121	23.70261	0.00851
409	23.2549	0.00394
320	22.77841	0.00832
87	22.07889	0.00767
529	22.06511	0.00076
21	21.64724	0.00048

5.4.4 Assessment of Linearity

Linearity is an essential requirement for performing factor analysis procedures. It is examined for independent variables separately. Figures 5-2–5-5 show the outputs from regression analyses as normal P–P plots of items for LGM, LA, LIS and LS competency respectively. The results confirm linear relationships between the dependent and independent variables in each level of model, and that the distribution of scores was normal.

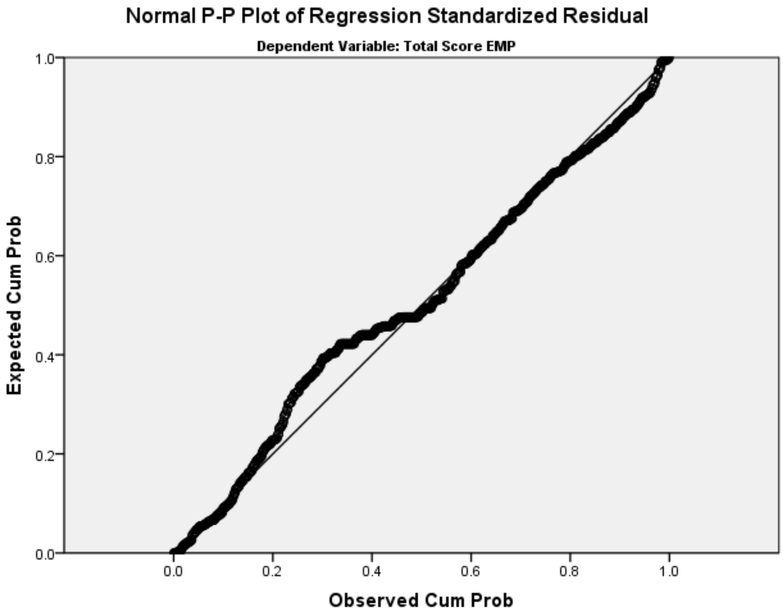


Figure 5-6: Normal P–P plot of LGM competency

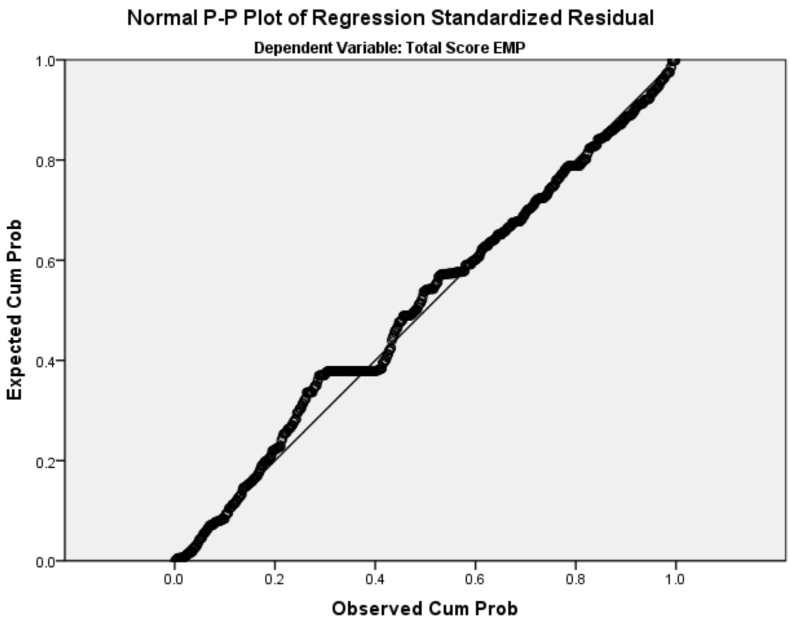


Figure 5-7: Normal P–P plot of LA competency

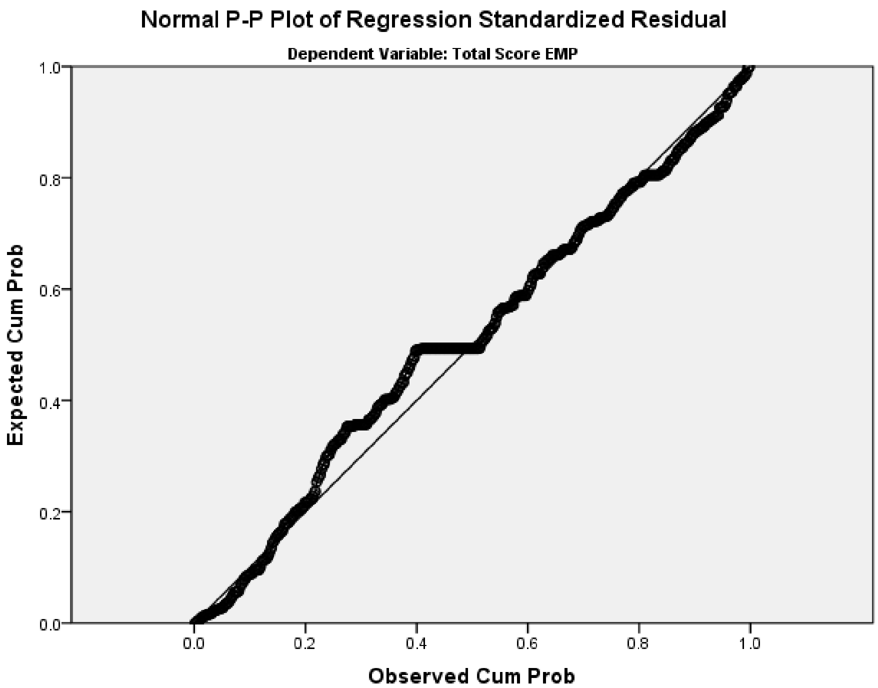


Figure 5-8: Normal P–P plot of LIS competency

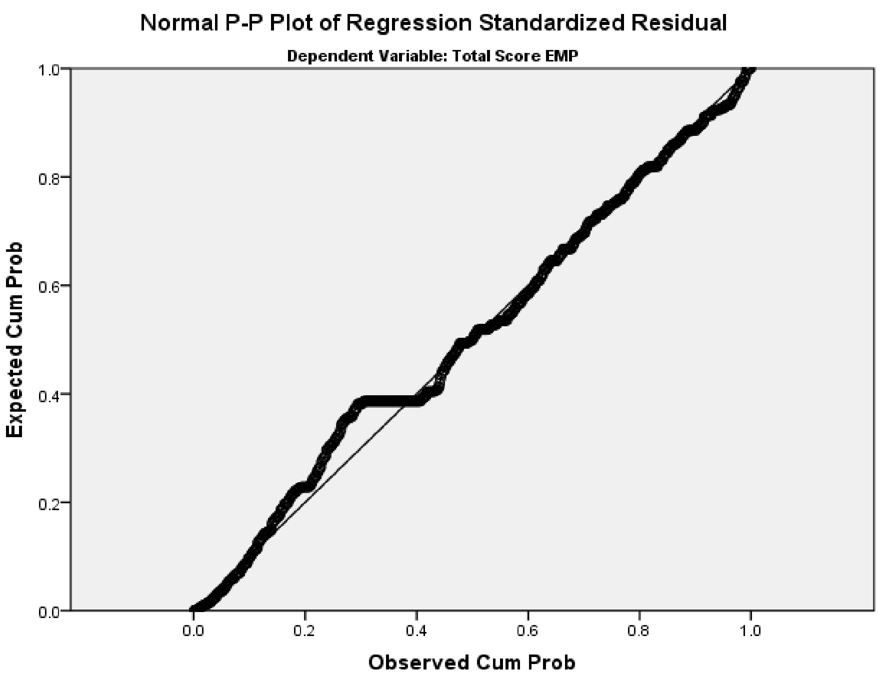


Figure 5-9: Normal P–P plot of LS competency

5.4.5 Assessment of Common Method Variance

Surveys have important strengths that are quite appealing, such as the ability to efficiently obtain large samples and to generalise findings across multiple populations. However, surveys are also prone to certain problems, such as common method variance (CMV), which may lead to erroneous conclusions about relationships between variables by inflating or deflating findings. CMV is the amount of spurious correlation between variables that is created by using the same method, often a survey, to measure each variable (Craighead et al., 2011).

In this study, CMV was assessed using the Harman single-factor test with the aim of identifying and measuring variables that reflect the observed constructs. The Harman single-factor test requires loading all the measures in the study into a factor analysis, with the assumption that the presence of CMV is indicated by the emergence of either a single factor or a general factor, accounting for the majority of covariance among measures (Podsakoff et al., 2003). Therefore, in this study, factor analysis was applied only for the assessment of CMV.

All 48 variables were entered into a principal components factor analysis, with no rotation. With regard to the extraction sums of squared loadings, the results explain that 33.33% of variance was attributed to the measured items; in other words, an unrotated factor analysis of all study items yielded 16 factors in total explaining 60.72%% of the variance. The extraction sum of squared loadings of the first factor was 16.15%, which is far lower than 50%. The basic assumption of this test is that a substantial amount of CMV exists if a general factor accounts for the majority of the covariance in independent and criterion variables (Podsakoff & Organ, 1986). Therefore, the results indicated no possibility of a CMV problem in the data for this study.

5.5 Summary

Data analysis in this thesis was preceded by data editing from the collected questionnaires and the coding of question items. Data screening and preliminary data analysis, including descriptive statistics and sample characteristics were discussed. Data screening was performed in preparation for conducting PLS-SEM, as the latter is sensitive to missing data, multicollinearity and inadequate sample sizes. Following screening, the number of respondents was analysed and demographic characteristics of the sample described.

The next chapter discusses the PLS-SEM model analysis and findings in detail to evaluate the hypotheses outlined in Chapter 3.

CHAPTER 6: RESULTS AND ANALYSIS

6.1 Introduction

This chapter presents the analysis and results of the research models and hypotheses outlined in Sections 3.6 and 3.7. The reason for selecting PLS-SEM is discussed in Section 6.2. The analysis of all 708 samples is presented in Section 6.3, and then the samples of the CP3PL, MN3PL and Chinese SO3PL firms are discussed in Sections 6.4, 6.5 and 6.6 respectively. Section 6.7 reports the multi-group analysis for the three organisational ownership types and a summary of the chapter is presented in Section 6.8.

6.2 Selection of Partial Least Squares Structural Equation Modelling

To calculate the parameters of a SEM, two approaches are commonly used: a covariance-based method and a variance-based (or components-based) method (Haenlein & Kaplan 2004). The term SEM is often used as a synonym for covariance-based SEM. There are several tools available in the form of software packages to perform this sort of analysis, including AMOS, EQS, SEPATH, and COSAN and LISREL. A well-accepted method for performing variance-based SEM is PLS path modelling. There are various tools available to perform PLS analysis, including Smart PLS and PLS graph.

When covariance-based SEM reaches its limitations, variance-based SEM is an appropriate method of analysis. PLS has the advantage that it involves no assumptions about the population or scale of measurement (Haenlein & Kaplan 2004) and ultimately works with no need for distributional assumptions. The hypotheses is this study were assessed for the Chinese SO3PL, MN3PLs and CP3PL firms, whose sample sizes were 200, 177 and 331 respectively, which are too small to run software packages such as AMOS.

SmartPLS 3.0 was selected to perform the PLS path modelling analysis (Hair et al. 2017) in this study. SmartPLS is a software application for (graphical) latent variable path (LVP) modelling. The PLS method was used for the LVP analysis. The structural model of this study was built using SmartPLS software.

6.3 Analysis of Research Model for the Total Sample

6.3.1 Assessment of the Measurement Model (Outer Model)

The evaluation of the measurement model followed the steps recommended by Becker, Klein and Wetzels (2012). All possible outer and inner links were drawn using SmartPLS software. All first-order constructs in the models are reflective and Figure 6-1 illustrates the relationships.

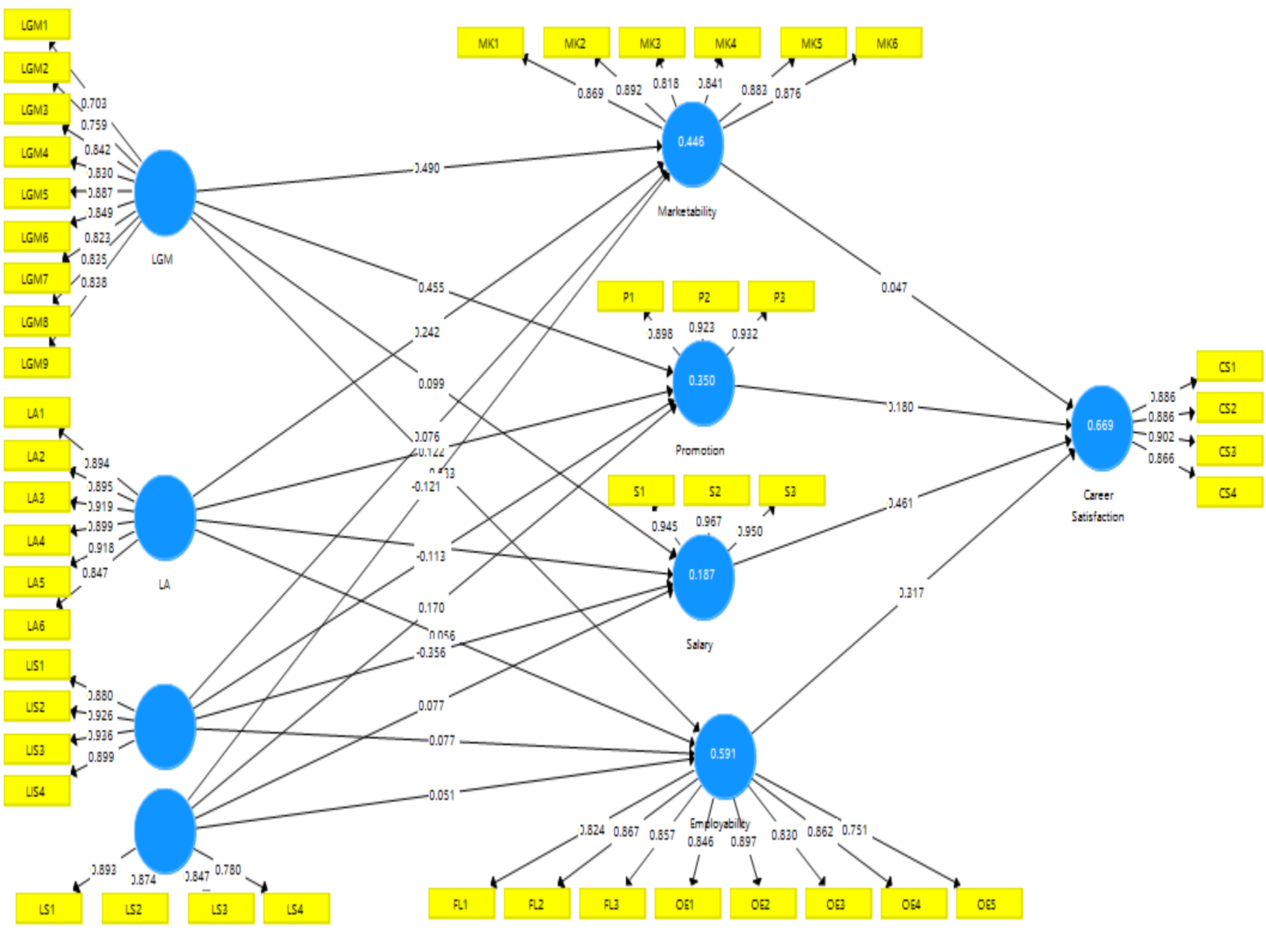


Figure 6-1: Measurement model for the Total Sample

The measurement model evaluates the validity and reliability of the measures. Reliability refers to the stability and consistency of the scale in measuring the concept while validity refers to the ability of a scale to represent the concept being measured (Sekaran 2007).

The measurement items representing the constructs in the measurement model need to demonstrate reliability as well as convergent and discriminant validity. Hence, a CFA was performed to confirm unidimensionality of the measurement items that reflect the underlying constructs (Tenenhaus, Esposito Vinzi, Chatelin & Lauro 2005; Wilden et al. 2013). In other words, CFA aims to verify whether a set of measurement items share sufficient common variance to be regarded as measures of an intended single factor (Bagozzi & Yi 2012). Generally, CFA is used to identify and remove measurement items that load weakly on intended constructs, thus establishing unidimensionality. CFA was deemed more appropriate in this study because the researcher had relied on developed knowledge regarding the underlying factor structure of the measures. Based on theory, past research or both, the relationships between the measures and the factors were hypothesised and statistically assessed using CFA (Bryne 2005; Treiblmaier & Filzmoser 2010). CFA was conducted using SmartPLS following criteria as explained in Section 4.9.5 and the following section.

6.3.1.1 Indicator Reliability

For PLS algorithm calculation, the inner weighting option was set using the path weighting scheme. The maximum number of iterations is 300. The path weighting scheme has been strongly recommended for use in preference to the factorial and centroid weighting scheme because it is the only scheme that takes into account the direction of relationships specified in the models (Vinzi, Trinchera & Amato 2010). According to this procedure, factor loadings for the measurement items were determined. Table 6-1 reports the factor loadings for the original research model.

Table 6-1: Factor loadings for the Total Sample

	CS	LA	LGM	LIS	LS	MKT	PRM	SAL	EMP
CS1	0.8861								
CS2	0.8859								
CS3	0.9015								
CS4	0.8657								
FL1									0.8236
FL2									0.8669
FL3									0.8569
LA1		0.8944							
LA2		0.8952							
LA3		0.9190							
LA4		0.8991							
LA5		0.9177							
LA6		0.8467							
LGM1			0.6913						
LGM10			0.4283						
LGM2			0.7656						
LGM3			0.8366						
LGM4			0.8240						
LGM5			0.8867						
LGM6			0.8504						
LGM7			0.8238						
LGM8			0.8379						
LGM9			0.8369						
LIS1				0.8797					
LIS2				0.9256					
LIS3				0.9365					
LIS4				0.8986					
LS1					0.8932				
LS2					0.8737				
LS3					0.8475				
LS4					0.7804				
MK1						0.8686			
MK2						0.8918			
MK3						0.8176			
MK4						0.8411			
MK5						0.8829			
MK6						0.8759			
OE1									0.8465
OE2									0.8972
OE3									0.8297
OE4									0.8623
OE5									0.7515
P1							0.8982		
P2							0.9226		
P3							0.9319		
S1								0.9449	
S2								0.9668	
S3								0.9497	

Notes: MKT, marketability; PRM, promotion; SAL, salary, EMP, employment

Researchers (e.g. Hair, Ringle & Sarstedt 2013; Peng & Lai 2012) suggest that item loadings should be at least 0.7 to achieve item reliability of approximately 0.5. Loadings are correlations and the item reliability is the square of the loading. Therefore, for a loading value of 0.707, item reliability of 0.5 is achieved, showing that 50% or more of the variance in the observed variables is due to the construct (Hulland 1999).

Applying these criteria, one item (LGM10, highlighted in red in Table 6-1) did not meet the threshold value of 0.7. LGM10, which had the lowest factor loading, was removed from the model at first and the analysis was conducted again to re-evaluate the model loadings. This showed that the lowest factor loading was 0.703, which exceeded the threshold value; hence, only LGM10 was removed from the LGM competency construct.

By conducting the final round of CFA, loadings for the items retained in the measurement model were obtained. Following this, the bootstrapping procedure was conducted to estimate the significance of each measurement item by examining t-statistics. The number of bootstrap samples must be larger than the number of valid observations in the original data set but should be higher; generally, 5000 bootstrap samples are recommended (Hair et al. 2017). For this thesis, bootstrap t-statistics were computed on the basis of 5000 resamples. The critical t-statistic for a two-tailed test is 1.96 at the 0.05 significance level (Hair, Ringle & Sarstedt 2011). Table 6-2 presents the psychometric properties of the constructs comprising loadings for the final measurement items, together with the sample mean, standard error and t‑statistics used to assess the significance of loadings.

Table 6-2: Psychometric properties of the first-order constructs for the Total Sample

Construct	Loading	Sample mean	Std. error	T-statistic	CR [a]	AVE [b]
LGM					0.948	0.672
LGM1	0.703	0.703	0.033	21.509		
LGM2	0.759	0.758	0.024	31.568		
LGM3	0.842	0.841	0.014	59.255		
LGM4	0.830	0.830	0.021	39.390		
LGM5	0.887	0.887	0.010	87.178		
LGM6	0.849	0.848	0.015	57.013		
LGM7	0.823	0.822	0.016	52.253		
LGM8	0.835	0.834	0.013	62.159		
LGM9	0.838	0.838	0.015	57.657		
LA					0.961	0.802
LA1	0.894	0.894	0.012	72.721		
LA2	0.895	0.895	0.011	83.153		
LA3	0.919	0.919	0.010	92.548		
LA4	0.899	0.899	0.011	81.826		
LA5	0.918	0.918	0.007	125.345		
LA6	0.847	0.847	0.015	56.902		
LIS					0.951	0.829
LIS1	0.880	0.879	0.017	52.824		
LIS2	0.926	0.926	0.007	133.640		
LIS3	0.936	0.936	0.006	148.016		
LIS4	0.899	0.898	0.010	92.970		
LS					0.912	0.722
LS1	0.893	0.893	0.010	91.091		
LS2	0.874	0.873	0.015	58.918		
LS3	0.847	0.846	0.017	48.863		
LS4	0.780	0.781	0.020	39.069		
Marketability					0.946	0.745

MK1	0.869	0.869	0.013	65.966		
MK2	0.892	0.892	0.010	87.317		
MK3	0.818	0.817	0.026	31.463		
MK4	0.841	0.840	0.019	43.984		
MK5	0.883	0.882	0.013	67.558		
MK6	0.876	0.875	0.012	73.270		
Promotion					0.941	0.842
P1	0.898	0.898	0.016	54.841		
P2	0.923	0.922	0.010	88.826		
P3	0.932	0.932	0.008	113.939		
Salary					0.968	0.910
S1	0.945	0.945	0.006	157.831		
S2	0.967	0.967	0.004	271.189		
S3	0.950	0.950	0.006	172.395		
Employability					0.951	0.710
FL1	0.824	0.823	0.017	49.425		
FL2	0.867	0.867	0.015	58.456		
FL3	0.857	0.857	0.015	55.856		
OE1	0.846	0.846	0.015	54.707		
OE2	0.897	0.897	0.011	83.803		
OE3	0.830	0.829	0.019	44.236		
OE4	0.862	0.862	0.016	54.051		
OE5	0.751	0.750	0.023	32.297		
Career satisfaction					0.935	0.783
CS1	0.886	0.886	0.012	70.967		
CS2	0.886	0.886	0.012	72.418		
CS3	0.902	0.901	0.015	59.222		
CS4	0.866	0.866	0.018	47.422		

Notes: [a] *CR, composite reliability;* [b]*AVE, average variance extracted*

After removing item with loadings less than the threshold value, all measurement items loaded highly significantly between 0.703 and 0.967 on their intended constructs, achieving unidimensionality as reported in Table 6-2. Loadings above the threshold value of 0.7 are indicative of shared variance between a construct and its indicators greater than the variance of the measurement error (Gotz, Liehr-Gobbers & Krafft 2010). Hence, the results from the CFA provide strong evidence for reliability of the measurement items.

6.3.1.2 Internal Consistency

To check internal consistency reliability, tests were conducted on CR measures as suggested by Hair, Ringle and Sarstedt (2011). CR refers to the degree to which the indicators measure the latent construct. CR is generally regarded as a more appropriate criterion to establish internal consistency reliability of a construct than the use of Cronbach's alpha (Hair et al. 2012a). Cronbach's alpha evaluates the degree to which the indicators measure a unidimensional construct, and thus low alpha values are obtained for multidimensional constructs (Gotz, Liehr-Gobbers & Krafft 2010). Cronbach's alpha indicates lower bound estimates of reliability than does CR (Hair et al. 2012a). Consequently, only CR values are reported in this thesis.

As shown in Table 6-2, all constructs displayed CR values well above the threshold value of 0.7. Internal consistency reliability is considered satisfactory when CR is greater than 0.7. In exploratory research, values of 0.6–0.7 are acceptable (Hair, Ringle & Sarstedt 2011), whereas CR values less than 0.6 indicate a lack of reliability (Nunnally & Bernstein 1994).

6.3.1.3 Convergent Validity

Two types of validity, namely convergent and discriminant validity, were examined to evaluate construct validity. Convergent validity is evident when each measurement item correlates strongly with its intended theoretical construct (Gefen & Straub 2005). Convergent validity of the constructs in this study was examined via AVE values as suggested by Fornell and Larcker (1981). AVE refers to the average variance shared between a construct and its measures relative to the amount of measurement error (Chin 2010; Hulland 1999). Sufficient convergent validity is achieved when the AVE value for a construct is at least 0.5 (Fornell & Larcker 1981). This means that a construct explains more than 50% of the variance among the scale indicators (Gotz, Liehr-Gobbers & Krafft 2010; Hair, Ringle & Sarstedt 2011). Table 6-3 shows that the AVE for all constructs were within the range 0.672–0.910, fulfilling the 0.5 threshold and demonstrating convergent validity.

6.3.1.4 Discriminant Validity

Discriminant validity indicates the extent to which each construct is more highly related to its own measures than to other constructs (Chin 2010). Discriminant validity is achieved when two criteria are fulfilled. First, the measurement items should exhibit high loadings on their theoretically intended constructs and must not load highly on other constructs (Gefen & Straub 2005). Second, constructs show satisfactory discriminant validity when the square root of the AVE is greater than the inter-construct correlations (Fornell & Larcker 1981; Gefen & Straub 2005). This means that the variance shared between each construct and its indicators is greater than the variance shared among other constructs (Compeau et al., 1999). Discriminant validity was assessed by examination of the correlation matrix of the constructs, as presented in Table 6-3.

The square roots of the AVE for each construct with the correlations among other constructs are presented in Table 6-3. They show that the square root of AVE as the diagonal elements are larger than the off-diagonal correlations in rows and columns. Hence, discriminant validity at the construct level is supported.

Table 6-3: Convergent validity and discriminant validity of first-order constructs for the Total Sample

Construct	AVE	1	2	3	4	5	6	7	8	9
1. LGM	0.672	**0.820**								
2. LA	0.802	0.748	**0.896**							
3. LIS	0.829	0.710	0.802	**0.910**						
4. LS	0.722	0.609	0.783	0.750	**0.850**					
5. Employability	0.710	0.760	0.631	0.610	0.538	**0.843**				
6. Promotion	0.842	0.570	0.505	0.435	0.458	0.647	**0.918**			
7. Salary	0.910	0.296	0.387	0.204	0.292	0.693	0.335	**0.954**		
8. Marketability	0.745	0.651	0.574	0.527	0.423	0.756	0.653	0.548	**0.863**	
9. CS	0.783	0.477	0.446	0.357	0.352	0.623	0.671	0.693	0.657	**0.885**

Notes: Highlighted values on the diagonal are the square root of AVE (average variance extracted) and correlations are off-diagonal

Another alternative to assessing discriminant validity is to use cross-loadings. Discriminant validity is established when an indicator's loading on its assigned construct is higher than all of its cross-loadings with other constructs (Hair et al. 2014). Table 6-4 shows the loadings and cross-loadings for every indicator. For example, indicator CS1 has the highest value for the loading with its corresponding construct CS (0.886), while all cross-loadings with other constructs are considerably lower (e.g. CS1 on LA: 0.384). The same finding holds for the other indicators of CS as well as the indicators measuring other constructs. Hence, the cross-loadings criterion provides evidence for the constructs' discriminant validity.

Table 6-4: Cross-loadings for discriminant validity assessment in the Total Sample

	CS	Employability	LA	LGM	LIS	LS	Marketability	Promotion	Salary
SCS1	0.886	0.505	0.384	0.389	0.272	0.303	0.619	0.602	0.646
CS2	0.886	0.536	0.408	0.440	0.326	0.301	0.616	0.606	0.624
CS3	0.902	0.584	0.402	0.441	0.345	0.292	0.558	0.581	0.627
CS4	0.866	0.582	0.383	0.418	0.319	0.351	0.531	0.588	0.553
FL1	0.593	0.824	0.526	0.585	0.468	0.378	0.658	0.555	0.378
FL2	0.574	0.867	0.575	0.645	0.559	0.490	0.655	0.527	0.314
FL3	0.541	0.857	0.517	0.639	0.558	0.414	0.673	0.546	0.258
LA1	0.337	0.550	0.894	0.694	0.751	0.736	0.497	0.417	0.307
LA2	0.385	0.623	0.895	0.729	0.751	0.726	0.530	0.491	0.286
LA3	0.445	0.601	0.919	0.697	0.726	0.727	0.541	0.495	0.346
LA4	0.382	0.538	0.899	0.627	0.715	0.648	0.504	0.440	0.353
LA5	0.447	0.563	0.918	0.677	0.710	0.675	0.553	0.475	0.420
LA6	0.393	0.511	0.847	0.590	0.659	0.699	0.453	0.384	0.367
LGM1	0.363	0.678	0.408	0.703	0.492	0.333	0.471	0.447	0.056
LGM2	0.298	0.594	0.638	0.759	0.609	0.566	0.533	0.363	0.156
LGM3	0.432	0.641	0.588	0.842	0.585	0.463	0.560	0.493	0.276
LGM4	0.444	0.633	0.554	0.830	0.540	0.414	0.545	0.495	0.262
LGM5	0.375	0.664	0.669	0.887	0.654	0.536	0.568	0.455	0.231
LGM6	0.369	0.638	0.692	0.849	0.617	0.606	0.505	0.513	0.254
LGM7	0.433	0.575	0.646	0.823	0.539	0.520	0.558	0.497	0.381
LGM8	0.332	0.561	0.657	0.835	0.600	0.543	0.508	0.421	0.218
LGM9	0.451	0.624	0.662	0.838	0.602	0.513	0.548	0.504	0.320
LIS1	0.342	0.490	0.708	0.571	0.880	0.709	0.448	0.404	0.233
LIS2	0.345	0.591	0.756	0.663	0.926	0.694	0.516	0.395	0.216
LIS3	0.327	0.570	0.767	0.678	0.936	0.687	0.483	0.411	0.183
LIS4	0.284	0.565	0.689	0.670	0.899	0.642	0.469	0.376	0.109
LS1	0.323	0.499	0.693	0.556	0.653	0.893	0.396	0.412	0.308
LS2	0.236	0.342	0.664	0.466	0.637	0.874	0.316	0.316	0.242
LS3	0.222	0.329	0.638	0.414	0.591	0.847	0.313	0.285	0.244
LS4	0.367	0.579	0.648	0.579	0.643	0.780	0.382	0.484	0.193

MK1	0.601	0.743	0.445	0.600	0.456	0.321	0.869	0.616	0.432
MK2	0.675	0.686	0.510	0.585	0.451	0.361	0.892	0.637	0.543
MK3	0.564	0.628	0.492	0.565	0.447	0.380	0.818	0.570	0.508
MK4	0.451	0.575	0.470	0.483	0.427	0.319	0.841	0.446	0.404
MK5	0.553	0.613	0.525	0.547	0.462	0.385	0.883	0.533	0.507
MK6	0.530	0.655	0.533	0.579	0.485	0.423	0.876	0.554	0.432
OE1	0.468	0.846	0.595	0.684	0.543	0.521	0.659	0.527	0.302
OE2	0.547	0.897	0.546	0.673	0.507	0.445	0.647	0.588	0.258
OE3	0.467	0.830	0.499	0.668	0.524	0.437	0.590	0.504	0.183
OE4	0.523	0.862	0.542	0.674	0.521	0.476	0.684	0.578	0.316
OE5	0.486	0.751	0.448	0.553	0.421	0.469	0.520	0.540	0.243
P1	0.607	0.531	0.487	0.517	0.418	0.443	0.614	0.898	0.579
P2	0.591	0.605	0.433	0.507	0.386	0.399	0.585	0.923	0.464
P3	0.648	0.644	0.469	0.543	0.395	0.418	0.599	0.932	0.482
S1	0.655	0.328	0.337	0.283	0.172	0.260	0.500	0.577	0.945
S2	0.685	0.341	0.389	0.306	0.201	0.288	0.548	0.533	0.967
S3	0.641	0.288	0.380	0.256	0.209	0.286	0.519	0.475	0.950

6.3.1.5 Quality of the Measurement Model

The quality of a measurement model can be measured by examining the AVE values. As shown in Table 6-3, the AVE values for all constructs were greater than the cut-off value of 0.5 (Fornell & Larcker 1981), confirming the quality of the measurement model.

6.3.2 Assessment of the Structural Model (Inner Model)

In a structural model, the terms exogenous and endogenous are used to refer to two different constructs. An exogenous construct refers to a latent construct that has no arrows representing the structural path relationships pointing towards it, whereas an endogenous construct is a latent construct that is explained by other constructs through structural path relationships or one that has arrows pointing at it (Hair, Ringle & Sarstedt 2011).

The assessment of a structural model is based on the five-step guidelines provided by Hair et al. (2014) as follows:

- Step 1: assess the structural model for collinearity issues
- Step 2: assess the significance and relevance of the structural model relationships
- Step 3: assess the level of R^2
- Step 4: assess the effect sizes f^2
- Step 5: assess the predictive relevance Q^2 and the q^2 effect sizes.

6.3.2.1 Step 1: Assessment of Collinearity

Collinearity refers to the degree to which any variable's effect can be predicted or accounted for by other variables (Hair et al., 2010). High levels of collinearity between predictors are a crucial issue because they affect the estimation of weights and their statistical significance. More specifically, in practice, high levels of collinearity often affect the results of analyses.

To assess the level of collinearity at the structural model level, researchers should compute the tolerance. Tolerance represents the amount of variance of one predictor that is not explained by the other predictor in the same block (Urbach & Ahlemann 2010). A related measure of collinearity is the variance inflation factor (VIF), defined as the reciprocal of tolerance. In the context of PLS-SEM, a tolerance value of 0.2 or lower and a VIF value of 5 or higher indicates a potential collinearity problem (Hair et al., 2011).

To examine the collinearity among exogenous constructs, each set of predictor constructs for each subpart of a structural model must be examined separately (Hair et al., 2017). Two sets of constructs were evaluated for collinearity in the structural model in this study:

1. LGM, LS, LA and LIS competency as predictors of marketability, promotion, salary and employability

2. marketability, employability, salary and promotion as predictors of CS.

After running the PLS algorithm, SmartPLS provides the key results for the model estimation. Table 6-5 presents VIF values and tolerance levels for all the exogenous constructs in the structural model. Results indicate that VIF values were below the recommended threshold value of 5 and the tolerance levels were greater than 0.2, indicating there was no significant level of collinearity among the predictor constructs (Hair et al. 2014).

Table 6-5: Collinearity assessment in the structural model for the total sample

First set			**Second set**		
Construct	**VIF**	**Tolerance**	**Construct**	**VIF**	**Tolerance**
LGM	2.465	0.406	Marketability	3.085	0.324
LS	2.897	0.345	Employability	2.782	0.359
LA	4.232	0.236	Salary	1.702	0.587
LIS	3.399	0.294	Promotion	2.248	0.445

6.3.2.2 Step 2: Assessment of Significance and Relevance of Path Coefficients

The second step in a structural model evaluation involves examining the significance of hypothesised relationships. Therefore, the PLS algorithm was applied using the path weighting scheme, following the criteria discussed in Section 6.3.1. From this operation, the size of path coefficients and coefficient determination (R^2) were obtained as shown in Figure 6-2. Before evaluating R^2 values it is important to identify the significance as well as the sign and magnitude of the path coefficients by analysing the t-values and the path coefficients obtained by employing a non-parametric bootstrapping procedure (Henseler, Ringle & Sinkovics 2009; Peng & Lai 2012). The t-values were used to evaluate the statistical significance of each path coefficient.

Commonly used critical values for two-tailed tests are 1.65 (significance level = 10%), 1.96 (significance level = 5%) and 2.57 (significance level = 1%). In general, when a study is exploratory in nature, researchers often assume a significance level of 10% (Hair, Ringle & Sarstedt, 2011; Hair et al., 2014, 2017). This study is the first to evaluate the relationship between the competency, career success and CS of logistics managers in 3PL firms in the Chinese context; hence, critical t-values for two-tailed tests with 1.65 (significance level = 10%) are applied in this thesis. Results from the bootstrapping procedure are shown in Figure 6-3 and further detailed in Table 6-6.

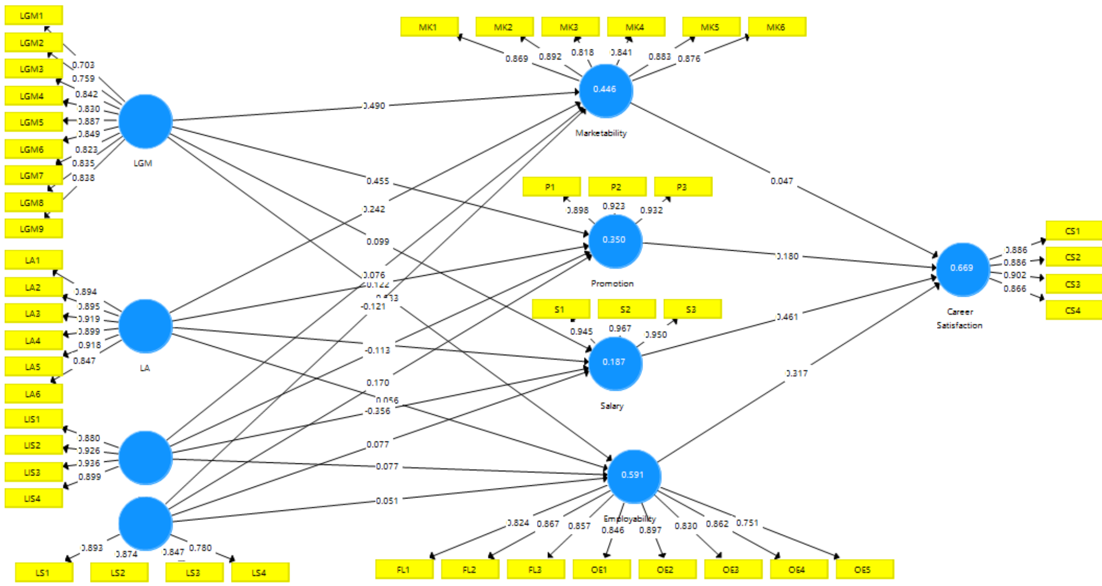


Figure 6-2: PLS algorithm for the structural model in the total sample

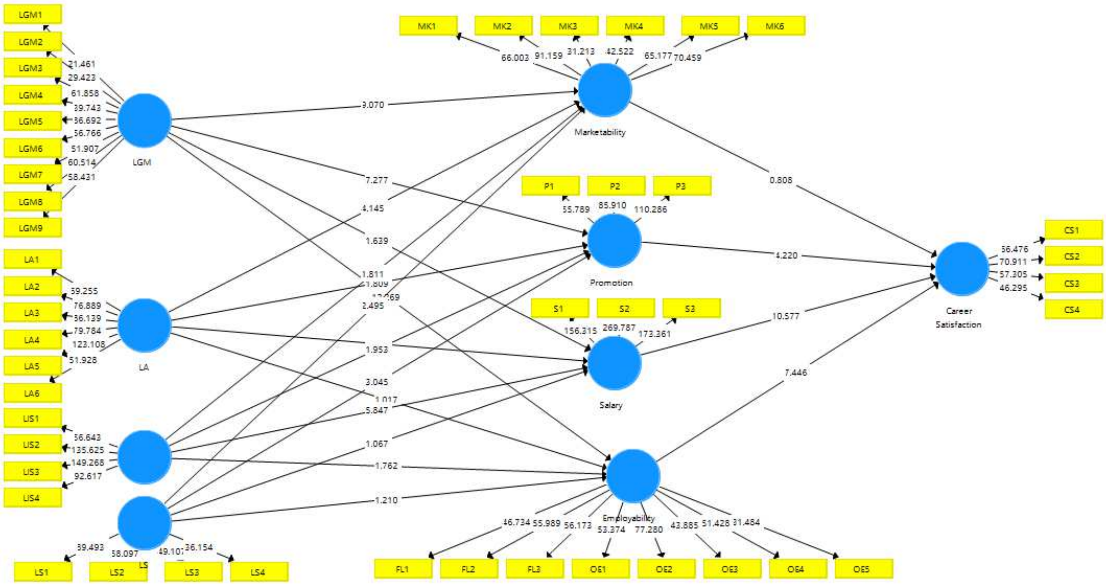


Figure 6-3: Bootstrapping for the structural model in the total sample

Table 6-6: Results of bootstrapping for structural model evaluation for the Total Sample

Hypothesis	Exogenous construct	Endogenous construct	β[a]	Mean	Std. error	T-statistic	P-value	Expected sign	Result
H1.a	LGM	Employability	0.633	0.633	0.048	13.206	0.000	Positive	Supported **
H2.a	LA		0.056	0.055	0.054	1.040	0.298	Positive	Not supported
H3.a	LIS		0.077	0.078	0.044	1.774	0.076	Positive	Supported *
H4.a	LS		0.051	0.052	0.043	1.201	0.230	Positive	Not supported
H1.b	LGM	Promotion	0.455	0.457	0.063	7.281	0.000	Positive	Supported **
H2.b	LA		0.122	0.119	0.068	1.791	0.073	Positive	Supported *
H3.b	LIS		–0.113	–0.111	0.060	1.888	0.059	Positive	Not supported
H4.b	LS		0.170	0.171	0.057	3.007	0.003	Positive	Supported **
H1.c	LGM	Salary	0.099	0.101	0.062	1.591	0.112	Positive	Not supported
H2.c	LA		0.538	0.537	0.077	6.984	0.000	Positive	Supported **
H3.c	LIS		–0.356	–0.355	0.061	5.872	0.000	Positive	Not supported
H4.c	LS		0.077	0.077	0.073	1.048	0.295	Positive	Not supported
H1.d	LGM	Marketability	0.490	0.490	0.053	9.203	0.000	Positive	Supported **
H2.d	LA		0.242	0.241	0.057	4.224	0.000	Positive	Supported **
H3.d	LIS		0.076	0.076	0.042	1.791	0.073	Positive	Supported *
H4.d	LS		–0.121	–0.120	0.048	2.517	0.012	Positive	Not supported
H5	Employability	CS	0.317	0.315	0.041	7.683	0.000	Positive	Supported **

H6	Promotion	0.180	0.178	0.043	4.167	0.000	Positive	Supported **
H7	Salary	0.461	0.463	0.043	10.663	0.000	Positive	Supported **
H8	Marketability	0.047	0.048	0.056	0.841	0.400	Positive	Not supported

*Notes: [a]β-path coefficient; * Significant at the 0.1 level (two-tailed); ** Significant at the 0.05 level (two-tailed)*

Table 6-6 presents a summary of the bootstrap results evaluating the relationship between the exogenous and endogenous constructs. With regard to the proposed relationships, the results provide support for strongly significant positive relationships for nine hypotheses. These coefficients exceeded 0.1 and were significant at a level of $p < 0.05$. H3.a, H2.b and H3.d had weak support in the form of a positive significant relationships at the level of $p < 0.1$. Three hypotheses are not supported even though the coefficient was statistically significant at the level of $p < 0.1$, because the path coefficient was negative. The other five hypotheses are not supported as their t-statistics were less than 1.65, which is not significant at the level of $p < 0.1$.

These results demonstrate that employability, salary and promotion positively contributed to explaining the variance in CS. With regard to the relevance of significant relationships between the four exogenous constructs (Employability, Salary, Promotion and Marketability) and career success, the results show that LGM, LS, LA and LIS competency has different path coefficient in impacting career success. This stresses the importance of considering all four constructs in influencing the level of career success.

6.3.2.3 Step 3: Assessment of Coefficient of Determination (R^2)

Having examined the significance and relevance of the path coefficients, the explanatory power of the structural model was determined. The explanatory power was examined by the coefficient of determination, R^2 values (Hair et al. 2012b). R^2 represents the amount of variance in the endogenous constructs—in this study marketability, salary, promotion, employability and CS—explained by the model. According to Chin (1998), R^2 values of 0.67, 0.33 or 0.19 for endogenous latent constructs in the inner model can be described as substantial, moderate or weak, respectively. The adjusted R^2 is used to compare PLS-SEM results involving models with different numbers of exogenous latent variables and/or data sets with different sample sizes (Sarstedt et al. 2013; Hair et al. 2017) and are not interpreted in this section.

Table 6-7: R^2 for structural model evaluation of the total sample

Construct	$\boldsymbol{R^2}$	***Adjusted*** $\boldsymbol{R^2}$
CS	0.669	0.667
Employability	0.591	0.589
Marketability	0.446	0.443
Promotion	0.350	0.346
Salary	0.187	0.183

The results in Table 6-7 indicate a robust model with almost 67% (R^2 = 0.669) of the variance in CS explained by the four latent variables; employability, promotion, salary and marketability. Hence, with respect to Chin's (1998) recommendation, the explained variance in CS can be interpreted as substantial.

According to rules of thumb, the results indicate a moderate relationship with Employability, Marketability and Promotion explained by the four constructs (LGM, LS, LA and LIS competency), whereas the R^2 value for Salary (0.187) was rather weak. However, Falk and Miller (1992) recommend a minimum R^2 value of 0.1 to ensure that at least 10% of the construct variability is due to the model. Hence, the structural model explains only a small amount (18.7%) of the variation in Salary.

6.3.2.4 Step 4: Assessment of Effect Sizes (f^2)

The effect size of the structural model was evaluated using Cohen's f^2 (Cohen1988). The effect size is calculated as the increase in R^2 relative to the proportion of variance that remains unexplained in the endogenous construct (Peng & Lai 2012). The f^2 effect size measures the influence a selected predictor construct has on the R^2 values of an endogenous construct. f^2 values of 0.02, 0.15 and 0.35 are regarded as small, medium and large effect sizes, respectively, of the predictive variables (Cohen, 1988).

R^2 included and R^2 excluded are the R^2 values estimated for the endogenous construct when a specific exogenous construct under examination is included or excluded from the model. The included values were obtained previously when all constructs were included in the model. The structural model is then estimated again by removing the selected exogenous construct yielding R^2 excluded (Hair et al. 2014). The effect size was then calculated for each of the positive and significant path coefficients.

Table 6-8: Summary of results—path coefficients and effect sizes in the total sample

	Employability		**Marketability**		**Promotion**		**Salary**		**CS**	
	β^a	f^2	β^a	f^2	β^a	f^2	β^a	f^2	β^a	f^2
LGM	0.633**	0.397	0.490**	0.176	0.455**	0.129	0.099	0.005		
LA	0.056	0.002	0.242**	0.025	0.122*	0.005	0.538**	0.084		
LIS	0.077*	0.004	0.076*	0.003	-0.113	0.006	-0.356	0.046		
LS	0.051	0.002	-0.121	0.009	0.170**	0.015	0.077	0.002		
Employability									0.317**	0.109
Marketability									0.047	0.002
Promotion									0.180**	0.044
Salary									0.461**	0.377

Notes: [a] *β-path coefficient;* [*] *Significant at the 0.1 level (two-tailed);* [**] *Significant at the 0.05 level (two-tailed)*

Referring to Table 6-8, with respect to the relationships between the four first-order constructs and career success (Employability, Promotion, Salary and Marketability), the analysis reveals that all relationships showed a small to large effect size assuming a significance level of 0.05. Take Marketability as an example; the analysis reveals that LGM ($\beta = 0.490$, $t = 9.07$, $p < 0.05$) and LA ($\beta = 0.24$, $t = 4.15$, $p < 0.05$) competency affected Marketability with medium to small effect sizes: $f^2 = 0.17$, $f^2 = 0.025$, respectively. With regard to the relationships between LGM and Employability, the f^2 effect size was 0.397, which can be considered large.

Regarding the relationships between career success (Employability, Promotion, and Salary) and CS, three predictor constructs showed a small to large effect size. For example, Employability had a medium effect size of 0.109 on CS, Promotion had a large effect size of 0.377, and Salary had a small effect size of 0.044.

6.3.2.5 Step 5: Assessment of Predictive Relevance Q^2 *and the* q^2 *Effect Sizes*

In addition to evaluating the magnitude of the R^2 values as a criterion for predictive accuracy, researchers should also examine Stone–Geisser's Q^2 value (Hair et al. 2017), to determine predictive relevance using the blindfolding procedure in Smart PLS (Hair, Ringle & Sarstedt 2011; Henseler, Ringle & Sinkovics 2009; Peng & Lai 2012). Q^2 measures the extent to which a model's prediction is successful (Urbach & Ahlemann 2010). A value greater than 0 confirms the presence of predictive relevance (Hair et al. 2014; Henseler, Ringle & Sinkovics 2009). Computation of Q^2 is applicable only for reflectively measured endogenous constructs (Hair et al. 2014). Thus, in this study Q^2 was computed for the Employability, Salary, Promotion, Marketability and CS endogenous constructs (see Table 6-9).

Table 6-9: Q^2 of the structural model for the Total Sample

Construct	***SSO*** [a]	***SSE*** [b]	***Q^2 (= 1 – SSE/SSO)***
CS	2,832.000	1,444.376	0.490
Employability	5,664.000	3,451.736	0.391
Marketability	4,248.000	2,935.318	0.309
Promotion	2,124.000	1,536.853	0.276
Salary	2,124.000	1,787.166	0.159

Notes: [a] *SSO, the sum of the squared observations;* [b] *SSE, the sum of the squared prediction errors*

As can be seen, the Q^2 values for all five endogenous constructs were considerably larger than 0. CS had the highest Q^2 value (0.490), followed by Employability (0.391), Marketability (0.309), Promotion (0.276) and finally Salary (0.159). These results provide clear support for the model's predictive relevance regarding the endogenous latent variables.

The Q^2 values estimated by the blindfolding procedure represent a measure of how well the path model can predict the originally observed values. The effect size q^2 allows assessment of an exogenous construct's contribution to an endogenous latent variable's Q^2 value. As a relative measure of predictive relevance, q^2 values of 0.02, 0.15, and 0.35 indicate that an exogenous construct has small, medium or large predictive relevance, respectively, for a certain endogenous construct (Chin, 1998; Hair et al. 2014, 2017).

The final assessment addresses the q^2 effect sizes. These must be computed manually because the SmartPLS software does not provide them (Hair et al., 2017). Similar to the f^2 effect size approach for assessing R^2 values, the relative impact q^2 value of predictive relevance can be calculated using the following formula:

$$q^2 = \frac{Q^2\ \boldsymbol{included} - Q^2 \boldsymbol{excluded}}{1 - Q^2\ \boldsymbol{included}}$$

The q^2 effect size was calculated for each of the positive and significant path coefficients.

Table 6-10: Summary of results—path coefficient and effect size q^2 in the Total Sample

	Employability		**Marketability**		**Promotion**		**Salary**		**CS**	
	β^a	q^2	β^a	q^2	β^a	q^2	β^a	q^2	β^a	q^2
LGM	0.633**	0.177	0.490**	0.095	0.455**	0.092	0.099	0.001		
LA	0.056	0.001	0.242**	0.014	0.122*	0.002	0.538**	0.071		
LIS	0.077*	0.001	0.076*	0.001	0.113	0.000	–0.356	0.000		
LS	0.051	0.001	–0.121	0.000	0.170**	0.010	0.077	0.001		
Employability									0.317**	0.051
Marketability									0.047	0.001
Promotion									0.180**	0.022
Salary									0.461**	0.179

*Notes: [a], path coefficient; * Significant at the 0.1 level (two-tailed); ** Significant at the 0.05 level (two-tailed)*

Referring to Table 6-10, with respect to the relationships between the four first-order constructs and career success (Employability, Promotion, Salary and Marketability), the analysis shows that most of relationships had a small to medium effect size assuming a significance level of 0.05. For example, LGM competency had a medium effect size of 0.177 on Employability and smaller effect sizes on Marketability (0.095) and Promotion (0.092). In contrast, LA competency had no effect on Marketability (0.014), and LS competency had no effect on Promotion (0.010).

With regard to the relationships between career success (Employability, Promotion and Salary) and CS, three predictor constructs showed a small to medium effect size: Employability had a small effect size of 0.051, Promotion had a small effect size of 0.022, and Salary had a medium effect size of 0.179, on CS,.

6.3.3 Results for All Hypothesised Relationships for the Total Sample

Based on the structural model assessment, Table 6-11 presents the results for all proposed hypotheses: 12 of the 20 are supported in the Total Sample.

Table 6-11: Summary of results for all hypothesised relationships for the Total Sample

Hypothesis	Result
H1.a: LGM competency positively affects employability of L&SC managers working in 3PL firms	Supported
H2.a: LA competency positively affects employability of L&SC managers working in 3PL firms	Not supported
H3.a: LIS competency positively affects employability of L&SC managers working in 3PL firms	Supported
H4.a: LS competency positively affects employability of L&SC managers working in 3PL firms	Not supported
H1.b LGM competency positively affects the promotion of L&SC managers working in 3PL firms	Supported
H2.b LA competency positively affects the promotion of L&SC managers working in 3PL firms	Supported
H3.b LIS competency positively affects the promotion of L&SC managers working in 3PL firms	Not supported
H4.b LS competency positively affects the promotion of L&SC managers working in 3PL firms	Supported
H1.c LGM competency positively affects the salary of L&SC managers working in 3PL firms	Not supported
H2.c LA competency positively affects the salary of L&SC managers working in 3PL firms	Supported
H3.c LIS competency positively affects the salary of L&SC managers working in 3PL firms	Not supported
H4.c LS competency positively affects the salary of L&SC managers working in 3PL firms	Not supported
H1.d LGM competency positively affects the marketability of L&SC managers working in 3PL firms	Supported
H2.d LA competency positively affects the marketability of L&SC managers working in 3PL firms	Supported

Hypothesis	Result
H3.d LIS competency positively affects the marketability of L&SC managers working in 3PL firms	Supported
H4.d LS competency positively affects the marketability of logistics managers working in 3PL firms	Not supported
H5 Employability is positively associated with CS of L&SC managers working in 3PL firms	Supported
H6 Promotion is positively associated with CS of L&SC managers working in 3PL firms	Supported
H7 Salary is positively associated with CS of L&SC managers working in 3PL firms	Supported
H8 Marketability is positively associated with CS of L&SC managers working in 3PL firms	Not supported

In the following three sections, analyses of the three sub-samples (CP3PL, MNC and Chinese SO3PL firms) are conducted separately. Although the sample size per ownership type differed, the procedure and threshold values of analysis are the same as those employed in the 'Total Sample' modelling conducted in Section 6.3. Therefore, to simplify the process of analysis, introduction to some relevant theories is omitted, and the results of outer model and inner model assessment are emphasised.

6.4 Analysis of Research Model for Chinese Private 3PLs

6.4.1 Assessment of the Measurement Model (Outer Model)

6.4.1.1 Indicator Reliability

Following the criteria outlined in Section 6.3.1.1, LGM10, with a factor loading less than 0.7, was removed from the model to maintain parsimony.

By conducting the final round of CFA, loadings for the items retained in the measurement model were obtained. Following this, bootstrapping using 5000 resamples was conducted to estimate the significance of each measurement item via t-statistics.

Table 6-12 presents the psychometric properties of the first-order constructs comprising loadings for the final measurement items together with the sample mean, standard error and t−statistics to assess the significance of loadings.

After removing item with loadings less than the threshold value, all measurement items loaded significantly and highly between 0.722 and 0.956 on their intended constructs, achieving unidimensionality as shown in Table 6-12. Loadings above the threshold value of 0.7 are indicative of greater shared variance between a construct and its indicators than the variance of the measurement error (Gotz, Liehr-Gobbers & Krafft 2010). Hence, results from CFA provide strong evidence for reliability of the measurement items.

Table 6-12: Psychometric properties of the first-order constructs in CP3PLs

Construct	Loading	Sample mean	Std. error	T-statistic	CR [a]	AVE[b]
LGM					0.944	0.652
LGM1	0.750	0.748	0.042	17.705		
LGM2	0.722	0.720	0.038	19.208		
LGM3	0.822	0.821	0.024	34.167		
LGM4	0.791	0.790	0.037	21.332		
LGM5	0.885	0.884	0.014	61.695		
LGM6	0.832	0.830	0.024	34.911		
LGM7	0.810	0.809	0.024	33.409		
LGM8	0.825	0.824	0.021	39.459		
LGM9	0.819	0.818	0.026	31.507		
LA					0.958	0.792
LA1	0.873	0.872	0.021	40.616		
LA2	0.896	0.896	0.014	61.892		
LA3	0.919	0.919	0.013	73.396		
LA4	0.892	0.892	0.014	65.260		
LA5	0.925	0.925	0.010	96.631		
LA6	0.832	0.832	0.023	36.108		
LIS					0.943	0.806
LIS1	0.856	0.854	0.034	25.372		
LIS2	0.919	0.919	0.011	83.319		
LIS3	0.929	0.929	0.010	89.758		
LIS4	0.885	0.885	0.016	53.891		
LS					0.906	0.708
LS1	0.888	0.888	0.015	58.010		
LS2	0.862	0.860	0.024	36.174		
LS3	0.821	0.819	0.027	30.376		
LS4	0.792	0.792	0.027	29.638		
Marketability					0.946	0.746

MK1	0.871	0.871	0.017	50.993		
MK2	0.881	0.881	0.014	63.322		
MK3	0.842	0.842	0.019	43.296		
MK4	0.839	0.838	0.025	33.196		
MK5	0.896	0.896	0.016	57.325		
MK6	0.852	0.852	0.018	46.237		
Promotion					0.935	0.827
P1	0.895	0.895	0.025	35.193		
P2	0.904	0.904	0.018	50.187		
P3	0.930	0.930	0.012	80.603		
Salary					0.963	0.896
S1	0.935	0.935	0.010	93.734		
S2	0.956	0.956	0.006	159.255		
S3	0.948	0.948	0.007	139.635		
Employability					0.949	0.701
FL1	0.815	0.815	0.022	36.667		
FL2	0.860	0.860	0.022	38.767		
FL3	0.852	0.851	0.023	37.407		
OE1	0.832	0.831	0.024	33.993		
OE2	0.888	0.888	0.016	56.942		
OE3	0.827	0.825	0.024	33.832		
OE4	0.890	0.889	0.016	56.369		
OE5	0.724	0.723	0.038	18.824		
CS					0.938	0.792
CS1	0.869	0.868	0.022	38.995		
CS2	0.876	0.876	0.020	44.679		
CS3	0.926	0.925	0.011	85.079		
CS4	0.888	0.887	0.018	48.882		

*Notes**:** [a] CR, composite reliability; [b]AVE, average variance extracted*

6.4.1.2 Internal Consistency

As shown in Table 6-12, all constructs displayed CR well above the threshold value of 0.7. Internal consistency reliability is considered satisfactory when the CR value is higher than 0.7; in exploratory research values between 0.6 and 0.7 are acceptable (Hair, Ringle & Sarstedt 2011), whereas values below 0.6 indicate a lack of reliability (Nunnally & Bernstein 1994).

6.4.1.3 Convergent Validity

Two types of validity, namely convergent and discriminant validity, were examined to evaluate construct validity. Convergent validity is evident when each measurement item correlates strongly with its intended theoretical construct (Gefen & Straub 2005). Convergent validity of the first-order constructs in this thesis was examined via AVE values as suggested by Fornell and Larcker (1981). AVE refers to the average variance shared between a construct and its measures relative to the amount of measurement error (Chin 2010; Hulland 1999). Sufficient convergent validity is achieved when AVE value of a construct is at least 0.5 (Fornell & Larcker 1981). Table 6-13 shows that the AVE for all constructs was within the range 0.652–0.896, exceeding the 0.5 threshold and demonstrating convergent validity.

6.4.1.4 Discriminant Validity

Discriminant validity was assessed by examining the correlation matrix of the constructs as presented in Table 6-13. The square roots of the AVE for each construct with the correlations among other constructs are presented in Table 6-13. The square roots of AVE as the diagonal elements are larger than the off-diagonal correlations in rows and columns. Hence, discriminant validity at the construct level is supported. Thus, the reliability and validity of the reflective construct measures is confirmed.

Another alternative to assessing discriminant validity is using cross-loadings. Discriminant validity is established when an indicator's loading on its assigned construct is higher than all of its cross-loadings with other constructs (Hair et al. 2014). Table 6-14 shows the loadings and cross-loadings for every indicator. For example, indicator CS1 has the highest value for the loading with its corresponding construct CS (0.869): all cross-loadings with other constructs are considerably lower (e.g. CS1 on LA: 0.402). The same finding holds for the other indicators of CS as well as indicators measuring other constructs. Hence, cross-loadings provide further evidence for the constructs' discriminant validity.

Table 6-13: Convergent validity and discriminant validity of first-order constructs in CP3PLs

Construct	***AVE***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***
1.LGM	0.652	**0.807**								
2.LA	0.792	0.763	**0.890**							
3.LIS	0.806	0.693	0.806	**0.898**						
4.LS	0.708	0.656	0.769	0.787	**0.841**					
5.Employability	0.701	0.815	0.679	0.605	0.573	**0.837**				
6.Promotion	0.827	0.585	0.524	0.456	0.487	0.603	**0.910**			
7.Salary	0.896	0.312	0.423	0.253	0.289	0.353	0.531	**0.947**		
8.Marketability	0.746	0.698	0.602	0.529	0.444	0.794	0.653	0.531	**0.863**	
9.CS	0.792	0.527	0.480	0.392	0.350	0.654	0.660	0.639	0.688	**0.890**

Notes: Highlighted values on the diagonal are square roots of AVE (average variance extracted) and correlations are off-diagonal;

Table 6-14: Cross-loadings for discriminant validity assessment in CP3PLs

	CS	Employability	LA	LGM	LIS	LS	Marketability	Promotion	Salary
CS1	0.869	0.530	0.402	0.423	0.296	0.299	0.605	0.556	0.548
CS2	0.876	0.536	0.483	0.502	0.415	0.373	0.581	0.558	0.552
CS3	0.926	0.605	0.408	0.455	0.344	0.271	0.618	0.613	0.620
CS4	0.888	0.650	0.419	0.495	0.343	0.310	0.642	0.617	0.552
FL1	0.664	0.815	0.568	0.588	0.445	0.413	0.725	0.545	0.477
FL2	0.616	0.860	0.641	0.665	0.570	0.565	0.719	0.494	0.362
FL3	0.596	0.852	0.564	0.652	0.560	0.463	0.737	0.517	0.312
LA1	0.343	0.586	0.873	0.709	0.753	0.734	0.503	0.421	0.336
LA2	0.421	0.653	0.896	0.737	0.754	0.731	0.587	0.527	0.328
LA3	0.489	0.663	0.919	0.716	0.741	0.724	0.586	0.500	0.351
LA4	0.409	0.553	0.892	0.624	0.710	0.613	0.505	0.457	0.424
LA5	0.483	0.607	0.925	0.690	0.695	0.658	0.557	0.507	0.459
LA6	0.406	0.557	0.832	0.588	0.652	0.643	0.465	0.369	0.359
LGM1	0.443	0.746	0.464	0.750	0.479	0.412	0.608	0.502	0.123
LGM2	0.284	0.582	0.646	0.722	0.587	0.604	0.533	0.306	0.155
LGM3	0.430	0.649	0.600	0.822	0.565	0.513	0.555	0.503	0.272
LGM4	0.502	0.681	0.532	0.791	0.483	0.459	0.549	0.505	0.275
LGM5	0.433	0.719	0.668	0.885	0.618	0.553	0.600	0.479	0.248
LGM6	0.376	0.635	0.678	0.832	0.602	0.619	0.521	0.481	0.252
LGM7	0.478	0.621	0.667	0.810	0.543	0.560	0.589	0.508	0.391
LGM8	0.371	0.607	0.657	0.825	0.597	0.573	0.549	0.426	0.213
LGM9	0.474	0.658	0.649	0.819	0.575	0.498	0.560	0.505	0.321
LIS1	0.331	0.456	0.679	0.537	0.856	0.731	0.404	0.393	0.265
LIS2	0.376	0.577	0.754	0.648	0.919	0.706	0.517	0.414	0.261
LIS3	0.367	0.564	0.760	0.646	0.929	0.718	0.488	0.418	0.215
LIS4	0.333	0.564	0.699	0.650	0.885	0.675	0.482	0.413	0.171
LS1	0.307	0.527	0.668	0.587	0.699	0.888	0.424	0.419	0.336
LS2	0.206	0.368	0.651	0.507	0.681	0.862	0.326	0.347	0.204

LS3	0.167	0.342	0.632	0.453	0.608	0.821	0.296	0.283	0.206
LS4	0.423	0.605	0.630	0.608	0.643	0.792	0.405	0.520	0.205
MK1	0.615	0.743	0.471	0.621	0.434	0.344	0.871	0.587	0.446
MK2	0.697	0.732	0.530	0.625	0.456	0.362	0.881	0.583	0.499
MK3	0.626	0.733	0.547	0.646	0.500	0.446	0.842	0.570	0.523
MK4	0.478	0.585	0.504	0.512	0.410	0.353	0.839	0.423	0.390
MK5	0.593	0.650	0.538	0.595	0.467	0.380	0.896	0.523	0.484
MK6	0.522	0.646	0.530	0.602	0.468	0.413	0.852	0.490	0.390
OE1	0.450	0.832	0.596	0.752	0.526	0.517	0.659	0.439	0.264
OE2	0.542	0.888	0.569	0.725	0.468	0.442	0.643	0.533	0.253
OE3	0.512	0.827	0.548	0.709	0.516	0.480	0.588	0.525	0.213
OE4	0.549	0.890	0.594	0.753	0.535	0.497	0.692	0.538	0.295
OE5	0.437	0.724	0.456	0.609	0.422	0.466	0.539	0.441	0.171
P1	0.579	0.504	0.486	0.538	0.429	0.429	0.553	0.895	0.529
P2	0.577	0.527	0.451	0.503	0.401	0.463	0.541	0.904	0.460
P3	0.641	0.609	0.493	0.554	0.415	0.438	0.589	0.930	0.461
S1	0.591	0.333	0.367	0.287	0.207	0.256	0.466	0.556	0.935
S2	0.627	0.367	0.429	0.336	0.256	0.288	0.529	0.497	0.956
S3	0.596	0.301	0.402	0.260	0.253	0.276	0.511	0.456	0.948

6.4.1.5 Quality of the Measurement Model

The quality of a measurement model can be measured by examining the AVE values. In Table 6-13, the AVE values for all constructs were greater than the cut-off value of 0.5 (Fornell & Larcker 1981), confirming the quality of the measurement model.

6.4.2 Assessment of the Structural Model (Inner Model)

6.4.2.1 Step 1: Assessment of Collinearity

To examine the collinearity among exogenous constructs, each set of predictor constructs for each subpart of the structural model must be examined separately (Hair et al., 2017). Two sets of constructs were evaluated for collinearity in the structural model:

1. LGM, LS, LA and LIS competency as predictors of marketability, promotion, salary and employability.
2. Marketability, employability, salary and promotion as predictors of CS.

After running the PLS algorithm, SmartPLS provides the key results for the model estimation (see Table 6-15).

Table 6-15: Collinearity values for CP3PLs

First set			Second set		
Construct	**VIF**	**Tolerance**	**Construct**	**VIF**	**Tolerance**
LA	4.054	0.247	Employability	3.009	0.332
LGM	2.516	0.397	Marketability	3.406	0.294
LIS	3.623	0.276	Promotion	1.948	0.513
LS	3.059	0.327	Salary	1.613	0.620

Table 6-15 presents the VIF values and tolerance levels for all exogenous constructs in the structural model. The VIF values are below the recommended threshold value of 5 and the tolerance levels are greater than 0.20, indicating no significant level of collinearity among the exogenous constructs (Hair et al. 2014)

6.4.2.2 Step 2: Assessment of Significance and Relevance of the Path Coefficients

The second step in structural model evaluation involves examining the significance of hypothesised relationships. From this operation, the size of path coefficients and coefficient determination values (R^2) were obtained as shown in Figure 6-4. Before evaluating the R^2, it is important to identify the significance as well as the sign and magnitude of the path coefficients by analysing the t-values and path coefficients obtained by performing a non-parametric bootstrapping procedure (Henseler, Ringle & Sinkovics 2009; Peng & Lai 2012). The t-values were used to evaluate the statistical significance of each path coefficient.

Commonly used critical values for two-tailed tests are 1.65 (significance level = 10%), 1.96 (significance level = 5%), and 2.57 (significance level = 1%). In general, when a study is exploratory in nature, researchers often assume a significance level of 10% (Hair, Ringle & Sarstedt, 2011; Hair et al., 2014, 2017). This study is the first to evaluate the relationship between the competency, career success and CS of logistics managers in 3PL firms in the Chinese context; hence, the critical t-value for two-tailed tests with 1.65 (significance level = 10%) were applied in this thesis. Results from the bootstrapping procedure are shown in Figure 6-5 and further detailed in Table 6-16.

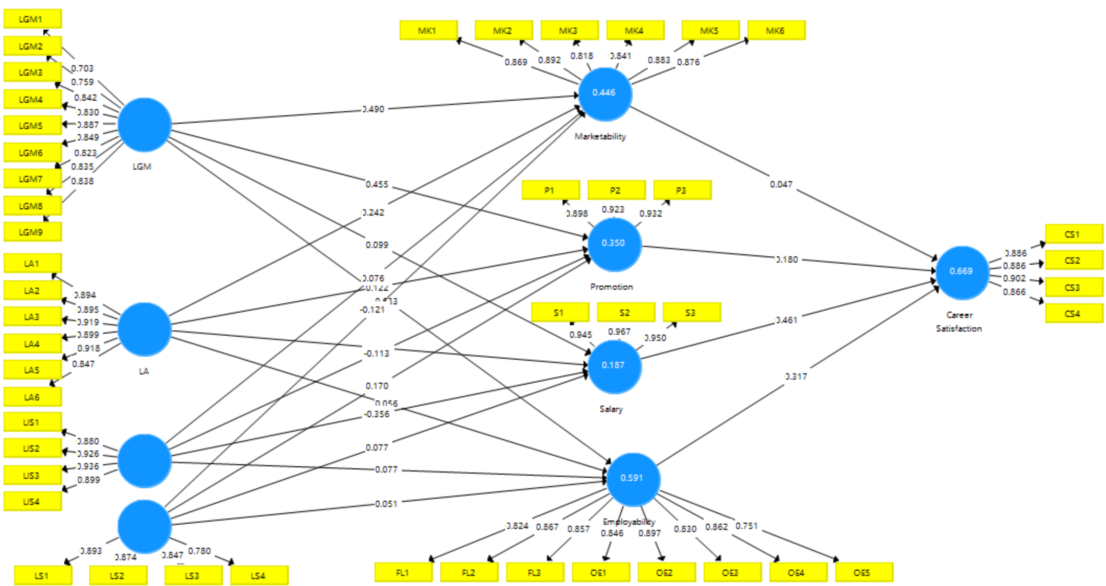


Figure 6-4: PLS algorithm for the structural model for CP3PLs

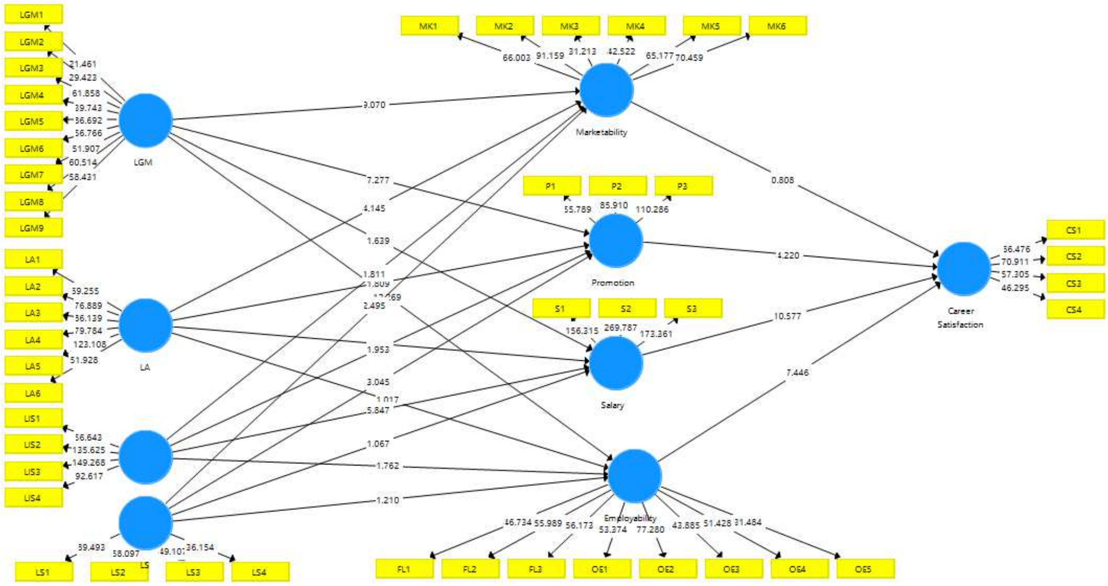


Figure 6-5: Bootstrapping of the structural model for CP3PLs

Table 6-16: Results of bootstrapping for structural model evaluation for CP3PLs

Hypothesis	Exogenous construct	Endogenous construct	β[a]	Mean	Std. error	T-statistic	P value	Expected sign	Result
H1.a	LGM	Employability	0.633	0.633	0.048	13.206	0.000	Positive	Supported **
H2.a	LA		0.056	0.055	0.054	1.040	0.062	Positive	Not supported
H3.a	LIS		0.077	0.078	0.044	1.774	0.954	Positive	Supported *
H4.a	LS		0.051	0.052	0.043	1.201	0.949	Positive	Not supported
H1.b	LGM	Promotion	0.455	0.457	0.063	7.281	0.000	Positive	Supported **
H2.b	LA		0.122	0.119	0.068	1.791	0.148	Positive	Supported *
H3.b	LIS		–0.113	–0.111	0.060	1.888	0.396	Positive	Not supported
H4.b	LS		0.170	0.171	0.057	3.007	0.077	Positive	Supported **
H1.c	LGM	Salary	0.099	0.101	0.062	1.591	0.832	Positive	Not supported
H2.c	LA		0.538	0.537	0.077	6.984	0.000	Positive	Supported **
H3.c	LIS		–0.356	–0.355	0.061	5.872	0.005	Positive	Not supported
H4.c	LS		0.077	0.077	0.073	1.048	0.893	Positive	Not supported
H1.d	LGM	Marketability	0.490	0.490	0.053	9.203	0.000	Positive	Supported **
H2.d	LA		0.242	0.241	0.057	4.224	0.008	Positive	Supported **
H3.d	LIS		0.076	0.076	0.042	1.791	0.277	Positive	Supported *
H4.d	LS		–0.121	–0.120	0.048	2.517	0.010	Positive	Not supported
H5	Employability	CS	0.317	0.315	0.041	7.683	0.000	Positive	Supported **
H6	Promotion		0.180	0.178	0.043	4.167	0.004	Positive	Supported **
H7	Salary		0.461	0.463	0.043	10.663	0.000	Positive	Supported **
H8	Marketability		0.047	0.048	0.056	0.841	0.219	Positive	Not supported

*Notes: [a] β, path coefficient; * Significant at the 0.1 level (two-tailed); ** Significant at the 0.05 level (two-tailed)*

Table 6-16 presents a summary of the bootstrap results for evaluating the relationship between the exogenous and endogenous constructs. These results demonstrate that employability, salary and promotion positively contribute to explaining the variance in CS in the CP3PL sample. With regard to the relevance of significant relationships between the four exogenous constructs with career success (Employability, Salary, Promotion and Marketability), the results show that LGM, LS, LA and LIS competency have variable effects on career success predictors with path coefficients. This emphasises the importance of considering all four constructs in influencing the level of career success.

6.4.2.3 Step 3: Assessment of Coefficient of Determination (R^2*)*

Having examined the significance and relevance of the path coefficients, the explanatory power of the structural model was determined. The explanatory power was examined via coefficient of determination, R^2 values (Hair et al. 2012b). R^2 represents the amount of variance in endogenous constructs—in this thesis marketability, salary, promotion, employability and CS—explained by the model. According to Chin (1998), R^2 values of 0.67, 0.33 and 0.19 for endogenous latent constructs in the inner model can be described as substantial, moderate and weak, respectively.

Table 6-17: R^2 for structural model evaluation in CP3PLs

Construct	R^2	***Adjusted*** R^2
CS	0.650	0.646
Employability	0.672	0.668
Marketability	0.510	0.504
Promotion	0.365	0.358
Salary	0.201	0.191

The results in Table 6-17 indicate a robust model with 65% (R^2 = 0.65) of the variance in CS explained by the four latent variables, employability, promotion, salary and marketability. Hence, according to Chin's (1998) recommendation, the explained variance in CS can be interpreted as moderate or close to substantial.

Following rules of thumb, the results indicate a moderate amount of the variance in Employability, Marketability and Promotion was explained by the four constructs (LGM, LS, LA and LIS competency): for example, the R^2 value for Employability (0.672) was substantial, whereas the R^2 value for Salary (0.201) was weak.

6.4.2.4 Step 4: Assessment of Effect Sizes (f^2)

The effect size of the structural model was evaluated using Cohen's f^2 (Cohen, 1988). The effect size is calculated as the increase in R^2 relative to the proportion of variance that remains unexplained in the endogenous construct (Peng & Lai 2012). The f^2 effect size measures the influence of a selected predictor construct on the R^2 values for an endogenous construct. Values of 0.02, 0.15 and 0.35 respectively are regarded as small, medium and large effect sizes of the predictive variables (Cohen, 1988).

The effect size was calculated for each of the positive and significant path coefficients (see Table 6-18).

Table 6-18: Summary of results—path coefficient and effect size f^2 in CP3PLs

	Employability		Marketability		Promotion		Salary		CS	
	β^a	f^2	β^a	f^2	β^a	f^2	β^a	f^2	β^a	f^2
LGM	0.708**	0.607	0.586**	0.279	0.429**	0.115	0.022	0.000		
LA	0.134*	0.013	0.229**	0.026	0.134	0.007	0.606**	0.113		
LIS	0.004	0.000	0.078	0.003	-0.078	0.003	-0.264	0.024		
LS	0.004	0.000	-0.178	0.021	0.163*	0.014	0.016	0.000		
Employability									0.293**	0.081
Marketability									0.139	0.016
Promotion									0.211**	0.066
Salary									0.350**	0.217

Notes: ^{a} β-path coefficient; * Significant at the 0.1 level (two-tailed); ** Significant at the 0.05 level (two-tailed)

Referring to Table 6-18, with respect to the relationships between the four first-order constructs and career success (Employability, Promotion, Salary and Marketability), the analysis reveals that all relationships showed a small to medium effect size assuming a significance level of 0.05. Take Marketability as an example, the analysis reveals that LGM ($\beta = 0.586$, $t = 8.296$, $p < 0.05$), and LA ($\beta = 0.229$, $t = 2.655$, $p < 0.05$) competency influenced Marketability with a medium to small effect size; $f^2 = 0.279$ and 0.026, respectively. With regard to the relationships between LA and Employability with a significance level of 0.1, f^2 was 0.013, which can be considered rather small.

Regarding the relationships between career success (Employability, Promotion, and Salary) and CS, three predictor constructs show a small to medium effect size. For example, Salary had a medium effect size of 0.217 on CS; Employability and Promotion had small effect sizes of 0.081 and 0.066, respectively.

6.4.2.5 Step 5: Assessment of Predictive Relevance Q^2 *and the Effect Sizes* f^2

In addition to evaluating the magnitude of R^2 values as a criterion for predictive accuracy, researchers should also examine Stone-Geisser's Q^2 values (Hair et al. 2017) to determine predictive relevance using the blindfolding procedure in SmartPLS (Hair, Ringle & Sarstedt 2011; Henseler, Ringle & Sinkovics 2009; Peng & Lai 2012). Q^2 measures the extent to which the model's prediction is successful (Urbach & Ahlemann 2010). A value greater than 0 confirms the presence of predictive relevance (Hair et al. 2014; Henseler, Ringle & Sinkovics 2009). Computation of Q^2 is applicable only for reflectively measured endogenous constructs (Hair et al. 2014). Thus, in this thesis Q^2 was computed for the Employability, Salary, Promotion, Marketability and CS endogenous constructs (see Table 6-19).

Table 6-19: Q^2 for the structural model in CP3PLs

Construct	***SSO*** [a]	***SSE*** [b]	***Q^2 (= 1 – SSE/SSO)***
CS	1324.000	692.382	0.477
Employability	2648.000	1498.891	0.434
Marketability	1986.000	1289.823	0.351
Promotion	993.000	713.693	0.281
Salary	993.000	829.442	0.165

Notes: [a] SSO, sum of the squared observations; [b] SSE, sum of the squared prediction errors

As can be seen, the Q^2 values for all five endogenous constructs were considerably greater than 0. More precisely, CS had the highest Q^2 value (0.477), followed by Employability (0.434), Marketability (0.351), Promotion (0.281) and finally, Salary (0.165). These results provide clear support for the model's predictive relevance regarding the endogenous latent variables.

Q^2 values estimated by the blindfolding procedure represent a measure of how well the path model can predict the originally observed values. The effect size f^2 allows assessment of an exogenous construct's contribution to an endogenous latent variable's Q^2 value. As a relative measure of predictive relevance, q^2 values of 0.02, 0.15 and 0.35, indicate that an exogenous construct has small, medium and large predictive relevance, respectively, for a particular endogenous construct (Chin, 1998; Hair et al. 2014, 2017).

The final assessment addresses the q^2 effect sizes. These must be computed manually because the SmartPLS software does not provide them (Hair et al., 2017). The effect size was thus calculated for each of the positive and significant path coefficients.

Table 6-20: Summary of results—path coefficient and effect size q^2 in CP3PLs

	Employability		Marketability		Promotion		Salary		CS	
	β^a	q^2	β^a	q^2	β^a	q^2	β^a	q^2	β^a	q^2
LGM	0.708**	0.232	0.586**	0.145	0.429**	0.077	0.022	0.001		
LA	0.134*	0.004	0.229**	0.014	0.134	0.002	0.606**	0.091		
LIS	0.004	0.001	0.078	0.001	–0.078	0.000	–0.264	0.000		
LS	0.004	0.001	–0.178	0.000	0.163*	0.009	0.016	0.001		
Employability									0.293**	0.038
Marketability									0.139	0.005
Promotion									0.211**	0.030
Salary									0.350**	0.106

*Notes: [a] β -path coefficient; * Significant at the 0.1 level (two-tailed); ** Significant at the 0.05 level (two-tailed)*

Referring to Table 6-20, with respect to the relationships between the four first-order constructs and career success (Employability, Promotion, Salary and Marketability), most relationships demonstrated a small to medium effect size assuming a significance level of 0.05. For example, LGM had a medium effect size of 0.232 on Employability and small effect sizes of 0.145 on Marketability and of 0.077 on Promotion. However, LA had no effect on Marketability (0.014).

With regard to relationships between career success (Employability, Promotion, and Salary) and CS, three predictor constructs showed a small effect size: Employability had a small effect size of 0.038 on CS; Promotion and Salary had small effect sizes of 0.03 and of 0.106, respectively.

6.4.3 Results for All Hypothesised Relationships for Chinese Private 3PLs

Based on the structural model assessment, Table 6-21 presents the results for all proposed hypotheses: 10 of the 20 are supported in the sample of CP3PL firms.

Table 6-21: Summary of results for all hypothesised relationships in CP3PLs

Hypothesis	Results
H1.a: LGM competency positively affects employability of L&SC managers working in 3PL firms	Supported
H2.a: LA competency positively affects employability of L&SC managers working in 3PL firms	Supported
H3.a: LIS competency positively affects employability of L&SC managers working in 3PL firms	Not Supported
H4.a: LS competency positively affects employability of L&SC managers working in 3PL firms	Not supported
H1.b LGM competency positively affects the promotion of L&SC managers working in 3PL firms	Supported
H2.b LA competency positively affects the promotion of L&SC managers working in 3PL firms	Not supported
H3.b LIS competency positively affects the promotion of L&SC managers working in 3PL firms	Not supported
H4.b LS competency positively affects the promotion of L&SC managers working in 3PL firms	Supported
H1.c LGM competency positively affects the salary of L&SC managers working in 3PL firms	Not supported
H2.c LA competency positively affects the salary of L&SC managers working in 3PL firms	Supported
H3.c LIS competency positively affects the salary of L&SC managers working in 3PL firms	Not supported
H4.c LS competency positively affects the salary of L&SC managers working in 3PL firms	Not supported
H1.d LGM competency positively affects the marketability of L&SC managers working in 3PL firms affects	Supported
H2.d LA competency positively affects the marketability of L&SC managers working in 3PL firms	Supported
H3.d LIS competency positively affects the marketability of L&SC managers working in 3PL firms	Not supported
H4.d LS competency positively affects the marketability of logistics managers working in 3PL firms	Not supported
H5 Employability is positively associated with CS of L&SC managers working in 3PL firms	Supported
H6 Promotion is positively associated with CS of L&SC managers working in 3PL firms	Supported
H7 Salary is positively associated with CS of L&SC managers working in 3PL firms	Supported
H8 Marketability is positively associated with CS of L&SC managers working in 3PL firms	Not supported

6.5 Analysis of Research Model for Multinational Corporations

6.5.1 Assessment of Measure Model (Outer Model)

6.5.1.1 Indicator Reliability

For PLS algorithm calculation, the inner weighting option was set using the path weighting scheme. The maximum number of iterations was 300. The path weighting scheme is strongly recommended for use in preference to the factorial and centroid weighting scheme because it is the only scheme that takes into account the direction of relationships specified in models (Vinzi, Trinchera & Amato 2010). Following this procedure, factor loadings for the measurement items were determined.

Researchers (e.g. Hair, Ringle & Sarstedt 2013; Peng & Lai 2012) suggest that item loadings should be at least 0.7 to achieve item reliability of approximately 0.5. Loadings are correlations and item reliability is the square of a loading. Therefore, with a loading value of 0.707 indicates item reliability of 0.5, showing that 50% or more of the variance in the observed variables is due to the construct (Hulland 1999).

Applying these criteria, OE5 and LGM10, with factor loadings less than 0.7, were removed from the model to maintain parsimony.

After conducting the final round of CFA, loadings for the items retained in the measurement model were obtained. The bootstrapping procedure was then employed using 5000 resamples to estimate the significance of each measurement item via t-statistics.

Table 6-22 presents the psychometric properties of the constructs comprising loadings for the final measurement items together with the sample mean, standard error and t−statistics to assess the significance of loadings.

Table 6-22: Psychometric properties of the constructs for MN3PLs

Construct	Loading	Sample mean	Std. error	T-statistic	CR [a]	AVE [b]
LGM					0.951	0.682
LGM1	0.796	0.796	0.049	16.318		
LGM2	0.739	0.736	0.053	14.067		
LGM3	0.885	0.884	0.021	43.057		
LGM4	0.830	0.830	0.045	18.473		
LGM5	0.906	0.906	0.017	53.291		
LGM6	0.789	0.788	0.037	21.071		
LGM7	0.808	0.806	0.039	20.684		
LGM8	0.813	0.810	0.040	20.554		
LGM9	0.853	0.852	0.024	34.977		
LA					0.962	0.810
LA1	0.930	0.929	0.022	42.088		
LA2	0.864	0.862	0.035	24.966		
LA3	0.902	0.902	0.038	23.773		
LA4	0.935	0.934	0.020	46.448		
LA5	0.927	0.926	0.015	62.427		
LA6	0.838	0.839	0.033	25.561		
LIS					0.963	0.865
LIS1	0.917	0.917	0.014	63.934		
LIS2	0.949	0.949	0.009	102.966		
LIS3	0.952	0.952	0.013	71.706		
LIS4	0.902	0.901	0.020	45.802		
LS					0.909	0.715
LS1	0.858	0.852	0.036	23.866		
LS2	0.906	0.899	0.033	27.726		
LS3	0.888	0.881	0.040	22.453		
LS4	0.718	0.729	0.063	11.365		

Marketability					0.937	0.714
MK1	0.837	0.838	0.034	24.388		
MK2	0.890	0.891	0.024	37.496		
MK3	0.807	0.809	0.035	23.129		
MK4	0.819	0.818	0.056	14.566		
MK5	0.858	0.858	0.040	21.427		
MK6	0.855	0.855	0.026	33.071		
Promotion					0.946	0.853
P1	0.923	0.924	0.022	41.336		
P2	0.919	0.919	0.017	53.165		
P3	0.928	0.927	0.017	53.094		
Salary					0.977	0.933
S1	0.948	0.947	0.013	71.579		
S2	0.981	0.981	0.005	209.113		
S3	0.968	0.968	0.006	156.828		
Employability					0.955	0.754
FL1	0.780	0.778	0.050	15.665		
FL2	0.902	0.901	0.019	46.395		
FL3	0.839	0.837	0.039	21.408		
OE1	0.879	0.879	0.027	32.627		
OE2	0.915	0.914	0.014	67.695		
OE3	0.877	0.876	0.028	31.201		
OE4	0.878	0.877	0.020	44.937		
CS					0.952	0.832
CS1	0.938	0.938	0.012	76.422		
CS2	0.905	0.904	0.021	43.978		
CS3	0.921	0.921	0.016	56.925		
CS4	0.884	0.883	0.037	24.214		

Notes: *[a] CR, composite reliability; [b]AVE, average variance extracted*

After removing items with loadings less than the threshold value, all measurement items loaded significantly and were higher than 0.718 on their intended constructs, indicating unidimensionality (see Table 6-22). Loadings above the threshold value of 0.7 are indicative of larger shared variance between a construct and its indicators than the variance of the measurement error (Gotz, Liehr-Gobbers & Krafft 2010). Hence, results from CFA show strong evidence for reliability of measurement items.

6.5.1.2 Internal Consistency

As depicted in Table 6-22, all first-order constructs displayed CR well above the threshold value of 0.7. Internal consistency reliability is considered satisfactory when a CR value is higher than 0.7; in exploratory research values between 0.6 and 0.7 are acceptable (Hair, Ringle & Sarstedt 2011) whereas values below 0.6 indicate a lack of reliability (Nunnally & Bernstein 1994).

6.5.1.3 Convergent Validity

Two types of validity, namely convergent and discriminant validity, were examined to evaluate construct validity. Convergent validity is evident when each measurement item correlates strongly with its intended theoretical construct (Gefen & Straub 2005). Convergent validity of the constructs in this thesis was examined via AVE values as suggested by Fornell and Larcker (1981). AVE refers to the average variance shared between a construct and its measures relative to the amount of measurement error (Chin 2010; Hulland 1999). Sufficient convergent validity is achieved when the AVE value for a construct is at least 0.5 (Fornell & Larcker 1981). Table 6-23 shows that the AVE for all constructs exceeded the 0.5 threshold, demonstrating convergent validity.

6.5.1.4 Discriminant Validity

Discriminant validity was examined via the correlation matrix of the constructs as presented in

Table 6-23.

Comparing the square root of the AVE for each construct with the correlations among other constructs in Table 6-23 shows that the square roots of AVE, as the diagonal elements, are larger than the off-diagonal correlations in rows and columns. Hence, discriminant validity at the construct level is supported. Thus, the reliability and validity of reflective construct measures was confirmed.

Another alternative to assessing discriminant validity is to use cross-loadings. Discriminant validity is established when an indicator's loading on its assigned construct is higher than all of its cross-loadings with other constructs (Hair et al. 2014). Table 6-24 shows the loadings and cross-loadings for each indicator. For example, the indicator CS1 had the highest value for the loading with its corresponding construct CS (0.938); all cross-loadings with other constructs were considerably lower (e.g. CS1 on LA: 0.453). The same finding holds for the other indicators of CS as well as the indicators measuring other constructs. Hence, the cross-loadings criterion provides evidence for the constructs' discriminant validity.

Table 6-23: Convergent validity and discriminant validity of first-order constructs in MN3PLs

Construct	**AVE**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1.LGM	0.682	**0.826**								
2.LA	0.810	0.618	**0.900**							
3.LIS	0.865	0.752	0.809	**0.930**						
4.LS	0.715	0.383	0.701	0.532	**0.846**					
5.Employability	0.853	0.792	0.599	0.692	0.451	**0.868**				
6.Promotion	0.858	0.607	0.565	0.502	0.574	0.630	**0.923**			
7.Salary	0.933	0.221	0.360	0.125	0.297	0.200	0.456	**0.966**		
8.Marketability	0.714	0.710	0.647	0.640	0.370	0.744	0.620	0.474	**0.845**	
9.CS	0.832	0.422	0.463	0.330	0.373	0.448	0.612	0.804	0.586	**0.912**

Notes: Highlighted values on the diagonal are square roots of AVE (average variance extracted) and correlations are off-diagonal

Table 6-24: Cross-loadings for discriminant validity assessment in MN3PLs

	CS	Employability	LA	LGM	LIS	LS	Marketability	Promotion	Salary
CS1	0.938	0.350	0.453	0.359	0.272	0.374	0.545	0.631	0.818
CS2	0.905	0.513	0.374	0.476	0.340	0.215	0.569	0.512	0.663
CS3	0.921	0.438	0.465	0.435	0.363	0.311	0.568	0.503	0.773
CS4	0.884	0.340	0.390	0.264	0.229	0.465	0.451	0.585	0.665
FL1	0.344	0.780	0.387	0.536	0.453	0.174	0.622	0.433	0.194
FL2	0.451	0.902	0.545	0.698	0.642	0.401	0.694	0.595	0.169
FL3	0.294	0.839	0.439	0.666	0.613	0.227	0.650	0.436	0.017
LA1	0.379	0.565	0.930	0.574	0.812	0.656	0.589	0.487	0.219
LA2	0.360	0.603	0.864	0.599	0.792	0.643	0.518	0.534	0.173
LA3	0.464	0.513	0.902	0.554	0.694	0.641	0.578	0.545	0.378
LA4	0.370	0.549	0.935	0.538	0.771	0.585	0.590	0.440	0.242
LA5	0.430	0.516	0.927	0.561	0.722	0.588	0.634	0.466	0.394
LA6	0.483	0.490	0.838	0.508	0.586	0.664	0.576	0.569	0.510
LGM1	0.257	0.754	0.317	0.796	0.605	0.132	0.566	0.410	-0.068
LGM2	0.221	0.659	0.616	0.739	0.705	0.476	0.582	0.346	0.016
LGM3	0.352	0.681	0.431	0.885	0.624	0.200	0.626	0.461	0.223
LGM4	0.319	0.547	0.403	0.830	0.599	0.158	0.582	0.463	0.197
LGM5	0.308	0.731	0.504	0.906	0.698	0.292	0.656	0.477	0.152
LGM6	0.427	0.690	0.599	0.789	0.571	0.529	0.489	0.714	0.266
LGM7	0.443	0.577	0.536	0.808	0.484	0.334	0.591	0.549	0.410
LGM8	0.248	0.533	0.500	0.813	0.645	0.348	0.511	0.446	0.114
LGM9	0.503	0.683	0.656	0.853	0.666	0.363	0.661	0.594	0.281
LIS1	0.393	0.614	0.826	0.646	0.917	0.580	0.616	0.571	0.240
LIS2	0.359	0.699	0.789	0.739	0.949	0.524	0.638	0.503	0.202
LIS3	0.280	0.634	0.750	0.732	0.952	0.444	0.568	0.441	0.052
LIS4	0.170	0.624	0.623	0.680	0.902	0.411	0.548	0.326	-0.070
LS1	0.311	0.365	0.534	0.303	0.374	0.858	0.296	0.431	0.301
LS2	0.354	0.342	0.578	0.258	0.395	0.906	0.318	0.411	0.282
LS3	0.278	0.290	0.547	0.200	0.361	0.888	0.233	0.356	0.236
LS4	0.298	0.463	0.651	0.454	0.587	0.718	0.356	0.644	0.183

MK1	0.435	0.757	0.486	0.672	0.603	0.216	0.837	0.412	0.248
MK2	0.625	0.653	0.627	0.644	0.531	0.381	0.890	0.649	0.536
MK3	0.442	0.529	0.530	0.554	0.515	0.318	0.807	0.466	0.476
MK4	0.387	0.546	0.475	0.513	0.533	0.165	0.819	0.401	0.286
MK5	0.543	0.609	0.499	0.556	0.465	0.243	0.858	0.553	0.495
MK6	0.503	0.663	0.639	0.645	0.600	0.508	0.855	0.620	0.333
OE1	0.433	0.879	0.627	0.679	0.597	0.545	0.644	0.626	0.289
OE2	0.463	0.915	0.590	0.682	0.620	0.472	0.655	0.647	0.208
OE3	0.281	0.877	0.475	0.764	0.644	0.375	0.612	0.444	0.039
OE4	0.433	0.878	0.538	0.760	0.616	0.469	0.649	0.605	0.275
P1	0.600	0.526	0.587	0.628	0.526	0.588	0.620	0.923	0.508
P2	0.508	0.647	0.473	0.543	0.441	0.445	0.553	0.919	0.339
P3	0.579	0.583	0.496	0.503	0.416	0.545	0.540	0.928	0.401
S1	0.746	0.183	0.334	0.238	0.133	0.328	0.406	0.495	0.948
S2	0.805	0.188	0.343	0.205	0.103	0.273	0.477	0.427	0.981
S3	0.777	0.207	0.367	0.201	0.126	0.262	0.488	0.402	0.968

6.5.1.5 Quality of the Measurement Model

The quality of a measurement model can be measured by examining AVE values. In Table 6-22, the AVE values for all constructs were greater than the cut-off value of 0.5 (Fornell & Larcker 1981), confirming the quality of the measurement model.

6.5.2 Assessment of the Structural Model (Inner Model)

The assessment of the structural model proceeded according to the steps outlined in Section 6.3.2 following Hair et al. (2014).

6.5.2.1 Step 1: Assessment of Collinearity

To examine collinearity among exogenous constructs, each set of predictor constructs for each subpart of a structural model must be examined separately (Hair et al., 2017). Two sets of constructs were evaluated for collinearity in the structural model:

1. LGM, LS, LA and LIS competency as predictors of marketability, promotion, salary and employability.
2. Marketability, employability, salary and promotion as predictors of CS.

After running the PLS algorithm, SmartPLS presents the key results of the model estimation (see Table 6-25).

Table 6-25: Collinearity values among exogenous constructs of MN3PLs

First set			Second set		
Construct	**VIF**	**Tolerance**	**Construct**	**VIF**	**Tolerance**
LA	4.121	0.243	Employability	2.876	0.348
LGM	2.306	0.434	Marketability	2.999	0.333
LIS	4.123	0.243	Promotion	2.062	0.485
LS	1.987	0.503	Salary	1.572	0.636

Table 6-25 presents the VIF values tolerance levels for all the exogenous constructs in the structural model. Results indicate that VIF values are below the recommended threshold value of 5 and the tolerance levels are greater than 0.20, indicating there was no significant level of collinearity among the exogenous constructs (Hair et al. 2014)

6.5.2.2 Step 2: Assessment of Significance and Relevance of the Path Coefficients

The second step in structural model evaluation involves examining the significance of hypothesised relationships. Following this operation, the size of path coefficients and coefficient determination (R^2) values were obtained as shown in Figure 6-6. Before evaluating R^2, it is important to identify the significance, sign and magnitude of path coefficients by analysing the t-values and path coefficients obtained by performing a non-parametric bootstrapping procedure

(Henseler, Ringle & Sinkovics 2009; Peng & Lai 2012). The t-values were used to evaluate the statistical significance of each path coefficient.

Commonly used critical values for two-tailed tests are 1.65 (significance level = 10%), 1.96 (significance level = 5%), and 2.57 (significance level = 1%). In general, when a study is exploratory in nature, researchers often assume a significance level of 10% (Hair, Ringle & Sarstedt, 2011; Hair et al., 2014, 2017). This study is the first to evaluate the relationship between the competency, career success and CS of logistics managers in 3PL firms in the Chinese context; hence, critical t-values for two-tailed tests with 1.65 (significance level = 10%) were applied in this thesis. Results from the bootstrapping procedure are shown in Figure 6-7 and further detailed in Table 6-26.

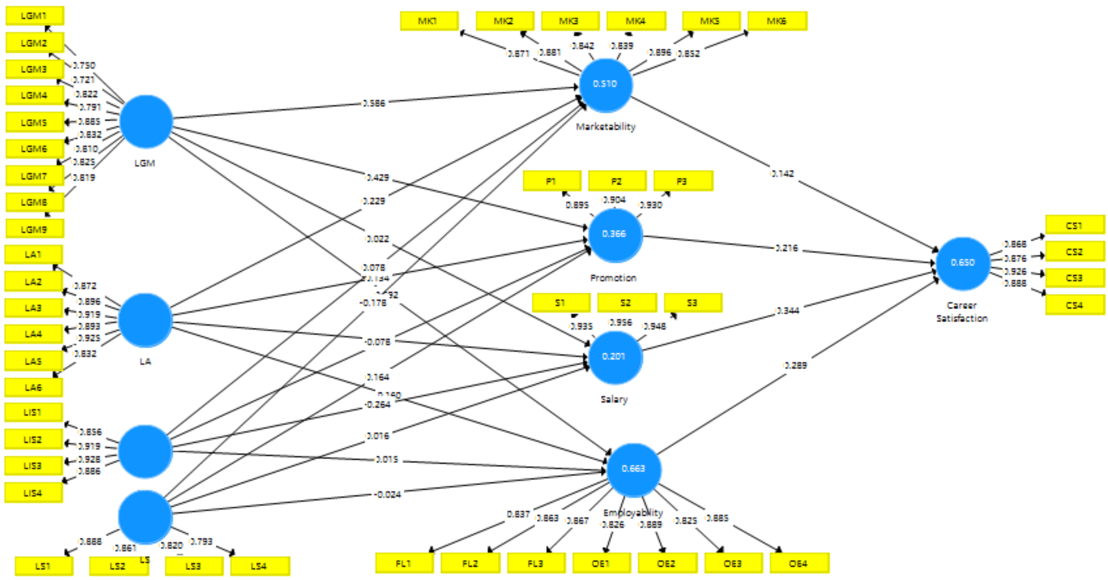


Figure 6-6: PLS algorithm for the structural model of MN3PLs

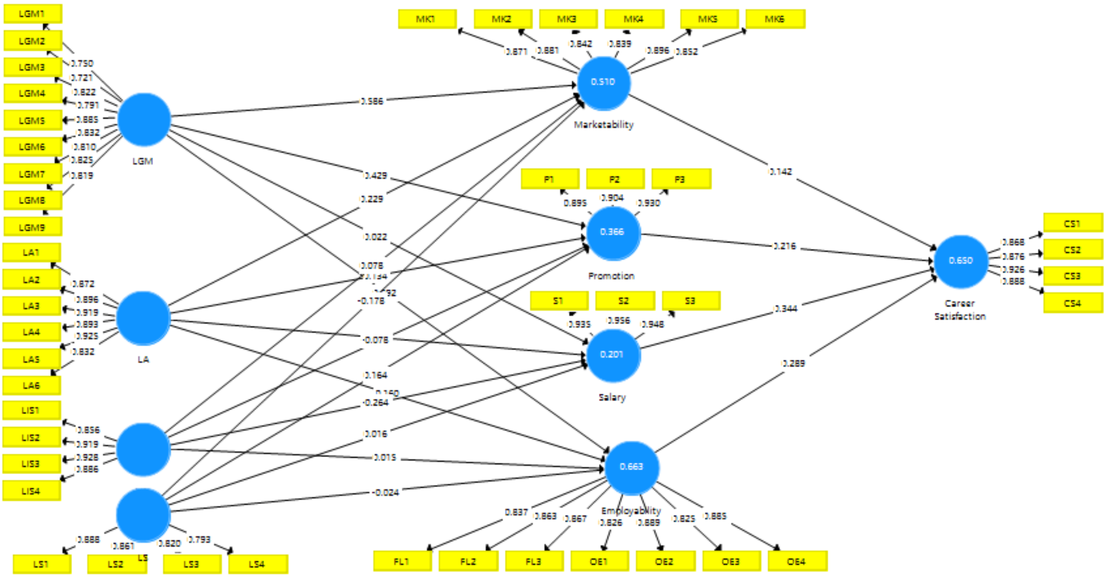


Figure 6-7: Bootstrapping for the structural model of MN3PLs

Table 6-26: Results of bootstrapping for structural model evaluation in MN3PLs

Hypothesis	Exogenous construct	Endogenous construct	β[a]	Mean	Std. error	T-statistic	P value	Expected sign	Result
H1.a	LGM	Employability	0.630	0.628	0.131	4.818	0.000	Positive	Supported**
H2.a	LA		–0.010	–0.005	0.123	0.078	0.938	Positive	Not supported
H3.a	LIS		0.156	0.156	0.128	1.217	0.224	Positive	Not supported
H4.a	LS		0.134	0.132	0.056	2.402	0.016	Positive	Supported**
H1.b	LGM	Promotion	0.540	0.538	0.109	4.945	0.000	Positive	Supported**
H2.b	LA		0.141	0.142	0.123	1.147	0.251	Positive	Not supported
H3.b	LIS		–0.224	–0.230	0.139	1.610	0.107	Positive	Not supported
H4.b	LS		0.387	0.398	0.082	4.693	0.000	Positive	Supported**
H1.c	LGM	Salary	0.281	0.271	0.111	2.528	0.011	Positive	Supported**
H2.c	LA		0.690	0.674	0.150	4.592	0.000	Positive	Supported**
H3.c	LIS		–0.680	–0.674	0.148	4.606	0.000	Positive	Not supported
H4.c	LS		0.067	0.086	0.104	0.645	0.519	Positive	Not supported
H1.d	LGM	Marketability	0.513	0.518	0.118	4.344	0.000	Positive	Supported**
H2.d	LA		0.454	0.448	0.135	3.355	0.001	Positive	Supported**
H3.d	LIS		–0.050	–0.049	0.118	0.423	0.672	Positive	Not supported
H4.d	LS		–0.119	–0.118	0.083	1.423	0.155	Positive	Not supported
H5	Employability	CS	0.196	0.197	0.067	2.931	0.003	Positive	Supported**

H6	Promotion	0.170	0.168	0.060	2.852	0.004	Positive	Supported**
H7	Salary	0.682	0.688	0.051	13.386	0.000	Positive	Supported**
H8	Marketability	0.011	0.009	0.070	0.164	0.870	Positive	Not supported

Notes: [a] *β-path coefficient;* [*] *Significant at the 0.1 level (two-tailed);* [**] *Significant at the 0.05 level (two-tailed)*

Table 6-26 presents a summary of the bootstrap results evaluating the relationships between the exogenous and endogenous constructs. These results demonstrate that employability, salary and promotion positively contributed to explaining the variance in CS in the MN3PL sample. With regard to the relevance of significant relationships between the four exogenous constructs with career success (Employability, Salary, Promotion and Marketability), the results show that LGM, LS, LA, LIS competency have variable weights in affecting career success with path coefficients. This emphasises the importance of considering the influence of four constructs on the level of career success.

6.5.2.3 Step 3: Assessment of Coefficient of Determination (R^2)

Having examined the significance and relevance of the path coefficients, the explanatory power of the structural model was determined. The explanatory power was examined by the coefficient of determination, R^2 values (Hair et al. 2012b). R^2 represents the amount of variance in the endogenous constructs—in this thesis marketability, salary, promotion, employability and CS—explained by the model. According to Chin (1998), R^2 values of 0.67, 0.33 and 0.19 for endogenous latent constructs in the inner model can be described as substantial, moderate and weak, respectively.

Table 6-27: $R^2$for structural model evaluation for MN3PLs

Construct	R^2	***Adjusted*** R^2
CS	0.747	0.741
Employability	0.661	0.653
Marketability	0.582	0.572
Promotion	0.518	0.507
Salary	0.246	0.228

The results in Table 6-27 indicate a robust model with 74.7% (R^2 = 0.747) of the variance in CS explained by the four latent variables: employability, promotion, salary and marketability. Hence, with respect to Chin's (1998) recommendation, the explained variance in CS can be interpreted as substantial.

Following the rules of thumb, the results indicate a moderate model of the variance in Employability, Marketability and Promotion was explained by the four constructs (LGM, LS, LA and LIS competency): for example, the R^2 value for Employability (0.661) was close to substantial, whereas the R^2 value for Salary (0.246) was weak.

6.5.2.4 Step 4: Assessment of Effect Sizes (f^2)

The effect size for the structural model was evaluated using Cohen's f^2 (Cohen1988). The effect size is calculated as the increase in R^2 relative to the proportion of variance that remains unexplained in the endogenous construct (Peng & Lai 2012). The f^2 effect size measures the influence of a selected predictor construct on the R^2 values of an endogenous construct. R^2 values of 0.02, 0.15 and 0.35 are regarded as small, medium and large effect sizes, respectively, of the predictive variables (Cohen, 1988).

The effect size was calculated for each of the positive and significant path coefficients (see Table 6-28).

Referring to Table 6-28, with respect to the relationships between the four first-order constructs and career success (Employability, Promotion, Salary and Marketability), all relationships showed a small to large effect size assuming a significance level of 0.05. Taking Employability as an example, the analysis reveals that LGM ($\beta = 0.63$, $t = 0.818$, $p < 0.05$) and LS ($\beta = 0.134$, $t = 2.402$, $p < 0.05$) affected Employability with large and small effect sizes, respectively ($f^2 = 0.507$ and 0.026). With regard to the relationships between LGM and Salary, the effect size was 0.045, which can be considered small.

Regarding the relationships between career success (Employability, Promotion and Salary) and

CS, three predictor constructs showed a small to large effect size: Employability had a small effect size of 0.053 on CS, Promotion had a small effect size of 0.056 and Salary had a large effect size of 1.17.

Table 6-28: Summary of results—path coefficient and effect size f^2 in MN3PLs

	Employability		**Marketability**		**Promotion**		**Salary**		**CS**	
	β^a	f^2	β^a	f^2	β^a	f^2	β^a	f^2	β^a	f^2
LGM	0.630**	0.507	0.513**	0.273	0.540**	0.262	0.281**	0.045		
LA	–0.01	0.000	0.454**	0.119	0.141	0.010	0.690**	0.153		
LIS	0.156	0.017	–0.05	0.001	–0.224	0.025	–0.68	0.149		
LS	0.134**	0.026	–0.119	0.017	0.387**	0.156	0.067	0.003		
Employability									0.196**	0.053
Marketability									0.011	0.000
Promotion									0.170**	0.056
Salary									0.682**	1.170

Notes: [a] β *-path coefficient;* [*] *Significant at the 0.1 level (two-tailed);* [**] *Significant at the 0.05 level (two-tailed)*

6.5.2.5 Step 5: Assessment of Predictive Relevance Q^2 *and Effect Size* f^2

In addition to evaluating the magnitude of the R^2 values as a criterion for predictive accuracy, researchers should also examine Stone-Geisser's Q^2 values (Hair et al. 2017) to determine predictive relevance using the blindfolding procedure in Smart PLS (Hair, Ringle & Sarstedt 2011; Henseler, Ringle & Sinkovics 2009; Peng & Lai 2012). Q^2 measures the extent to which the model's prediction is successful (Urbach & Ahlemann 2010). A value greater than 0 confirms the presence of predictive relevance (Hair et al. 2014; Henseler, Ringle & Sinkovics 2009). Computation of Q^2 is applicable only to reflectively measured endogenous constructs (Hair et al. 2014). Thus, in this thesis Q^2 was computed for the Employability, Salary, Promotion, Marketability and CS endogenous constructs (see Table 6-29).

Table 6-29: Q^2 for the structural model for MN3PLs

Construct	***SSO*** [a]	***SSE*** [b]	Q^2 ***(= 1 –S SE/SSO)***
CS	708.000	301.393	0.574
Employability	1239.000	675.884	0.454
Marketability	1062.000	664.841	0.374
Promotion	531.000	318.007	0.401
Salary	531.000	419.818	0.209

Notes: [a] *SSO, sum of squared observations;* [b] *SSE, sum of squared prediction errors*

As can be seen, the Q^2 values of all five endogenous constructs were considerably above 0. CS had the highest Q^2 value (0.574), followed by Employability (0.454), Promotion (0.401), Marketability (0.374) and Salary (0.209). These results provide clear support for the model's predictive relevance regarding the endogenous latent variables.

Q^2 values estimated by the blindfolding procedure represent a measure of how well the path model can predict the originally observed values. The effect size q^2 facilitates assessment of an exogenous construct's contribution to an endogenous latent variable's Q^2 value. As a relative measure of predictive relevance, q^2 values of 0.02, 0.15 and 0.35 indicate that an exogenous construct has a small, medium or large predictive relevance, respectively, for a certain endogenous construct. (Chin, 1998; Hair et al. 2014, 2017).

The final assessment addresses q^2 effect sizes. These must be computed manually because the SmartPLS software does not do this (Hair et al., 2017). The effect size was thus calculated for each of the positive and significant path coefficients.

Referring to Table 6-30, the relationships between the four first-order constructs and career success (Employability, Promotion, Salary and Marketability) show a small to medium effect size assuming a significance level of 0.05. For example, LGM had medium effect sizes of 0.223 and of 0.170 on Employability and Promotion, respectively, and small effect sizes of 0.119 on Marketability and 0.037 on Salary. However, LS had no effect on Employability (0.01).

With regard to the relationships between career success (Employability, Promotion and Salary) and CS, three predictor constructs showed a small to large effect size. For example, Employability had a small effect size of 0.024 on CS, Promotion had a small effect size of 0.025, and Salary had a large effect size of 0.536.

Table 6-30: Summary of results—path coefficient and effect size q^2 in MN3PLs

	Employability		**Marketability**		**Promotion**		**Salary**		**CS**	
	β^a	q^2	β^a	q^2	β^a	q^2	β^a	q^2	β^a	q^2
LGM	0.630**	0.223	0.513**	0.119	0.540**	0.170	0.281**	0.037		
LA	–0.010	0.000	0.454**	0.047	0.141	0.014	0.690**	0.128		
LIS	0.156	0.065	–0.050	0.000	–0.224	0.000	–0.680	0.000		
LS	0.134**	0.010	–0.119	0.000	0.387**	0.098	0.067	0.012		
Employability									0.196**	0.024
Marketability									0.011	0.002
Promotion									0.170**	0.025
Salary									0.682**	0.536

*Notes: ^{a} β-path coefficient; * Significant at the 0.1 level (two-tailed); ** Significant at the 0.05 level (two-tailed)*

6.5.3 Results for All Hypothesised Relationships for Multinational Corporations

Based on the structural model assessment, Table 6-31 presents the results for all proposed hypotheses: 11 out of 20 are supported in the samples of MN3PL firms.

Table 6-31: Summary of results for all hypothesised relationships for MN3PLs

Hypothesis	Results
H1.a: LGM competency positively affects employability of L&SC managers working in 3PL firms	Supported
H2.a: LA competency positively affects employability of L&SC managers working in 3PL firms	Not supported
H3.a: LIS competency positively affects employability of L&SC managers working in 3PL firms	Not supported
H4.a: LS competency positively affects employability of L&SC managers working in 3PL firms	Supported
H1.b LGM competency positively affects the promotion of L&SC managers working in 3PL firms	Supported
H2.b LA competency positively affects the promotion of L&SC managers working in 3PL firms	Not supported
H3.b LIS competency positively affects the promotion of L&SC managers working in 3PL firms	Not supported
H4.b LS competency positively affects the promotion of L&SC managers working in 3PL firms	Supported
H1.c LGM competency positively affects the salary of L&SC managers working in 3PL firms	Supported
H2.c LA competency positively affects the salary of L&SC managers working in 3PL firms	Supported
H3.c LIS competency positively affects the salary of L&SC managers working in 3PL firms	Not supported
H4.c LS competency positively affects the salary of L&SC managers working in 3PL firms	Not supported
H1.d LGM competency positively affects the marketability of L&SC managers working in 3PL firms	Supported
H2.d LA competency positively affects the marketability of L&SC managers working in 3PL firms affects	Supported
H3.d LIS competency positively affects the marketability of L&SC managers working in 3PL firms	Not supported
H4.d LS competency positively affects the marketability of logistics managers working in 3PL firms	Not supported
H5 Employability is positively associated with CS of L&SC managers working in 3PL firms	Supported
H6 Promotion is positively associated with CS of L&SC managers working in 3PL firms	Supported
H7 Salary is positively associated with CS of L&SC managers working in 3PL firms	Supported
H8 Marketability is positively associated with CS of L&SC managers working in 3PL firms	Not supported

6.6 Analysis of Research Model for Chinese State-owned 3PLs

6.6.1 Assessment of Measure Model (Outer Model)

6.6.1.1 Indicator Reliability

For PLS algorithm calculation, the inner weighting option was set using the path weighting scheme. The maximum number of iterations was 300. The path weighting scheme has been strongly recommended for use in preference to the factorial and centroid weighting scheme because it is the only scheme that takes into account the direction of relationships specified in models (Vinzi, Trinchera & Amato 2010). From this procedure, factor loadings for the measurement items were determined.

Researchers (e.g. Hair, Ringle & Sarstedt 2013; Peng & Lai 2012) suggest that item loadings should be at least 0.7 to achieve item reliability of approximately 0.5. Loadings are correlations and item reliabilities are the squares of the loadings. Therefore, for a loading value of 0.707, an item reliability of 0.5 is yielded, showing that 50% or more of the variance in the observed variables is due to the construct (Hulland 1999). Following these criteria, LGM1 and LGM10, with factor loadings less than 0.7 were removed from the model to maintain parsimony.

After conducting the final round of CFA, loadings for the items retained in the measurement model were obtained. Following this, bootstrapping with 5000 resamples was conducted to estimate the significance of each measurement item by examining t-statistics.

Table 6-32 presents the psychometric properties of the constructs comprising loadings for the final measurement items, together with the sample mean, standard error and t−statistics to assess the significance of loadings.

Table 6-32: Psychometric properties of the first-order constructs in Chinese SO3PLs

Construct	Loading	Sample mean	Std. error	T-statistic	CR [a]	AVE[b]
LGM					0.963	0.763
LGM2	0.822	0.821	0.034	23.965		
LGM3	0.847	0.847	0.021	39.605		
LGM4	0.893	0.892	0.018	49.529		
LGM5	0.903	0.902	0.017	53.857		
LGM6	0.910	0.908	0.019	48.153		
LGM7	0.859	0.856	0.025	34.061		
LGM8	0.874	0.874	0.018	49.101		
LGM9	0.879	0.877	0.021	42.252		
LA					0.965	0.820
LA1	0.919	0.918	0.015	61.989		
LA2	0.909	0.909	0.017	54.742		
LA3	0.929	0.929	0.010	88.632		
LA4	0.894	0.893	0.026	34.821		
LA5	0.900	0.900	0.016	55.512		
LA6	0.880	0.878	0.021	41.866		
LIS					0.953	0.834
LIS1	0.888	0.887	0.020	44.645		
LIS2	0.916	0.915	0.015	60.788		
LIS3	0.937	0.937	0.010	90.598		
LIS4	0.913	0.913	0.014	65.383		
LS					0.927	0.761
LS1	0.917	0.917	0.011	82.375		
LS2	0.883	0.880	0.026	33.852		
LS3	0.879	0.877	0.029	30.269		
LS4	0.805	0.807	0.030	27.027		
Marketability					0.952	0.768
MK1	0.883	0.882	0.023	38.954		

MK2	0.918	0.917	0.015	63.104		
MK3	0.793	0.789	0.068	11.712		
MK4	0.861	0.859	0.030	28.413		
MK5	0.884	0.883	0.023	38.442		
MK6	0.912	0.911	0.017	55.239		
Promotion					0.948	0.858
P1	0.890	0.890	0.030	30.106		
P2	0.950	0.949	0.013	75.081		
P3	0.939	0.939	0.014	68.148		
Salary					0.971	0.917
S1	0.956	0.955	0.009	104.133		
S2	0.976	0.976	0.005	202.673		
S3	0.941	0.941	0.014	65.401		
Employability					0.957	0.735
FL1	0.885	0.883	0.025	35.677		
FL2	0.857	0.854	0.032	27.007		
FL3	0.883	0.881	0.025	36.003		
OE1	0.852	0.849	0.027	31.224		
OE2	0.899	0.896	0.023	39.948		
OE3	0.839	0.835	0.041	20.565		
OE4	0.809	0.807	0.041	19.695		
OE5	0.833	0.829	0.035	23.791		
CS					0.918	0.737
CS1	0.879	0.880	0.022	39.310		
CS2	0.888	0.889	0.020	43.491		
CS3	0.845	0.841	0.053	16.038		
CS4	0.820	0.818	0.050	16.501		

Notes: [a] CR, composite reliability; [b]AVE, average variance extracted

After removing item with loadings less than the threshold value, all measurement items loaded significantly and highly between 0.793 and 0.976 on their intended constructs, achieving unidimensionality as reported in Table 6-32. Loadings above the threshold value of 0.7 are indicative of larger shared variance between a construct and its indicators, than the variance of the measurement error (Gotz, Liehr-Gobbers & Krafft 2010). Hence, results from CFA provide strong evidence for reliability of measurement items

6.6.1.2 Internal Consistency

As shown in Table 6-32, all constructs displayed CR well above the threshold value of 0.7. Internal consistency reliability is considered satisfactory when the CR value is higher than 0.7; in exploratory research, values between 0.6 and 0.7 are acceptable (Hair, Ringle & Sarstedt 2011), while values below 0.6 indicate a lack of reliability (Nunnally & Bernstein 1994).

6.6.1.3 Convergent Validity

Two types of validity, namely convergent and discriminant validity, were examined to evaluate construct validity. Convergent validity is evident when each measurement item correlates strongly with its intended theoretical construct (Gefen & Straub 2005). Convergent validity of the first-order constructs in this thesis was examined via AVE values, as suggested by Fornell and Larcker (1981). AVE refers to the average variance shared between a construct and its measures relative to the amount of measurement error (Chin 2010; Hulland 1999). Sufficient convergent validity is achieved when the AVE value for a construct is at least 0.5 (Fornell & Larcker 1981). This means that the construct explains more than 50% of the variance among the scale indicators (Gotz, Liehr-Gobbers & Krafft 2010; Hair, Ringle & Sarstedt 2011). Table 6-33 shows that the AVE for all constructs met the 0.5 threshold, demonstrating convergent validity.

6.6.1.4 Discriminant Validity

Discriminant validity was examined via the correlation matrix of the constructs shown in Table 6-

33.

Considering the square roots of the AVE for each construct and the correlations among other constructs, the results in Table 6-33 show that the square root of the AVE values—the diagonal elements—are larger than the off-diagonal correlations in rows and columns. Hence, discriminant validity at the construct level is supported. In summary, the reliability and validity of reflective construct measures was confirmed.

Table 6-33: Convergent validity and discriminant validity of first-order constructs in Chinese SO3PLs

Construct	**AVE**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1.LGM	0.763	**0.874**								
2.LA	0.820	0.798	**0.905**							
3.LIS	0.834	0.700	0.803	**0.913**						
4.LS	0.761	0.654	0.848	0.827	**0.872**					
5.Employability	0.735	0.657	0.558	0.559	0.497	**0.858**				
6.Promotion	0.858	0.525	0.444	0.355	0.351	0.691	**0.926**			
7.Salary	0.917	0.351	0.370	0.217	0.311	0.406	0.673	**0.958**		
8.Marketability	0.768	0.584	0.513	0.484	0.432	0.737	0.720	0.636	**0.876**	
9.CS	0.737	0.455	0.397	0.335	0.348	0.698	0.750	0.704	0.699	**0.858**

Notes: Highlighted values on the diagonal are square roots of AVE (average variance extracted) and correlations are off-diagonal

Another alternative to assessing discriminant validity uses cross-loadings. Discriminant validity is established when an indicator’s loading on its assigned construct is higher than all of its cross-loadings with other constructs (Hair et al. 2014). Table 6-34 shows the loadings and cross-loadings for each indicator. For example, indicator CS1 has the highest value for the loading with its corresponding construct CS (0.879); all cross-loadings with other constructs are considerably lower (e.g. CS1 on LA: 0.341). The same finding holds for the other indicators of CS as well as the indicators measuring other constructs. Hence, the cross-loadings criterion provides evidence for the constructs’ discriminant validity.

Table 6-34: Cross-loadings for discriminant validity assessment in Chinese SO3PLs

	CS	**Employability**	**LA**	**LGM**	**LIS**	**LS**	**Marketability**	**Promotion**	**Salary**
CS1	0.879	0.557	0.341	0.379	0.257	0.286	0.690	0.660	0.679
CS2	0.888	0.563	0.330	0.355	0.216	0.252	0.693	0.726	0.700
CS3	0.845	0.664	0.362	0.427	0.346	0.316	0.519	0.608	0.536
CS4	0.820	0.621	0.333	0.408	0.346	0.350	0.481	0.570	0.485
FL1	0.628	0.885	0.522	0.598	0.511	0.420	0.596	0.628	0.328
FL2	0.585	0.857	0.458	0.576	0.492	0.393	0.561	0.534	0.328
FL3	0.614	0.883	0.464	0.585	0.508	0.414	0.608	0.608	0.328
LA1	0.326	0.489	0.919	0.738	0.742	0.786	0.456	0.383	0.323
LA2	0.367	0.569	0.909	0.786	0.730	0.758	0.459	0.412	0.312
LA3	0.371	0.521	0.929	0.746	0.719	0.777	0.473	0.445	0.345
LA4	0.381	0.500	0.894	0.685	0.697	0.741	0.474	0.412	0.341
LA5	0.400	0.512	0.900	0.719	0.741	0.747	0.521	0.432	0.386
LA6	0.299	0.424	0.880	0.649	0.734	0.813	0.388	0.306	0.295
LGM2	0.400	0.596	0.636	0.822	0.595	0.547	0.517	0.463	0.271
LGM3	0.499	0.621	0.645	0.847	0.591	0.523	0.542	0.506	0.319
LGM4	0.460	0.629	0.674	0.893	0.584	0.491	0.546	0.502	0.303
LGM5	0.385	0.574	0.769	0.903	0.688	0.646	0.495	0.422	0.284
LGM6	0.348	0.583	0.765	0.910	0.651	0.622	0.504	0.433	0.283
LGM7	0.356	0.502	0.663	0.859	0.570	0.540	0.510	0.454	0.359
LGM8	0.342	0.527	0.740	0.874	0.596	0.601	0.453	0.411	0.296
LGM9	0.364	0.540	0.692	0.879	0.617	0.611	0.499	0.458	0.338
LIS1	0.342	0.450	0.683	0.569	0.888	0.738	0.433	0.319	0.205
LIS2	0.295	0.537	0.738	0.631	0.916	0.770	0.464	0.290	0.181
LIS3	0.300	0.528	0.790	0.675	0.937	0.782	0.442	0.365	0.240
LIS4	0.290	0.525	0.716	0.678	0.913	0.730	0.427	0.323	0.166
LS1	0.356	0.494	0.827	0.643	0.757	0.917	0.416	0.376	0.287
LS2	0.228	0.292	0.734	0.535	0.735	0.883	0.305	0.233	0.287
LS3	0.284	0.325	0.705	0.484	0.731	0.879	0.384	0.265	0.312
LS4	0.316	0.560	0.677	0.588	0.660	0.805	0.380	0.317	0.206
MK1	0.686	0.747	0.381	0.529	0.396	0.333	0.883	0.736	0.527

MK2	0.683	0.661	0.447	0.541	0.424	0.366	0.918	0.709	0.612
MK3	0.590	0.547	0.393	0.479	0.334	0.312	0.793	0.614	0.541
MK4	0.521	0.624	0.436	0.454	0.425	0.368	0.861	0.524	0.522
MK5	0.570	0.603	0.539	0.514	0.491	0.483	0.884	0.564	0.575
MK6	0.606	0.677	0.506	0.543	0.472	0.413	0.912	0.613	0.565
OE1	0.559	0.852	0.570	0.573	0.536	0.507	0.677	0.605	0.401
OE2	0.615	0.899	0.478	0.585	0.478	0.417	0.666	0.620	0.304
OE3	0.570	0.839	0.438	0.544	0.463	0.417	0.619	0.518	0.276
OE4	0.585	0.809	0.466	0.519	0.433	0.446	0.709	0.609	0.412
OE5	0.628	0.833	0.432	0.524	0.409	0.400	0.626	0.613	0.414
P1	0.687	0.546	0.441	0.436	0.337	0.392	0.685	0.890	0.720
P2	0.683	0.673	0.375	0.480	0.316	0.265	0.666	0.950	0.567
P3	0.712	0.696	0.418	0.538	0.334	0.319	0.652	0.939	0.587
S1	0.701	0.420	0.310	0.335	0.174	0.240	0.618	0.683	0.956
S2	0.693	0.397	0.370	0.346	0.208	0.308	0.628	0.657	0.976
S3	0.627	0.346	0.386	0.329	0.244	0.347	0.580	0.590	0.941

6.6.1.5 Quality of the Measurement Model

The quality of a measurement model can be measured by examining the AVE values. In Table 6-33, the AVE values for all first-order constructs were greater than the cut-off value of 0.5 (Fornell & Larcker 1981), confirming the quality of the measurement model.

6.6.2 Assessment of the Structural Model (Inner Model)

The assessment of the structural model proceeded according to the steps outlined in Section 6.3.2 following Hair et al. (2014).

6.6.2.1 Step 1: Assessment of Collinearity

To examine collinearity among exogenous constructs, each set of predictor constructs for each subpart of the structural model must be examined separately (Hair et al., 2017). Two sets of constructs were evaluated for collinearity in the structural model:

1. LGM, LS, LA and LIS competency as predictors of career success (marketability, promotion, salary and employability).
2. Marketability, employability, salary and promotion as predictors of CS.

After running the PLS algorithm, SmartPLS returned the key results for the model estimation presented in Table 6-35.

Table 6-35: Collinearity values among exogenous constructs for Chinese SO3PLs

First set			Second set		
Construct	**VIF**	**Tolerance**	**Construct**	**VIF**	**Tolerance**
LA	5.797	0.173	Employability	2.719	0.368
LGM	2.916	0.343	Marketability	3.197	0.313
LIS	3.762	0.266	Promotion	3.029	0.330
LS	4.675	0.214	Salary	2.198	0.455

Table 6-35 presents the VIF values and tolerance levels for all the exogenous constructs in the structural model. The VIF values were below the recommended threshold value of 5 and the tolerance levels were greater than 0.20, except for the exogenous construct LA, which had a VIF value of 5.797. However, this first-order construct was retained in the structural model because its VIF value was far lower than a rule of thumb suggested by Henseler, Ringle and Sinkovics (2009): that is, VIF greater than 10 denotes a harmful level of collinearity. Moreover, Hair et al. (2017) suggest that researchers should not simply remove constructs from models if the remaining constructs insufficiently capture the model's content from a theoretical perspective.

6.6.2.2 Step 2: Assessment of Significance and Relevance of Path Coefficients

The second step in structural model evaluation involves examining the significance of hypothesised relationships. Following this operation, the size of path coefficients and coefficient determination (R^2) were obtained as shown in Figure 6-8. Before evaluating R^2, it is important to identify the significance, sign and magnitude of path coefficients by analysing t-values and path coefficients obtained via a non-parametric bootstrapping procedure (Henseler, Ringle & Sinkovics 2009; Peng & Lai 2012). The t-values were used to evaluate the statistical significance of each path coefficient.

Commonly used critical values for two-tailed tests are 1.65 (significance level = 10%), 1.96 (significance level = 5%) and 2.57 (significance level = 1%). In general, when a study is exploratory in nature, researchers often assume a significance level of 10% (Hair, Ringle & Sarstedt, 2011; Hair et al., 2014, 2017). This study is the first to evaluate the relationship between the competency, career success and CS of logistics managers in 3PL firms in the Chinese context; hence, critical t-values for two-tailed tests with 1.65 (significance level = 10%) were applied in this thesis. Results from the bootstrapping procedure are shown in Figure 6-9 and further detailed in Table 6-36.

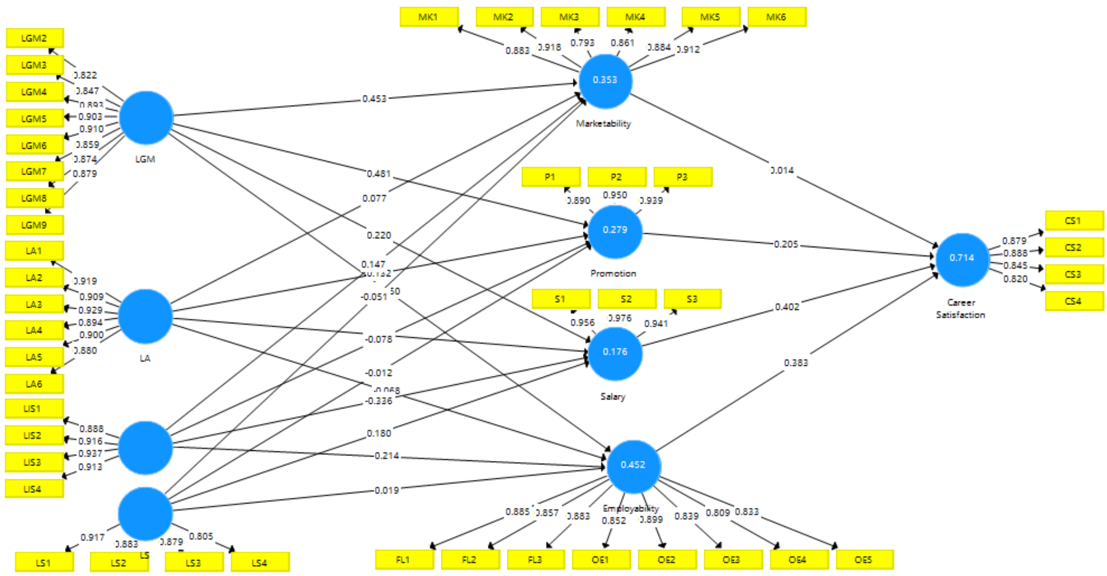


Figure 6-8: PLS algorithm for the structural model of Chinese SO3PLs

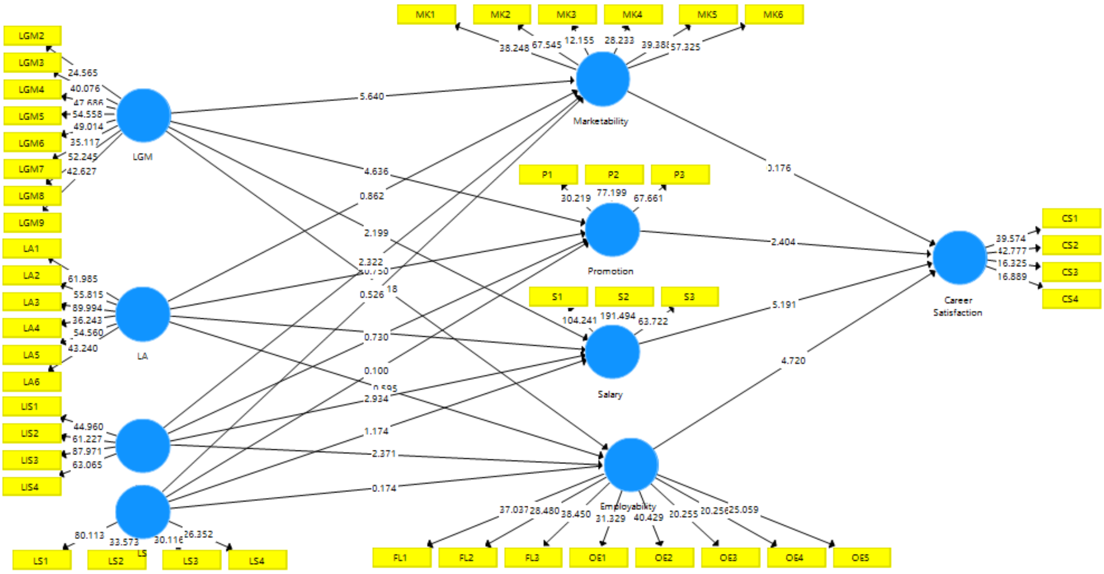


Figure 6-9: Bootstrapping of the Structural Model for Chinese SO3PLs

Table 6-36: Results of bootstrapping for structural model evaluation in Chinese SO3PLs

Hypothesis	Exogenous construct	Endogenous construct	β[a]	Mean	Std. error	T-statistic	P value	Expected sign	Result
H1.a	LGM	Employability	0.550	0.551	0.096	5.713	0.000	Positive	Supported**
H2.a	LA		–0.068	–0.069	0.109	0.620	0.535	Positive	Not supported
H3.a	LIS		0.214	0.216	0.090	2.385	0.017	Positive	Supported**
H4.a	LS		0.019	0.030	0.107	0.173	0.862	Positive	Not supported
H1.b	LGM	Promotion	0.481	0.489	0.099	4.853	0.000	Positive	Supported**
H2.b	LA		0.132	0.119	0.171	0.772	0.440	Positive	Not supported
H3.b	LIS		–0.078	–0.064	0.107	0.726	0.468	Positive	Not supported
H4.b	LS		–0.012	–0.010	0.118	0.100	0.920	Positive	Not supported
H1.c	LGM	Salary	0.220	0.217	0.099	2.213	0.027	Positive	Supported**
H2.c	LA		0.311	0.311	0.159	1.962	0.050	Positive	Supported*
H3.c	LIS		–0.336	–0.324	0.114	2.957	0.003	Positive	Not supported
H4.c	LS		0.180	0.176	0.157	1.149	0.251	Positive	Not supported
H1.d	LGM	Marketability	0.453	0.456	0.080	5.635	0.000	Positive	Supported**
H2.d	LA		0.077	0.077	0.091	0.844	0.399	Positive	Not supported
H3.d	LIS		0.147	0.150	0.063	2.340	0.019	Positive	Supported**
H4.d	LS		–0.051	–0.043	0.102	0.500	0.617	Positive	Not supported
H5	Employability	CS	0.383	0.388	0.083	4.616	0.000	Positive	Supported**
H6	Promotion		0.205	0.198	0.083	2.472	0.013	Positive	Supported**
H7	Salary		0.402	0.405	0.077	5.199	0.000	Positive	Supported**
H8	Marketability		0.014	0.012	0.077	0.185	0.854	Positive	Not supported

Notes: [a] β, *path coefficient;* [*] *Significant at the 0.1 level (two-tailed);* [**] *Significant at the 0.05 level (two-tailed)*

Table 6-36 provides a summary of the bootstrap results for evaluating the relationship between the exogenous and endogenous constructs. These results demonstrate that employability, salary and promotion positively contributed to explaining the variance in CS in the Chinese SO3PL firm sample. Examining the relevance of significant relationships between the four exogenous constructs and career success predictors (Employability, Salary, Promotion and Marketability), the results show that LGM, LS, LA and LIS competency had variable weights as career success predictors with path coefficients. This emphasises the importance of considering the effect of all four constructs on the level of career success.

6.6.2.3 Assessment of Coefficient of Determination (R^2*)*

Having examined the significance and relevance of the path coefficients, the explanatory power of the structural model was determined. The explanatory power was examined by the coefficient of determination, R^2 values (Hair et al. 2012b). R^2 refers to the amount of variance in the endogenous constructs—in this thesis marketability, salary, promotion, employability and CS—explained by the model. According to Chin (1998), R^2 values of 0.67, 0.33 and 0.19 for endogenous latent constructs in the inner model can be described as substantial, moderate and weak, respectively.

Table 6-37: $R^2$for structural model evaluation for Chines SO3PLs

Construct	***R^2***	***Adjusted R^2***
CS	0.714	0.708
Employability	0.452	0.441
Marketability	0.353	0.340
Promotion	0.279	0.265
Salary	0.176	0.159

With respect to Table 6-37, the results indicate a robust model with 71.4% (R^2 = 0.714) of the variance in CS explained by the four latent variables—employability, promotion, salary and marketability. Hence, with respect to Chin’s (1998) recommendation, the explained variance in CS can be interpreted as substantial.

Following rules of thumb, the results indicate a moderate model for the variance in Employability, Marketability and Promotion explained by four constructs (LGM, LS, LA and LIS competency), whereas the R^2 value for Salary (0.176) was rather weak. However, Falk and Miller (1992) recommend a minimum R^2 value of 0.1, which ensures that at least 10% of construct variability is due to the model. Hence, the structural model explains a weak amount of 17.6% of the variation in Salary, thus explaining in the lower limit of weak R^2 values nearly.

6.6.2.4 Step 4: Assessment of Effect Sizes (f^2)

The effect size of the structural model was evaluated using Cohen’s f^2 (Cohen1988). Effect size is calculated as the increase in R^2 relative to the proportion of variance that remains unexplained in the endogenous construct (Peng & Lai 2012). The f^2 effect size measures the influence of a selected predictor construct on the R^2 values of an endogenous construct. f^2 values of 0.02, 0.15 and 0.35 are regarded as small, medium and large effect sizes, respectively, of predictive variables (Cohen, 1988). The effect size was calculated for each of the positive and significant path coefficients and the results are reported in Table 6-38.

Referring to Table 6-38, with respect to the relationships between the four first-order constructs and career success (Employability, Promotion, Salary and Marketability), most relationships show a small to medium effect size assuming a significance level of 0.05. Taking Employability as an example, the analysis reveals that LGM (β = 0.55, t = 5.713, $p < 0.05$) and LIS (β = 0.214, t = 2.385, $p < 0.05$) affect Employability with medium to small effect sizes (f^2 =0.189 and 0.022, respectively). With regard to the relationships between LIS and Marketability, the effect size was 0.009, which can be considered no effect.

Regarding the relationships between career success (Employability, Promotion and Salary) and CS, the three predictor constructs show a small to medium effect size. For example, Employability had a medium effect size of 0.188 on CS, Salary had a medium effect size of 0.257 and Promotion had a small effect size of 0.048.

Table 6-38: Summary of results—path coefficient and effect size f^2 in Chinese SO3PLs

	Employability		**Marketability**		**Promotion**		**Salary**		**CS**	
	β^a	f^2	β^a	f^2	β^a	f^2	β^a	f^2	β^a	f^2
LGM	0.550**	0.189	0.453**	0.109	0.481**	0.110	0.220**	0.020		
LA	–0.068	0.001	0.077	0.002	0.132	0.004	0.311**	0.020		
LIS	0.214**	0.022	0.147**	0.009	–0.078	0.002	–0.336	0.036		
LS	0.019	0.000	–0.051	0.001	–0.012	0.000	0.180	0.008		
Employability									0.383**	0.188
Marketability									0.014	0.000
Promotion									0.205**	0.048
Salary									0.402**	0.257

*Notes: ᵃ β -path coefficient; * Significant at the 0.1 level (two-tailed); ** Significant at the 0.05 level (two-tailed)*

6.6.2.5 Step 5: Assessment of Predictive Relevance Q^2 *and* q^2 *Effect Size*

In addition to evaluating the magnitude of R^2 values as a criterion for predictive accuracy, researchers should also examine Stone-Geisser's Q^2 values (Hair et al. 2017) to determine predictive relevance using the blindfolding procedure in Smart PLS (Hair, Ringle & Sarstedt 2011; Henseler, Ringle & Sinkovics 2009; Peng & Lai 2012). Q^2 measures the extent to which a model's prediction is successful (Urbach & Ahlemann 2010). A value greater than 0 confirms the presence of predictive relevance (Hair et al. 2014; Henseler, Ringle & Sinkovics 2009). Computation of Q^2 is applicable only for reflectively measured endogenous constructs (Hair et al. 2014). Thus, in this thesis Q^2 was computed for the Employability, Salary, Promotion, Marketability and CS endogenous constructs (see Table 6-39).

Table 6-39: Q^2 values for the structural model of Chinese SO3PLs

Construct	***SSO*** [a]	***SSE*** [b]	***Q^2 (= 1 – SSE/SSO)***
CS	800.000	411.893	0.485
Employability	1600.000	1102.594	0.311
Marketability	1200.000	899.390	0.251
Promotion	600.000	471.457	0.214
Salary	600.000	517.089	0.138

Notes: [a] SSO, sum of squared observations; [b] SSE, sum of squared prediction errors

As can be seen, the Q^2 values for all five endogenous constructs were considerably greater than 0. CS had the highest Q^2 value (0.485), followed by Employability (0.311), Marketability (0.251), Promotion (0.214) and Salary (0.138). These results provide clear support for the model's predictive relevance regarding the endogenous latent variables.

Q^2 values estimated by the blindfolding procedure represent a measure of how well the path model can predict the originally observed values. The effect size q^2 allows for assessment of an exogenous construct's contribution to an endogenous latent variable's Q^2 value. As a relative measure of predictive relevance, q^2 values of 0.02, 0.15 and 0.35, respectively, indicate that an exogenous construct has a small, medium or large predictive relevance for a certain endogenous construct (Chin, 1998; Hair et al. 2014, 2017).

The final assessment addresses q^2 effect sizes. These must be computed manually because the SmartPLS software does not provide them (Hair et al., 2017). The effect size was thus calculated for each of the positive and significant path coefficients.

Referring to Table 6-40, with respect to the relationships between the four first-order constructs and career success (Employability, Promotion, Salary and Marketability), the analysis reveals that most of the relationships showed a small effect size assuming a significance level of 0.05. For example, LGM had small effect sizes of 0.104 on Employability, 0.064 on Marketability and 0.081 on Promotion. In contrast, LGM had no effect on Salary (0.015).

With regard to relationships between career success (Employability, Promotion and Salary) and CS, three predictor constructs showed a small effect size: Employability had a small effect size of 0.067 on CS, Salary had a small effect size of 0.097 and the q^2 value for Promotion (0.012) was also rather small.

Table 6-40: Summary of results—path coefficient and effect size q^2 in Chinese SO3PLs

	Employability		**Marketability**		**Promotion**		**Salary**		**CS**	
	β^a	q^2	β^a	q^2	β^a	q^2	β^a	q^2	β^a	q^2
LGM	0.550**	0.104	0.453**	0.064	0.481**	0.081	0.220**	0.015		
LA	–0.068	0.000	0.077	0.007	0.132	0.008	0.311**	0.009		
LIS	0.214**	0.011	0.147**	0.014	–0.078	0.000	–0.336	0.000		
LS	0.019	0.003	–0.051	0.000	–0.012	0.000	0.180	0.005		
Employability									0.383**	0.067
Marketability									0.014	0.004
Promotion									0.205**	0.012
Salary									0.402**	0.097

*Notes: ^{a} β -path coefficient; * Significant at the 0.1 level (two-tailed); ** Significant at the 0.05 level (two-tailed)*

6.6.3 Results for All Hypothesised Relationships for Chinese State-owned 3PLs

Based on the structural model assessment, Table 6-41 presents the results for all proposed hypotheses: 10 of the 20 are supported in the sample of Chinese SO3PL firms.

Table 6-41: Summary of results for all hypothesised relationships of Chinese SO3PLs

Hypothesis	Results
H1.a: LGM competency positively affects employability of L&SC managers working in 3PL firms	Supported
H2.a: LA competency positively affects employability of L&SC managers working in 3PL firms	Not supported
H3.a: LIS competency positively affects employability of L&SC managers working in 3PL firms	Supported
H4.a: LS competency positively affects employability of L&SC managers working in 3PL firms	Not supported
H1.b LGM competency positively affects the promotion of L&SC managers working in 3PL firms	Supported
H2.b LA competency positively affects the promotion of L&SC managers working in 3PL firms	Not supported
H3.b LIS competency positively affects the promotion of L&SC managers working in 3PL firms	Not supported
H4.b LS competency positively affects the promotion of L&SC managers working in 3PL firms	Not supported
H1.c LGM competency positively affects the salary of L&SC managers working in 3PL firms	Supported
H2.c LA competency positively affects the salary of L&SC managers working in 3PL firms	Supported
H3.c LIS competency positively affects the salary of L&SC managers working in 3PL firms	Not supported
H4.c LS competency positively affects the salary of L&SC managers working in 3PL firms	Not supported
H1.d LGM competency positively affects the marketability of L&SC managers working in 3PL firms	Supported
H2.d LA competency positively affects the marketability of L&SC managers working in 3PL firms	Not supported
H3.d LIS competency positively affects the marketability of L&SC managers working in 3PL firms	Supported
H4.d LS competency positively affects the marketability of logistics managers working in 3PL firms	Not supported
H5 Employability is positively associated with CS of L&SC managers working in 3PL firms	Supported
H6 Promotion is positively associated with CS of L&SC managers working in 3PL firms	Supported
H7 Salary is positively associated with CS of L&SC managers working in 3PL firms	Supported
H8 Marketability is positively associated with CS of L&SC managers working in 3PL firms	Not supported

6.7 Multi-group Analysis

As explained earlier, there are three types of organisational ownership in the Chinese logistics 3PL industry: Chinese SO3PL, MN3PL and CP3PL firms. The relationship between logistics managers' competency (LGM, LIS, LA, and LS), career success and CS was identified in Sections 6.3–6.5, but it is unclear whether there exists a significant difference between the three subgroups of firms. The multi-group analysis in this section is designed to address this question.

The following two sections compare the results for the three firm types. Hair et al. (2014) recommends use of a significance of 10% ($p \leq 0.1$) for exploratory research as acceptable. This study represents systematic pioneering research on the relationship between competency and CS for logistics managers working in Chinese 3PL organisations, and the first survey-based multi-group analysis for different organisational ownership types. Therefore, the lower standard of t-statistics greater than 1.65 and p-values less than 0.10 was adopted in this study.

As mentioned in Section 4.9.7, there are four approaches to conducting multi-group analysis in PLS path modelling; the parametric approach was adopted in this study. Executing parametric tests requires researchers to first run a standard PLS path modelling algorithm for each group, followed by the bootstrapping procedure (e.g. Hair et al., 2011; Henseler et al., 2009) to obtain the standard errors of the group-specific parameter estimates (Keil et al., 2000). The differences between path estimators are tested by significance in t-tests, as suggested by Keil et al. (2000), Chin (2002) and Sarstedt et al. (2011):

$$t = \frac{p^{(1)} - p^{(2)}}{\sqrt{\frac{(m-1)^2}{(m+n-2)} \times se_{p^{(1)}}^2 + \frac{(n-1)^2}{(m+n-2)} \times se_{p^{(2)}}^2} \times \sqrt{\frac{1}{m} + \frac{1}{n}}} \qquad (1)$$

where $p^{(1)}$ ($p^{(2)}$) denotes the original parameter estimate for a path relationship in group one (two), m (n) denotes the number of observations in group one (two), and $se_p^{(1)}$ ($se_p^{(2)}$) denotes the path coefficient’s standard error in group one (two) obtained from bootstrapping.

6.7.1 Logistics Managers’ Competency and Career Success

Multi-group analysis in this section examines differences in the relationship between logistics managers’ competency (LGM, LIS, LA and LS) and career success (employability, promotion, salary and marketability) among the group members. Results indicate that there were no significant differences among the groups in most of the relationships. Some exceptions were seen in the comparisons of MN3PLs with SO3PLs, and MN3PLs with CP3PL firms. From Table 6-42, it is clear that between CP3PL firms and MN3PLs there were differences in hypotheses examining the relationships between LS and promotion, LIS and salary and LA and marketability ($p = 0.028$, 0.018 and 0.092, respectively). Similar differences were seen between MN3PLs and SO3PL firms for hypotheses of effects of LS on promotion, LA and LIS on salary, and LA on marketability (p + 0.007, 0.086, 0.063 and 0.019, respectively).

Table 6-42: Summary of multi-group analysis for hypothesised relationships between competency and career success

Exogenous construct	Endogenous construct	CP3PL		MN3PL		SO3PL		CP3PL *v.* MN3PL		MNC3PL *v.* SO3PL		SO3PL *v.* CP3PL	
		***β**[a]*	**SE**	***β**[a]*	**SE**	***β**[a]*	**SE**	**t-statistic**	**p-value**	**t-statistic**	**p-value**	**t-statistic**	**p-value**
LGM	Employability	0.633	0.048	0.63	0.131	0.550	0.096	0.026	0.979	0.501	0.617	0.859	0.392
LA		0.056	0.054	–0.01	0.123	–0.068	0.109	0.569	0.570	0.355	0.723	1.134	0.258
LIS		0.077	0.044	0.156	0.128	0.214	0.090	–0.712	0.477	–0.378	0.706	–1.526	0.129
LS		0.051	0.043	0.134	0.056	0.019	0.107	–1.161	0.247	0.920	0.359	0.321	0.749
LGM	Promotion	0.455	0.063	0.54	0.109	0.481	0.099	–0.726	0.456	0.403	0.688	–0.233	0.911
LA		0.122	0.068	0.141	0.123	0.132	0.171	–0.147	0.883	0.042	0.967	–0.063	0.950
LIS		–0.113	0.06	–0.224	0.139	–0.078	0.107	0.852	0.395	–0.845	0.399	–0.309	0.758
LS		0.17	0.057	0.387	0.082	–0.012	0.118	–2.211	0.028**	2.716	0.007**	1.553	0.122
LGM	Salary	0.099	0.062	0.281	0.111	0.22	0.099	–1.554	0.121	0.413	0.680	–1.094	0.275
LA		0.538	0.077	0.69	0.15	0.311	0.159	–1.002	0.317	1.726	0.086*	1.437	0.153
LIS		–0.356	0.061	–0.68	0.148	–0.336	0.114	2.378	0.018**	–1.869	0.063*	–0.169	0.866
LS		0.077	0.073	0.067	0.104	0.18	0.157	0.080	0.936	–0.586	0.559	–0.670	0.503
LGM	Marketability	0.49	0.053	0.513	0.118	0.453	0.08	–0.205	0.838	0.430	0.668	0.402	0.688
LA		0.242	0.057	0.454	0.135	0.077	0.091	–1.690	0.092*	2.368	0.019**	1.623	0.106
LIS		0.076	0.042	–0.05	0.118	0.147	0.063	1.219	0.224	–1.524	0.129	–0.976	0.331
LS		–0.121	0.048	–0.119	0.083	–0.051	0.102	–0.022	0.983	–0.510	0.611	–0.698	0.486

[*] *Significant at the 0.1 level (two-tailed);* [**] *Significant at the 0.05 level (two-tailed)*

Table 6-43: Summary of multi-group analysis for hypothesised relationships between career success and CS

Exogenous construct	CP3Pl		MN3PL		SO3PL		CP3PL *v.* MN3PL		MN3PL *v.* SO3PL		SO3PL v. CP3PL	
	β^a	SE	β^a	SE	β^a	SE	t-statistic	p-value	t-statistic	p-value	t-statistic	p-value
Employability	0.317	0.041	0.196	0.067	0.383	0.083	2.517	0.013**	–1.729	0.086*	–0.794	0.428
Promotion	0.180	0.043	0.170	0.060	0.205	0.083	0.478	0.633	–0.335	0.738	–0.295	0.769
Salary	0.461	0.043	0.682	0.051	0.402	0.077	–4.028	0.000**	2.959	0.004**	0.726	0.469
Marketability	0.047	0.056	0.011	0.070	0.014	0.077	0.033	0.974	–0.029	0.977	0.353	0.725

[*] Significant at the 0.1 level (two-tailed); [**] Significant at the 0.05 level (two-tailed)

6.7.2 Career Success and Career Satisfaction

Multi-group analysis in this section examines differences in the relationships between career success (employability, promotion, salary and marketability) and career satisfaction among the groups. Results indicate that there were no significant differences among the groups in most relationships, with some exceptions in the comparison of MN3PLs with SO3PLs and MN3PLs with CP3PL firms. From Table 6-43, it is clear that between CP3PL firms and MN3PLs there were differences in hypotheses examining the relationships between employability and CS, and salary and CS ($p = 0.013$ and 0.000, respectively). Similar differences were evident between MN3PL and SO3PL firms for the same hypotheses: relationships between employability and CS, and salary and CS, were associated with p-values of 0.086 and 0.004, respectively.

6.8 Summary

To calculate the parameters for SEM, two approaches are normally used: the covariance-based method and the variance-based (or components-based) method. As the sample size ($n = 177$) of logistics managers from MN3PLs was not large enough for a covariance-based SEM method for the research model, variance-based PLS-SEM was selected as the method of analysis.

The outcomes of analyses of the research model indicated that with regard to the complex relationships between the four competencies and career success, eight hypotheses were rejected for the Total Sample, and 10, 9 and 10 hypotheses were rejected for CP3PL, MN3PL and Chinese SO3PL firms respectively. However, the outcome of analysis of the relationships between career success and CS were consistent for different sample sizes: salary, employability and promotion positively influenced CS, and there was a non-significant positive relationship between marketability and CS.

To address the research question regarding whether the relationships between logistics competency, career success and CS differ for logistics managers working in Chinese SO3PL firms, CP3PL firms and MN3PL firms operating in China, a multi-group analysis was conducted to verify the significance of differences. The results of the multi-group analysis indicated was no significant difference among the groups in most relationships involving competency, career success and CS.

The next chapter discusses the above results in detail to answer the research questions and objectives outlined in Chapter 1.

CHAPTER 7: DISCUSSION OF FINDINGS

7.1 Introduction

Chapters 5 and 6 presented the descriptive and statistical results relating to the research questions identified in Chapter 1, and the research hypotheses proposed in Chapter 3 and complemented in Chapter 6. In this chapter I discuss the results in detail with the objectives of:

1. providing an overview of the effects of logistics managers' competency on career success, and of career success on CS; and
2. reporting and discussing the results of hypothesis testing.

The discussion in this chapter is organised with a brief introduction in Section 7.1. Section 7.2 clarifies the foundation of 3PL L&SC manager career development antecedents for this research. The impacts of logistics managers' competency on career success and of career success on CS are discussed in Sections 7.3 and 7.4 respectively. Sections 7.3 and 7.4 begin with a review of the hypotheses, and then present results from the structural equation model and interpretations of the findings. Last, a summary of the chapter is presented in Section 7.5.

7.2 Foundations of Logistics and Supply Chain Competency

Antecedents of L&SC career development in the context of China are relatively new to the field of L&SCM. The main objectives of this study were to investigate the relationship between logistics competency and career success and CS. For the purpose of this study, four antecedents of L&SC competency were identified. These were:

1. LGM competency
2. LA competency
3. LIS competency

4. LS competency.

The competency theory emphasises the skills, abilities and knowledge obtained by personnel (Nasiriyar and Jolly, 2006; Chen et al., 2009; Li et al., 2012). The theory provides an explanation for competitive heterogeneity based on the premise that employees differ in their resources and capabilities in important and durable ways (Helfat & Peteraf, 2003; Schmidt & Keil, 2012).

3PLs in China have long acknowledged the importance of talent development. This logic has recently been extended: the critical skills required by 3PLs are examined via personal career success instead of organisational performance. It is therefore sensible for the definition of L&SC competency to emphasise relationships between sub-constructs within the career success construct, as the concept of L&SC competency and relationships may be useful for meeting the goals of L&SC managers' career development. Relationships between competency and career success, and in turn CS, are becoming increasingly important in terms of both competitiveness and developing the dynamic capability of 3PLs to respond to rapid changes in the market. Further, L&SC skills—both individual and organisational—are integral to responding to dynamic markets and the development needs of 3PLs.

Recent literature also suggests that employability should be studied from both an organisational perspective (e.g. Nauta, Van Vianen, Van der Heijden, Van Dam, and Willemsen, 2009; Scholarios et al., 2008) and an individual perspective (e.g. Forrier & Sels, 2003; Fugate & Kinicki, 2008; Vander Heijden, Boon, Van der Klink, & Meijs, 2009). The organisational perspective refers to HR practices aimed at optimising the deployment of staff to increase an organisation's flexibility and competitive advantage (Nauta et al., 2009). The individual perspective focuses on individual dispositions and behaviours (Forrier & Sels, 2003; Fugate et al., 2004; Fugate & Kinicki, 2008). The present study incorporated the organisational perspective by examining L&SC managers' perceptions of their organisation's support for career development, as well as the individual perspective, by addressing their actual participation in the initiatives offered by the 3PL firms.

7.3 The Impact of Logistics Managers' Competency on Career Success

One of this study's research questions was posited to examine the impact of L&SC managers' competency on their career success in the Chinese 3PL industry. This is a very complex question because eight constructs were included and evaluated in the SEM model. Four constructs, named LGM, LA, LIS and LS constituted competency, and employability, salary, promotion and marketability represented career success in the research model. Sixteen hypotheses relating to competency and career success were investigated in Chapter 6; the results of tests of these hypotheses are discussed in the following section**.**

In this study, with the exception of the Total Sample, three separate samples from CP3PL, MN3PL and Chinese SO3PL firms were considered and analysed in Chapter 6. A discussion and comparison of results for each organisational type is also presented in the following sections.

7.3.1 The Impact of Logistics Managers' Competency on Employability

7.3.1.1 Discussion Based on the Results for the Total Sample

This section discusses the results of hypothesis testing regarding the relationship between competency and employability of L&SC managers working in 3PL firms. In the proposed model, this thesis hypothesised that competency has a positive effect on employability of logistics managers working in 3PL firms. The competency was defined as four competencies in this study; a related hypothesis (H1.a, H2.a, H3.a, H4.a) for each competency was proposed. Table 7-1 presents the hypotheses and results of evaluation of the relationship between competency and employability.

Table 7-1: Hypotheses and results for the relationship between competency and employability

Hypothesis	Results
H1.a: LGM competency positively affects employability of L&SC managers working in 3PL firms	Supported
H2.a: LA competency positively affects employability of L&SC managers working in 3PL firms	Not supported
H3.a: LIS competency positively affects employability of L&SC managers working in 3PL firms	Supported
H4.a: LS competency positively affects employability of L&SC managers working in 3PL firms	Not supported

As shown in Table 7-1, not all hypotheses were supported. LGM competency and LIS competency positively affected employability of L&SC managers (H1.a: $\beta = 0.633$, $t = 13.206$, $p < 0.05$; H3.a: $\beta = 0.077$, $t = 1.774$, $p < 0.1$), but LA and LS competency did not (H2.a: $\beta = 0.056$, $t = 1.104$, $p < 0.1$; H4.a: $\beta = 0.051$, $t = 1.201$, $p < 0.1$).

In recent years, a rich body of literature has appeared on talent development and competency theory in the field of L&SC. Most studies investigate the significance of certain competencies for L&SC managers (Mangan and Christopher, 2005; Murphy and Poist, 2007; Rahman and Yang, 2012; Wilson and Barbat, 2015; Shou and Wang, 2017). Others also examine the relationship between L&SC manager competency and firm-specific characteristics, including overall success of L&SCM or design (Myers et al., 2004; Mangan and Christopher, 2005; Christopher, 2012; Prajogo and Sohal, 2013), customer orientation (Richey et al., 2006; Periatt et al., 2007), financial performance and worth (Carr and Smeltzer, 2000; Myers et al., 2004; Richey et al., 2006). The concept of employability is defined in the literature by many researchers and in many different ways (McQuaid and Lindsay, 2005, De Grip, Van Loo, & Sanders, 2004; Fugate et al., 2004; van der Heijde and van der Heijen, 2006).

Although research on the theory and application of competency and employability is discussed in the literature, the current pioneering study is the first to investigate the relationship between these two concepts in the 3PL industry in a Chinese context. The findings from this study reveal that competency positively affects employability of L&SC managers; in other words, it is ‘competency’, not ‘*guanxi*’ that play an important role in managers’ career development in the Chinese 3PL industry.

Regarding the mechanism of the positive association between competency and employability, career competency development could be part of the appraisal procedure or integrated into interventions as part of organisations’ career development policies. These kinds of HR practices have been shown to increase employee commitment and performance and could also enhance employability and, ultimately, career success (Kuvaas, 2008). Redmond (2013) mentions that competency models perceived as strategically and personally relevant and fairly rewarded were positively related to supervisor-rated work effort, and organisational citizenship behaviour and self-rated ‘employability’ outcomes.

Respondents in this study were managers from Chinese 3PL firms and the majority (> 80%) had a bachelor degree or above. The results reveal that the competency theory is widely applied both in themselves and employees’ management. According to the competency theory, competency models could generate positive employee outcomes by increasing the transparency of goals and performance measures and improving the consistency of HR practices (Becker & Huselid, 1999; Campion et al., 2011). Positive relationships between career competency and both internal and external perceived employability were verified by Akkermans and Tims (2017). In practice, competency models are cited as a source of tension for employees, particularly when employees lack trust in management strategies or do not understand their individual fit within the competency framework (Hayton & McEvoy, 2006). Thus, I believe that both individuals’ participation in competency development initiatives and an organisational climate supporting competency development will be positively associated with employability perceptions (De Vos et al., 2011), and that managers from the Chinese 3PL industry manage and motivate employees via these theories.

At the end of 2016, the number of employees in China's logistics-related industry was over 10 million. This was 4.7% higher than in 2015, and 1.5 percentage points higher than urban employment. Table 7-2 outlines the number of logistics professionals in the logistics-related industry. The labour market in the Chinese logistics industry is a huge and highly competitive market in which professionals must improve their competency to match the demands of employers. Recently, researchers have begun to show that individuals with high levels of perceived employability—that is, those who perceive they have a good chance of being able to find alternative employment—are better able to cope with today's increasingly complex labour market (De Cuyper et al., 2014; Vanhercke et al., 2014), that career competency may act like a personal resource and that these are related to job resources and work engagement (Akkermans et al., 2013). Individuals who know what they want, know who they can approach to receive advice and know how to search for developmental opportunities are those who will become more employable both externally and internally (Akkermans et al., 2015). Competency development initiatives are positively associated with self-perceived employability (De Vos et al., 2011).

Table 7-2: Profile of logistics professionals in logistics-related industries

Industry	**Employees (tens of thousands）**	**Percentage**
Total	1008	20.11%
Express logistics	245	4.88%
Railway transport	217	4.32%
Road transport	295	5.89%
Handling and others	127	2.54%
Water transport	60	1.20%
warehousing	49	0.98%
Air transport	11	0.22%
Pipeline transport	4	0.08%

Source: National Bureau of Statistics of China, 2016

It is generally acknowledged that competency has a positive effect on employability (Nauta et al, 2009; De Vos et al., 2010). However, another finding of this group of hypotheses (H1.a, H2.a, H3.a, and H4.a) is that different competencies have different effects on employability in the Chinese 3PL industry. LGM and LIS competency positively influence employability, but LA and LS competency are not positively associated with employability. According to the concrete analysis conducted in Section 7.3 of skills in LGM and LIS competency (often called ‘soft skills’), managers working in 3PL firms must utilise these skills to handle daily operational problems and make strategic decisions. For instance, the role of a L&SC manager’s LGM competency has been explained in many studies（Ahn & McLean, 2008; Bourlakis & Sodhi, 2013; Derwik & Hellstrom, 2016). Clearly, this is a powerful indication of the competency that L&SC managers must have to guarantee their position and develop employability for career success (Lannu et al., 2017).

An unexpected finding from this study is that LA competency is not so vital for Chinese 3PL managers to improve their employability. ‘Demand forecasting’, ‘quantitative modelling skills’ and ‘distribution planning’ are mentioned as important skills by Murphy and Poist (1991), Razzaque and Sirat (2001) and Rahman and Yang (2012), but the Chinese logistics industry may not be sufficiently mature. The most important factors for Chinese 3PL companies are daily operation management and cost control; therefore, some managers focus more on LGM and LIS competency.

Being ‘green and sustainable’ is part of China’s national developmental strategy, but the findings in relation to hypothesis H4.a may not be surprising. As many researchers report, sustainability requires a high standard of social and economic development and is a vision of the SC or industry chain. Unfortunately, Chinese 3PL firms have not faced much challemges from their customers, so even logistics managers who understand the necessity for sustainability do not think it is necessary to their employability wither internal or external.

The conclusion from testing this group of hypotheses is that career development activities such as cultivating competency are important for workers’ employability (De Vos et al., 2009), but not all competencies are necessary at the current stage of development of the Chinese 3PL industry.

7.3.1.2 Discussion Based on the Results from Chinese Private, Multinational Corporations and State-owned 3PL Firms

This section discusses the results from testing hypotheses related to the relationship between the competency and employability of logistics managers working in different types of 3PL firms. In the proposed model, this thesis hypothesised that competency has a positive effect on employability of L&SC managers working in CP3PL, MN3PL and Chinese SO3PL firms. Table 7-3 presents the hypotheses and results from the evaluation of the relationship between competency and employability in different types of Chinese 3PL firms.

Table 7-3: Hypotheses and results for the relationship between competency and employability for each type of firm

Hypothesis	CP3PL	MN3PL	SO3PL
H1.a: LGM competency positively affects employability of L&SC managers working in 3PL firms	Supported	Supported	Supported
H2.a: LA competency positively affects employability of L&SC managers working in 3PL firms	Supported	Not supported	Not supported
H3.a: LIS competency positively affects employability of L&SC managers working in 3PL firms	Not Supported	Not supported	Supported
H4.a: LS competency positively affects employability of L&SC managers working in 3PL firms	Not supported	Supported	Not supported

The analysis shows that in the Chinese 3PL industry, competency of managers has a strong positive relationship with employability for all types of firm, but not all hypotheses were accepted for the measurement constructs of competency. For H1.a, LGM competency positively affects employability of L&SC managers working in all three types of firms. For H2.a, in CP3PL firms only, LA competency positively affects employability of L&SC managers. However, for MNC and Chinese SO3PL firms these hypothesis were rejected. Similarly, LIS competency positively affects employability of L&SC managers working in Chinese SO3PL firms but not the other two types of 3PL firm. LS competency only positively affects employability of L&SC managers working in MN3PLs.

At present, the 3PL market in China is at a stage of competing with all kinds of enterprises within and outside China. The three types of 3PL enterprises participating in 3PL market competition in China differ in their development backgrounds, development targets, management strategies and management methods (Feng, 2009).

It is not surprising that LGM competency positively affects employability of L&SC managers in Chinese 3PL firms. Facing an increasingly open market and in an increasingly fierce competition environment, logistics enterprises' core competitiveness determines their market position and development space (Guo, 2018). Yin (2017) considers logistics company managers should have a company plan and guide the completion of the plan according to their company's strategy, and should have the basic abilities of looking ahead, supervising and planning.

Regarding H2.a, unlike the other two types of enterprises, CP3PL enterprises generally have multiple problems leading to slow development and limited growth. These include lack of planning, difficult implementation of assessment, low staff quality, poor execution and unscientific management processes (Guo, 2018). Therefore, in CP3PL firms, LA competency is more important.

In regard to H3.a, all kinds of logistics IT are widely used in the field of logistics in China. SO3PL firms mostly include warehousing, transportation and other traditional logistics enterprises. The IT level of state-owned enterprises is lower than that of the other two enterprises (Feng, 2009). Therefore, Chinese SO3PL enterprises need more technical talent than the other two kinds of enterprise and managers working in SO3PL firms believe that LIS competency is important for their employability.

It is generally acknowledged that MN3PLs pay more attention to green logistics, and ‘green and sustainable’ is part of China’s national development strategy. Thus, the finding in relation to hypothesis H4.a may not be surprising. Finally, the multi-group analysis results indicate that there is significant difference among groups in the hypothesised relationship between logistics manager competency and employability.

7.3.2 The Impact of Logistics Managers’ Competency on Promotion

7.3.2.1 Discussion Based on the Results for the Total Sample

This section discusses the results of testing hypotheses related to the relationship between competency and the promotion of logistics managers working in 3PL firms. In the proposed model, this thesis hypothesised that competency has a positive effect on promotion of logistics managers working in 3PL firms. Table 7-4 presents the hypotheses and results from evaluating the relationship between competency and promotion.

Table 7-4: Hypotheses and results for the relationship between competency and promotion

Hypothesis	Results
H1.b LGM competency positively affects the promotion of L&SC managers working in 3PL firms	Supported
H2.b LA competency positively affects the promotion of L&SC managers working in 3PL firms	Supported
H3.b LIS competency positively affects the promotion of L&SC managers working in 3PL firms	Not supported
H4.b LS competency positively affects the promotion of L&SC managers working in 3PL firms	Supported

The results show that competency has a strong positive relationship with promotion of logistics managers in 3PL firms, but not all of were accepted for the measurement constructs of competency. LGM competency ($\beta = 0.455$, $t = 7.281$, $p < 0.05$), LA competency ($\beta = 0.122$, $t = 1.791$, $p < 0.1$) and LS competency ($\beta = 0.17$, $t = 3.007$, $p < 0.05$) positively influence promotion of L&SC managers (H1.b, H2.b, H4.b). However, LIS competency does not (H3.b: $\beta = –0.113$, $t = 1.888$, p

< 0.1).

The more competent a person, the more likely they are to be promoted. In the real world, competency has many components, including knowledge, skills (special skills for a special position) and personal image. If managers of 3PL firms wish to achieve higher positions, they must improve their competency.

In recent years, there a rich body of literature has appeared on promotion and competency theory. Studies have shown that competency is positively related to promotion in different respects. Some research shows that leaders in the workplace are using benchmarking, competency, competency models and competency studies to help make HR decisions related to aspects such as hiring, training and promotions (Zane et al., 2002). If properly designed, a competency approach can enhance and meet both individual and organisational needs, such as staffing and selection, education and training, and organisational development and performance (Gangani et al., 2006; Ozcelik & Ferman, 2006). Companies are encouraged to provide job descriptions, assessment models and internal communications that incorporate 21st century workplace competencies and illuminate the role these competencies play in hiring, evaluation, training and promotion (Business-Higher Education Forum, 2013). As employers scan the current workforce and anticipate future workforce needs, they frequently find that employees are not well equipped with core content knowledge and 21st century workplace competency.

From a personal point of view, some authors suggest that by enhancing their competency, employees can achieve the goal of promotion and obtain a pay rise. Stephen and Stump (2010) verified that professionals can enhance their promotion potential by developing and exhibiting competencies of interest to their supervisors (most performance competencies).

Although research on competency and promotion is widely discussed in the literature, few studies focus on the relationship between competency and promotion of L&SC managers in the 3PL industry in China. The findings from the current study show that competency positively affects promotion of L&SC managers. In other words, one's competency determines one's position and salary.

It is generally acknowledged that competency has a positive effect on promotion. However, the findings in relation to the four sub-hypothesis (H1.b, H2.b, H3.b, and H4.b) reveal that different competencies have a different effect on promotion in the Chinese 3PL industry. LGM, LA and LS competency positively affect promotion, but LIS competency is not positively associated with promotion. It is not surprising that if a L&SC manager possesses LGM, LA and LS competency, they are sure to have more opportunities for promotion (Murph and Poist 2006; Prajogo and Sohal 2013; Burch et al. 2015; Shams and Yang, 2012; Pooley and Dunn, 2014; Razzaque and Sirat, 2001; Loo et al., 2015). The unexpected finding from this study is that LIS competency is not so important for 3PL managers to receive a promotion. Although LIS competencies such as barcode/RFID systems, database management and data analytics are necessary in daily operations management and cost control in Chinese 3PL companies, they are less important for the promotion of a manager than global concept and decision-making abilities (Gangani et al,, 2006; Ozcelik & Ferman, 2006).

Unlike hypothesis H4.a, discussed in Section 7.3.1, LS competency has a significant positive effect on promotion in the Chinese 3PL industry (H4.b). This is partly because environmental-related laws and legislation are gradually being enforced by the Chinese central government, and 'sustainable development' has been defined as a national strategy. Meanwhile, many world-class 3PLs have realised that sustainable SC practices can be used to gain competitive advantage (Hu & Bidanda, 2009; Lee et al., 2010). JD.com, Inc., a famous e-business and logistics company in China, has upgraded its *Green Supply Chain Strategy* and now expects 'sustainability' in all its business, especially the L&SC department. Thus, for L&SC managers, LS competency is indispensable for career development.

7.3.2.2 Discussion Based on the Results for Chinese Private, Multinational Corporations and State-owned 3PL Firms

This section discusses the results of testing hypotheses related to the relationship between competency and promotion of logistics managers working in different types of 3PL firms. In the proposed model, this thesis hypothesised that competency has a positive effect on promotion of logistics managers working in CP3PL, MN3PL and Chinese SO3PL firms. Table 7-5 presents the hypotheses and results for evaluating the relationship between competency and promotion in different types of Chinese 3PL firms.

Table 7-5: Hypotheses and results for the relationship between competency and promotion for each firm type

Hypothesis	CP3PL	MN3PL	SO3PL
H1.b LGM competency positively affects the promotion of L&SC managers working in 3PL firms	Supported	Supported	Supported
H2.b LA competency positively affects the promotion of L&SC managers working in 3PL firms	Not supported	Not supported	Not supported
H3.b LIS competency positively affects the promotion of L&SC managers working in 3PL firms	Not supported	Not supported	Not supported
H4.b LS competency positively affects the promotion of L&SC managers working in 3PL firms	Supported	Supported	Not supported

The analysis reveals that in the Chinese 3PL industry, competency of managers has a strong positive relationship with promotion in all three types of firm, but not all hypotheses were accepted for the measurement constructs of competency. In relation to H1.b, LGM competency positively influences promotion of L&SC managers working in all three types of 3PL firms. In relation to H2.b and H3.b, LA and LIS competency do not positively affect promotion of L&SC managers working in these three types. LS competency positively affects promotion of L&SC managers working in CP3PL and MN3PL firms but does not support the hypothesis in relation to Chinese SO3PL firms.

It is known that managers in 3PL firms should utilise LGM competencies to deal with daily operational problems and make strategic decisions. Thus, an unexpected finding in this study is that LGM competency is vital for CP3PL managers to improve their promotion prospects. As many researchers show, LGM competency is necessary for L&SC managers. Although the private logistics industry in China has undergone rapid development, it must be emphasised that most such enterprises remain in the primary stage of development and are weak, small and scattered.

With global strengthening of SC logistics, the talent market needs people with LA and LIS competency (Feng, 2009). However, the current results clearly show that these two competency categories are currently not very important and helpful for L&SC managers in regard to promotion.

LS competency is indeed needed, but green logistics, as an important link in the green SC, has only recently sprouted in China. An understanding of green sustainability is important for L&SC managers. For example, the famous e-commerce company Jingdong Ltd delivered a *Green Logistics Action Plan* with the following features: environmentally friendly packaging materials, conservation of packaging materials, green environmental protection for transportation vehicles, research and development of green products and the establishment of a green logistics fund. Therefore, it is important for managers in CP3PL firms to be cognisant of LS competencies to improve their promotion prospects. Meanwhile, MN3PL enterprises operating in China appreciate the goals of the Chinese government and pay more attention to environmental sustainability.

The multi-group analysis identified significant differences between the MN3PL and Chinese SO3PL groups, and the MN3PL and CP3PL firm groups with regard to hypotheses examining promotion of career success as the dependent variable. This indicates that logistics managers working in MN3PLs have more opportunities to be promoted than those with similar competencies working in Chinese SO3PL and CP3PL firms.

7.3.3 The Impact of Logistics Managers' Competency on Salary

7.3.3.1 Discussion Based on the Results for the Total Sample

This section discusses the results of testing hypotheses related to the relationship between the competency and salary of logistics managers working in 3PL firms. In the proposed model, this thesis hypothesised that competency has a positive effect on salary of logistics managers working in 3PL firms. Table 7-6 presents the hypotheses and results for evaluating the relationship between competency and salary.

Table 7-6: Hypotheses and results for the relationship between competency and salary

Hypothesis	Results
H1.c LGM competency positively affects the salary of L&SC managers working in 3PL firms	Not supported
H2.c LA competency positively affects the salary of L&SC managers working in 3PL firms	Supported
H3.c LIS competency positively affects the salary of L&SC managers working in 3PL firms	Not supported
H4.c LS competency positively affects the salary of L&SC managers working in 3PL firms	Not supported

The analysis shows that competency has a positive relationship with salary for logistics managers, but for the measurement constructs of competency, only LA competency (H2.c) positively affects the salary of L&SC managers working in 3PL firms ($\beta = 0.538$, $t = 6.984$, $p < 0.05$). Neither the LGM (H1.c: $\beta = 0.099$, $t = 1.591$, $p < 0.1$), LIS (H3.c: $\beta = -0.356$, $t = 5.872$, $p < 0.1$) nor LS competency (H4.c: $\beta = 0.077$, $t = 1.048$, $p < 0.1$) hypotheses are supported.

I conclude that competency ultimately positively affects salary of L&SC managers working in 3PL firms. I make the following arguments to support this hypothesis. First, it is known that staff competency is an essential core competitive ability of an enterprise (Sun, 2011). Some research build salary models based on competency. Sun (2013) introduces the connotation of competency and elaborates under which situation the salary system based on competency should be employed. Based on the current salary system, Sun proposes methods of structuring the salary system based on competency that are highly applicable in different industries. For example, constructing a competency model for medical insurance practitioners is critical for the reform of the personnel and salary system, and can provide evidence that these practitioners can use to improve their competency, to be appointed, to be selected and to make plans for salary compensation and their future careers (Xu et al, 2016). Gurney (2017) examined the body posture and identified four competency measures: confidence, professionalism, approachability and likeliness of a high salary. Professionals can improve their promotion potential and salary progression by developing and exhibiting competencies of interest to their supervisors (most performance competencies), peers (gaining buy-in and commitment of others, recognising and promoting interdependence) and direct reports (providing direction that inspires action, fostering a climate of innovation and learning) (Stephen & Stump, 2010). Equity theory suggests that people with equal education and experience should earn equal salaries. The concept of 'skill-based pay' links pay to employee skills. An employee's salary typically increases after a certain skill has been acquired (Gerhart et al., 1996). Salary is an important lever to attract employees. Milkovich and Newman (2002) specify five factors to explain the pay gap. The first factor covers differences in occupational attainment, including occupational segregation and position within an organisation. The second factor includes personal work-related characteristics (e.g. education and experience) and behaviours (e.g. hours worked and performance). These are the human capital factors. The third and fourth factors are differences among industries and firms (e.g. size) and differences in union membership. The fifth factor is discrimination. Among these factors, personal competency is the only controllable one. Therefore, a person can increase their wage by improving their competency.

Previous sections mentioned that LGM, LIS and LS competency are not positively associated with salary for Chinese L&SC managers. However, LA competency positively affects salary. Of most surprise is that LGM competency is not vital for salary. Perhaps LGM competencies, often called 'soft skills', are not easy to measure. An expected finding from the study is that LIS competency is less vital for Chinese 3PL managers to improve their salary. Because logistics professionals may focus on managing traditional logistics functions such as LIS, transportation and warehousing, their contemporaries no longer operate in isolation from the organisation's value chain and instead must constantly interact with other functional areas within their organisation, such as marketing and production, as well as integrate with those of their suppliers and customers. One issue that arises is what knowledge and competencies are necessary for logistics professionals to be able to meet the broader challenges of their role in a globalised market. Logistics professionals must be multi-talented across a range of management competencies as well as having a depth of logistics knowledge and abilities, which means they must have both generalist and specialist knowledge and competencies (Gammelgaard and Larson, 2001; Razzaque and Sirat, 2001; Murphy and Poist, 2006). Thus, LIS is not so important for increasing wages for logistics managers in Chinese 3PL firms. The finding in relation to hypothesis H4.c is not surprising. However, it is also interesting to note the increasing concern of logistics professionals regarding their ability to understand and mitigate climate change impacts on logistics operations, which in turn can be interpreted as logistics-related skills and knowledge, such as the capability to design, operate and manage environmentally friendly logistics operations processes ('green logistics') (Vinh V. Thai, Stephen and Hai T. Tran, 2011). However, in China, green logistics is in the early stages, so it does not have a close relationship with wages. In the end, I believe that green logistics will expand in China. LA competency is definitely important for Chinese 3PL managers to increase their salaries. Demand forecasting, quantitative modelling skills and distribution planning are essential competencies for logistic managers (Murphy and Poist, 1991). Therefore, having strong LA competency leads to high salary.

7.3.3.2 Discussion Based on the Results from Chinese Private, Multinational Corporations and State-owned 3PL Firms

This section discusses the results of testing hypotheses related to the relationship between the competency and salary of logistics managers working in different types of 3PL firms. In the proposed model, this thesis hypothesised that competency has a positive effect on salary of logistics managers working in CP3PL, MNC and Chinese SO3PL firms. Table 7-7 presents the hypotheses and results for evaluating the relationship between competency and salary in different types of Chinese 3PL firms.

Table 7-7: Hypotheses and results for the relationship between competency and salary for each firm type

Hypothesis	CP3PL	MN3PL	SO3PL
H1.c LGM competency positively affects the salary of L&SC managers working in 3PL firms	Not supported	Supported	Supported
H2.c LA competency positively affects the salary of L&SC managers working in 3PL firms	Supported	Supported	Supported
H3.c LIS competency positively affects the salary of L&SC managers working in 3PL firms	Not supported	Not supported	Not supported
H4.c LS competency positively affects the salary of L&SC managers working in 3PL firms	Not supported	Not supported	Not supported

The analysis reveals that in the Chinese 3PL industry, the competency of managers has a strong positive relationship with salary for all firm types, but for the measurement constructs of competency, not all hypotheses are supported. For H1.c, LGM competency positively affects salary of L&SC managers working in Chinese SO3PL and MN3PL firms, but not in CP3PL firms. For H2.c, LA competency positively affects salary of L&SC managers working in all three types. However, the hypotheses for LIS competency and salary (H3.c), and LS competency and salary (H4.c) are rejected.

Considering H1.c, LGM competency positively affects the salary of L&SC managers working in Chinese SO3PL and MN3PL firms. Salary not only has an incentive function, but also plays a role in healthcare. On one hand, salaries can affect the marketing performance of enterprises and can guide marketing and logistics professionals to work according to the overall and long-term performance requirements of the enterprise. On the other hand, a certain level of salary can maintain a basic level of effort by marketing logistics professionals (xu, 2007). Although LGM competency is essential for logistics managers, it does not significantly influence the salary in CP3PL firms.

H3.c is not supported by any type of 3PL firm. MN3PLs have the highest wages, followed by CP3PL and SO3PL companies, which have relatively low wages (Feng, 2009). Because the logistics industry is a strongly asset- and labour-intensive industry, it creates no real products and belongs to the service industry. Thus, among all industries, logistics is not a high-profit, high value-adding industry. This may be why logistics managers do not think it is necessary to master LIS competency to increase their salary.

However, in regard to H4.c, as mentioned in previous sections, managers with LS competency will have more opportunities in their career development in the future, but not now. 3PL firms, even MN3PL firms operating in China, do not want to pay more salary to their employees. The multi-group analysis results indicate no significant differences among groups in most hypothesised relationships between logistics manager competency and salary. An exception is seen between the MNC and SO3PL groups for hypotheses examining the relationship between LA skills and salary. MN3PLs are known to acknowledge employees with analytical skills and reward them with a high salary.

7.3.4 The Impact of Logistics Managers' Competency on Marketability

7.3.4.1 Discussion Based on the Results for the Total Sample

This section discusses the results of testing hypotheses related to the relationship between competency and marketability of logistics managers working in 3PL firms. In the proposed model, this thesis hypothesised that competency has a positive effect on marketability of logistics managers working in 3PL firms. Table 7-8 presents the hypotheses and results evaluating the relationship between competency and marketability.

Table 7-8: Hypotheses and results for the relationship between competency on marketability

Hypothesis	Result
H1.d LGM competency positively affects the marketability of L&SC managers working in 3PL firms	Supported
H2.d LA competency positively affects the marketability of L&SC managers working in 3PL firms	Supported
H3.d LIS competency positively affects the marketability of L&SC managers working in 3PL firms	Supported
H4.d LS competency positively affects the marketability of L&SC managers working in 3PL firms	Not supported

In the proposed model, this thesis hypothesised that competency has a positive effect on marketability of logistics managers working in 3PL firms. The analysis reveals that in 3PL firms, competency has a strong positive relationship with marketability of logistics managers. However, for the measurement constructs of competency, not all hypotheses were accepted. LGM ($\beta = 0.49$, $t = 9.203$, $p < 0.05$), LA ($\beta = 0.241$, $t = 4.224$, $p < 0.05$) and LIS competency ($\beta = 0.076$, $t = 1.791$, $p < 0.1$) positively affect marketability of L&SC managers (H1.d, H2.d, H3.d) but this is not true for LS competency (H4.d: $\beta = –0.121$, $t = 2.517$, $p < 0.1$).

Marketability is defined as the belief that one is valuable to their current or other employers (Eby et al., 2003). In the talent market, it is not the most powerful person that survives, but the most suitable.

So, what is marketability and how can it enhance market competitiveness? The ‘iceberg model’ is a basic model in the field of talent management that describes all the intrinsic value elements of a person. Most large companies use this model for talent screening and training. According to the model, a person’s market competitiveness depends on three factors. The first element is knowledge and competency. A person's knowledge and competency can be acquired and are dominant. The second element is general ability; for example, learning and thinking ability, and interpersonal competency. In terms of knowledge and competency, the training cycle is longer. The third element is 'genius', which includes values, personality traits and motivation. The more downhill an element, the harder it is to change but the greater its impact on people and thus the more important it is for improving L&SC managers' marketability.

Employees understand how to increase their personal marketability through developing specific competencies, knowledge and attitudes. Managers and coaches find the tools and resources to make employees more valuable to the organisation. Even policymakers and human resource professionals can drive change and business improvement through the application of competency modelling processes (Edward et al, 2002). Managers are particularly concerned with selecting programs that provide job connections, an increase in their marketability and the opportunity to develop diagnostic expertise (Lagwinski & Hunt, 2009). Therefore, the current research is a pioneering and meaningful study investigating the relationship between these two concepts in the 3PL industry in the Chinese context.

In recent years, with the strong impetus of the market economy, China's modern logistics industry has made considerable progress, and logistics enterprises have also grown rapidly. This situation makes logistics professionals more attractive and the prospect of supply exceeds supply in the market. However, their survival in the industry is not ensured. As a result, over the past 10 years, logistics professional education has grown. Only managers with competency that satisfies the market will retain their jobs.

Logistics practitioners often do not have suitable knowledge about career development and are always eager to transform their theoretical knowledge into production motivation. However, the logistics industry is different from other industries; it requires employees to have not only a solid theoretical foundation, but also to have strong experience in practical operation and management (Zhang, 2011). However, for logistics enterprises to cope with the fierce competition in the industry, the demand for logistics talent is generally high in the real world. Logistics enterprises hope to recruit talented employees who can enhance their overall operation efficiency and reduce their logistics costs; yet talented people with complex, high-end logistics skills are scarce in China. Many employees have problems such as a low level of professionalism, lack of practical experience or poor coordination ability, which are difficult to fully integrate with enterprises. Generally speaking, there is still a strong need for logistics management talent in China. An excellent logistics manager provides great value for an enterprise. Ultimately, all competencies are necessary in the Chinese 3PL industry to improve one's marketability, with the exception currently of the LS skills category.

7.3.4.2 Discussion Based on the Results from Chinese Private, Multinational Corporations and State-owned 3PL Firms

This section discusses the results of testing the hypotheses related to the relationship between competency and marketability of logistics managers working in different types of 3PL firms. In the proposed model, this thesis hypothesised that competency has a positive effect on marketability of logistics managers working in the three types of firm. Table 7-9 presents the hypotheses and results for evaluating the relationship between competency and marketability in different types of Chinese 3PL firms.

Table 7-9: Hypotheses and results for the relationship between competency and marketability per firm type

Hypothesis	CP3PL	MN3PL	SO3PL
H1.d LGM competency positively affects the marketability of L&SC managers working in 3PL firms	Supported	Supported	Supported
H2.d LA competency positively affects the marketability of L&SC managers working in 3PL firms	Supported	Supported	Not supported

H3.d LIS competency positively affects the marketability of L&SC managers working in 3PL firms	Not supported	Not supported	Supported
H4.d LS competency positively affects the marketability of L&SC managers working in 3PL firms	Not supported	Not supported	Not supported

The analysis shows that in the Chinese 3PL industry, the competency of managers has a strong positive relationship with marketability for all firm types, but not all hypotheses were accepted for the measurement constructs of competency. In relation to H1.d, LGM competency positively influences the salary of L&SC managers in all three types. For H2.d, LA competency does not positively affect salary of L&SC managers working in Chinese SO3PL firms, but there is support for an effect in the other two types. LIS competency positively influences the salary of L&SC managers working in Chinese SO3PL firms, but the hypothesis for CP3PL firms and MN3PLs is rejected. For H4.d, LS competency does not positively affect the marketability of L&SC managers working in any type of firm.

It was expected that LGM competency is vital for Chinese 3PL managers to improve their marketability in all three firm types. With the continuous enrichment of business and the expansion of business contents, the demand for compound management talent is increasing. The labour market needs people with complex talents who know both logistics and management to promote the development of employees (Guo, 2018).

For H2.d, in the traditional business of freight forwarding, port and warehouse management, a large number of senior talented staff are concentrated. They are proficient in both logistics and logistics technology, and have a clear grasp of trends in logistics enterprises. However, with the increasing international business, there is a lack of staff with advanced talents who are proficient in international business, trade, international marketing and logistics planning. According to the survey in this study, the total number of people with such talents accounts for only 6% of high-end employees. This is not only a defect in talent resources in logistics enterprises, but is also an important problem for the rapid development of enterprises (Yin, 2017). Thus, mastering LA competency is vital for managers to improve their marketability. This phenomenon does not apply to Chinese SO3PL firms. It is surprising that LIS does not positively affect the marketability of L&SC managers working in CP3PL and MN3PL firms. Private logistics enterprises respond quickly and are adaptable to the market. However, most Chinese SO3PL enterprises are engaged in traditional industries and have a low level of utilisation of LIS. Therefore, in these firms, managers can enhance their marketability by mastering LIS competencies. The multi-group analysis indicates that the hypothesised relationship between LA skills and marketability is different for MN3PLs than for Chinese SO3PL and CP3PL firms. It is known that employees in MN3PLs are successful in using their LA skills for their marketability needs.

7.4 The Impact of Career Success on Career Satisfaction

The third research question in this study was designed to examine the effect of L&SC managers' career success on CS in the Chinese 3PL industry. Career success includes indicators of employability, promotion, salary and marketability, which were assessed via SEM by evaluating the four path relationships (hypotheses) between employability and CS (H5), promotion and CS (H6), salary and CS (H7), and marketability and CS (H8).

The findings in relation to hypotheses H5–H8 are presented separately in the following sections, for the Total Sample first. A comparison of the findings for the three separate samples of CP3PL, MN3PL and Chinese SO3PL firms is presented in Section 7.4.5.

7.4.1 The Impact of Employability on Career Satisfaction for the Total Sample

This section discusses the hypotheses related to employability and CS of L&SC managers working in 3PL firms. In the proposed model, the hypothesis is posited that employability has a positive effect on the CS of L&SC managers working in 3PL firms. Therefore, the fifth hypothesis was:

H5: Employability is positively associated with the CS of L&SC managers working in 3PL firms.

The analysis reveals that in 3PL firms, employability has a strong positive relationship with CS of L&SC managers ($\beta = 0.317$, $t = 7.683$, $p < 0.05$), which provides support for H5.

Scholars have many perspectives and understandings of employability. Some focus on the situation of the labour market and the responsibility of the government and the company. Some pay attention to potential and professional competencies of the labour market; others focus on the possibility of employment in the organisation; and others on guiding the formation and development of the professional ability of the individual. The concept of employability can be categorised according to three perspectives: the economic–social, the individual and the organisation (Van Dam et al., 2006). In the contemporary research's view, employability is 'the ability to get initial employment, to maintain employment and to get new employment if necessary'. The essence of this is that 'a person can have the ability to get a job, to have a job and to do a good job after the process of learning', which is the ability of a person to obtain and sustain work. According to Forrier and Sels (2003), employability has become a focus since the 1990s, but the historical antecedents to the current debate have prevailed for almost a century (Gazier, 1998; McQuaid & Lindsay, 2005). Competition in employability has become a core element of competition in the labour market, which attracts wide attention from academics, policymakers and human resource experts. The role and importance of employability for organisations and individuals have been demonstrated in detail (Nauta et al., 2009; Fugate, Kinicki, & Ashforth, 2004; Van der Heijde & Van der Heijden, 2006).

Bandura (1997) and Van der Velde and Van den Berg (2003) suggest that employability is largely dependent on self-efficacy, which has been shown to be positively related to job search behaviour and positive employment outcomes (Kanfer, Wanberg & Kantrowitz 2001). There are also many definitions of employability from the individual perspective, particularly emphasising career aspects (Forrier & Sels, 2003; McArdle et al., 2007; McQuaid & Lindsay, 2005; Rothwell & Arnold, 2007). Gilmer and Deci (1977) conclude that workers' attitudes towards their jobs reflect the extent to which they are satisfied with their jobs and their work lives. There is a significant positive relationship between individuals' employability attributes and satisfaction, and retention factors, with proactivity and career self-management being the best predictors of retention factor satisfaction (Oosthuizen, 2016; Stoltz, 2014).

However, an individual's successful employment not only depends on their personal ability and employment intentions, but is also affected by social factors. For example, an airline pilot with a large amount of flight knowledge and competencies has a high level of personal working ability and willingness to work, because of their academic qualifications. From the individual perspective, the pilot is highly employable. However, for economic reasons, large airlines may go bankrupt and the demand for pilots sharply reduced. Most employable pilots are then in danger of losing their jobs. Therefore, employment is not a static concept, but is also influenced by individual and market changes.

These two economic–social and individual perspectives contribute to the rationale for hypothesis (H5). Based on a national survey in China, the *Living Standards Quality in the Job*, conducted by the Ministry of Work and Social Affairs in 2001, Llorente and Touya (2006) found that increasing employability has a positive effect on the job satisfaction of temporary workers. Employability was found to positively influence perceived career success, measured in terms of CS and marketability (Pool & Qualter, 2013; Vos & Hauw, 2010). Gowan (2012) considers that employability predicates wellbeing and job satisfaction at a psychological level. The interaction between employability and personal initiatives increases the predictibity of these two variables on intrinsic and extrinsic job satisfaction (Gamboa et al. 2009). Coetzee and Beukes (2010) found that employability is a key contributor to CS in an increasingly globally unstable and chaotic business environment.

Although the theory and application of CS and employability are widely discussed in the literature, the current study is the first to investigate the relationship between these two concepts in the 3PL industry in China. The findings from the research model show that employability positively affects CS of L&SC managers. In other words, personal employability plays an important role in managers' CS in the Chinese 3PL industry. In this context, the multi-group analysis indicates differences in opinions between the MN3PL and SO3PL firm groups, and the MN3PL and CP3PL firm groups. In particular, employees from CP3PL and SO3PL firms who are successful in personal employability are more satisfied than employees in MN3PLs.

7.4.2 The Impact of Promotion on Career Satisfaction for the Total Sample

This section discusses the relationship between promotion and CS for logistics managers working in 3PL firms. In the proposed model, it was hypothesised that promotion has a positive effect on CS of L&SC managers working in 3PL firms. Therefore, the sixth hypothesis proposed was:

H6: Promotion is positively associated with the CS of L&SC managers working in 3PL firms.

The analysis reveals that in 3PL firms, promotion has a strong positive relationship with CS of L&SC managers ($\beta = 0.18$, $t = 4.167$, $p < 0.05$), providing support for H6.

Job satisfaction was first derived from the Hawthorne experimental research report, which explains that 'the emotion of work affects its work behaviour, and the social and psychological factors of workers are the main factors that determine job satisfaction and productivity'. The concept of job satisfaction was formally proposed for the first time by Hoppock (1935) in his doctoral thesis, where he describes it as a subjective response of employees to their work situation. Job satisfaction is a collection of positive feelings or the emotional state that a person perceives based on a variety of features of the work itself and the work environment (Locke, 1976; Spector, 1997; Robbins, 2005). Luthans (1998) discusses job satisfaction from a three-dimensional perspective, regarding job satisfaction as a tangible entity and employee expectation, and declaring that several job characteristics including pay, promotion and work itself are attitudes that can be related to job satisfaction.

Promotion is a pursuit for every job seeker. When one is not promoted, one has no growth and no core competitiveness. Only when a person is promoted to a higher position will they have the opportunity to get in touch with their overall situation and exercise more systematic ability. Successful promotion is the best way for a person to build core competitiveness because it means that they can obtain more resources and cannot be easily replaced.

The literature is replete with studies on promotion and CS. Locke (1976) considers that promotion related to opportunity for advancement, growth and fair process is strongly associated with job satisfaction. Satisfaction on the job may be affected by promotion opportunities, which influence employee retention in an organisation. The key to becoming the best employer is to attach importance to employee retention, incentive, responsibility, reward, recognition, institutional flexibility, employees work–life balance and participation by employees. If an employee is not motivated by these factors, a tendency to quit their job is observed (Bolarin, 1993). Souza (2002) found that the number of previous promotions an employing organisation gives to employees has a significant positive relationship with employee satisfaction with promotion magnitude, opportunity, policies and practices. Alam (2015) found that job satisfaction related to an employee's personal evaluation of their job is considerable. In research conducted in Pakistan, job satisfaction was found to be positively and significantly associated with job-related factors such as pay, promotion, relationships among employees, relationships with supervisors, work stress and job security (Rukh et al. 2015). According to Shields and Ward (2001), employees who are dissatisfied with opportunities available for promotion show a greater intention to leave the organisation.

Promotion is an important incentive measure for enterprises. It has two functions: one is to attract outstanding talent and the other is to motivate work enthusiasm among existing employees. In an era of increasingly competitive talent, the goal of an enterprise is not only to become the best employer, but also to make this clear to job seekers. Naveed (2011) found a moderate and positive relationship between promotion and job satisfaction, which suggests that elements such as length of service, ability and competencies that are determinants of promotion have a moderate effect on enhancing the job satisfaction level of employees. Employees perceive management as supportive of them climbing their professional ladder. It is important for an enterprise to promote excellent employees from the inside for the enterprise development. When employees perceive that there is a strong chance of promotion, they feel satisfied regarding their place in the organisation (De Souza, 2002). In-group promotion increases employees' satisfaction from working with their leaders (Pierro et al. 2009). Pergamit and Veum (1989) established that a higher chance of promotion leads to job satisfaction for employees.

Although there is a vast literature about promotion and CS, few studies have been undertaken in China, especially those on promotion and job satisfaction in the 3PL logistic industry. Therefore, the current study is of great value.

7.4.3 The Impact of Salary on Career Satisfaction for the Total Sample

This section discusses the relationship between salary and CS of L&SC managers working in 3PL firms. In the proposed model, this thesis hypothesised that salary has a positive effect on CS of L&SC managers working in 3PL firms. Therefore, the seventh hypothesis proposed was:

H7: Salary is positively associated with the CS of L&SC managers working in 3PL firms.

The analysis reveals that in 3PL firms, salary has a strong positive relationship with CS of logistics managers ($\beta = 0.461$, $t = 10.663$, $p < 0.05$), providing support for H7.

Regardless of their career aspirations, employees still have demands and expectations regarding their salary. A reasonable remuneration system will directly affect the development of an enterprise. Employees will not only pay attention to the fairness of internal remuneration but will also compare their pay with that of others in the same industry. If employees' satisfaction regarding their salary is very low, they will 'job hop', leading to the loss of talent and seriously affecting the competitiveness and economic benefits for enterprises. Pay has been considered an important reward to motivate the behaviour of employees (Taylor and Vest, 1992; Pouliakas, K, 2010). In addition, if the salary paid by an enterprise is lower than the average for the talent market, this will not only reduce the competitiveness of the enterprise but will increase its risk of losing talent. It will also affect the normal operation of the enterprise and have a negative effect on its development. Other behavioural factors are important for enhancing job satisfaction of employees but satisfaction related to pay is the most important, and dissatisfaction with pay may lead to decreased job satisfaction, motivation and performance (Sharma and Bajpai, 2011).

Sant'Anna et al. (2012), Alam (2015) and Noor (2010) found that salary has a significant positive association with job satisfaction and wellbeing. Alam (2015) considers that satisfaction with the job may be motivated by satisfaction with pay, which influences employee retention in organisations. The higher the salary satisfaction of employees, the more obvious the incentive function for employees. Employees will work harder and be paid more. This creates a 'virtuous circle' and may enable enterprises to retain more excellent employees. Conversely, if pay satisfaction is low, there will be a vicious circle, which will result in brain drain. The work attitude of employees directly influences the effectiveness of production and operation, and employees' salary satisfaction directly affects their work attitude. The salary incentive ensures a basic life support for employees while fully motivating and giving free rein to the ability of employees to improve the economic efficiency and market competitiveness of enterprises. Ronra and Chaisawat (2009) found that one of the factors most strongly affecting employee turnover is salary. High turnover and absenteeism are reported to be related to job dissatisfaction, while low absenteeism is associated with high job satisfaction (Saifuddin et al., 2008). According to Clark and Oswald (1996), the impact of a wage rise as a result of promotion is more significant than the effect of a fixed income on job satisfaction. Peiró et al. (2010) recognise that individuals with a higher salary, permanent employment contract and greater work experience contribute to higher job satisfaction. There are also statistics identifying an inverted U-shaped relationship between salary level and job satisfaction. Individuals who receive low and high salaries have lower job satisfaction than individuals who receive a salary in the moderate range. This study provides evidence that the amount of salary is a catalytic variable and is not a core predictor of the job satisfaction of employees, especially for individuals who receive higher salaries (Al-Zoubi, 2012). All of the above studies support this study's hypothesis that salary is positively associated with CS of logistics managers working in 3PL firms.

China's logistics industry is currently at the initial stage of 'upgrading of logistics hardware' and is in a 'logistics cost management era'. As the arterial system of the national economy, the logistics industry connects all sectors of the economy to produce an organic whole, and its degree of development is an important symbol by which to measure the degree of modernisation and the comprehensive national strength of a country. The demand for talent in this industry is becoming more and more diversified. According to a recent report (CLM, May 2017) on the salary level of logistics personnel published on a large data platform in the logistics industry, the average salary of logistics people in China has increased to varying degrees. There is a large gap in salaries between different levels of logistic workers. Given the trend of increasingly fierce cost control and talent competition, logistics enterprises need to attract talent by offering competitive remuneration. Therefore, it is meaningful for the development of personnel across the whole logistics industry to study the relationship between salary and job satisfaction of logistics managers. From the multi-group analysis, it is evident that there are differences between MN3PLs and private firms and

MN3PLs and state-owned enterprises. It is apparent that employees who receive higher salary in MN3PLs feel rewarded, which affects their satisfaction.

7.4.4 The Impact of Marketability on Career Satisfaction for the Total Sample

This section discusses the relationship between marketability and CS of logistics managers working in 3PL firms. In the proposed model, this thesis hypothesised that marketability has a positive effect on CS of L&SC managers working in 3PL firms. Therefore, the eighth hypothesis proposed was:

H8: Marketability is positively associated with the CS of L&SC managers working in 3PL firms.

However, the results reveal that in 3PL firms, marketability does not have a positive relationship with CS of logistics managers ($\beta = 0.047$, $t = 0.841$, $p < 0.05$), providing no support for H8.

Professional attainment is reflected in promotion, status and salary level, which are common indicators of objective career success. Studies have been published on marketability and career success, but not CS. For example, perceived marketability is defined as the belief that one is valuable to their current or other employers (Eby et al., 2005; Haines et al., 2014). Haines et al. (2014) found that perceived external marketability is positively associated with subjective career success. In a current career context characterised by instability and uncertainty, the extent to which individuals believe they are seen as marketable by their current or future employers is a relevant indicator of subjective career success (Bird, 1994; De Vos & Soens, 2008; Eby et al., 2003). However, research has shown that has increased marketability due to training may result in greater satisfaction with one’s career (Wayne,1999). Therefore, there is insufficient evidence to support H8.

7.4.5 Discussion of Findings for Chinese Private, Multinational Corporations and State-owned Firms

In this study, in addition to the Total Sample, the CP3PL, MN3PL and Chinese SO3PL firm samples were considered and analysed separately. A discussion and comparison of results of each organisational type are presented in this section. The section discusses the results of analyses on the relationships between employability, promotion, salary, marketability and CS of logistics managers working in different types of 3PL firms. In the proposed model, this thesis hypothesised that employability, promotion, salary and marketability have a positive effect on the CS of logistics managers working in CP3PL, MN3PL and Chinese SO3PL firms (H5, H6, H7 and H8, respectively). H8, that marketability is positively associated with CS of L&SC managers working in 3PL firms is not supported. Table 7-10 presents the hypotheses and results from evaluating relationships in different types of Chinese 3PL firms.

Table 7 10: Hypotheses and results for each firm type

Hypothesis	CP3PL	MN3PL	SO3PL
H5 Employability is positively associated with CS of L&SC managers working in 3PL firms	Supported	Supported	Supported
H6 Salary is positively associated with CS of L&SC managers working in 3PL firms	Supported	Supported	Supported
H7 Promotion is positively associated with CS of L&SC managers working in 3PL firms	Supported	Supported	Supported
H8 Marketability is positively associated with CS of L&SC managers working in 3PL firms	Not supported	Not supported	Not supported

The development trend in China's logistics industry indicates that in the future Chinese market, logistics firms will be the core of economic development for all enterprises. Although China's logistics industry is in its initial stage, its enterprises have developed rapidly with the benefit of transportation and market advantages. At present, the Chinese logistics industry competition pattern forms a situation of tripartite confrontation. This pattern plays a role in promoting the development of the modern logistics industry. The first type of firm is the SO3PL logistics enterprises of mainland China. With the rapid development of society, the concept of development of state-owned enterprises is constantly changing to meet the needs of customers and a rapidly developing market. The second type is private enterprises. Private enterprises are becoming increasingly strong in the Chinese market, which boosts logistics enterprise activity. The third type is multinational enterprises. With China's accession to the WTO, many MNCs have entered China's market, providing favourable conditions for China's logistics companies to globalise. Logistics talent is difficult to cultivate in the short term. Therefore, all types of enterprise require a large number of logistics professionals.

7.4.5.1 The Impact of Employability on Career Satisfaction in Chinese Private, Multinational Corporations and State-owned Firms

The analysis reveals that in the Chinese 3PL industry, employability of managers has a strong positive relationship with CS for CP3PL, MNC and Chinese SO3PL firms (H5). In simple terms, employability is about being capable of getting and retaining a fulfilling job. More comprehensively, employability is the capability to move self-sufficiently within the labour market to realise potential through sustainable employment (Hillage and Pollard 1998). First, the rapid development of private enterprises has increased their demand for talent. In private 3PL enterprises, talented staff have higher self-value than employees in industries. When working stably, they pay more attention to their own development and future; that is, the realisation of career planning. Employability can improve their satisfaction with their careers (Li, 2013), which helps firms prevent the loss of talented logistics staff. Employability involves a set of competencies, knowledge, understanding and personal attributes that make a person more likely to choose and secure a job in which they can be satisfied and successful. For state-owned enterprises and MN3PLs, improvement in the employment ability of logistics personnel can also enhance job satisfaction. With the development of the logistics industry in recent years, the talent in the domestic market is on the rise. In particular, the demand for logistic managers is increasing year by year. Employability is generally related to the quality of employment. For logistics personnel, the indicators for evaluating the quality of employment mainly include wages, benefits, work environment, workplace and the match between work and personal interests. Logistics managers with high employability have more opportunity to obtain the right job, higher wages and improved welfare. They can choose to work in a big city that is suitable for their individual development and is economically developed and choose work that is in accordance with their own interests. Therefore, H5 is clearly established: logistics managers with higher employability have more professional satisfaction and happiness.

7.4.5.2 The Impact of Promotion on Career Satisfaction in Chinese Private, Multinational Corporations and State-owned Firms

In any enterprise, the promotion system is related to future directions and space for managers' career development. This is an important way for enterprises to grow their employees' abilities. If the promotion system in an enterprise is not clear, managers have a sense of hopelessness and no goal. The analysis here reveals that in the Chinese 3PL industry, promotion of managers has a strong positive relationship with their CS in all firm types (H6). In the 21st century, employees' career expectations have begun to diversify. A stable, well-paid career is more strongly valued by people, and factors such as salary, promotion, personal reputation and accomplishment are also key points for people to choose their careers. Xie and Wang (2012) conclude on the basis of their empirical research that promotion has an important effect on job satisfaction, both in state-owned enterprises and private enterprises in China. Similarly, in MN3PLs, the promotion of logistics personnel brings about occupational happiness. Senior managers in logistics play a key role in logistics enterprises. They influence the development of logistics enterprises and attract higher resources, including human and material resources. Turnover of middle and top managers has differential effects on enterprises. Therefore, fair and appropriate promotion opportunities are needed to retain senior managers. Fairness in promotion requires enterprises to determine ways to improve employees' performance according to their performance and ability, rather than relying on factors such as relationships effects on employee development (Zhou, 2015). Therefore, I conclude that regardless of the kind of enterprise, promotion is positively associated with CS practices of L&SC managers working in 3PL firms.

7.4.5.3 The Impact of Salary on Career Satisfaction in Chinese Private, Multinational Corporations and State-owned Firms

Salary is the most directly relevant interest of managers themselves as well as enterprises. The general salary includes a basic salary, annual bonuses and a performance reward level; in addition, some senior managers have executive stock options and other long-term incentives as compensation. The meaning of salary is first a return and affirmation for the work of employees, as well as a degree of value that employees use as a reference. Whether a company has a reasonable and fair salary system is an important factor that affects the psychological loyalty of its employees. Zhou (2015) found that the impact of salary rationality on managers is greater than that of competition. The analysis in the current study reveals that in the Chinese 3PL industry, manager salaries have a strong positive relationship with CS in all firm types (H7). Managers' work efforts are clearly reflected in performance-based pay. Generally speaking, the most important factors affecting employee satisfaction are education level, salary and personal welfare (Xie, 2012). Salary management is an important means for enterprises to carry out HRM based on the basic wage and a performance-linked pay strategy. The management layer has a higher level of demand. Salary management can improve the loyalty of employees to the enterprise and ensure they complete their work to a higher standard and improve the innovation ability of the enterprise. Lack of external competitiveness in the management of remuneration makes it difficult for enterprises to introduce and retain outstanding talent. Companies willing to pay high salaries can attract staff with excellent talent and form a cluster of talented people. Thus, regardless of the type of enterprise, salary increases can retain talented personnel and enhance their job satisfaction.

7.4.5.4 The Impact of Marketability on Career Satisfaction in Chinese Private, Multinational Corporations and State-owned Firms

What is a person's market competitiveness and how can they improve the competitiveness of the market? Marketability is defined as the belief that one is valuable to their current or other employers (Eby et al., 2003). In today's society, striving to improve personal marketability in China is a priority for everyone. The analysis here reveals that in the Chinese 3PL industry, marketability of managers has no obvious relationship with CS in an type of firm (H8). As described in Section 7.4.4, there is insufficient evidence to prove that marketability is positively associated with CS practices of L&SC managers in Chinese 3PL firms. Therefore, I assume that although marketability is valuable individually, it is less important than other elements in its effect on CS.

Three hypotheses have supported the significant differences among firm types in the relationship between career success and CS (see Table 6-51). The first is the impact of employability on CS; the multi-group analysis reveals that employability provides more CS for Chinese SO3PL managers than for MN3PL managers. The last two interesting findings relate to the impact of salary on CS: managers who work in MN3PL firms care more about their salaries, although they are paid more than managers in Chinese SO3PL and CP3PL firms.

7.5 Summary

The main objective of this study was to examine the relationship between logistics competency and career success, and the relationship between career success and CS in the Chinese 3PL industry. In addition, it aimed to discover the impact of four constructs of L&SC professional competency (LGM, LA, LIS and LS competency) on four constructs of career success (marketability, salary, employability and promotion). All these relationships were verified simultaneously in four sample groups: the Total Sample with 708 respondents, CP3PL firms with 331 respondents, MN3PLs with 177 respondents and Chinese SO3PL firms with 200 respondents. The data analysis process using SEM confirms the widely held belief that L&SC professionals' competency affects their career success and CS in the Chinese 3PL industry.

The next chapter presents the final conclusions stemming from the hypothesis testing, research framework and research questions. It also identifies implications for both practice and theory; discusses the limitations of the study; suggests directions for future research; and presents final conclusions.

CHAPTER 8: IMPLICATIONS, CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH

8.1 Introduction

This study focused on L&SC managers' job-related competencies in 3PLs operating in China. It attempted to identify critical competencies and examine their effects on career success, as well as the effects of career success on CS. The objectives of this chapter are to summarise the conclusions and contributions from the research findings, and to highlight potentially important implications for theory and practice to improve the effectiveness of L&SC talent development in China. Further, the chapter discusses recommendations for researchers, educators, policymakers and practitioners interested in the development of L&SC competency in the future.

The chapter begins with Section 8.1 introducing the objectives of the chapter, followed by conclusions and contributions based on the conceptual framework, methodology, measurement and research questions in Section 8.2. Theoretical and management implications of the research findings are explained in Section 8.3. Section 8.4 identifies limitations of this research, and directions for future research are suggested in Section 8.5. This chapter concludes with an overall summary in Section 8.6.

8.2 Conclusions and Contributions from Research Findings

This section discusses the conclusions and contributions of the findings via three major perspectives: research framework, empirical methodology and measurement, and the research questions.

8.2.1 Conclusions and Contributions Based on the Research Framework

This study encapsulates theoretical reasoning based on two theories—competency and social capital—in a new research setting. The central research questions underpinning this study were: What are the important competencies for L&SC managers working in 3PLs in China? How do these important competencies (or skill categories) impact career success and CS? To address these research questions and meet the research objectives, a comprehensive review of potential theories and the theoretical literature was conducted, and relevant directions towards identifying the predictors of career success from the perspective of competency were consolidated in Chapter 3.

The basic objective of this research was to develop a research framework highlighting some important and potential competencies for L&SC managers, and their effect on these managers' career success. Figure 8-1 shows the final research framework underlying the research model.

The first analysis section of this study attempted to empirically investigate the relationships between four major exogenous variables—LGM, LA, LIS and LS competency—and four endogenous variables, being employability, promotion, salary and marketability. Sixteen hypotheses were developed to examine the relationships between each identified competency category and career success (employability, promotion, salary and marketability) in the research model presented in Figure 8-1.

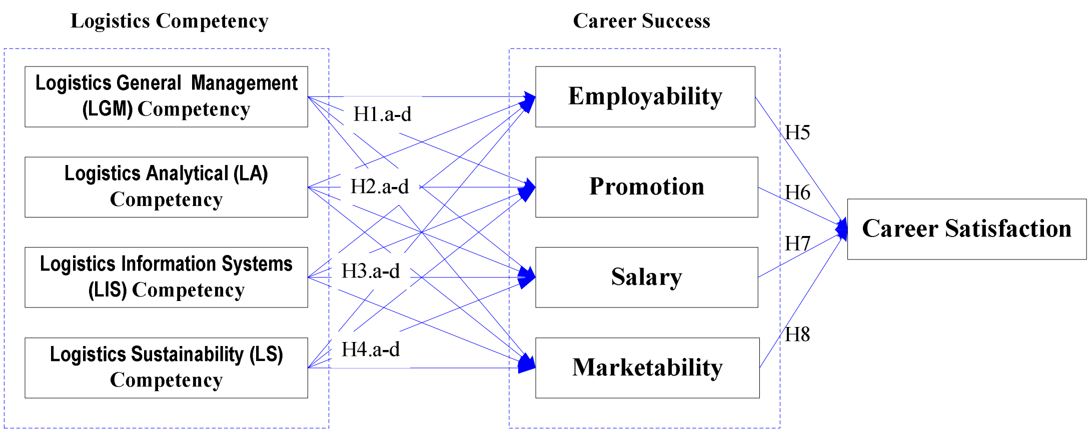


Figure 8-1: Framework underlying the research model

Given the importance of the relationship between logistics managers' competency and career success, the outcomes from the research framework include the common-sense finding that competency is important in the career success of Chinese logistics managers. However, when investigating the four competencies, an obvious difference was found; that is, interactions among the four competencies reveal that logistics managers rank their importance based on their working experience and then determine the effect of four competencies on career success (employability, promotion, salary and marketability). Section 6.2 presents the results of their choice through the SEM analysis: 9 out of 16 hypothetical relationships are supported.

The study also contributes to the body of knowledge by presenting an L&SC competency model from the organisational ownership perspective. Questionnaires were completed by representatives from three samples of CP3PL, MN3PL and Chinese SO3PL firms prior to analysis using SmartPLS and multi-group analysis. This study may represent the first empirical research focusing on exploring the relationships between competencies and career success according to firm ownership in the 3PL industry in China.

The third significant contribution is related to the research framework for examining the relationships between logistics professionals' competency and their career success. This elaborate design of a research framework that delivers insights to researchers and the practitioners.

The fourth significant contribution is related to the multi-group analysis performed to strengthen the research model proposed for Chinese SO3PL, MN3PL and CP3PL firms. The analysis was performed to identify significant differences among these groups. After running the standard PLS path modelling algorithm for each group, the standard errors of the group-specific parameter estimates were obtained by the bootstrapping procedure, and then the differences between the path estimators were tested by the significance of t-tests as suggested by Keil et al. (2000), Chin (2002) and Sarstedt et al. (2011). The multi-group analysis demostrated that there is no significant difference between Chinese private and state-owned enterprise firms for all the research hypotheses (see Tables 6-42 & 6-43). Promotion of career success, as both a dependent and an independent variable, contributes to the differences among firm types. This may indicate that logistics managers working in MN3PLs have more opportunity to be promoted than do those working in Chinese SO3PL and CP3PL firms even if they have similar competency.

The second analysis section in this study attempted to empirically investigate relationships between career success (employability, promotion, salary and marketability) and CS. The findings discussed in Chapter 7 provide evidence for the very important contribution of the current study. Relationships between employability and CS, promotion and CS, and salary and CS were significant positively related in the research framework. However, the relationship between marketability and CS was not significant in the sample datasets. This finding is similar to those in studies focusing on the effect of objective career success on job satisfaction and represents a new discovery in the study of logistics talent development. Thus, this study may be the first to examine the impact of competency on career success, and career success on CS, in the context of talent development in the Chinese 3PL industry.

Remarkably, although the analysis of career success and CS was conducted for three organisational ownership types, no differences were found. No previous study has examined these relationships. Thus, the findings of the current study constitute a major novel contribution to knowledge, as they present further evidence of use to organisations seeking to improve their operational performance in talent development.

Another interesting finding from the second analysis section was the non-significant relationship between marketability and CS. A rich body of literature shows that marketability is positively associated with subjective career success or CS (Bird, 1994; De Vos & Soens, 2008; Eby et al., 2003; Haines et al., 2014), contrary to the results of this study. The findings show empirically that in a developing economy like that of China, marketability has not been a widely accepted concept until now. This finding points out the necessity for organisations and educators to consider the Chinese traditional culture in designing talent development systems.

This study also went one step further than previous studies by proposing the examination of career success in relation to competency. This study provides new knowledge by presenting several novel findings as discussed above in relation to mutual relationships between competency (LGM, LA, LIS, LS), career success (employability, salary, promotion, marketability) and CS.

8.2.2 Conclusions and Contributions Based on the Empirical Methodology and Measurement

This study employed quantitative research methodology. The data analysis required a range of basic and advanced statistical techniques to address the research problem. The study makes a significant contribution to empirical methodology and measurement through SEM using the PLS software. The SEM technique was chosen because of its superiority over other conventional statistical techniques and because it employs a unique combination of two multivariate techniques: factor analysis and multiple regression analysis (Hair et al., 2010).

PLS-SEM was used to examine the interrelationships between the constructs of interest, because it provides explicit estimates of error variance parameters—which is not possible with other conventional statistical techniques—to counter model imperfections. As indicated in Section 4.9, two types of error variance occur: measurement errors associated with observed variables, and residual terms (disturbance terms), which are designed to account for unexplained variance in the latent variables. SEM also provides for a more precise analysis of factor reliability, or CR. As discussed in Section 4.9.5, CR includes measurement errors of the indicators, and thus provides a more accurate construct reliability output.

SEM permits the concurrent statistical estimation of both indicators and latent variables and makes testing a hypothesis easier and more precise than conventional statistical techniques. The findings of this study provide additional understanding of theories underlying competency; and implications of the antecedents of career development for employability, salary and promotion, and for CS. The study also contributes additional knowledge on the impact of objective career success on subjective career success. The use of SEM contributed by facilitating simple and extensive modelling of multivariate interrelationships and allowing the output of the current study to be analysed and interpreted more precisely and rationally. It thus provide new insights for the body of knowledge.

This study also makes a significant contribution to empirical methodology and measurement by analysing the data collected from three groups—Chinese SO3PL, MN3PL and CP3PLfirms—through PLS-SEM multi-group analysis. This study was a pioneering study that employed a complex analysis to identify the sources of variance between these three groups. Prior to multi-group analysis, the PLS path modelling algorithm, bootstrapping procedure and significance of t-tests for each group were employed to examine similarities in the patterns of structural relationships hypothesised for the subgroup samples. This type of analysis could not have been accomplished by conventional methods such as multiple regression analysis, which cannot examine different groups simultaneously.

8.2.3 Conclusions and Contributions Based on the Research Question

A broad research question was defined at the beginning of the thesis based on the extensive literature review. The broad research question stated in Chapter 1 was:

> What are the critical skills of L&SC managers among MN3PLs, SO3PLs and CP3PLs in China and their effects on career success; that is, can the significance of these skills be measured in terms of employability, salary, promotion and marketability; and would these higher-level terms be indicators of CS for L&SC managers?

Several specific research questions were established from the broad research question.

<u>RQ1:</u> Which competency/skill categories are significantly related to perceived employability, promotion, salary and marketability; and which are the four sub-constructs to explain career success of L&SC managers working in 3PL firms in China?

RQ1 is a core research question aligned with the research objective statement. It was intended to empirically examine the impact of logistics managers' competency (and skill categories) on career success in Chinese 3PL firms. Sixteen hypotheses (H1.a–d, H2.a–d, H3.a–d and H4.a–d) were designed for this core question to ensure more insights would be disclosed.

The hypothesis testing—as discussed in Section 7.4—concluded that the logistics professionals' skill categories are differentiated according to their employability, promotion, salary and marketability. Thus, it can be concluded from the analysis that strategies for developing Chinese 3PL managers' competency should be designed carefully. For instance, LS competency positively affects the promotion of L&SC managers working in Chinese 3PL firms, but LS competency is not positively associated with salary. In other words, if a manager cares more about their salary than about promotions, the employer should not deliver more training on LS to them. This finding makes a new contribution to talent development theory in the logistics domain, as it presents concrete suggestions for organisations or educators seeking to design their talent development strategies.

<u>RQ2</u>: Are employability, promotion, salary and marketability related to CS of L&SC managers working in 3PL firms in China?

Question 3 is another core research question and its four hypotheses (H5, H6, H7 and H8) were designed to comprehend further the extent and magnitude of the influence of career success on CS. As mentioned earlier, career success consists of employability, promotion, salary and marketability and the four hypotheses are related to each of these four constructs. The application of SEM revealed a significant and positive impact of employability, promotion and salary on CS, and a positive impact of marketability on CS is not supported.

According to H5, employability is positively associated with CS of logistics managers working in 3PL firms in China. The findings show that increased employability may improve managers' perceptions of their CS. Increasing logistics managers' employability—such as their capacity to engage in in-depth and specialised discussions in their job domain; quickly anticipate change and take advantage of it in their work environment; focus on continually developing themselves and manage their time management—may improve their CS. CS in this study was measured by successes they had had in their career, development progress in their job, harmonious relationships with colleagues and contributions made to society during their work.

Also supported is H6, that there is a significant positive relationship between promotion and CS. It can be concluded that more opportunities for promotion may improve logistics managers' feelings of CS. Promotion in this study was measured as obtaining promotion, significantly increasing the responsibilities in their job and significantly broadening the scope of their job. The same result was observed for H7, which hypothesises that salary is positively associated with the CS of logistics managers working in Chinese 3PL firms. Unlike employability and promotion, the t-value obtained from the PLS-SEM bootstrapping procedure show that salary is strongly positively associated with CS. In other words, salary remains the most important indicator of logistics professionals' satisfaction in the Chinese context.

H8 on the relationship between marketability and CS is rejected by the PLS-SEM analysis. This indicates that marketability of logistics managers may not improve their perception of CS in the Chinese 3PL industry. Marketability in this study was measured by items such as 'My firm views me as an asset to the organisation', 'There are many opportunities available for me in this firm', 'I could easily obtain a comparable job with another employer', 'There are many jobs available for me given my skills and experience' and 'Given my skills and experience, other firms find me a value-added resource'.

<u>RQ3</u>: Are the relationships between logistics competency, career success and CS different for L&SC managers working in Chinese state-owned 3PL (SO3PL), Chinese private 3PL (CP3PL) and multinational 3PL (MN3PL) firms operating in China?

RQ3 focused on comparing the three types of organisational ownership of Chinese 3PL firms. Two research frameworks were designed to investigate this question.

As shown in Figure 8-1, 20 hypotheses were tested for each type of ownership to evaluate the relationships between competencies, career success and CS in the research model. The findings show that in Chinese SO3PL firms, 10 of 20 hypotheses are rejected. For example, managers working in SO3PL companies believe there is no significant positive relationship between LS competency and career success. Although 9 and 10 of 20 hypotheses are rejected for MN3PLs and CP3PL firms, respectively, the difference between these two ownership types is significant. For instance, LGM competency is positively associated with salary for MN3PL managers, but not for managers working in CP3PL firms.

Further, based on the theory of multi-group analysis, the parametric approach to multi-group analysis was conducted to investigate differences among the three types of 3PL firm. The findings show that the majority of hypotheses are not supported (see Section 6.6), which means the majority of relationships between competency and career success, and career success and CS, are not significant. For instance, the impact of logistics managers' competency on their salary is positive but there are no significant differences among the types of firm.

The most significant contribution here is related to the multidimensional comparison of three types of firm. The results and findings discussed in Chapters 6 and 7 provide evidence for the most important contributions to the current study and talent development in 3PL organisations.

8.3 Implications of Research Findings

Following the discussion on conclusions and contributions, this section discusses the implications of the study from two major perspectives: theoretical implications and management implications.

8.3.1 Theoretical Implications

Recently, a substantial number of studies has bridged the SCM and talent development literature to argue that competition not only revolves around market share, profit margin and so on, but also that talent competition is increasingly becoming the focus of strategic development for firms (Crook & Combs, 2007; Holcomb & Hitt, 2007). Spekman et al. (1998) mention that while reduced cost is typically a result, L&SC firms should emphasise leveraging the skills, expertise and capabilities of their employees and develop their careers more appropriately. Under the competency theory, emphasis is placed on the skills, abilities and knowledge obtained by personnel (Nasiriyar & Jolly, 2006; Schmidt & Keil, 2012), and both ‘soft’ and ‘hard’ skills may contribute to competitive advantage in career development, as they are valuable, rare, cannot be duplicated, and have no substitutes (Barney, 1991).

To identify the necessary competencies or competency categories for logistics professionals, several competency models have been proposed by researchers in the domain of L&SCM, such as the BLM model (Murphy & Poist, 1991,2006,2007; Razzaque & Sirat, 2001; Thai et al., 2012; Prajogo & Sohal, 2013) and ‘T-shaped’ model (Mangan & Christopher, 2005; Kovas et al.,2012). By combining the findings of these studies and competency theory—particularly in relation to the current situation of the economy and social development in China—a MAIS model is presented in this study. In this competency model designed for L&SC managers, general management competencies are a fundamental skill set and include skills, abilities and knowledge such as ‘team orientation’, ‘attitude towards work’ and ‘ability to learn’. Analytical competency focuses on logistics-related skills and quantitative analysis capacity; for example, ‘inventory management’, ‘distribution planning’ and ‘statistical analysis ability’. The last two skill sets are information and sustainability, which emphasise high technology and green development, respectively. From the academic standpoint, the validated measurement items of the MAIS model are beneficial to support future research in the area of talent development in general, especially in the area of L&SCM.

Many studies have shown that improving the competency of employees increases the performance of organisations, which improves employees’ perceptions of their career success or CS—but what will happen in the Chinese context? By combining the theoretical approach from existing theories, a new theoretical research model about the relationship between competency and career success was developed and tested. From the perspective of a developing country, this study makes an important contribution to enriching the literature and body of knowledge by addressing significant issues related to talent development in the 3PL industry.

This study included an investigation of the effect of career success on CS, finding a strong and positive relationship between career success (employability, promotion and salary) and CS. As noted earlier, this finding was verified through the research framework; the implication is both significant and important for organisations seeking to improve their HR performance, and for researchers designing a theoretical framework based on the current findings. The most surprising result of this study is the non-significant relationship between marketability and CS. Marketability measures used in this study did not contribute to improving the managers’ feelings of CS. In contrast, some researchers report a positive significant relationship between these two constructs; thus it should be of interest to academic practitioners to validate this relationship with other measurement items in the 3PL industry or in other industries in China.

From the perspective of a developing economy, this study makes an unquestionable contribution to the literature. This study might be the first empirical study to focus on such issues in the Chinese 3PL context. Employing a quantitative approach, this study empirically took a comprehensive perspective, gathering information evenly from Chinese SO3PL, MN3PL and CP3PL firms, and attempting to cover all business zones in China. Further, the relationships identified in the research frameworks extend the use of the competency and social capital theories to a novel research setting.

This study makes significant contributions in the field of L&SCM—specifically the talent development literature—by systematically determining the critical skills/competency and relationships between competency and career success and CS based on the abovementioned basic theories and examining the impact of these relationships on the Chinese 3PL industry. The study then examined the effect of logistics managers' competency on career success and CS. Overall, the results provide partial support for both the identified basic theories, showing that Chinese characteristics should be considered.

In short, this study proposed a conceptual model linking logistics competency with career success and CS. These relationships have not been investigated in the context of the logistics industry. The findings of this research extend the body of knowledge in the field through theoretical assessment of the suggested constructs in the model.

8.3.2 Management Implications

One of the primary intentions of this study was to produce results relevant to the requirement for manager competency in the Chinese logistics industry. As mentioned earlier, HR constraints are a serious problem encountered by 3PL firms. Almost 500 universities in China offer programs on logistics, but the demand for professional talent has always exceeded supply, both in quantity and quality. The findings of this study show that some skills are less important in China, given its current stage of development, than how they rank in the literature. The necessary skills for logistics managers are analysed and presented.

The management implications of this study largely emerge from its quantitative findings in terms of which competency is significant in the relationship between managers' competency and career success in Chinese 3PL firms; and which construct of career success is positively associated with managers' CS. In terms of the quantitative analysis, the findings suggest that logistics managers' competencies are strong predictors of career success in the Chinese 3PL industry, and three out of four constructs (not including marketability) of career success are positively associated with managers' CS. Regarding competency, the relationships between four competencies (LGM, LA, LIS, LS) and four constructs (employability, promotion, salary, marketability) of career success are somewhat complex. Employers should consider their employees' psychological requirements and design comprehensive strategies for talent development. From a practical perspective, the results of the comparative analysis of three types of organisational ownerships are more valuable for HRM, and the significant differences in the impacts of competencies on career success may help employers to develop suitable HR strategies.

This study is important because it represents the first empirical research establishing a relationship between logistics professionals' competency (and competencies), career success (employability, promotion, salary, marketability) and CS, using SEM. Therefore, this research fills the gap between theory and practice concerning strategically designed talent development programs. The implications of the findings are also important, particularly the finding that Chinese 3PL managers can increase their feelings of career success and improve their perceptions of CS by enhancing their competency.

Perceived marketability is defined as the belief that one is valuable to their current or other employers (Eby et al., 2005; Haines et al., 2014), and many studies have shown that marketability is positively associated with CS (Bird, 1994; De Vos & Soens, 2008; Eby et al., 2003; Haines et al., 2014). However, the analysis in this study revealed that increases in marketability do not improve logistics managers' CS in the Chinese 3PL industry. This indicates that cultural influences still play an important role in China, and managers working in Chinese 3PL firms are still not comfortable with marketing and praising themselves. Organisations that pursue excellent performance in HRM should appreciate this fact and design localised talent development strategies.

This study also makes a significant contribution by providing a framework for decision making conducted by L&SC education and training providers, and logistics firms. The research frameworks and research models presented in this study provide a set of validated models that can guide the actions of practitioners in terms of elements to emphasise in building workable tactics and strategies for talent development.

In summary, this study identifies the critical competencies required by L&SC managers of 3PLs in China. The results have implications for L&SC education and training providers, and logistics firms. By understanding how logistics managers see their career success, 3PL firms will be able to design appropriate incentive and motivational packages.

8.4 Limitations of the Research

While this study makes contributions to the L&SC manager competency literature, it has some limitations that must be acknowledged. These are discussed below in terms of the context of this study.

First, the sample chosen for this study focuses on L&SC managers in a single industry—3PL in China. This may raise concerns about limited external validity and prevent the findings being more generally applied. Constraining the study to a single industry eliminates problems associated with the effects of industry differences (Hartline & Ferrell, 1996), but future research will have to examine whether the results are applicable to other settings. Though a study of the 3PL industry in China allows the researcher to control complex market variables that differ from industry to industry or country to country, applicability to other industries or countries may be limited.

Further, the respondents' companies in each group provided a small sample size, which may affect the stability of the parameter estimates. This necessitates replication of the proposed competency model in contrasting empirical contexts. Thus, the empirical findings should be interpreted with caution. Realising these limitations, future studies may compare 3PL firms from different countries or regions to further validate the theoretical constructs identified in this study.

8.5 Directions for Future Research

Despite some limitations, the study does make some useful contributions to the emerging discipline in this area. More specifically, this study can be used as a basis for future research. For example, the perceptions of logistics practitioners may be compared with those of logistics educators and researchers to identify and acquire the skills necessary for contemporary logisticians in the new millennium. Industry-specific logistics skill requirements may also be investigated. Finally, future research may include logisticians from other countries within and outside the region and conduct cross-cultural studies to compare and contrast the skill level of logisticians across nations.

Gilmour (2016) surveyed distribution managers in the Asia Pacific region and found them more narrow-minded and less well educated than their US counterparts. This study's findings tend to suggest that the picture may have changed, logisticians in the Asia Pacific region seem to be fast catching up with their North American counterparts.

Although this study presents an effective career development model with identified critical competencies, several areas for future research remain. The current research endeavour focused on 3PLs in China. The findings may differ if other country classification groups are considered, such as developing and developed countries. Several opportunities for future research arise from the results of this study. It would be interesting to extend the research to other developed or developing countries that offer attractive remunerations and incentives for foreign investment. This suggests a need for more cross-boundary research to identify whether 3PLs within these countries/regions consider the same L&SC competencies to be important. Future research should also explore and compare the L&SC manager competencies required in other countries both develoed and developing.

Future researchers are also encouraged to explore whether the career development model proposed in this study holds in other industry contexts. As discussed in Chapter 3, the MAIS competencies were identified for 3PLs in China. Therefore, the implications might differ in contexts where the identified competencies are tested on industries with the adoption of L&SC management.

Practical experience and feedback provided a valid and appropriate foundation for the research framework. However, the framework needs continuous evaluation and reflection in response to the ever-changing environment because the original core purpose of the framework was to develop and update competencies continuously. In addition to current evaluation methods, there are future development challenges including how to evaluate the impacts of the framework, how to create and follow up career/competency development paths and what are the working methods. In addition, validity, utility and usability were defined in the name of practical business results—the MAIS skill model meets these conditions if it can produce competencies that help a company to prosper.

8.6 Summary

Talent development is important for 3PL firms operating in China. The findings of this research suggest that L&SC manager competencies can be developed from features of employees' own career development, such as employability, subjective and objective career success. A new L&SC competency model was developed, which contributes to the existing body of knowledge via its conceptual framework, methodology and measurement, and research question. However, this thesis acknowledges some limitations that may provide opportunities for further research.

REFERENCES

Abalo, J Varela, J & Manzano, V., 2007, ‘Importance values for Importance-Performance Analysis: a formula for spreading out values derived from preference rankings’, *Journal of Business Research*, Vol. 60, pp.115-121.

Abbasi, MS, Tarhini, A, Elyas, T & Shah, F 2015 , ‘Impact of individualism and collectivism over the individual’s technology acceptance behaviour: A multi-group analysis between Pakistan and Turkey’, *Journal of Enterprise Information Management*, Vol. 28, No. 6, pp.747-768.

Abele, AE & Spurk, D 2009, ‘The longitudinal impact of self-efficacy and career goals on objective and subjective career success’, *Journal of Vocational Behavior*, Vol. 74, pp. 53-62.

Acikgoz, Y, Sumer, HC & Sumer, N 2016, ‘Do Employees Leave Just Because They Can? Examining the Perceived Employability–TurNover Intentions Relationship’, *The Journal of Psychology*, Vol. 150, No. 5, pp. 666-683.

Adams, R S, Daly, SR, Mann, LM & Alba, GD 2011. Being a professional: Three lenses into design thinking, acting, and being’, Design Studies, Vol.32, No.6, pp. 588-607.

Agarwal, A, Shankar, R & Tiwari, MK 2006, ‘Modeling the Metrics of Lean, Agile and Leagile Supply Chain: An ANP-Based Approach’, *European Journal of Operational Research*, Vol. 173, No. 1, pp. 211 - 25.

Agho, AO, Mueller, CW & Price, JL 1993, ‘Determinants of employee job satisfaction: An empirical test of a causal model’, *Human Relations*, Vol. 46, No.8, pp. 1006-1027.

Ahn, YS & McLean, GN 2008. ‘Competencies for Port and Logistics Personnel: An Application of Regional Human Resource Development’. *Asia Pacific Education Review*, Vol. 4, No. 9, pp. 542-551.

Ahsan, K, Ho, M & Khan, S 2013, ‘Recruiting Project Managers: A Comparative Analysis of Competencies and Recruitment Signals from Job Advertisements Project’, *Management Journal*, Vol. 44, No. 5, pp. 36-54.

Akkermans, J & Tims, M 2017, ‘Crafting your Career: How Career Competencies Relate to Career Success via Job Crafting’, *Applied psychology an international review psychology ieappliquee revue international*, Vol. 66, No.1, pp.168-195.

Akkermans, J & Tims, M 2017, ‘Crafting your Career: How Career Competencies Relate to Career Success via Job Crafting’, *An International Review*, Vol. 66, No. 1, pp. 168–195.

Akkermans, J, Brenninkmeijer, V, Schaufeli, WB & Blonk, RWB 2015, 'It's all about CareerSKILLS: Effectiveness of a career development intervention for young employees', *Human Resource Management*, Vol. 54, No. 4, pp. 533-551.

Akkermans, J, Brenninkmeijer, V, Huibers, M & Blonk, RWB 2013,'Competencies for the contemporary career: Development and preliminary validation of the Career Competencies Questionnaire', *Journal of Career Development*, Vol. 40, No. 3, pp. 245-267.

Alam, SMT 2015, 'Factors affecting job satisfaction, motivation and turnover rate of medical promotion officer (mpo) in pharmaceutical industry: a study based in khulna city', *Asian Business Review*, Vol. 1, No. 2, pp. 126-131.

Albers, S 2010, *PLS and Success Factor Studies in Marketing*, Handbook of Partial Least Squares.

Albino, JE et al 2008 'Assessing Dental Students Competence Best Practice Recommendations in the Performance Assessment', *Journal of Dental Education*, Vol. 72, No.12, pp. 1406-1432.

Alec, L 2012, 'Talent management challenges of building cross-functional capability in high-performance work systems environments', *Asia Pacific Journal of Human Resources*, Vol.50, pp. 187-204.

Aleo, VD & Sergia, BS 2017, 'Human factor: the competitive advantage driver of the EU's logistics sector', *International Journal of Production Research*, Vol. 55, No. 3, pp. 642-655.

Ali, T, Kate, H & Liu, X 2014, 'The effects of individual differences on e-learning users' behavior in developing countries A structural equation model', *Computers in Human Behavior*, Vol. 41, pp. 153-163.

Allden, M, Niemann, W & Kotzé, T 2018, 'Industry expectations of supply chain management graduates: Perspectives from third-party logistics providers in South Africa', *Journal of Transport & Supply Chain Management*, vol. 12, p. 37-49.

Aluja B, T et al 2012, *Survey Data Collection.*

Al-Zoubi, M 2012, 'The shape of the relationship between salary and job satisfaction: a field study', *Far East Journal of Psychology & Business*, Vol. 7, No. 3, pp. 1-12.

Amaratunga, D, Baldry, D, Sarshar, M & Newton, R 2002, 'Quantitative and qualitative research in the built environment: application of "mixed" research approach', *Work study*, Vol. 51, No. 1, pp. 17-31.

Anderson, JC & Gerbing, DW 1988, 'Structural equation modeling in practice: A review and recommended two-step approach', *Psychological bulletin*, Vol. 103, No. 3, p. 411.

Anderson, JE & Schwger, PH 2004, *SME Adoption of Wireless LAN Technology: Applying the UTAUT Model*, Proceeding of the 7th Annual Conference of the Southern Association for Information Systems.

Anderson, RE & Swaminathan, S 2011, 'Customer satisfaction and loyalty in e-markets: a pls path modeling approach', *Journal of Marketing Theory & Practice*, Vol. 19, No. 2, pp. 221-234.

Ans DV, Sara DH, Beatrice, IJM & Van, H 2011, 'Competence development and career success: The mediating role of employability', *Journal of Vocational Behavior*, Vol. 79,No. 2,pp. 438-447.

Arbore, A & Busacca, B 2011, 'Rejuvenating importance-performance analysis', *Journal of Service Management*, Vol. 22, No. 3, pp. 409-429.

Arthur, MB, Khapova, SN & Wilderom, CPM 2005, 'Career success in a boundaryless career world', *Journal of Organisational Behavior*, Vol. 26, pp. 177-202.

Arvis, JF 2014, *Trade Logistics in the Global Economy*, The International Bank for Reconstruction and Development.

Atkearney 2011, *China's E-commerce Market: The largest Challenges*.

Atkearney 2014, *China's E-Commerce Market in 2014: The Logistics Challenges.*

Atkearney 2015, *China 2015: Transportation and Logistics Strategies,* Atkearney.

Azzopardi, E & Nash, R 2013, 'A critical evaluation of importance-performance analysis', *Tourism Management,* Vol. 35, pp. 222-233.

Bacon, DR 2003, 'A comparison of approaches to Importance-Performance Analysis', *International Journal of Market Research*, Vol. 45 No. 1, pp. 55-71.

Bagozzi, RP & Yi, Y 2012, 'Specification, Evaluation, and Interpretation of Structural Equation Models', *Journal of the Academy of Marketing Science*, Vol. 40, pp. 8-34.

Bak, O., Jordan, C. and Midgley, J. 2019, 'The adoption of soft skills in supply chain and understanding their current role in supply chain management skills agenda: A UK perspective', *Benchmarking: An International Journal*, Vol. 26 No. 3, pp. 1063-1079

Ballout, HI 2007, 'Career success：The effects of human capital person-environment fit and organisational support', *Journal of Managerial Psychology*, Vol. 22, No. 8, pp. 741-765.

Bandura, A 1997, 'Self-efficacy: The Exercise of Control', *Freeman*, New York.

Bardasi, E & Francesconi, M 2004, 'The impact of atypical employment on individual well-being: Evidence from a panel of British workers', *Social Science and Medicine*, Vol. 58, No. 9, pp. 1671-1688.

Bartram, D (2005), The Great Eight Competencies: A Criterion-Centric Approach to Validation, *Journal of Applied Psychology*, 90, No.6, pp. 1185-203

Beaumont, E, Gedye, S & Richardson, S 2016, 'Am I employable? Understanding students' employability confidence and their perceived barriers to gaining employment', *Journal of Hospitality,Leisure,Sport&Tourism Education*, Vol. 19, pp. 1–9.

Becker, BE & Huselid, MA 1999, 'Overview: Strategic human resource management in five leading firms', *Human Resource Management*, Vol. 38, pp.287-301.

Becker, JM, Klein, K & Wetzels, M 2012, 'Hierarchical latent variable models in pls-sem: guidelines for using reflective-formative type models', *Long Range Planning*, Vol. 45, No. 5-6, pp. 359-394.

Bentler, PM & Chou, CP 1987, 'Practical Issues in Structural Modeling', *Sociological Methods & Research*, Vol. 16, No. 1, pp. 78-117.

Bird, A 1994, 'Careers as repositories of knowledge: a new perspective on boundaryless careers', *Journal of Organisational Behavior*, Vol.15, No.4, pp. 325-344.

Bolarin, CC 1993, 'Job Satisfaction Factors', *Griffin Books, New Delhi.*

Boomsma, A 1982, 'The robustness of LISREL against small sample sizes in factor analysis models', *Systems under indirect observation: Causality, structure, prediction*, Vol. 1, pp. 149-73.

Booth, AL, Francesconi, M & Frank, J 2002, 'Temporary jobs: stepping stones or dead ends?', Economic *Journal*, Vol. 112, pp. 189-213.

Bourlakis, M, Sodhi, MS & Son, BG 2015, 'The relative emphasis on supply-chain/logistics topics by UK industry in hiring postgraduates and by UK universities in teaching and research', *International Journal of Logistics: Research and Applications*, Vol. 27, No. 4, pp. 506-522.

Bowden, A, Fox-Rushby, J, Nyandieka, L & Wanjau, J 2002, 'Methods for pre-testing and piloting survey questions: illustrations from the KENQOL survey of health-related quality of life', *Health policy and planning*, Vol. 17, No. 3, pp. 322-30.

Bowling, A 1997, *Research Methods in Health*, Open University Press, Buckingham.

Bozionelos, N, Kostopoulos, K, Heijden, BV, Rousseau, DM, Bozionelos, G,Hoyland, T, Miao, R, Marzec, I, Jędrzejowicz, P, Epitropaki, O, Mikkelsen, A, Scholarios, D & Heijde, CV 2016, 'Employability and Job Performance as Links in the Relationship Between Mentoring Receipt and Career Success: A Study in SMEs', *Group & Organisation Management*, Vol. 41, No. 2, pp. 135-171.

Braunscheidel, MJ, Suresh, NC & Boisnier, AD 2010, ‘Investigating the impact of organisational culture on supply chain integration’, *Human Resource Management*, Vol. 49, No. 5, pp. 883-911.

Brière, S, Proulx, D, Flores, O N & Laporte, M 2015, ‘Competencies of project managers in international NGOs: Perceptions of practitioners’, International *Journal of Project Management*, Vol. 33, pp. 116-125.

Brislin, RW 1970, 'Back-translation for cross-cultural research', *Journal of cross-cultural psychology*, Vol. 1, No. 3, pp. 185-216.

Brown, S 1993, ‘Drop and Collect Surveys: A Neglected Research Technique?’, *Marketing Intelligence & Planning*, Vol. 5, No. 1, pp. 19-23.

Bryman, A & Bell, E 2007, *Business Research Methods*, Oxford University Press, New York.

Bryne, BM 2005, 'Factor Analytic Models: Viewing the Structure of an Assessment Instrument from Three Perspectives', *Journal of Personality Management*, Vol. 85, No. 1, pp. 17-32.

Burcher, PG, Lee, GL & Sohal, AS 2005, ‘A cross country comparison of careers in logistics management in Australia and Britain’, *The International Journal of Logistics Management*, Vol. 16, No.2, pp. 205 - 217.

Burrell, G & Morgan, G 1979, *Sociological paradigms and organisational analysis*, Vol. 248.

Campion, MA, Fink, A, Ruggeberg, BJ, Carr, L, Phillips, GM & Odman, RB 2011, ‘Doing competencies well: Best practices in competence modeling’, *Personnel Psychology*, Vol. 64, pp. 225-262.

Capgemini 2014, *2014 Third-Party Logistics Study*.

Cappellen, T & Janssens, M 2008, ‘Global managers’ career competencies’, *Career Development International*, Vol. 13, No. 6, pp. 514-537.

Cameron, EG & Shaun, C 2019, ‘Moving from Skills to Social Capital in Transportation and Logistics (T&L) Education’, *e - Journal of Social & Behavioural Research in Business.* Vol. 10, No. 3, pp. 22-33

Carmines, E. & Zeller, R 1979, ‘Reliability and validity assessment’, *Sage University Paper Series on Quantitative Applications in the Social Sciences*, No. 7.

Campos, D.F., Lima Jr, J.T.d.A., Silva, A.B.d. and Fernandes, A.J. 2019, ‘Professional competencies in supply chain management in the mid-sized supermarket sector in Brazil’, *Supply Chain Management*, Vol. 24 No. 3, pp. 405-416.

Campos E.A.R.d., Paula, R.C.D., Caten,C.S 2020, ‘The effect of collaboration and IT competency on reverse logistics competency - Evidence from Brazilian supply chain executives’, *Environmental Impact Assessment Review*, Vol. 84, 106433.

Cavana, RY, Delahaye, BL & Sekaran, 2001, 'Applied business research: Qualitative and quantitative methods'.

Celaya, L & Swift, JS 2006. 'Pre-departure cultural training US managers in Mexico', *Cross Cultural Management: An International Journal*, Vol. 13, No. 3, pp. 230-243.

Chacón Vargas, JR, Moreno Mantilla, CE & de Sousa Jabbour, ABL 2018, 'Enablers of sustainable supply chain management and its effect on competitive advantage in the Colombian context', *Resources, Conservation & Recycling*, Vol. 139, pp. 237–250

Che Hashim, HI & Mohd Shariffa, SM 2016, 'Halal Supply Chain Management Training: Issues and Challenges', *Procedia EcoNomics and Finance*, Vol. 37, pp. 33-38.

Cheung, GW & Rebecca, S 2008, 'Testing Mediation and Suppression Effects of Latent Variables Bootstrapping with Structural Equation Models', *Organisational Research Methods*, Vol. 11, No. 2, pp. 296-325.

Chin, WW 1998, 'The partial least squares approach to structural equation modeling', *Modern methods for business research*, Vol. 295, No. 2, pp. 295-336.

Chin, WW 2003, 'A permutation procedure for multi-group comparison of PLS models. In: M. Vilares, M. Tenenhaus, P. Coelho, V. Esposito Vinzi, A. Morineau (Eds.), *PLS and Related Methods: Proceedings of the International Symposium*, pp. 33-43.

Chin, WW 2010, 'How to Write up and Report Pls Analyses', in VE Vinzi, WW Chin, J Henseler & H Wang (eds), *Handbook of Partial Least Squares Concepts, Methods and Applications*, Springer, Berlin Heidelberg.

Chiu, YW, Yen, DC & Shi, DH 2011, 'Importance-performance analysis for the adoption of radio frequency identification technology', *Journal of Information Technology*, Vol. XXII, No. 2, pp. 30-40.

Cho, JJ-K, Ozment, J & Harry Sink 2008, 'Logistics Capability, Logistics Outsourcing and Firm Performance in an E-Commerce Market', *International Journal of Physical Distribution & Logistics Management*, Vol. 38, No. 5, pp. 336-59.

Chou, CP & Bentler, PM 1995, 'Estimates and tests in structural equation modeling', *Structural equation modeling: Concepts, issues and applications*, pp. 37-55.

Chum, A et al 2015, 'Does geographic context influence employability-motivated volunteering? The role of area-level material insecurity and urbanicity', *The Canadian Geographer*, pp. 1-15.

Chun, Y & Wu, J 2006, 'Skill requirements for logistics license in Taiwan', *Supply Chain Management: An International Journal*, Vol. 11, No.5, pp. 415 -424.

Chun, Y & Wu, J 2007, ‘Contemporary logistics education: an international perspective’, *International Journal of Physical Distribution & Logistics Management*, Vol. 37, No. 7, pp. 504-528.

Chun, Y et al, 2013. ‘Global logistics management curriculum: perspective from practitioners in Taiwan’, S*upply Chain Management: An International Journal*, Vol. 18, No. 4, pp. 376-388.

Churchill Jr, GA 1979, ‘A paradigm for developing better measures of marketing constructs’, *Journal of marketing research*, pp. 64-73.

Cilliers, WW & Nagel, PJ 1994, ‘Logistics Trends in South Africa’, *International Journal of Physical Distribution & Logistics Management*, Vol. 24, No. 7, pp. 4-14.

Clark, AE & Oswald & AJ 1996, ‘Satisfaction and comparison income’, *Journal of Public EcoNomics*, Vol. 61, No.3, pp. 359-381.

Clark, LA & Watson, D 1995, ‘Constructing validity: Basic issues in objective scale development’, *Psychological assessment*, Vol. 7, No. 3, p. 309.

Clarke, M 2008, ‘Understanding and managing employability in changing career contexts’, *Journal of European Industrial Training*, Vol. 32, No. 4, pp. 258-284.

Clarke, S 1999, ‘Perceptions of organisational safety: implications for the development of safety culture’, *Journal of organisational Behavior*, pp. 185-98.

Clason, DL & Dormody, TJ 1994, ‘Analyzing data measured by individual Likert-type items’, *Journal of Agricultural Education*, Vol. 35, p. 4.

Clokie, TL & Fourie, E 2016, ‘Graduate Employability and Communication Competence: Are Undergraduates Taught Relevant Skills?’, *Business and Professional Communication Quarterly*, Vol. 79, No.2, pp. 442-463.

Coetzee, M & Harry, N 2014, ‘Emotional intelligence as a predictor of employees career adaptability’, *Journal of Vocational Behavior*, Vol. 84, pp. 90-97.

Coetzee, M & Beukes, C 2010, ‘Employability, emotional intelligence and career preparation support satisfaction among adolescents in the school-to-work transition phase’, *Journal of Psychology in Africa*, Vol. 20, No. 3, pp. 439-446.

Coghlan, A 2012, ‘Facilitating reef tourism management through an innovative importance-performance analysis method’ · *Tour Manag*, Vol. 33, No.4, pp.767–775.

Cohen, J 1992, 'A Power Primer', *Psychological Bulletin*, vol. 112, pp. 155-159.

Compeau, D, Higgins, C, and Huff, S 1999. ‘Social Cognitive Theory and Individual Reactions to Computing Technology: A Longitudinal Study’, *MIS Quarterly,* Vol. 23, No. 2, pp. 145-158.

Cooper, D & Schindler, P 2008*, International Edition: Business Research Methods,* New Delhi.

Creswell, JW 2009, *‘Research Design: Qualitative, Quantitative and Mixed Methods Approaches’*, 3th edn. Sage Publications, Inc.

Creswell, JW 2013, ‘*Research design: qualitative, quantitative and mixed methods approaches*’, 4th edn. *Sage,* Thousand Oaks, CA

Crossan, F 2003, ‘Research philosophy: towards an understanding’, *Nurse researcher*, Vol. 11, No. 1, pp. 46-55.

Crotty, M 1998, *‘The foundations of social research: Meaning and perspective in the research process’*, Sage.

Dalziel, J 2019, ‘Driving logistics talent into the future’, *Logistics & Transport Focus,* vol. 21, no. 9, pp. 32–33

Dam, K, Heijden, BIJM & Schyns, B 2006, ‘Employability and employee development at work’, *Gedrag and Organisatie*, Vol. 19, pp. 53-68.

Daud, D & Talib, MSA 2013, ‘Developing a Measurement Model for Undergraduate Program in Logistics’, *International Journal of Education,* Vol. 5, No. 2, pp. 86-101.

Davila Quintana, CD, Mora, JG, Perez, PJ & Luis E 2016, ‘Enhancing the Development of Competencies: the role of UBC’, *Vila European Journal of Education,* Vol. 51, No. 1.

Dawood, SAJ, Ercan, ST & Volkan, A 2016, ‘Evaluating communication competence of tour guides using a modified importance-performance analysis (MIPA)’, *International Journal of Contemporary Hospitality Management*, Vol. 28, No. 1, pp. 195 - 218

De Souza, R 2002, *Walking upright here: Countering prevailing discourses through reflexivity and methodological pluralism*, Master Dissertation, Massey University, Albany, NZ.

De Vos, A, Dewettinck, K & Buyens, D 2009, ‘The professional career on the right track. A study on the interaction between career self-management and organisational career management in explaining employee outcomes’, *European Journal of Work and Organisational Psychology*, Vol. 18, No. 1, pp. 55-80.

De Vos, A, VerfasserDe, H & Sara, V 2010, ‘Linking competence development to career success: exploring the mediating role of employability’, *Vlerick Leuven Gent Management School Working Paper Series*.

Derwik, P, Hellström, D & Karlsson, S 2016, ‘Manager competences in logistics and supply chain practice’, *Journal of Business Research*, Vol. 69, pp. 4820-4825.

Dibbern, J & Chin, WW 2005, ‘Multi-group comparison: Testing a PLS model on the sourcing of application software services across Germany and the USA using a permutation-based algorithm’, *Handbuch PLS-Pfadmodellierung. Methode, Anwendung, Praxisbeispiele*, pp. 135-160.

Ding, MJ & Jie, F 2020, ‘The moderating effect of Guanxi on supply chain competencies of logistics firms in China’, *International Journal of Logistics Research and Applications*, DOI: 10.1080/13675567.2020.1763280

Ding, MJ, Kam, BH & Lalwani, CS 2012. ‘Operational routines and supply chain competencies of Chinese logistics service providers’, *The International Journal of Logistics Managements*, Vol. 23, No. 3, pp. 383-407.

Ding, MJ, Kam, BH, Zhang, JY & Jie, F 2015, ‘Effects of human resource management practices on logistics and supply chain competencies – evidence from China logistics service market’, *International Journal of Production Research*, Vol. 53, No. 10, pp. 2885-2903.

Ding, S 2015. ‘Forecast analysis of logistics talent demand based on GM (1,1) model.’, *Value engineering*, pp. 190-191.

Dinwoodie, J 2001, ‘Motivational profiling of logistics Masters students in Great Britain’, *International Journal of Physical Distribution & Logistics Management*, Vol. 31, No. 3, pp. 187-202.

Discenna, TA 2016, ‘The Discourses of Free Labor: Career Management, Employability, and the Unpaid Intern’, *Western Journal of Communication*, Vol. 80, No. 4, pp. 435–452.

Dobroszek, J., Mourao, P. and Grzesiak, L. 2019, ‘Identification of the similarities and differences of logistics controller, manager and specialist: A study based on a content analysis’, *The International Journal of Logistics Management*, Vol. 30 No. 1, pp. 261-283.

Doll, J, Packard, K, Furze, J, Huggett, K, Jensen, G, Jorgensen, D, Wilken, M, Chelal, H & Maio, A 2013, ‘Reflections from an interprofessional education experience: Evidence for the core competencies for interprofessional collaborative practice’, *Journal of Interprofessional Care*, Vol. 27, pp. 194-196.

Dubey, R., Gunasekaran, A., Childe, S.J. and Papadopoulos, T. 2018, ‘Skills needed in supply chain-human agency and social capital analysis in third party logistics’, *Management Decision*, Vol. 56 No. 1, pp. 143-159.

Dries, N, Forrier, A, Vos, AD & Pepermans, R 2014, ‘Self-perceived employability, organisation-rated potential, and the psychological contract ‘, *Journal of Managerial Psychology*, Vol.29, No. 5, pp. 565-581.

Eby, LT & Butts, M & Lockwood, A 2003, ‘Predictors of success in the era of the boundaryless career’, *Jounal of Organisational Behavior*, Vol. 24, No. 6, pp. 689-708.

Eccles, J 2009, ‘Who Am I and What Am I Going to Do with My Life? Personal and Collective Identities as Motivators of Action’, *Educational Psychologist*, Vol. 44, No. 2, pp. 78-89.

Eddie, F 2011, ‘What practitioners consider to be the skills and behaviours of an effective’, *International Journal of Project Management*, Vol. 29, pp. 994-1002.

Edgington, E & Onghena, P 2007, ‘Randomization tests’, *London: Chapman & Hall*, Vol. 4.

Edward, C, Edward, J, Richard, SM & Richard, SM 2002, *The Value-Added Employee*.

Ellickson, MC 2001, ‘Determinants of job satisfaction of municipal government employees’, *State & Local Government Review*, Vol. 33, No. 3, pp. 173-184.

El-Sabaa, S 2001. ‘The skills and career path of an eff€ective project manager’, *International Journal of Project Management*, pp. 1-7.

Elsevier Ltd, Onar, SC, Aktas, E, Topcu, YI& Doran, D 2013, ‘An analysis of supply chain related graduate programmes in Europe,’ *Supply Chain Management: An International Journal*, Vol.18, No.4, pp.398-412.

Elzarka, S 2010, *Designing A Competence Framework for Logistics Executives: The Case of the ready-made garment manufacturers in Egypt*, The University of Huddersfield.

Emory, WC 1985, *Business Research Methods*, Irwin, Homewood, IL.

Eng, TY 2016, ‘An empirical study of Chinese SME grocery retailers’ distribution capabilities’, *Supply Chain Management: An International Journal*, Vol. 21, No. 1, pp. 63-77.

Esper, TL, Defee, CC & Mentzer, JT 2010, ‘A framework of supply chain orienntation’, *The International Journal of Logistics Management*, Vol. 21, No. 2, pp. 161-179.

Evangelista, P, McKinnon, A & Sweeney, E 2013, ‘Technology adoption in small and medium-sized logistics providers’, *Industrial Management & Data Systems*, Vol. 113, No. 7, pp. 967-989.

Evans, MG 1974, ‘Extensions of a path-goal theory of motivation’, *Journal of Applied Psychology*, Vol.59, No.2, pp.172-178.

Falk, R. & Miller, N. 1992, *A Primer for Soft Modeling*, University of Akron Press, Akron, OH.

Feisel, E, Hartmann, E & Giunipero, L 2011, ‘The importance of the human aspect in the supply function： Strategies for developing PSM proficiency’, *Journal of Purchasing & Supply Management*, Vol. 17, pp. 54-67.

Feng, Y Y, 2009, ‘China's third-party logistics market competition and the development of private enterprises’, *modern sciences*, pp.99.

Feldt, T, Kokko, K, Kinnunen, U & Pulkkinen, L 2005, ‘The Role of Family Background, School Success, and Career Orientation in the Development of Sense of Coherence’, *European Psychologist*, Vol. 10, pp. 298-308.

Fenn, J., 2006, ‘Managing Citations and Your Bibliography with BibTEX’. *The Practex Journal*, Vol. 25, No. 5.

Fernando, Y. & Wulansari, P. 2020, ‘Perceived understanding of supply chain integration, communication and teamwork competency in the global manufacturing companies’, *European Journal of Management and Business Economics*, https://doi.org/10.1108/EJMBE-06-2020-0157

Fisher, E 2011, ‘What practitioners consider to be the skills and behaviours of an effective people project manager’, *International Journal of Project Management*, Vol. 29, pp. 994-1002.

Flöthmann, C., Hoberg, K. and Gammelgaard, B. 2018, ‘Disentangling supply chain management competencies and their impact on performance: A knowledge-based view’, *International Journal of Physical Distribution & Logistics Management*, Vol. 48 No. 6, pp. 630-655.

Flöthmann, C., Hoberg, K. & Wieland, A. 2018, ‘Competency requirements of supply chain planners and analysts and personal preferences of hiring managers’, *Supply Chain Management: An International Journal*, Vol. 23 · No.6, pp.480–499

Fornell, C & Larcker, DF 1981, ‘Evaluating structural equation models with uNobservable variables and measurement error’, *Journal of Marketing Research*, Vol.18, No. 1, pp.39-50.

Foo, P-Y, Lee, V-H, Tan, GW-H & Ooi, K-B 2018, ‘A gateway to realising sustainability performance via green supply chain management practices: A PLS–ANN approach’, *Expert Systems with Applications*, Vol. 107, pp. 1–14

Forrier, A, Verbruggen, M & Cuyper, ND 2015, ‘Integrating different notions of employability in a dynamic chain: The relationship between job transitions, movement capital and perceived employability’. *Journal of Vocational Behavior*, Vol. 89, pp. 56-64.

Francis-Smythe, J, Haase, S, Thomas, E & Steele, C 2013, ‘Development and Validation of the Career Competencies Indicator (CCI)’, *Journal of Career Assessment*, Vol. 21, No. 2, pp. 227-248.

Frazer, L & Lawley, M 2000, ‘Questionnaire administration and design: A practical guide’, *Brisbane, Australia: John Wiley & Sons.*

Fugate, M, Kinicki, AJ. & Ashforth, BE 2004. ‘Employability: A psycho-social construct its dimensions, and applications’. *Journal of Vocational Behavior*, Vol. 65, pp. 14-38.

Gallagher, D, Ting, L & Palmer, A 2008, ‘A journey into the unkNown; taking the fear out of structural equation modeling with AMOS for the first-time user’, *The Marketing Review*, Vol. 8, No. 3, pp. 255-75.

Gamboa, JP, Gracia, F, Ripoll, P & Peiró, JM 2009, ‘Employability and personal initiative as antecedents of job satisfaction’, *Spanish Journal of Psychology*, Vol. 12, No. 2, pp.632.

Gámez-Pérez, K.M., Sarmiento, A.M., Garcia-Reyes, H. and Velázquez-Martínez, J.C. 2020, ‘An international university-industry collaboration model to develop supply chain competences’, *Supply Chain Management*, Vol. 25 No. 4, pp. 475-487

Gammelgaard, B & Larson, PD 2001, ‘Logistics skills and competencies for supply chain management’, *Journal of Business Logistics*, Vol. 22, No. 2, pp. 27-49.

Gangani, M & Braden, 2006, ‘Ozcelik & Ferman, 2006, ‘Competence Approach to Human Resources Management: Outcomes and Contributions in a Turkish Cultural Context’, *Human Resource Development Review*, Vol. 5, No. 1, pp. 72-91.

Garton, BL & Robinson, JS 2006. ‘Career paths, job satisfaction, and employability skills of agricultural education graduates’, *Nacta Journal*, Vol. 50, No.12, pp. 31-36.

Garver, MS, Williams, Z & LeMay, SA 2010. ‘Measuring the importance of attributes in logistics research’. *The International Journal of Logistics Managements*, Vol. 21, No. 2, pp. 22-44.

Gazier, B 1998, ‘L´Employabilite´: Bre`ve radiographie d’un concept en mutation. Employability: Short registration of a changing concept’, *Sociologie du Travail*, Vol. 32, No. 4, pp. 575-584.

Gefen, D & Straub, D 2005, 'A Practical Guide to Factorial Validity Using Pls-Graph: Tutorial and Annotated Example', *Communications of the Association for Information Systems*, Vol. 16, pp. 91-109.

Gefen, D, Straub, DW & Boudreau, MC 2000, 'Structural equation modeling and regression: guidelines for research practice', *Communications of the Association for Information Systems*, Vol.4, No.7.

Gerhart, GB, Minkoff, HB & Olsen, RN 1996. *Employee compensation: theory, practice and evidence*, Handbook of Human Resource Management, Blackwell Business, Cambridge, MA.

Gekara, VO, Snell, D, Chhetri, P & Manzoni, A 2014. ‘Meeting skills needs in a market-based training system: a study of employer perceptions and responses to training challenges in the Australian transport and logistics industry’. *Journal of Vocational Education & Training*, Vol. 66, No. 4, pp. 491-505.

Gemini，JM 2015, *Guide to China Market*.

Geng, X & Chu, X 2012, ‘A new importance–performance analysis approach for customer satisfaction evaluation supporting PSS design’, *Expert Syst Appl*, Vol. 39, No. 1, pp.1492–1502.

Ghijsen, P, Semeijn, J & Wang, A 2009. ‘Modern 3PL Services in China: The Role of Trust’. *Journal of International Business and Economy*, Vol.10, No. 2, pp. 103-135.

Gibson, BJ & Cook, RL 2001, ‘Hiring practices in US third-party logistics firms’, *International Journal of Physical Distribution & Logistics Management*, Vol.31, No.10, pp. 714-732.

Gibson, BJ & Cook, RL 2001. ‘Hiring practices in US third-party logistics firms’, *International Journal of Physical Distribution & Logistics Management*, Vol. 31, No.10, pp. 714-732.

Gilmer, B & Deci, E 1977, ‘Industrial and organisational psychology’, *McGraw-Hill*, New York.

Gimenez, C & Sierra, V 2013, 'Sustainable supply chains: governance mechanisms to greening suppliers', *Journal of Business Ethics*, Vol. 116, No. 1, pp. 189-203.

Giovanni, PD & Vinzi, VE 2014. ‘The benefits of the emissions trading mechanism for Italian firms: a multi-group analysis’, *International Journal of Physical Distribution & Logistics Management*, Vol. 44, No. 4, pp. 305-324.

Goh, M & Pinaikul, P 1998. ‘Research paper: logistics management practices and development in Thailand’. *Logistics Information Management*, Vol. 11, pp. 359-369.

Gotz, O, Liehr-Gobbers, K & Krafft, M 2010, 'Evaluation of Structural Equation Models Using the Partial Least Squares (Pls) Approach', in VE Vinzi, WW Chin, J Henseler & H Wang (eds), *Handbook of Partial Least Squares*, Springer, Berlin Heidelberg.

Gowan, MA 2012, ‘Employability, well-being and job satisfaction following a job loss’, *Journal of Managerial Psychology*, Vol. 27, No. 8, pp.780-798.

Grawe, SJ, Chen, H & Daugherty, PJ 2009, ‘The relationship between strategic orientation, service inNovation, and performance’, *International Journal of Physical Distribution & Logistics Management*, Vol. 39, No. 4, pp. 282-300.

GraziaNo, AM & Raulin, ML 2007, *Research Methods: A Process of Inquiry*, Pearson Education, Inc., Boston.

Green Jr, KW, Whitten, D. & Inman, RA 2008. ‘The impact of logistics performance on organisational performance in a supply chain context’. *Research paper*, Vol. 13, No. 4, pp. 317-327.

Grip, AD, Loo, JV & Steur, M 2001, ‘Skills obsolescence: causes and cures, *International Journal of Manpower*, Vol. 22, No. 1/2, pp. 121-138.

Guba, EG & Lincoln, YS 1994, ‘Competing paradigms in qualitative research’, *Handbook of qualitative research*, Vol. 2, pp. 163-194.

Guba, EG 1990, *The paradigm dialog*, Sage Publications.

Guilbert, Y, Bernaud, JL, Gouvernet, B & Rossier, J 2016, ‘Employability: review and research prospects’, *Int J Educ Vocat Guidance*, Vol. 16, p. 69-89.

Guo, H, 2018. *Research on the development strategy of private logistics enterprises -- take X logistics enterprises as an example*, Capital International Economic and Trade University.

Guo, W, Xiao, HJ & Yang, X 2012, ‘An empirical research on the correlation between human capital and career success of knowledge workers in enterprise’. *SciVerse ScienceDirect*, Vol. 25, pp.715-725.

Gunkel, M, Schlagel, C, Langella, IM, Peluchette, JV & Reshetnyak, E 2013, *The influence of national culture on business students’ career attitudes-An analysis of eight countries*, University of Wollongong.

Gunter, B & Furnham, A 1996, ‘Biographical and climate predictors ofjob satisfaction and pride in organisation’, *The Journal of Psychology*, Vol. 130, No. 2, pp. 193–208.

Gurney, DJ, Howlett, N, Pine, K, Tracey, M & Moggridge, R 2017, ‘Body posture effects on self-evaluation: A self-validation approach’, *European Journal of Social Psychology*, Vol. 39, No. 6, pp. 1053-1064.

Haenlein, M & Kaplan, AM 2004, ‘A Beginner's Guide to Partial Least Squares Analysis’, *Understanding Statistics*, Vol. 3, No. 4, pp. 283-97.

Haines, VY, Hamouche, S & Saba, T 2014, ‘Career success: fit or marketability?’, *Career Development International*, Vol. 19, No. 7, pp. 779-793.

Hair, JF, Sarstedt, M, Pieper, TM & Ringle, CM 2012a, 'The Use of Partial Least Squares Structural Equation Modeling in Strategic Management Research: A Review of Past Practices and Recommendations for Future Applications', *Long Range Planning*, vol. 45, pp. 320-340.

Hair, J & Sarstedt, M & Ringle, C & Mena, J 2012b, ‘An assessment of the use of partial least squares structural equation modeling in marketing research’. *Journal of the Academy of Marketing Science*, Vol. 40, No. 3, pp. 414-433.

Hair, JF, Hult, GTM, Ringle, CM & Sarstedt, M 2014, *A primer on partial least squares structural equation modeling (PLS-SEM)*, Thousand Oaks, CA: SAGE Publications.

Hair, JF, Hult, GTM, Ringle, CM & Sarstedt, M 2017, *A primer on partial least squares structural equation modeling (PLS-SEM)*, Second edn, Los Angeles: Sage

Hair, JF, Ringle, CM & Sarstedt, M 2011, 'The use of partial least squares (PLS) to address marketing management topics', *Journal of Marketing Theory & Practice*, Vol.19, No.2, pp. 135-138.

Hair, JF, Bush, RP & Ortinau, DJ 2009, *Marketing Research: In a Digital Information Environment*, 4th edn, McGraw-Hill Irwin, Boston.

Hair, JFJ, Anderson, RE, Tatham, RL & William, C 1998, *Multivariate data analysis*, 5th edn, Prentice-Hall International, Inc., Upper Saddle River, New Jersey.

Hair, JFJ, Black, WC, Babin, BJ & Anderson, RE 2010, *Multivariate Data Analysis*, 7th edn, Prentice Hall, New Jersey.

Hair, JFJ, Bush, RP & Ortinau, DJ 2000, *Marketing research: a practical approach for the new millennium*, McGraw-Hill Irwin, New York.

Hair, JFJ, Gabriel, M & Patel, V 2014, 'AMOS covariance-based structural equation modeling (CB-SEM): guidelines on its application as a marketing research tool', *Brazilian Journal of Marketing*, Vol. 13, No. 2.

Hair, JFJ, Ringle, CM & Sarstedt, M 2013, 'Editorial Partial Least Squares Structural Equation Modeling: Rigorous Applications, Better Results and Higher Acceptance', *Long Range Planning*, Vol. 46, pp. 1-12.

Hair, JFJ, Sarstedt, M, Hopkins, L & Kuppelwieser, VG 2014, 'Partial least squares structural equation modeling (PLS-SEM)', *European Business Review*, Vol. 26, No. 2, pp. 106.

Haiyan, K & Qi, Y 2014. 'The relationship between learning satisfaction and career competencies', *International Journal of Hospitality Management*, Vol. 4, pp. 133-139.

Halldorsson, A & Skjøtt-Larsen, T 2004, 'Developing logistics competencies through third party logistics relationships', *International Journal of Operations &Production Management*, Vol. 24, No. 2, pp. 192-206.

Hampden-Turner, C & Trompenaars, F 1997, 'Response to Geert Hofstede', *International Journal of Intercultural Relations*, Vol. 21, No. 1, pp. 149-59.

Han, H, Hsu, LT & Sheu, C 2010, 'Application of the Theory of Planned Behavior to green hotel choice: Testing the effect of environmentally friendly activities', *Tourism Management*, Vol. 31, No. 3, pp. 325 - 34.

Hancock, G 2015, 'Fortune Cookies, Measurement Error, and Experimental Design'. *Journal of Modern Applied Statistical Methods*, Vol. 2, No. 2, pp. 293-305.

Hauge, JB 2016, 'An educational framework for supporting the implementation of the Intelligent Cargo concept', *International Journal of Advanced Logistics*, Vol. 5, No. 2, pp. 86-100.

Hay, C 2002, 'Political analysis: a critical introduction', *Palgrave Macmillan*.

Hayek, AM, Christopher, H, Thomas, B, Milorad M, Novicevic, C & Daniel, M 2016, ‘Contextualizing human capital theory in a Non-Western setting: Testing the pay-for-performance assumption’, *Journal of Business Research*, Vol. 69, pp. 928-935.

Hayton, JC & McEvoy, GM 2006, ‘Competencies in practice: An interview with Hanneke C. Frese’, *Human Resource Management*, Vol. 45, pp. 495-500.

HDC 2011, ‘Awreness on The Halal Industry’, *Halal Industry Development Corporation*, Vol. 20.

HDC 2014, ‘Opportunities in Halal EcoNomy’, *Halal Industry Development Corporation*, Vol. 2.

Healy, M & Perry, C 2000, ‘Comprehensive Criteria to Judge Validity and Reliability of Qualitative Research within the Realism Paradigm’, *Qualitative Market Research: An International Journal*, Vol. 3, No. 3, pp. 118-26.

Heaslip, G, Vaillancourt, A, Tatham, P, Kovács, G, Blackman, D & Henry, MC 2019, ‘Supply chain and logistics competencies in humanitarian aid’, *Disasters*, vol. 43, no. 3, pp. 686–708

Heijde, CM & Hijden, Bricei 2006. ‘A Competence-based and Multidimensional Operationalization and Measurement of Employability’, *Human Resource Management*, Vol. 45, No. 4, pp.449-476.

Heimler, R, Rosenberg, S & Morote, ES 2012. ‘Predicting career advancement with structural equation modelling’. *Education +Training*, Vol. 54, No. 2, pp. 85-94.

Henseler, J, Ringle, CM & Sinkovics, RR 2009, ‘The use of partial least squares path modeling in international marketing’, *Social Science Electronic Publishing*, Vol.20, No.4, pp. 277-319.

Henseler, J, Ringle, CM & Sarstedt, M 2012, 'Using Partial Least Squares Path Modeling in Advertising Research: Basic Concepts and Recent Issues', in S Okazaki (ed.), *Handbook of Research on International Advertising*, Edward Elgar, Cheltenham.

Henseler, J 2007, ‘A new and simple approach to multi-group analysis in partial least squares path modeling’, *International symposium on PLS and related methods*, pp. 104-107.

Heslin, PA 2002, ‘Self and Other-Referent Criteria of Career Success’, *Journal of Career Assessment*, Vol. 11, No. 3, pp. 262-286.

Hillage, J & Pollard, E 1998, ‘Employability: ‘Developing a framework for policy analysis’ ·

Research Brief, Vol. 85.

Hirschheim, R 1985, ‘Information systems epistemology: An historical perspective’. *Research methods in information systems*, pp. 13-35.

Hirschi, A, Herrmannb, A, Nagy, N & Spurka, D 2016, ‘All in the name of work? Nonwork orientations as predictors of salary, career satisfaction, and life satisfaction’. *Journal of Vocational Behavior,* Vol. 95, pp. 45-57.

Hogan, R, Chamorro-premuzic, T & Kaiser, R 2013,’ Employability and Career Success: Bridging the Gap Between Theory and Reality’, *Industrial and Organisational Psychology*, Vol. 6, pp.3-16.

Hohenstein, NO, Feisel, E & Hartmann, E 2014. ‘Human resource management issues in supply chain management research’, *International Journal of Physical Distribution & Logistics Management*, Vol. 15, No. 4, pp. 434-463.

Hongkrailert, N & Sermsri, S 2008, ‘Job satisfaction among nurses in aceh timur district nanggroe aceh darussalam province Indonesia’, *Journal of Public Health and Development*, Vol. 6, No. 1, pp. 153-162.

Hoppock, R., 1935, *Job Satisfaction*, Harper and Row, New York

Hosseini, SY & Ziaei BA 2014, ‘A data mining approach for segmentation-based importance-performance analysis (SOM–BPNN–IPA): a new framework for developing customer retention strategies’, *Service Business*, Vol. 8, pp.295–312

Hoyle, RH 1995, ‘Structural equation modeling: concepts, issues, and applications’, *Library Quarterly*, Vol. 66, No.2, pp. 253-256.

Hoyle, RH 1999, *Statistical Strategies for Small Sample Research, in: Hoyle, R.H. (Ed.), Statistical Strategies for Small Sample Research*, Sage Publications.

Hrivnak, G 2009, *Extending a model of leader -member exchange development: Individual and dyadic effects of personality, similarity and liking*, PhD thesis, The George Washington University.

Hu, J, Holt, S, Marques, J & Camillo, AA 2014. ‘E-Commerce Development in China and its Implication for Business’, *Marketing Channels and Supply Chain Management in Contemporary Globalism*. pp. 325-334.

Hu, L, Bentler, PM & KaNo, Y 1992, ‘Can test statistics in covariance structure analysis be trusted?’, *Psychological bulletin*, Vol. 112, No. 2, p. 351.

Huang, J 2015. ‘Analysis of logistics talent classification demand in wuhan city’, *Theory of logistics business*, pp. 89-91.

Hulland, J 1999, 'Use of Partial Least Squares (PLS) in Strategic Management Research: A Review of Four Recent Studies', *Strategic Management Journal*, Vol. 20, No. 2, pp. 195-204.

Hummell, AC, Escuro, E, Lundy, KF, Therapy, N, Clinic, C & Cleveland, OH 2010, 'Research & Practice InNovations: Dietetics Management, leadership and education', *Journal of The American Dietetic Association*, pp. 83.

Ira, P & Bassam, B 2008, 'Project management education the human skills imperative', *International Journal of Project Management*, Vol. 26, pp. 124-128.

Jackson, D 2015, 'Employability skill development in work-integrated learning: Barriers and best practice', *Studies in Higher Education*, Vol. 40, No. 2, pp. 350-367.

Jafari, H, Saeidi, N, & Karimi, M 2013, 'Importance-performance analysis of port's services quality from perspective of containerized liner shipping', *Management Science Letters*, Vol. 3, No. 6, pp. 1743-1750.

Jarvis, Cheryl B, MacKenzie, SB & Podsakoff, PM 2003, 'A Critical Review of Construct Indicators and Measurement Model Misspecification in Marketing and Consumer Research', *Journal of Consumer Research*, Vol. 30, No. 2, pp. 199 - 218.

Jim Wu, YC, Huang, SK, Goh, M & Hsieh, YJ 2013. 'Global logistics management curriculum: perspective from practitioners in Taiwan', *Supply Chain Management: An International Journal*, Vol. 18, No. 4, pp. 376-388.

Johnston, DA, Mccutcheon, DM, Stuart, FI & Kerwood, H 2004, 'Effects of supplier trust on performance of cooperative supplier relationships', *Journal of Operations Management*, Vol. 22, No. 1, pp. 23-38.

Joash, M & Rose L, 2020, 'Skills frameworks: a focus on supply chains' *Journal of Transport and Supply Chain Management*, Johannesburg Vol. 14, https://doi.org/10.4102/jtscm.v14i0.458

Joong-Kun Cho, J, Ozment, J & Sink, H 2008, 'Logistics capability, logistics outsourcing and firm performance in an e-commerce market', *International Journal of Physical Distribution & Logistics Management*, Vol. 38, No. 5, pp. 336-359.

Judge, TA, BoNo, JE, Thoresen, CJ & Patton, GK 2001, 'The Job Satisfaction-Job Performance Relationship: A Qualitative and Quantitative Review', *Psychological Bulletin*, Vol. 127, No. 3, pp. 376-407.

Judge, TA, Heller, D & Mount, MK 2002, 'Five-Factor Model of Personality and Job Satisfaction: A Meta-Analysis', *Journal of Applied Psychology*, Vol. 87, No. 3, pp. 530-541.

Kalfa, S & Taksa, L 2015. 'Cultural capital in business higher education: reconsidering the graduate attributes movement and the focus on employability', *Studies in Higher Education*, Vol. 40, No. 4, pp. 580-595.

Kalpina, K, Sania, U & Javed H 2013, ‘HR Management Practices and Customer Satisfaction: The Mediating Effect of Effective Supply Chain Management Practices’, *Global Business and Management Research: An International Journal*, Vol. 5, No. 2 /3, pp. 137-160

Kamrul, A, Marcus, H & Sabik, K 2013. ‘Recruiting Project Managers - A Comparative Analysis of Competencies and Recruitment Signals from Job Advertisements’. *Project Management Journal*, Vol. 44, No. 5, pp. 36-54.

Kanfer, R, Wanberg, CR & Kantrowitz, T 2001. ‘Job search and employment: A personality-motivational analysis and meta-analytical review’, *Journal of Applied Psychology*, Vol. 86, No. 5, pp. 837-855.

Kappelman, L, Jones, CM, Johnson, V, Mclean, ER & Boonme, K 2016, ‘Success at Different Stages of an IT Professional’s Career’, *Communications of The Acm*, Vol. 59, No. 8, pp. 64-70.

Karatepe, OM 2012, ‘Perceived organisational support, career satisfaction, and performance outcomes A study of hotel employees in Cameroon’, *International Journal of Contemporary Hospitality Management*, Vol. 24 No. 5, pp. 735-752.

Karia, N & Wong, CY 2013, ‘The impact of logistics resources on the performance of Malaysian logistics service providers’, *Production Planning & Control*, Vol. 24, No. 7, pp. 589-606.

Karttunen, E. 2018, ‘Purchasing and supply management skills revisited: an extensive literature review’, *Benchmarking: An International Journal*, Vol. 25 No. 9, pp. 3906-3934

Kaynak, H 2003, ‘The relationship between total quality management practices and their effects on firm performance’, *Journal of Operations Management*, Vol. 21, No. 4, pp. 405-435.

Kearney, AT 2011, *China's E-Commerce market: The Logistics Challenges*, Atkearney.

Keep, E, Storey, J & Sisson, K, 2017, ‘Managing the Employment Relationship in Higher Education: Quo Vadis?’, *SRHE/OUP*, pp.34-35.

Keil, M, Lee, HK & Deng, T 2013, ‘Understanding the most critical skills for managing IT projects: A Delphi study of IT project managers’, *Information & Management*, Vol. 50, pp. 398–414.

Keil, M, Saarinen, T, Tan, BCY, Tuunainen, V, Wassenaar, A & Wei, KK 2000, ‘A cross-cultural study on escalation of commitment behavior in software projects’, *Management Information Systems Quarterly*, Vol. 24, No. 2, pp.299-325.

Keller, SB & Ozment, J 2009. ‘Research on personnel issues published in leading logistics journals’, *The International Journal of Logistics*, Vol. 20, No. 3, pp. 378-407.

Kenneth, GW, Dwayne, W & R, AI 2008. ‘The impact of logistics performance on organisational performance in a supply chain context’, *Supply Chain Management: An International Journal*, Vol. 13, No. 4, pp. 317-327.

Khalid, AY O., 2008 ‘Power-Influence in Decision Making, Competence Utilization, and Organisational Culture’, *Journal of Public Administration Research and Theory*, Vol. 19, pp. 385-407.

Kilibarda, M, Pajić, V & Andrejić, M 2019, ‘Human Resources in Logistics and Supply Chains: Current State and Trends’, *International Journal for Traffic & Transport Engineering*, vol. 9, no. 3, pp. 270–279,

Kim, MT & Han, HR 2004, ‘Cultural considerations in research instrument development’, in M. Frank- Stromborg and S. J. Olsen (eds.) Instruments for clinical health care research’, *Jones & Bartlett, Boston*, pp.73-81.

Kim, SK, Yim, BH, Byon, KK, Yu, JG, Lee, SM & Park, JA 2016, ‘Spectator perception of service quality attributes associated with Shanghai Formula One Importance and performance analysis approach’, *International Journal of Sports Marketing and Sponsorship*, Vol. 17, No. 2, pp. 153 – 171.

Kim, YH & Wemmerl¨ov, U 2015. ‘Does a Supplier’s Operational Competence Translate into Financial Performance? An Empirical Analysis of Supplier–Customer Relationships’, *Decision Sciences*, Vol. 46, No. 1, pp. 101-134.

Kitchenham, B & Pfleeger, SL 2002, ‘Principles of survey research: part 5: populations and samples’, *ACM SIGSOFT Software Engineering Notes*, Vol. 27, No. 5, pp. 17-20.

Kline, RB 2005, *Principles and Practice of Structural Equation Modeling*, Guilford Press, New York.

Knemeyer, AM & Murphy, PR 2005, ‘Is the glass half full or half empty?’, *International Journal of Physical Distribution & Logistics Management,* Vol. 35, No. 10, pp. 708 -727.

Knemeyer, MA & Murphy, PR 2005, ‘Is the glass half full or half empty? An examination of user and provider perspectives towards third-party logistics Relationships’, *International Journal of Physical Distribution & Logistics Management*, Vol. 35 · No. 10, pp. 708-727.

Knemeyer, MA & Murphy, PR 2005, ‘Exploring the Potential Impact of Relationship Characteristics and Customer Attributes’, *Transportation Journal*, pp. 5-19.

Ko, W H 2012, ‘The relationships among professional competence, job satisfaction and career development confidence for chefs in Taiwan’, *International Journal of Hospitality Management*, Vol. 31, pp. 1004-1011.

Konga, H & Yan, Q 2014, ‘The relationship between learning satisfaction and career competencies’, *International Journal of Hospitality Management*, Vol.41, pp. 133-139.

Kotzab, H., Teller, C., Bourlakis, M. and Wünsche, S. 2018, ‘Key competences of logistics and SCM professionals – the lifelong learning perspective’, *Supply Chain Management*, Vol. 23 No. 1, pp. 50-64.

Koufteros, X, Babbar, S & Kaighobadi, M 2009, ‘A paradigm for examining second-order factor models employing structural equation modeling’, *International Journal of Production Economics*, Vol. 120, No. 2, pp. 633-52.

Kovács, G & Tatham, P 2010. ‘What Is Special about a Humanitarian Logistician? A Survey of Logistic Skills and Performance’, *Supply Chain Forum*, Vol. 11, No. 3, pp. 32-41.

KPMG 2008, *Logistics in China.*

Kucukaltan, B, Irani, Z & Aktas, E 2016, ‘A decision support model for identification and prioritization of key performance indicators in the logistics industry’, *Computers in Human Behavior*, Vol. 65, pp. 346-358.

Kuhn, TS 1970, *The structure of scientific revolutions*, University of Chicago Press Chicago.

Kuijpers, M A & Scheerens, J 2006, ‘Career Competencies for the Modern Career’, *Journal of Career Development*, Vol. 32, No. 4, pp. 303-319.

Kumar, D & Rahman, Z 2015, ‘Sustainability adoption through buyer supplier relationship across supply chain: a literature review and conceptual framework’, *International Strategic Management Review*, Vol. 3, No. 1-2, pp. 110-127.

Kumar, R 2011, *Research Methodology: A Step-by-Step Guide for Beginners*, SAGE, London.

Kun Cho, JJ, Ozment, J & Sink, H 2008. ‘Logistics capability, logistics outsourcing and firm performance in an e-commerce market’, *International Journal of Physical Distribution & Logistics Management*, Vol. 38, No. 5, pp. 336-359.

Kuvaas, B 2008, ‘An exploration of how the employee–organisation relationship affects the linkage between perception of developmental human resource practices and employee outcomes’, *Journal of Management Studies*, Vol. 45, No. 1, pp. 1-25.

Lagwinski, N & Hunt, J 2009, ‘Fellowship Trends of Pathology Residents’, *Archives of Pathology & Laboratory Medicine*, Vol. 133, No. 9, pp.1431-1436.

Lai, K H & Cheng, T C E 2003, ‘Supply chain performance in transport logistics: an assessment by service providers’, *International Journal of Logistics: Research and Applications*, Vol. 6 No. 3, pp. 151-164.

Lange, A H, Demerouti, E & Heijde, C M 2009, ‘Age effects on the employability–career success relationship’, *Journal of Vocational Behavior*, Vol. 74, pp. 156-164.

Lannu, J E & Nobleza, M F 2017, 'The impact of competitiveness on the employability of Philippines industrial designers: streamlining the program with international market', *International Journal of Business & Administrative Studies*, Vol. 3, No. 1, pp. 30-36.

Larson, PD & Halldorsson, A 2004. 'Logistics versus supply chain management: An international survey'. *International Journal of Logistics Research and Applications: A Leading Journal of Supply Chain Management*, Vol. 7, No. 1, pp. 17-31.

Leahy, LE, Murphy, PR & Poist, RF 1995, 'Determinants of Successful Logistical Relationships: A Third-Party Provider Perspective', *Transportation Journal*, pp. 5-15.

Leary, SO 2016, 'Graduates' experiences of, and attitudes towards, the inclusion of employability-related support in undergraduate degree programmes; trends and variations by subject discipline and gender', *Journal of Education and Work*, Vol. 30, No. 1, pp. 84-105.

Lepine, JA & Crawford, ER 2010, 'Job Engagement: Antecedents and effects on job performance'. *Academy of Management Journal*, Vol. 53, No. 3, pp. 617-635.

Leuschner, R, Carter, CR, Goldsby, TJ & Rogers, ZS 2014. 'Third- Party Logistics: A meta-analytic review and investigation of its impact on performance', *Journal of Supply Chain Management*, Vol. 50, No. 1, pp. 21-43.

Leuven, B 2008. 'Global managers' career competencies', *Career Development International*, Vol. 13, No. 6, pp. 514-537.

Levenson, A 2012. 'Talent management: challenges of building cross-functional capability in high-performance work systems environments', *Asia Pacific Journal of Human Resources*, Vol. 50, pp. 187-204.

Li, G 2014, *Third party logistics development.*

Li, GC. 2013.'An analysis of the brain-drain of private logistics enterprises', *Technology and method*, pp.203-206.

Li, Y 2013. 'Domestic logistics talent demand research review', *Journal of Zhejiang University of Science and Technology*, Vol. 25, No. 4., pp. 290-295.

Li, YX 2011, 'An empirical study on competence model of intermediate professional managers in China', *China Management Studies*, Vol. 6, No. 4, pp. 59-79.

Lillian, TE, Marcus, B & Angie, L 2003, 'Predictors of Success in the Era of the Boundaryless Career', *Journal of Organisational Behavior*, Vol. 24, No. 6, pp.689-708.

Lima, YM, Leeb, TH, Yapc, CS & Lingd, CC 2016, 'Employability skills, personal qualities, and early employment problems of entry-level auditors: Perspectives from employers, lecturers, auditors, and students', *Journal of Education for Business*, Vol. 91, No. 4, pp. 185-192.

Lin, G B 2014, *Third party logistics development: An investigation of factors influencing third party logistics companies' success in China based on two case studies*, Bachelor degree thesis, University of Gavle.

Lin, S 2015. 'Research on the training mode of application-oriented logistics personnel based on school-enterprise cooperation', *Journal of Hubei institute of technology*, Vol. 35, No. 4, pp. 34-35.

Lin, SM, Zhu, ZW & Fan, MH 2010. 'The perspectives of store manager required competencies based on MCDM Method', *Department of Marketing and Logistics China University of Technology*, Vol. 31, No. 5, pp. 1161-1182.

Lin, X, Jiaji, T, Quanyi, H, Wen, Y & Weiguang, L, 2016, 'Review on the Construction of Competence Model for Medical Insurance Practitioners in Chinese Hospitals', *China Health Insurance*, Vol. 0, No. 4, pp.46-49

Little, TD, Das, JP, Carlson, JS & Yachimowicz, DJ 1993, 'The role of higher-order cognitive abilities as mediators of deficits in academic performance', *Learning and tndividual Ditterences*, Vol. 5, No. 3, pp. 219-240.

Liu, JY & Liu, Y H 2016, 'Perceived organisational support and intention to remain: The mediating roles of career success and self-esteemInternational', *Journal of Nursing Practice*, Vol. 22, pp. 205-214.

Liu, Y 2008. *The Current Situation Chinese Third-Party Logistics Companies Are Facing-An Exploratory Study*, Auckland, New Zealand: Massey University.

Liu, YD 2010, 'A revised importance–performance analysis for assessing image: the case of cultural tourism in Britain', *Tourism Analysis*, Vol. 15, No. 6, pp. 673-687.

Llorente, GÁ & Touya, DM 2006, 'The role of employability on temporal workers' job satisfaction', *Revista Galega De EcoNomia*, Vol. 15, No. 2, pp.163-182.

Locke, EA 1976, *The Nature and Causes of Job Satisfaction*, Handbook of Industrial and Organisational Pschology.

Lohr, S 2009, *Sampling: design and analysis*, Cengage Learning.

Lorentz, H, Toyli, J, Solakivi, T & Ojala, L 2013. 'Priorities and determinants for supply chain management skills development in manufacturing firms', *Supply Chain Management: An International Journal*, Vol. 18, No. 4, pp. 358-375.

Luthans, F 1998, 'Organisational Behaviour', *McGraw-Hill*, Boston: Irwin, Vol. 8.

Lutz, H & Birou, L 2013, 'Logistics education: a look at the current state of the art and science', *Supply Chain Management: An International Journal*, Vol. 18/4, pp. 455-467.

Maclennan, B, Langley, J & Kypri, K 2011, 'Distributing surveys: Postal versus drop-and-collect', *Epidemiology*, Vol. 22, No. 3, pp. 443-4.

Maestrinia, V, Luzzinib, D, Maccarronea, P & Caniatoa, F 2017, 'Supply chain performance measurement systems: A systematic review and research agenda', Int. J. *Production EcoNomics*, Vol. 183, pp. 299-315.

Mak, AS, Westwood, MJ & Bbarker, MC 1999, 'Optimising conditions for learning sociocultural competencies for success', *Int, J, Intercultural*, Vol. 12, No. 0, pp. 66-89.

Malhotra, NK 2008, *Marketing research: An applied orientation, 5/e*, Pearson Education India.

Maloni, MJ, Scherrer, CR, Campbell, SM & Boyd, E 2016, 'Attracting Students to the Field of Logistics', *Transportation Journal*, Vol. 55, No. 4.

Mangan, J & Christopher, M 2005. 'Management development and the supply chain manager of the future', *The International Journal of Logistics,* Vol. 16, No. 2, pp. 178-191.

Mangan, J, Gregory, O & Lalwani, C 2001 'Education, Training and the Role of Logistics Managers in Ireland', *International Journal of Logistics: Research and Applications*, Vol. 4, No. 3, pp.314-327.

Martilla, JA & James, JC 1977, 'Importance-performance analysis', *Journal of Marketing*, Vol. 41, No. 1, pp. 77-79.

Martz, B, Hughes, J & Braun, F 2017, 'Creativity and Problem-Solving: Closing the Skills Gap', *Journal Of Computer Information Systems*, Vol. 57, No. 1, pp. 39-48.

Massachusetts, W 1998, 'Accounting Students' Perceptions of Important Skills for Career Success', *Journal of Education for Business*, pp. 215-220.

Matthew, WA. & Stanley, FE 2013. 'Data Science, Predictive Analytics, and Big Data A Revolution That Will Transform Supply Chain Design and Management', *Journal of Business Logistics*, Vol. 34, No. 2, pp. 77-84.

McArdle, S, Waters, L, Briscoe, JP & Hall, DT 2007, 'Employability during unemployment: Adaptability, career identity and human and social capital', *Journal of Vocational Behavior*, Vol. 71, pp. 247-264.

McCelland, S 1994, 'Training needs assessment data-gathering methods: Part 4, survey questionnaire', *Journal of European Industrial Training*, Vol.18, No.5, pp. 22-26.

McColl, E, Jacoby, A, Thomas, L, Soutter, J, Bamford, C, Steen, N, Thomas, R, Harvey, E, Garratt, A & Bond, J 2001, *Design and use of questionnaires: a review of best practice applicable to surveys of health service staff and patients*, Core Research.

McGratha, S, Madzivab, R & Thondhlanaa, J 2016, ‘Rethinking the employability of international graduate migrants: Reflections on the experiences of Zimbabweans with degrees from England’, *Journal of Further and Higher Education*, Vol. 41, No. 2, pp. 238-259.

McLeay, F, Robson, A, & Yusoff, M 2017, ‘New applications for importance-performance analysis (IPA) in higher education: understanding student satisfaction’, *Journal of Management Development*, Vol. 36 No. 6, forthcoming

McQuaid, RW & Lindsay, C 2005, ’The Concept of Employability’, *Urban Studies*, Vol. 42, No. 2, pp.197-219.

McQuitty, S 2004, ‘Statistical Power and Structural Equation Models in Business Research’, *Journal of Business Research*, Vol. 57, No. 2, pp. 175 - 83.

Meadows, C 2003, ‘Formal methods for cryptographic protocol analysis: Emerging issues and trends’, Selected Areas in Communications, *IEEE Journal*, Vol. 21, No. 1, pp. 44-54.

Melbin, JE 1996, ‘The changing face of logistics careers’, *Business Collection*, Vol. 95, No. 11, pp. 34-38.

Meng, Y & Niu, R 2015. ‘Enterprise logistics talent demand analysis and talent cultivation strategy’, *Research and Discussion*, Vol. 4, No. 2.

Michael, WR & Michael, P 2002. ‘Relationships Between Job Skills and Performance A Study of Webmasters’, *Journal of Management Information Systems*, pp. 71-96.

Mikulic, J & Prebezac, D 2012, ‘Accounting for dynamics in attribute-importance and for competitor performance to enhance reliability of BPNN-based importance-performance analysis’, *Expert Systems with Applications*, Vol. 39, pp.5144–5153

Milena, GJ, María, CF & Laura GT 2015, ‘Impact of human resources on supply chain management and performance’, *Industrial Management & Data Systems*, Vol. 115, No. 1, pp. 129 -157

Milkovich, G, Newman, J & Gerhart B 2016, *Compensation*, McGraw-Hill Education, New York.

Miller, JG 1999, ‘Cultural psychology: Implications for basic psychological theory’, *Psychological Science*, Vol.10, pp. 85-91.

Miranda, FJ, Chamorro, A, Murillo, & Vega, J A 2010, ‘An Importance-Performance Analysis of primary healthcare services: Managers’ vs. patients’ perceptions’, *Journal of Service Science and Management*, Vol. 3, No. 2, pp. 227-234.

Mohebifar, R, Hasani, H, Barikani, A & Rafiei, S 2016, ‘Evaluating Service Quality from Patients’ Perceptions: Application of Importancee performance Analysis Method’, *Osong Public Health Res Perspect*, Vol.7, No. 4, pp.233-238.

Mollaret, P & Miraucourt, M 2016, ‘Personality and Social Psychology Is job performance independent from career success? A conceptual distinction between competence and agency’, *Scandinavian Journal of Psychology*, Vol. 57, pp. 607-617.

Mollenkopf, D & Dapiran, GP 2005. ‘The importance of developing logistics competencies: a study of Australian and New Zealand firms’, *International Journal of Logistics: Research and Applications*, Vol. 8, No. 1

Mollenkopf, D & Dapiran, GP 2005. ‘World-class logistics: Australia and New Zealand’, *International Journal of Physical Distribution & Logistics Management*, Vol. 35, No. 1, pp. 63-74.

Moore, GC & Benbasat, I 1991, ‘Development of an instrument to measure the perceptions of adopting an information technology in novation’, *Information systems research*, Vol. 2, No. 3, pp. 192-222.

Moorea, T & Mortonb, J 2017, ‘The myth of job readiness? Written communication, employability, and the ‘skills gap’ in higher education’, *Studies in Higher Education*, Vol. 42, No. 3, pp. 591-609.

Moratuwa, SL & Lasantha, P 2010. ‘Graduates’, university lecturers’ and employers’ perceptions towards employability skills’, *Education + Training*, Vol. 52, No. 3, pp. 226-244.

Mothilal, S, Gunasekaran, A, Nachiappan, S & Jayaram, J 2012. ‘Key success factors and their performance implications in the Indian third-party logistics (3PL) industry’, *International Journal of Production Research*, Vol. 50, No. 9.

Motowidlo, SJ, Borman, WC & Schrnit, MJ 1997. ‘A Theory of Individual Differences in Task and Contextual Performance’, *Human performance*, Vol. 10, No. 2, pp. 71-83.

Mulhall, S 2016,’Critical moments and second-chance education constructing socially excluded women’s stories of career success’, *Journal of Education and Work*, Vol. 29, No. 2, pp. 115-142

Murphy, P & Poist, RF 2007, ‘Skill requirements of senior-level logisticians: a longitudinal assessment’, *Supply Chain Management: An International Journal*, Vol. 12, No.6, pp. 423 – 431.

Murphy, PR & Poist, FR 1991, ‘A Comparison of Headhunter and Practitioner Views Regarding skill requirements of senior-level logistics professionals’, *Logistics and Transportation Review*，Vol. 27, no. 3, pp. 277-294.

Murphy, PR & Poist, FR 1991, ‘Determinants of Successful Logistical Relationships: A Third-Party Provider Perspective’, *Transportation Journal*，pp. 5-13.

Murphy, PR & Poist, FR 1991, ‘Educational Strategies for succeeding in Logistics: A Comparative Analysis’, *Logistics educational strategies*, pp. 36-48.

Murphy, PR & Poist, FR 1991, ‘Skill Requirement of senior-level logistics Executives: An Empirical Assessment’, *Journal of business logistics*, Vol. 12, No. 2, pp. 73-94.

Murphy, PR & Poist, RF 1994, ‘Educational Strategies for Succeeding in Logistics: A Comparative Analysis’, *Logistics educational strategies*, pp. 172-178.

Murphy, PR & Poist, RF 1998, ‘Skill requirements of senior-level logisticians’, *International Journal of Physical, Distribution & Logistics Management*, Vol. 28, No.4, pp. 284 -301.

Murphy, PR & Poist, RF 2006, ‘Skill requirements of contemporary senior and entry level logistics managers: a comparative analysis’, *Transportation Journal*, Vol. 45, No. 3, pp. 46-60.

Mwamwenda, TS 1998, ‘Teaching experience, job security, and job satisfaction among secondary school teachers in South Africa’, *Psychological Reports*, Vol. 82, No.1, pp. 139-142.

Myers, MB, Griffith, DA., Daugherty, PJ & Lusch, RF 2004, ‘Maximizing the human capital equation in logistics education experience and skills’, *Journal of Business Logistics*, Vol. 25, No. 11, pp. 211-230.

Nauta, A, Vianen, AEM, Van, H, BIJM, Dam, K & Willemsen, M 2009, ‘Understanding the factors that promote employability orientation: the impact of employability culture, career satisfaction and role breadth self-efficacy’, *Journal of Occupational and Organisational Psychology*, Vol. 82, pp. 233-251.

Naveed, A, Usman, A & Bushra, F 2011, ‘Promotion: a predictor of job satisfaction a study of glass industry of lahore (pakistan)’, *International Journal of Business & Social Science*, Vol. 2, No. 16, pp. 301-305.

Naylor, LA, Wooldridge, B & Lyles, A 2014, ‘Teaching Public Administration’, Vol.32, No. 1, pp. 68-79.

Nejati, M, Rabiei, S & Chiappetta Jabbour, CJ 2017, ‘Envisioning the invisible: Understanding the synergy between green human resource management and green supply chain management in manufacturing firms in Iran in light of the moderating effect of employees’ resistance to change’, *Journal of Cleaner Production*, Vol. 168, pp. 163–172

Neuman, WL 2011, *Social Research Methods: Qualitative and Quantitative Approaches*, Allyn & Bacon, Boston.

Nilforooshan, P & Salimi, S 2016, ‘Career adaptability as a mediator between personality and career engagement’. *Journal of vocational behaviour*, Vol. 94, pp.1-10.

Ng, TWH, Eby, LT, Sorensen, KL & Feldman, DC 2005, ‘Predictors of objective and subjective career success: a meta-analysis’, *Personnel Psychology*, Vol. 58, No. 2, pp. 367-408.

Noor, M 2010, ‘Supervision, Salary and Opportunities for Promotion as Related to Job Satisfaction’, *ASA University Review*, Vol. 4, No. 1, pp. 255-261.

Nunnally, JC 1978, *Psychometric Theory*, Mc Graw Hill: New York.

Nunnally, JC & Bernstein, IH 1994, *Psychometric Theory*, McGraw-Hill, New York.

Oh, H 2001, ‘Revisiting importance-performance analysis’, *Tourism Management*, Vol. 22, No. 6, pp. 617–627.

O'Leary, Z 2004, *The essential guide to doing research*, Sage.

Onar, SC, Aktas, E, Topcu, YI & Doran, D 2013. ‘An analysis of supply chain related graduate programmes in Europe’, *Supply Chain Management: An International Journal*, Vol. 18, No.4, pp. 398-412.

Oosthuizen, RMR 2016, *Psychosocial employability attributes as predictors of staff satisfaction with retention factors*, Society for Industrial and Organisational Psychology.

Oppenheim, AN 2000, *Questionnaire design, interviewing and attitude measurement*, Bloomsbury Publishing.

Orlikowski, W J & Baroudi, J J 1991, ‘Studying information technology in organisations: Research approaches and assumptions’, *Information systems research*, Vol. 2, No. 1, pp. 1-28.

Osman, KM 2012. ‘Perceived organisational support, career satisfaction, and performance outcomes’, *International Journal of Contemporary Hospitality Management*, Vol. 24, No. 5, pp. 735-752.

Osman, S, Khoiry, A, Muhamad, A, Nasri, Y, Nur I M, Hamzah, N & Kamaruddin 2016, *Implementation of bridge modeling competition in evaluating the students’ competence*, Global Engineering Education Conference.

Oteroa, MS & Shieldsb, R 2016, ‘The investment model of Volunteering in the EU-27countries: Volunteering, skills development and employability. A multi-level analysis’, *European Societies*, Vol. 18, No. 5, pp. 487-513.

Pagell, M 2004, ‘Understanding the factors that enable and inhibit the integration of operations, purchasing and logistics’, *Journal of Operations Management*, Vol. 22, pp. 459-487.

Palmer, KN, Ziegenfuss, DZ & Pinsker, RE 2004,’International knowledge, skills, and abilities of auditors/accountants Evidence from recent competence studies’, *Managerial Auditing Journal*, Vol. 19, No. 7, pp. 889-896.

Pandit, SA, G, P, Wallack, DC & Vijayalakshmi, C 2015. ‘Towards Understanding Employability in the Indian Context: A Preliminary Study’. *Psychology and Developing Societies*, Vol. 27, No. 1, pp. 81-103.

Pant, I & Baroudi, B 2008, ‘Project management education: The human skills imperative’, *International Journal of Project Management*, Vol. 26, pp. 124-128.

Patel, S 2015, ‘Healthcare, Technology, Participation, Research and a PhD blog, blog’, Vol. 1.

Peiró, JM, Agut, S & Grau, R 2010, ‘The relationship between overeducation and job satisfaction among young spanish workers: the role of salary, contract of employment, and work experience’, *Journal of Applied Social Psychology*, Vol. 40, No. 3, pp. 666-689.

Peng, DX & Lai, F 2012, 'Using Partial Least Squares in Operations Management Research: A Practical Guideline and Summary of Past Research', *Journal of Operations Management*, Vol. 30, pp. 467-480.

Pergamit, MR & Veum, JR 1999, ‘What is a promotion?’, *Industrial and Labor Relations Review*, Vol. 52, No. 4, pp. 581-601.

Periatt, JA, Chakrabarty, SA. & Lemay, SA 2007. ‘Using Personality Traits to Select Customer-Oriented Logistics Personnel’， *Transportation Journal*, Vol.46, No. 1, pp. 22-37.

Peter, G, Burcher Gloria, L, Lee Amrik, S & Sohal 2005, ‘Across country comparison of careers in logistics management in Australia and Britain’, *The International Journal of Logistics Management*, Vol. 16, No. 2, pp. 205-217.

Pierro, A, Cicero, L & Higgins, ET 2009, ‘Followers’ satisfaction from working with group-prototypic leaders: promotion focus as moderator’, *Journal of Experimental Social Psychology*, Vol. 45, No. 5, pp. 1105-1110.

Podsakoff, PM, MacKenzie, SB, Lee, JY & Podsakoff, NP 2003, ‘Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies’, *Journal of Applied Psychology*, Vol. 88, No. 5, pp. 879-903.

Poist, R, Scheraga, C & Semeijin, J 2001. ‘Preparation of logistics managers for the contemporary environment of the European Union’, *International journal of Physical Distribution & Logistics Management*, Vol. 31, pp. 487-504.

Poist, RF 1986, ‘Evolution of Conceptual Approaches to Designing Business Logistics Systems’, *Transportation Journal*, pp. 55-64.

Pool, LD & Qualter, P 2013, ‘Emotional self-efficacy, graduate employability, and career satisfaction: testing the associations’, *Australian Journal of Psychology*, Vol. 65, No. 4, pp.214-223.

Poon, JML, Briscoe, JP, Abdul-Ghani, R & Jones, EA 2015, ‘Meaning and determinants of career success: A Malaysian perspective’, *Journal of work and organisational psychology*, Vol. 31, pp. 21-29.

Potgieter, IL, Coetzee, M & Ferreira, N 2016, ‘Employability capacities and organisational commitment foci of human resource professionals: An exploratory Study’, *Journal of Psychology in Africa*, Vol. 26, No. 5, pp. 436-442.

Pouliakas, K 2010, ‘Pay enough, don't pay too much or don't pay at all? the impact of bonus intensity on job satisfaction’, *Kyklos*, Vol. 63, No. 4, pp. 597–626.

Prajogo, D & Sohal, A 2012. ‘Supply chain professionals A study of competencies, use of technologies, and future challenges’, *International Journal of Operations & production Management*, Vol. 30, No. 4, pp. 1532-1554.

Punch, K 2003, *Survey research: The basics*, Sage.

Qenani, E, MacDougall, N & Sexton, C 2014. ‘An empirical study of self-perceived employability: Improving the prospects for student employment success in an uncertain environment’, *Active Learning in Higher Education*, Vol. 15, No. 3, pp. 199-213.

Qiang, W, Zantow, K, Fujun, L & Xiaodong, W 2006, ‘Strategic postures of third-party logistics providers in mainland China’, *International Journal of Physical Distribution & Logistics Management*, Vol. 36, No. 10, pp. 793-819.

Qiu, H 2005, *Forecast analysis of logistics management talent demand in China.*

Qureshi, I & Compeau, D 2009, ‘Assessing between-Group Differences in Information Systems Research: A Comparison of Covariance-and Component-Based SEM’, *MIS Q*, Vol. 33, No. 1, pp. 197 - 214.

Rahman, S & Nie, Q 2014. ‘Graduate students’ perceptions of supply chain skills for supply chain managers’, *Benchmarking: An International Journal*, Vol. 15, No. 4, 21(2), pp. 276-299.

Rahman, S & Yang, X 2012. ‘Skill Requirements for Logistics Professionals in China: An Importance- Expertise Matrix Analysis’, *Supply Chain Forum*, Vol. 13, No. 2, pp. 40-52.

Rattray, J & Jones, MC 2007, ‘Essential elements of questionnaire design and development’, *Journal of clinical nursing*, Vol. 16, No. 2, pp. 234-43.

Rawwas, MY & Iyer, KN 2013. ‘How do small firms possibly survive? A comparison study of marketing skills and logistics infrastructure of small and large wholesalers’, *International Business Review*, Vol. 22, pp. 687-698.

Razzaque, MA & Bin Sirat, MS 2001, ‘Skill requirements: perception of the senior Asian logisticians’, *International Journal of Physical Distribution & Logistics Management*, Vol. 31, No. 5, pp. 374-395.

Redbound, Respository 2015, *Competence development and career success: The mediating role of employability.*

Redmond, E 2013, ‘Competence Models at Work: The Value of Perceived Relevance and Fair Rewards for Employee Outcomes’, *Human Resource Management*, Vol. 52, No.5, pp.771-792.

Reiter-Palmon, R, Brown, M, Sandall, DL, Buboltz, C & Nimps, T 2006, ‘Development of an O*NET web-based job analysis and its implementation in the U. S. Navy: Lessons learned’, *Human Resource Management Review*, Vol. 16, pp. 294-309.

Rich, BL, Lepine, JA, & Crawford, ER 2010, ‘Job engagement antecedents and effects on job performance’, *Academy of Management Journal*, Vol. 53, No. 3, pp.617-635.

Richard, F, Poist, CA & Semeijn, SJ 2001, ‘Preparation of logistics managers for the contemporary environment of the European Union’, *International Journal of Physical Distribution & Logistics Management*, Vol. 31, No. 7/8, pp. 487-505.

Richey, RG & Wheeler, AR 2004, ‘A New Framework for Supply Chain Manager Selection: Three Hurdles to Competitive Advantage’, *Journal of Marketing Channels*, Vol.11, No.4, pp.89-103.

Richey, RG, Tokman, M & Wheeler, AR 2006, ‘A supply chain manager selection methodology of business logistics’, pp. 163-189.

Ringle, CM, Sarstedt, M & Straub, DW 2012, 'Editor's comments: a critical look at the use of PLS-SEM in MIS quarterly', Society for Information Management and The Management Information Systems Research Center: *MIS Quarterly*, Vol. 36, No. 1.

Robbins, SP 2005, *Essentials of organisational behavior*, Prentice Hall, New Jersey.

Robert, H, Tomas, CP & Robert, KB 2013. ‘Employability and Career Success: Bridging the Gap Between Theory and Reality’, *Industrial and Organisational Psychology*, Vol. 6, pp. 3-16.

Rohde, J, Vincent, S & Janneck, M 2012, ‘Kompetenz-und karriereförderliches Führungsverhalten: Zum Stand der Forschung’, *Gruppendyn Organisationsberat*, Vol.43, pp. 91-112.

Robinson, JL, Manrodt, K, Murfield, ML, & Boone CA 2018, ‘Achieving integration A dual pathway model of supply chain orientation and organisational identification’, *The International Journal of Logistics Management*, Vol. 29 No. 4, pp. 1306-1324

Ronald, H, Stuart, R & Elsa-Sofia, M 2012. ‘Predicting career advancement with structural equation modelling’, *Education + Training*, Vol. 54, No. 2, pp. 85-94.

Ronra, B & Chaisawat, M 2009, ‘Factors Affecting Employee TurNover and Job Satisfaction: A Case Study of Amari Hotels and Resorts’, *PSU Phuket International Conference*, pp. 1-14.

Roscoe, JT 1975, *Fundamental research statistics for the behavioral sciences*, New York, NY.

Rothwell, A & ArNold, J 2007, ‘Self-perceived employability: Development and validation of a scale’, *Personnel Review*, Vol. 36, pp. 23-41.

Rowley, UH & Smith, JL 1992, ‘Chief Engineer as Chief Logistician’, *Logistics Symposium*, pp. 17-19.

Rudolf, L, Craig, CR., Thomas, GJ & Goldsby, RS 2014. ‘Third Party Logistics A Meta-Analytic Review and Investigation of Its Impact on Performance’, *Journal of Supply Chain Management*, Vol. 50, No. 1, pp. 21-43.

Rudolph, CW, Lavigne, KN & Zacher, H 2017, ‘Career adaptability: A meta-analysis of relationships with measures of adaptivity, adapting responses, and adaptation results’ *Journal of Vocational Behavior*, Vol. 98, pp.17-34.

Rukh, L, Choudhary, MA & Abbasi, SA 2015, ‘Analysis of factors affecting employee satisfaction: a case study from pakistan’, *Work*, Vol.52, No.1, pp. 137-52.

Russo, M, Guo, L & Baruch, Y 2014, ‘Work attitudes, career success and health: Evidence from China’. *Journal of Vocational Behavior*, Vol. 84, pp.248-258.

S, M, Angappa, G, S, NP & Jayanth, J 2012. ‘Key success factors and their performance implications in the Indian third-party logistics (3PL) industry’, *International Journal of Production Research*, Vol. 50, No. 9, pp. 2407-2422.

Sabaa, SE 2001. ‘The skills and career path of an e€ective project manager’, *International Journal of Project Management*, Vol. 19, pp. 1-7.

Sammarraa, A, Profilib, S & InNocenti, L 2013, ‘Do external careers pay-off for both managers and professionals? The effect of inter-organisational mobility on objective career success’, *The International Journal of Human Resource Management*, Vol. 24, No. 13, pp. 2490-2511.

Sangka, B.K., Rahman, S., Yadlapalli, A. and Jie, F. 2019, ‘Managerial competencies of 3PL providers: A comparative analysis of Indonesian firms and multinational companies’, *The International Journal of Logistics Management*, Vol. 30 No. 4, pp. 1054-1077.

Sandy, WJ, Robert, LC, Maria, KL & Isabel, GK 1999, ‘The role of human capital, motivation and supervisor sponsorship in predicting career success’, *Journal of Organisational Behavior*, pp. 577-595.

Sant'Anna, LL, Paschoal, T & Gosendo, EEM 2012, ‘Work well-being: relationships with leadership styles and support for ascension, promotion and salaries’, *Revista De Administração Contemporânea*, Vol. 16, No. 5, pp. 744-764.

Sarstedt, M, Henseler, J & Ringle, CM 2011, ‘Multi-Group Analysis in Partial Least Squares (PLS) Path Modeling: Alternative Methods and Empirical Results’, *Advances in International Marketing*, Vol.22, pp. 195-218.

Sarstedt, M., Wilczynski, P., & Melewar, T. 2013, ‘Measuring reputation in global markets: A comparison of reputation measures’ convergent and criterion validities’, *Journal of World Business*, Vol.48, pp.329–339.

Saunders, M, Lewis, P & Thornhill, A 2009, *Research Methods for Business Students*, Pearson Education, England.

Scheerens, J 2006. ‘Career Competencies for the Modern Career’, *Journal of Career Development*, Vol. 32, No. 4, pp. 303-319.

Schumacker, RE & Lomax, R 2010, *Structural equation modeling*, Routledge, Taylor & Francis Group, New York.

Seibert, SE, Kraimer, ML & Liden, RC 2001, ‘A Social caoital theory of career success’, *Acadumy of Management Journal*, Vol. 44, No. 2, pp. 219-237.

Sekaran, U 2007, *Research Methods for Business*, 4 edn, John Wiley & Sons, New Delhi.

Sekaran, U & Bougie, R 2009, *Research Methods for business*, John Wiley & Sons Ltd. United Kingdom.

Sekaran, U & Bougie, R 2010, *Research Methods for Business: A Skill Building Approach*, Wiley, London.

Sekaran, U 2003, *Research methods for business,* Hoboken, NJ.

Sharma, JP & Bajpai, N 2011, ‘Salary satisfaction as an antecedent of job satisfaction: development of a regression model to determine the linearity between salary satisfaction and job satisfaction in a public and a private organisation’, *European Journal of Social Sciences*, Vol. 18, No. 3, pp. 450-461.

Shi, Y & Handfield, R 2012. ‘Talent management issues for multinational logistics companies in China: observations from the field’, *International Journal of Logistics: Research and Applications*, Vol. 15, No. 3, pp. 163-179.

Shields, MA & Ward, M 2001, ‘Improving nurse retention in the National Health Service in England: The impact of job satisfaction on intention to quit’, *Journal of Health Economics*, Vol. 20, pp. 677-701.

Shin, SY & Pak, MS 2016, ‘The Critical Factors for Korean Forwarders’Purchasing Negotiation in International Logistics’, *The Asian Journal of Shipping And Logistics*, Vol. 34, pp. 195-201.

Shockley, KM, Ureksoy, H, Rodopman, OB, Poteat, LF & Dullaghan, TR 2016, ‘Development of a new scale to measure subjective career success: A mixed-methods study’, *Journal of Organisational Behavior,* Vol. 37, pp. 128-153.

Singleton, R & Straits, B 2010, *Approaches to social research,* New York, NY: Oxford University Press.

Skjøtt-Larsen, T & Halldo´rsson, A 2004. ‘Developing logistics competencies through third party logistics relationships’, *International Journal of Project Management*, Vol. 24, No. 2, pp. 192-206.

Smith, JL & Rowley, U 1993. ‘Chief Engineer as Chief Logistician’, *Naval Engineers Journal*, Vol. 9, pp. 31-36.

Smythe, JF, Haase, S, Thomas, E& Steele, C 2012, ‘Development and Validation of the Career Competencies Indicator (CCI)’, *Journal of Career Assessment*, Vol.21, No.2, pp.227-248.

Sobh, R & Perry, C 2006, ‘Research Design and Data Analysis in Realism Research’, *European Journal of Marketing*, Vol. 40, No. 11/12, pp. 1194-209.

Soens, N 2008, ‘Protean attitude and career success: the mediating role of self-management’, *Journal of Vocational Behavior*, Vol. 73, No. 3, pp. 449-456.

Sohal, AS 2013. ‘Developing competencies of supply chain professionals in Australia: collaboration between businesses, universities and industry associations’, *Supply Chain Management: An International Journal*, Vol. 18, No. 4, pp. 429-439.

Solberg, E & Dysvik, A 2016, ‘Employees’ perceptions of HR investment and their efforts to remain internally employable: testing the exchange-based mechanisms of the ‘new psychological contract’’, *The International Journal of Human Resource Management*, Vol. 27, No. 9, pp. 909-927.

Song, Y. Zhang, J & Qiang, Y 2005. ‘Evaluation and selection model of logistics management based on AHP’, *Communications Standardization,* Vol. 138, pp. 47-49.

Soosay, CA 2005, ‘An empirical study of individual competencies in distribution centres to enable continuous Innovation’, *Creativity and Innovation Management*, Vol. 14, No. 3, pp. 299-310.

Sophie, B, Denis, P, Olga, FN & Mélissa, L 2015. ‘Competencies of project managers in international NGOs Perceptions of practitioners’, *International Journal of Project Management*, Vol. 33, pp. 116-125.

Souza, GD 2002, ‘A study of the influence of promotions on promotion satisfaction and expectations of future promotions among managers’, *Human Resource Development Quarterly*, Vol. 13, No. 3, pp. 325-340.

Spector, PE 1997, *Job satisfaction: Application, assessment, cause, and consequences, Sage Publications*, Inc, Thousand Oaks.

Spurk, D, Keller, AC & Hirschi A, 2016, 'Do Bad Guys Get Ahead or Fall Behind? Relationships of the Dark Triad of Personality with Objective and Subjective Career Success', *Social Psychological and Personality Science*, Vol. 7, No. 2, pp. 113-121.

Stephen, AS 2010, 'Stakeholder competence assessments as predictors of career success', *Career Development International*, Vol. 15, No 5, pp.459-478.

Stoltz, E 2014, *Employability attributes and career adaptability as predictors of staff satisfaction with retention factors*, Master Thesis.

Straub, D, Boudreau, MC & Gefen, D 2004, 'Validation guidelines for IS positivist research', *Communications of the Association for Information Systems*, Vol. 13.

Sturges, J 1999. 'What it Means to Succeed Personal Conceptions of Career Success Held by Male and Female Managers at Different Ages', *British Journal of Management*, Vol. 10.

Svensson, G., Ferro, C., Høgevold, N., Padin, C., & Sosa Varela, J.C. 2018, 'Developing a theory of focal company business sustainability efforts in connection with supply chain stakeholders', *Supply Chain Management: An International Journal*, Vol. 23 No. 1, pp. 16–32.

Swafford, PM, Ghosh, S & Murthy, N 2008, 'Achieving supply chain agility through IT integration and flexibility', *International Journal of Production Economics*, Vol. 116, No. 2, pp. 288-97.

Tabachnick, B & Fidell, L 2007, *Using Multivariate Statistics. Pearson Education*, Boston, MA.

Tan, AWK, Zhao, Y, Zhang, D. & Hilmola, OP 2014. 'State of third-party logistics providers in China', *Industrial Management & Data Systems*, Vol. 114, No. 9, pp. 1322-1343.

Tan, KC 2002, 'Supply chain management: practices, concerns, and performance issues', *Journal of Supply Chain Management*, Vol. 38, No. 4, pp. 42-53.

Tarhini, A, Hone, K & Liu, X 2014,' The effects of individual differences on e-learning users' behaviour in developing countries: A structural equation model', *Computers in Human Behavior*, Vol. 41, pp. 153–163.

Tarique, I & Schuler, RS 2010, 'Global talent management: Literature review, integrative framework, and suggestions for further research', *Journal of World Business*, Vol. 45, pp. 122-133.

Tatham, p, Kovacs, G & Larson, P 2010, *What Skills and Attributes are Needed by Humanitarian Logisticians-a Perspective*, Drawn from International Disaster Relief Agencies, Vancouver.

Taylor, GS & Vest, MJ 1992, ‘Pay comparisons and pay satisfaction among public sector employees’, *Public Personnel Management*, Vol. 21, No.4, pp. 445-454.

TechNavio 2014, *Logistics Market in China 2015-2019,* Infiniti Research Ltd

Tenenhaus, M, Esposito Vinzi, V, Chatelin, YM & Lauro, C 2005, 'Pls Path Modeling', *Computational Statistics & Data Analysis*, Vol. 48, No. 1, pp. 159-205.

Thai, V, Ibrahim, KB, Ramani, V & Huang, HY 2012. ‘Competence Profile of Managers in the Singapore Logistics Industry’, *The Asian Journal of Shipping and Logistics*, Vol. 28, No. 2, pp. 161-182.

Thai, VV 2012. ‘Competence requirements for professionals in logistics and supply chain management’, *International Journal of Logistics: Research and Applications*, Vol. 2, No. 4, pp. 109-126.

Thai, VV, Cahoon, S & Tran, HT 2011. ‘Skill requirements for logistics professionals: findings and implications’, *Asia Pacific Journal of Marketing and Logistics,* Vol. 23, pp. 553-574.

Thomas, WH & Feldman, DC 2010, ‘Human capital and objective indicators of career success: The mediating effects of cognitive ability and conscientiousness’, *Journal of Occupational and Organisational Psychology*, Vol. 83, pp. 207-235.

Traut, CA, Larsen, R & Feimer, SH 2000, ‘Hanging on or fading out? Job satisfaction and the long-term worker’, *Public Personnel Management*, Vol. 29, No. 3, pp. 343-351.

Treiblmaier, H & Filzmoser, P 2010, 'Exploratory Factor Analysis Revisited: How Robust Methods Support the Detection of Hidden Multivariate Data Structures in Is Research', *Information & Management*, Vol. 47, No. 4, pp. 197-207.

Tsanos, C.S., & Zografos, K.G. 2016, ‘The effects of behavioural supply chain relationship antecedents on integration and performance’, *Supply Chain Management: An International Journal*, Vol. 21 No. 6, pp. 678–693.

Tsutsumi, E 2005, ‘Evaluation of Students’ Spatial Abilities Using Mental Cutting Test’, *International journal technology and engineering education*, Vol. 2, No. 2, pp. 77-82.

Tu, LL, S & Hu, C 2010. ‘China's logistics talent demand and post capacity analysis’, *Journal of Hunan industrial technical college*, Vol. 10, No. 3, pp. 57-59.

Tungjitjarurn, W 2020, ‘An Exploratory Factor Analysis of Logistics Capabilities for Manufacturing Industries in Thailand’, *International Journal of Business*, vol. 25, no. 1, pp. 83–98

Turban, DB, Moake, TR, Yu-Hsien Wu, S & Cheung, YH 2017, ‘Linking Extroversion and Proactive Personality to Career Success: The Role of Mentoring Received and Knowledge’, *Journal of Career Development*, Vol. 44, pp. 20-33.

Urbach, N & Ahlemann, F 2010, 'Structural Equation Modeling in Information Systems Research Using Partial Least Square', *Journal of Information Technology Theory and Application*, Vol. 11, No. 2, pp. 5-40.

Vaiman, V & Collings, DG 2013. ‘Introduction: Talent management: advancing the field’, *The International Journal of Human Resource Management*, Vol. 24, No. 9, pp. 1737-1743.

van Hoek, RI 2001. ‘Logistics Education Achieving market and research driven skill development’, *International Journal of Physical Distribution & Logistics Management*, Vol. 31, pp. 505-519.

van Loo, J, de Grip, A & de Steur, M 2001, ‘Skills obsolescence: causes and cures’, *International Journal of Manpower*, Vol. 22, No.1/2, pp. 121 – 138.

Vandaele, D& Gemmel, P 2006, *Impact of Purchased Business Services on Downstream Supply Chain Members*, The 22nd IMP-conference in Milan, Italy.

Vanhercke, D 2015. ‘Perceived employability and psychological functioning framed by gain and loss cycles’, *Career Development International*, Vol. 20, No. 2, pp. 179-198.

Vanhercke, D, De Cuyper, N, Peeters, E & DeWitte, H 2014, ‘Defining perceived employability: A psychological approach’, *Personnel Review*, Vol. 43, No. 4, pp.592-605.

Velde, M & Berg, P 2003, ‘Managing functional flexibility in a passenger transport firm’, *Human Resource Management Journal*, Vol. 13, No. 4, pp. 45-55.

Vinzi, VE, Trinchera, L & Amato, S 2010, 'Pls Pathmodeling: From Foundations to Recent Developments and Open Issues Formodel Assessment and Improvement', in VE Vinzi, WW Chin, J Henseler & H Wang (eds), *Handbook of Partial Least Squares. Concepts, Methods and Applications*, Springer, Berlin, Germany

Vivek, N& Ravindran, S 2009, ‘An empirical study on the impact of supplier performance on organisational performance: a supply chain perspective’, *South Asian Journal of Management*, Vol. 16, No. 3, pp. 61-70.

Voon-Hsien Lee, Keng-Boon Ooi, Alain Yee-Loong Chong & Seow, C 2014, ‘Creating technological innovation via green supply chain management: An empirical analysis’, *Expert Systems with Applications*, Vol. 41, No. 16, pp. 6983–6994

Vos, AD & Hauw, SD 2010, *Linking competence development to career success: exploring the mediating role of employability*, Vlerick Leuven Gent Management School Working Paper.

Vos, AD, Hauw, SD, Beatrice IJM & Heijden, V 2011, ‘Competence development and career success: the mediating role of employability’, *Journal of Vocational Behavior*, Vol. 79, No. 2, pp. 438-447.

Voss, MD, Page, JR, TJ, Keller, SB. & Ozment, J 2006. ‘Determining Important Carrier Attributes: A Fresh Perspective Using the Theory of Reasoned Action’, *Transportation Journal*, pp. 7-19.

Wade, MR & Parent, M 2002. ‘Relationships Between Job Skills and Performance: A Study of Webmasters’, *Journal of Management Information Systems*, Vol. 18, No. 3, pp. 71-96.

Wagner, C, Sancho-Esper, F & Rodriguez-Sanchez, C 2020, ‘Skill and knowledge requirements of entry-level logistics and supply chain management professionals: A comparative study of Ireland and Spain’, *Journal of Education for Business*, vol. 95, no. 1, pp. 23–36

Walker, RL 1976, ‘Social Survey Techniques: A Note on the 'Drop and Collect' Method’, *Area*, Vol.8, No.4, pp.284-288.

Waller, MA & Fawcett, SE 2013. ‘Data Science, Predictive Analytics, and Big Data: A Revolution That Will Transform Supply Chain Design and Management’, *Journal of Business Logistics*, Vol. 32, No. 4, pp. 77-84.

Waltham, M 1998. ‘Accounting Students Perceptions of Important Skills for career success’, *Journal of Education for Business*, Vol. 3, pp. 215-220.

Wang, L, ‘Logistics Management Teaching Reform in Higher Education’, *M & D Forum*, pp. 20-23.

Wang, Q 2015. ‘Logistics management professional ERP course classroom teaching reform’, *Software Guide*, Vol. 14, No. 6, pp. 192-193.

Wang, Q, Zantow, K, Lai, F & Wang, X 2006. ‘Strategic postures of third-party logistics providers in mainland China’, *International Journal of Physical Distribution & Logistics Management*, Vol. 36, No. 10, pp. 793-819.

Wang, YF 2013. ‘Constructing career competence model of hospitality industry employees for career success’, *International Journal of Contemporary Hospitality Management*, Vol. 23, No. 7, pp. 994-1016.

Watts, AG 2006. ‘Career development learning and employability’, *The Higher Education Academy*, Vol. 7, pp. 1-36.

Wayne, SJ, Liden, RC, Kraimer, ML & Graf, IK 1999, ‘The role of human capital, motivation and supervisor sponsorship in predicting career success’, *Journal of Organisational Behavior*, Vol. 20, No. 5, pp. 577-595.

Weaver, A, Greying, T, Wilgen, B & Kruger, F 1996. ‘Logistics and Team Management of A Large Environment Impact Assesment: Proposed Dune Mining At ST.Lucia,South Africa’, *Elsevier Science Inc*, Vol. 16, pp. 103-113.

Wei, WJ & Fu, SL 2014, ‘Discussion on the Salary Management under Contract Based on Post Competence’, *Hospital Management Forum*, Vol. 31, No 10, pp.11-13

Welters, R 2014, Salary survey.

Wen-Hwa, K 2014. ‘The relationships among professional competence, job satisfaction and career development confidence for chefs in Taiwan’, *International Journal of Hospitality Management*, Vol. 31, pp. 1004-1011.

Westwood, MJ 1999. ‘Optimising conditions for learning sociocultural competencies for success’, *Elseviors Science*, Vol. 23, No. 1, pp. 77-99.

Wetzels, M, Odekerken-Schröder, G & Oppen, CV 2009, ‘Using pls path modeling for assessing hierarchical construct models: guidelines and empirical illustration’, *Mis Quarterly,* Vol. 33, No. 1, pp. 177-195.

Wickramasinghe, V & Perera, L 2010, ‘Graduates’, university lecturers’and employers’ perceptions towards employability skills’, *Education+Training*, Vol. 52, No. 3, pp. 226-244.

Wicks, AC & Freeman, RE 1998, ‘Organisation studies and the new pragmatism: Positivism, anti-positivism, and the search for ethics’, *Organisation science*, Vol. 9, No. 2, pp. 123-40.

Wilden, R, Gudergan, SP, Nielsen, BB & Lings, I 2013, 'Dynamic Capabilities and Performance: Strategy, Structure and Environment', *Long Range Planning*, Vol. 46, pp. 72-96.

Willem, W, Cilliers, PJ & Nagel, A 1994, ‘Logistics Trends in South Africa’, *International Journal of Physical Distribution & Logistics Management*, Vol. 24, No. 7, pp. 4-14.

Williamsa, S, Dodda, LJ, Steeleb, C & Randallc, R 2016, ‘A systematic review of current understandings of employability’, *Journal of Education and Work*, Vol. 29, No. 8, pp. 877-901.

Witt, L & Wilson, JW 1990, ‘Income sufficiency as a predictor of jobsatisfaction and organisational commitment: Dispositional differences’, *Journal of Social Psychology*, Vol. 130, No. 2, pp. 267-268.

Wittekind, A, Reader, S & Grote, G 2010, ‘A longitudinal study of determinants of perceived employability’, *Journal of Organisational Behavior*, Vol.31, pp.566-586.

Wold, H 1982, 'Soft modelling: The Basic Design and Some Extensions', Systems under Indirect Observation: Part II, *Amsterdam: North-Holland*, pp.1-54.

Wong, DW, Choy, K, Chowb, HK & Lin, C 2014, 'Assessing a cross-border logistics policy using a performance measurement system framework: the case of Hong Kong and the Pearl River Delta region', *International Journal of Systems Science,* Vol. 45, No. 6, pp. 1306-1320.

Wong, KKK 2013, 'Partial least squares structural equation modeling (PLS-SEM) techniques using Smart PLS', *Marketing Bulletin*, Vol. 24, pp.1-32.

Wu, JY & Hou, JL 2010, 'An employee performance estimation model for the logistics industry', *Decision Support Systems*, Vol.48, pp.568-581.

Wu, J, Huang, SK, Goh. M & Hsieh, YG 2013, 'Global logistics management curriculum: perspective from practitioners in Taiwan', *Supply Chain Management: An International Journal*, Vol. 18, No. 4, pp.376-388.

Wuyts, S & Geyskens, I 2005, 'The formation of buyer—supplier relationships: detailed contract drafting and close partner selection', Journal of Marketing, Vol. 69, No. 4, pp. 103-117.

Xie, J 2012, '*The development and research of index system and self-evaluation scale for graduates' employability,* Master Thesis, Nanjing University of Science and TechNology.

Xie, X Q & Wang, X H 2012, 'Comparative analysis of influencing factors on job satisfaction of employees in state owned enterprises and private enterprises',*Academic research,*No.10.

Xinhua 2014, *The state council issued a long-term plan for the development of logistics industry*, People's Daily.

Xu, HL, 2007, 'The innovation of salary incentive in modern marketing logistics', *Seeker*.

Yang, F 2011, *The research of correlation between employees' employability and career success*, Master Thesis, Jinan University.

Yao, C 2014, 'The impact of cultural dimensions on Chinese expatriate's career capital'. *The International Journal of Human Resource Management*, Vol. 25, No. 5, pp. 609-630.

Yin, FP, 2017, *Research on construction and application of Human Resource Competence Model of SZ logistics company*, Hunan University of Technology.

Shou, Y, & Wang WJ, 2017, 'Multidimensional competences of supply chain managers: an empirical study', *Enterprise Information Systems*, Vol. 11, No. 1, pp. 58-74.

Young-sik, A & McLean, GN 2008, 'Competencies for Port and Logistics Personnel: An Application of Regional Human Resource Development', *Asia pacific education review*, Vol. 9, No.4, pp. 542-551.

Yu, C 2014. 'The Research on Private Express Enterprises' Development Strategy of Yangtze River Delta', *International Journal of Business and Social Science*, Vol. 5, No. 5, pp. 182-187.

Yuan, Q 2006. ‘Analysis and training requirements of logistics talents in China’, *China waterway*, Vol. 6, No. 5, pp. 96-98.

Yun, JS 2011, ‘Analysis of the Salary System Based on Competence of Chinese Companies’, *Journal of Harbin University of Commerce：Social Science Edition*, No. 2, pp. 42-46.

Yusuf, YY, Gunasekaran, A, Adeleye, E & Sivayoganathan, K 2004, 'Agile supply chain capabilities: Determinants of competitive objectives', *European Journal of Operational Research*, Vol. 159, No. 2, pp. 379-92.

Zahner, J & Sterling, SJ 2005, ‘Donning the Wizard's Hats: Online Students Learn to Teach Online’, *Distance Learning*, Vol. 2 No.1, pp. 29-34.

Zane, B, Marie, V, Nancy, B, Linda, D & Donna, S 2002,‘The increasing scope of training and development competence’, *Benchmarking: An International Journal*, Vol. 9, No 1, pp.43-61.

Zhang, H & Okoroafo, SC 2015. ‘Third-Party Logistics (3PL) and Supply Chain Performance in the Chinese Market: A Conceptual Framework’, *Engineering Management Research*, Vol. 4, No. 1, pp. 38-48.

Zhang, J 2015. ‘Talent shortage problem and talent cultivation in logistics industry’, *management of operation*. Vol. 5.

Zhang, LH & Shi, LB 2011. ‘Development of third-party logistics enterprises and training strategy of logistics talents in China’, *enterprise economics*, No.5.

Zhang, S 2007. ‘Analysis of the demand trend of logistics talents and the research of training countermeasures’, *Modern logistics industry*. Vol. 5, pp. 95-96.

Zhao, P & Li, G 2014. ‘The Reform of Logistics Education Based on "High-Quality Personnel Training" in Higher Vocational School. International Conference on Global Economy’, *Finance and Humanities Research*, pp. 125-127.

Zhao, Y 2015. ‘Research on the cultivation of logistics talents in China’, *Science Forum*. pp. 233-234.

Zhou, JY 2009, ‘Research on competence of state-owned agricultural enterprises’, *Management Science and Engineering*, pp.1-144.

Zhou, YH 2015, *Influencing factors and Countermeasures of middle and upper level managers' turnover in multinational corporations*, Southeast University

Ziegler, J, Dearden, P & Rollins, R 2012, ‘But are tourists satisfied? Importance-performance analysis of the whale shark tourism industry on Isla Holbox, Mexico’, *Tourism Management*, Vol. 33, pp. 692-701.

Zikmund, WG 2003, *Business Research Methods*, Thomson/South-Western, Cincinnati, OH.

APPENDICES

Appendix A: Survey Questionnaire in MANDARIN

School of Business IT and Logistics

问卷调查：中国第三方物流企业物流从业人员物流胜任力、就业力和事业成功相关性研究

诚挚邀请您参加上海对外经贸大学（SUIBE）和澳大利亚皇家墨尔本理工大学（RMIT）的合作研究项目。回答本问卷将花费您大约 30 分钟时间。

本问卷是研究项目”中国第三方物流企业物流从业人员物流胜任力、就业力和事业成功相关性研究”的重要组成部分。我们以物流管理人员必须具备的技能定义胜任力。就业力则是在职场获得和保有某份职业职务的可能性。而事业成功与否则通过职务晋升、个人成就等指标测量。

- 如果您同意参与本项目研究，您将需要花30分钟回答问卷上的问题，问题的回答方式是用1~7表示特别不重要（完全不同意）、部分不重要(部分不同意)、不重要（不同意）、一般、重要（同意）、部分重要(部分同意)、特别重要（完全同意），请您在相应处标记出您的选择。
- 您提供的信息将如何使用: 我们将对您提供的数据和信息严格保密,我们保证在论文或者研究报告中不提及您及企业的名字，仅在出现以下情况时公开：（1）出于保护您或者他人免受伤害的需要,（2）依据法律的特别规定或者许可，或者（3）您已书面同意我们公开。

问卷填写的注意事项：

- 您回答问卷中的所有问题对本研究的成功至关重要，即使有些问题是类似的，也请您做出回答。部分回答本问卷将使问卷不可用 .所以，**请一定不要留空白。**
- 本问卷不设答案为“对错”类的问题
- 如果您希望对某些问题发表看法，请写在问卷最后留出的空白处。
- 本研究成果将以总报告的形式呈现，不会涉及具体的组织、部门或者个人信息。
- 如果您对本问卷有任何疑问或者意见, 请通过邮件联系聂清qing.nie@rmit.edu.au。

衷心感谢您抽出宝贵的时间和精力参与本研究项目，**如果您愿意获得本研究成果,请将您的名片随问卷一同寄回**。我们将对您的回答严格保密，参与者的姓名、部门和企业将不会公开。

第一部分：基本信息

1：答问者基本信息

下列信息需要您详细回答，请将您的答案以√显示在方块中，并对具体选项也打√

1. 您在企业中的职务是?
   - ☐ 执行官 ☐ 高级经理 ☐ 经理 ☐主任 ☐ 主管
   - ☐ 其他Others, 请列明please specify: ____________________

2. 您受教育的程度是?
   - ☐ 高中 ☐ 大专 ☐ 本科 ☐ 硕士 ☐ 博士
   - ☐ 其他Others, 请列明please specify: ______________________

3. 您获得最终学位/学历的国家是?
   - ☐ 中国
   - ☐ 其他国/地区other countries/regions，请列明please specify: ____________________

4．您在国外受教育的时间是?

   - ☐ 无 ☐ 少于1年 ☐ 1年 ☐ 2-3年 ☐ 4-6年 ☐ 6-8年
   - ☐ 其他Others, 请列明please specify: ___________________

5．您有多少年的管理经验？

   - ☐ 少于等于1年 ☐ 2-5年 ☐ 6-10年
   - ☐ 11-15年 ☐ 16-20年 ☐ 20年以上

6．您在第三方物流企业工作了多少年？

   - ☐ 少于等于1年 ☐ 2-5年 ☐ 6-10年
   - ☐ 11-15 年 ☐ 16-20 年 ☐ 20 年以上

2：企业基本信息

1. 您所在企业的职工规模是?
   - ☐ 1-20人 ☐ 21-49人 ☐ 50-99人 ☐100-200人
   - ☐ 201-299人 ☐ 300-999人 ☐1000人及以上

2. 您所在的企业已经开办了多少年?
   - ☐ 3年以下 ☐ 3-5年 ☐ 6-10年 ☐ 11-15年
   - ☐ 16-20年 ☐ 21-30年 ☐ 30年以上

3. 过去三个财务年度以人民币计价的年均营业收入
   - ☐ 少于100万元 ☐ 100万元-200万元 ☐ 200万元-300万元
   - ☐ 300万元-500万元 ☐ 500万元-1000万元 ☐ 1000万元-5000万元
   - ☐ 5000万元-2亿元 ☐ 2亿元至3亿元 ☐ 3亿元-4亿元
   - ☐ 4亿元以上
4. 您所在企业的类型(基于资本来源)
   - ☐ 全民所有制 ☐三资企业 ☐私营企业
   - ☐ 其他Others, 请列明please specify: ___________________

5. 您所在企业提供的服务项目?(可多选)
   - ☐ 运输Transport ☐ 仓储Warehousing ☐ 库存管理Inventory management
   - ☐ 集中运输Shipment consolidation ☐ 承运人选择Carrier selection ☐ 订单处理Order processing
   - ☐ 包装Packaging ☐ 货运代理Freight forwarding ☐ 订单履行Order fulfillment
   - ☐ 回收管理Return management
   - ☐ 其他 Others, 请列明please specify: ________________

6．您所在企业的服务对象或行业类型？（可多选）

   - ☐ 煤炭 ☐钢铁 ☐ 机械 ☐矿建材料 ☐石油化工 ☐农副土特产 ☐食品 ☐医药
   - ☐ 纺织服装 ☐汽车及配件 ☐机电设备 ☐电子产品 ☐家用电器 ☐烟草 ☐图书报刊音像制品
   - ☐ 其他 Others, 请列明please specify: ________________

7．您所在企业服务的主要市场或地区?

   ☐ 全球 ☐ 亚太 ☐ 中国

   - ☐ 其他 Others, 请列明please specify: ________________

8．您所在企业的业务分布区域（可多选）？

   - ☐ 东北经济区 ☐ 北部沿海(渤海及京津冀)经济区 ☐ 东部沿海（长三角）经济区
   - ☐ 东南沿海（珠三角）经济区 ☐ 黄河上中游经济区 ☐ 长江上中游经济区
   - ☐ 珠江上中游经济区 ☐ 内蒙古经济区 ☐ 新疆经济区 ☐ 青藏高原经济区

   请举例具体城市: ________________________________

第二部分、物流胜任力、职业成功与职业满意度

1：物流胜任力

1．物流管理-一般技能组

项目编号 Item code	测量项目	完全不同意	不同意	有些不同意	一般	有些同意	同意	完全同意
LC-LGM1	我具备作为团队成员所需的能力和态度	1	2	3	4	5	6	7
LC-LGM2	我对供应链导向具有清楚的理解	1	2	3	4	5	6	7
LC-LGM3	我在所处的工作环境中具备宏观思维能力（大局观）	1	2	3	4	5	6	7
LC-LGM4	我认为自己具有有效的口头和书面沟通能力	1	2	3	4	5	6	7
LC-LGM5	我具有协调跨职能团队的丰富经验	1	2	3	4	5	6	7
LC-LGM6	我具有企业内、企业间横向和纵向沟通能力	1	2	3	4	5	6	7
LC-LGM7	我认为自己善于谈判	1	2	3	4	5	6	7
LC-LGM8	我具有有效管理冲突的能力	1	2	3	4	5	6	7
LC-LGM9	我认为自己是有效率的团队领导	1	2	3	4	5	6	7
LC-LGM10	我认为自己擅长英语	1	2	3	4	5	6	7

2．物流分析技能组

项目编号 Item code	测量项目 Measurement Item	完全不同意	不同意	有些不同意	一般	有些同意	同意	完全同意
LC-LA1	我具有有效管理供应链库存的能力	1	2	3	4	5	6	7
LC-LA2	我认为自己胜任项目管理	1	2	3	4	5	6	7
LC-LA3	我有能力制定关于产品和服务的有效配送计划	1	2	3	4	5	6	7
LC-LA4	我认为自己胜任仓储系统管理	1	2	3	4	5	6	7
LC-LA5	我具有运用定量方法解决高层次订单问题的能力	1	2	3	4	5	6	7
LC-LA6	我具有使用需求预测工具和技术的能力	1	2	3	4	5	6	7

3．物流信息系统技能组

项目编号 Item code	测量项目 Measurement Item	完全不同意	不同意	有些不同意	一般	有些同意	同意	完全同意
LC-LIS1	我了解条形码和无线射频识别技术系统	1	2	3	4	5	6	7
LC-LIS2	我具有数据库管理和数据分析能力	1	2	3	4	5	6	7
LC-LIS3	我具有供应链和物流相关的信息技术知识	1	2	3	4	5	6	7
LC-LIS4	我了解信息系统管理在在整个物流管理中的重要性	1	2	3	4	5	6	7

4．物流可持续技能组

项目编号 Item code	测量项目 Measurement Item	完全不同意	不同意	有些不同意	一般	有些同意	同意	完全同意
LC-LS1	我了解物流中的环境问题	1	2	3	4	5	6	7
LC-LS2	我有能力处理 ISO14001 环境系统的问题	1	2	3	4	5	6	7
LC-LS3	我具有准备 GRI（可持续性）报告的能力	1	2	3	4	5	6	7
LC-LS4	我理解承担企业社会责任对企业的重要性	1	2	3	4	5	6	7

2、事业成功

1．就业力

项目编号 Item code	测量项目 Measurement Item	完全不同意	不同意	有些不同意	一般	有些同意	同意	完全同意
E-E1	我认为我有能力在自己的工作领域进行深度的、专业性的讨论	1	2	3	4	5	6	7
E-E2	我认为我有能力给工作中遇到问题的同事提供切实可行的协助	1	2	3	4	5	6	7
E-E3	我专注于不断的提高自己	1	2	3	4	5	6	7
E-E4	我认为我有能力在企业内部发挥自己的影响力	1	2	3	4	5	6	7
E-E5	我能够均衡的分配在在工作、事业、个人发展和放松的时间	1	2	3	4	5	6	7
E-E6	我适应企业发展与变化	1	2	3	4	5	6	7
E-E7	我能够迅速的预期并且利用工作环境中的变化	1	2	3	4	5	6	7
E-E8	我适应工作中的变化	1	2	3	4	5	6	7

2．职位晋升

项目编号 Item code	测量项目 Measurement Item	完全不同意	不同意	有些不同意	一般	有些同意	同意	完全同意
CS-P1	自从加入这家企业,我得到了升职	1	2	3	4	5	6	7
CS-P2	自从加入这家企业,我的工作职责有了大幅度增加	1	2	3	4	5	6	7
CS-P3	自从加入这家企业,我的工作范围有了大幅度扩展	1	2	3	4	5	6	7

3． 薪资

项目编号 Item code	测量项目 Measurement Item	完全不同意	不同意	有些不同意	一般	有些同意	同意	完全同意
CS-S1	我对目前的收入感到满意（每月）	1	2	3	4	5	6	7
CS-S2	我对薪金增长幅度感到满意	1	2	3	4	5	6	7
CS-S3	我薪金的增加与生活费用的增长一致	1	2	3	4	5	6	7

4．市场性

项目编号 Item code	测量项目 Measurement Item	完全不同意	不同意	有些不同意	一般	有些同意	同意	完全同意
CS-MK1	基于我的能力和经验，我的企业认为我能够为其创造价值	1	2	3	4	5	6	7
CS-MK2	我所在的企业认为我是企业的宝贵人才	1	2	3	4	5	6	7

CS-MK3	在目前的企业我有许多机会	1	2	3	4	5	6	7
CS-MK4	我能容易地在其他企业获得类似的工作	1	2	3	4	5	6	7
CS-MK5	基于我的能力和经验,有许多职位等着我	1	2	3	4	5	6	7
CS-MK6	基于我具备的能力和经验,其他企业也会认为我能为它创造价值	1	2	3	4	5	6	7

3、职业满意度

1．职业满意度(Career Satisfaction)

项目编号 Item code	测量项目 Measurement Item	完全不同意	不同意	有些不同意	一般	有些同意	同意	完全同意
CS-CS1	我满意我所取得的职业成就	1	2	3	4	5	6	7
CS-CS2	我对我工作上的进步感到满意	1	2	3	4	5	6	7
CS-CS3	我对一起工作的伙伴感到满意	1	2	3	4	5	6	7
CS-CS4	我认为自己的工作对社会有价值	1	2	3	4	5	6	7

问卷结束，谢谢您的参与！

Appendix B: Survey Questionnaire IN ENGLISH

RMIT UNIVERSITY

School of Business IT and Logistics

INVITATION TO PARTICIPATE IN A RESEARCH PROJECT

PROJECT INFORMATION STATEMENT

Project Title:

Relationships between Logistics Competency, Career Success and Career Satisfaction of Logistics Professionals of 3PL Providers in China

Investigators:

Ms Nancy (Qing) Nie (PhD candidate, qing.nie@rmit.edu.au, Professor Shams Rahman (Supervisor, shams.rahman@rmit.edu.au, +613 9925 5530)

Dr Huan Vo-Tran (Associate supervisor, huan.vo-tran@rmit.edu.au, +613 9925 5538)

Dear Participant,

You are cordially invited to participate in a research project being conducted by RMIT University. This survey will take approximately 30 minutes. This letter provides you with an overview of the proposed research. Please read these pages carefully and be confident that you understand its contents before deciding whether to participate. Because of the nature of data collection, we are not obtaining written informed consent from you. Instead, we assume that you have given implied consent by completion and return of the questionnaire. If you have any questions about the project, please ask any of the investigators identified above.

Who is involved in this research project?

I am Nancy Nie, currently a research student in the school of Business IT and Logistics at RMIT University, Melbourne, Australia. This project is conducted as a part of my PhD degree. My supervisors for this project are Professor Shams Rahman and Associate supervisor Dr Huan Vo-Tran. This project has been approved by the RMIT Business Human Resource Ethics Committee.

Why is it being conducted?

The aim of the project is to investigate the relationships between logistics competency, employability and career success of logistics professionals in 3PL providers in China.

Why have you been approached?

You and your company have been randomly selected, as the project aims to collect information from logistics professionals working in 3PL firms in China. Contact details were obtained from the Council of Logistics Management (China) and China Federation of Logistics & Purchasing.

What is the project about? What are the questions being addressed?

This study investigates the relationships between logistics competency, employability and career success of logistics professionals in 3PL providers in China. So your participation is important for us to identify the skills required to develop logistics competency and employability and career success. By answering this questionnaire, you will provide us with invaluable insight on critical elements to assess the relationship between competency, employability and career success in the context of 3PL in China.

If I agree to participate, what will I be required to do?

If you agree to participate, you will be required to spend approximately 30 minutes to complete this survey. You will need to answer a few basic demographic questions and also respond to questions about logistics skills and competency, employability and career success. These questions will be in the form of statements that you will rate on a scale (1–7) ranging from extremely unimportant (or strongly disagree) to extremely important (or strongly agree).

What are the possible risks or disadvantages?

There is no risk associated with participating in this survey. However, if you are unduly concerned about your responses to any of the questionnaire items or if you find participation in the project distressing, you should contact Professor Shams Rahman as soon as convenient. Shams will discuss your concerns with you confidentially and suggest appropriate follow up, if necessary.

What will happen to the information I provide?

Your privacy and confidentiality will be strictly maintained in such a manner that you will not be identified in the thesis report or any related publication. Any information that you provide can be disclosed only if (1) it is to protect you or others from harm, (2) it is specifically required or allowed by law, or (3) you provide the researchers with written permission. Data will be seen only by my supervisors and examiners who will also protect you from any risk.

To ensure that data collected are protected; they will be saved on the university network system where practicable and only the researcher/s will have access to the data. Findings of this study will be disseminated in a PhD thesis, presented at conferences and published in journals. The final thesis and published research papers will remain in the RMIT online repository as an Appropriate Durable Record (ADR).

What are my rights as a participant?

As a participant you have the right to withdraw from participation at any time, request that any recordings cease and have any questions answered at any time. The unprocessed data can be withdrawn and destroyed, provided they can be reliably identified and this does not increase the risk for the participant.

I am assuring you that responses will remain confidential and anonymous.

Who should I contact if I have any questions?

If you have any queries regarding this project, please email me at qing.nie@rmit.edu.au; or phone Professor Shams Rahman on (+613) 9925 5530 or email him at shams.rahman@rmit.edu.au

Thank you very much for your contribution to this research.

Yours Sincerely,

Nancy (Qing) Nie

PhD Student

School of Business IT and Logistics

RMIT University

Bld 80 Level 8

445 Swanson Street

Melbourne 3000

AUSTRALIA

RMIT UNIVERSITY

PART A: DEMOGRAPHIC

SECTION 1: RESPONDENT PROFILE

The following information requires details of the respondents. Please indicate your response in the box provided.

1. What is your position in the organisation?
   Executive ☐ Senior manager ☐ Manager ☐ Director ☐ Head ☐ Other and Please specify☐
2. What is your level of education?
   Post-secondary/Secondary ☐ Diploma ☐ Graduate/Bachelor ☐ Post-graduate/Master ☐ Phd ☐ Other and Please specify☐_____________
3. Which country did you receive your final degree?
   China ☐ Other and Please specify☐_____________
4. How long have been in education overseas?
   None☐ Less than 1 year☐ 1 year☐ 2–3 years ☐ 4–6 years ☐ 6–8 years☐
   Other and Please specify☐_____________
5. How many years of managerial experience do you have?
   Less than 1 year ☐ 1–5 years ☐ 6–10 years ☐ 11–15 years ☐ 16–20 years☐ over 20 years☐
6. How many years of managerial experience do you have in the 3PL industry?
   Less than 1 year ☐ 1–5 years ☐ 6–10 years ☐ 11–15 years ☐ 16–20 years☐ over 20 years☐

SECTION 2: ORGANISATION PROFILE

1. Number of employees in your organisation:
   1–20 ☐ 21–49 ☐ 50–-99 ☐ 100–200 ☐ 201–299 ☐ 300–999 ☐ ⩾1000 ☐
2. Number of years that your organisation has been operating:
   3 years or less ☐ 3–5 years ☐ 6–10 years ☐ 11–15 years☐ 16–20 years ☐ 21–30 years ☐ over 30 years ☐
3. Last 3 financial year's average annual sales in in RMB:
   Less than 1 million ☐ 1–2 million ☐ 2–3 million ☐ 3–5 million ☐ 5–10 million ☐ 10–50 million ☐ 50–200 million ☐
   200–300 million ☐ 300–400 million ☐ over 400 million ☐
4. Type of organisation (based on paid-up capital):
   Chinese owned ☐ Multinational ☐ Private ☐
5. What types of services does your organisation provide?
   Transport ☐ Warehousing ☐ Inventory management ☐ Shipment consolidation ☐ Carrier

selection ☐ Order processing ☐
Packaging ☐ Freight forwarding ☐ Order fulfilment ☐ Return management ☐ Other and Please specify☐_____________

6. Industries your customers are mainly in:
   Coal mining ☐ Steel ☐ Machinery ☐ Construction materials ☐ Petrochemicals ☐ Agriculture ☐ Food ☐ Medicine☐
   Garment ☐ Automobile ☐ Electromechanical ☐ Electronics ☐ Home appliances ☐ Tobacco ☐ Publishing ☐
   Other and Please specify☐_____________
7. Regions your customers are mainly in:
   Global ☐ Asia Pacific ☐ China ☐ Other and Please specify☐_____________
8. Regions in which your organisation operates:
   Northeast China ☐ Northern Coastal Region (Beijing-Tianjin-Hebei Region) ☐ Eastern Costal Region (Yangtze River Delta) ☐
   Southeast China (Pearl River Delta) ☐ Middle and Upper Reaches of the Yellow River ☐ Middle and Upper Reaches of the Yangtze River ☐
   Middle and Upper Reaches of the Pearl River ☐ Inner Mongolia☐ Xinjiang Province ☐ Qinghai Tibet Plateau ☐
   Other and Please specify ☐_____________

PART B: **Logistics Competence, Career Success and Career Satisfaction**

SECTION 1: **Logistics Competence**

1. Logistics general management (LGM) competency

Item code	Measurement item	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
LC-LGM1	I have the capacity and attitude to work as a member of a team	1	2	3	4	5	6	7
LC-LGM2	I have clear understanding of the supply chain orientation	1	2	3	4	5	6	7
LC-LGM3	I have the ability to ‘see the big picture’ in my work environment	1	2	3	4	5	6	7
LC-LGM4	I consider myself competent to communicate effectively in both written and oral forms	1	2	3	4	5	6	7
LC-LGM5	I have extensive experience in coordinating cross-functional teams	1	2	3	4	5	6	7
LC-LGM6	I have the ability to communicate horizontally and vertically within and between organisations	1	2	3	4	5	6	7
LC-LGM7	I consider myself competent in negotiating skills	1	2	3	4	5	6	7
LC-LGM8	I have the competency to manage conflict effectively	1	2	3	4	5	6	7
LC-LGM9	I consider myself an effective team leader	1	2	3	4	5	6	7
LC-LGM10	I consider myself competent in the English language	1	2	3	4	5	6	7

2. Logistics analytical (LA) competency

Item code	Measurement item	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
LC-LA1	I have the ability to manage inventory efficiently and effectively across the supply chain	1	2	3	4	5	6	7
LC-LA2	I consider myself competent in project management	1	2	3	4	5	6	7
LC-LA3	I have the ability to develop effective distribution plans for our goods and services	1	2	3	4	5	6	7
LC-	I consider myself competent in the management of	1	2	3	4	5	6	7

RMIT UNIVERSITY

LA4	warehousing systems							
LC-LA5	I have higher-order problem-solving competencies using quantitative methods	1	2	3	4	5	6	7
LC-LA6	I have skills in demand forecasting tools and techniques	1	2	3	4	5	6	7

3. Logistics information systems (LIS) competency

Item code	Measurement item	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
LC-LIS1	I have knowledge of barcode/RFID systems	1	2	3	4	5	6	7
LC-LIS2	I have competency in database management and data analytics	1	2	3	4	5	6	7
LC-LIS3	I have knowledge about supply chain and logistics-related information technologies	1	2	3	4	5	6	7
LC-LIS4	I understand the importance of information system management in overall logistics management	1	2	3	4	5	6	7

4. Logistics sustainability (LS) competency

Item code	Measurement item	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
LC-LS1	I have knowledge of environmental issues in logistics	1	2	3	4	5	6	7
LC-LS2	I consider myself competent in ISO14001 environmental systems	1	2	3	4	5	6	7
LC-LS3	I have the ability to prepare Global Reporting Initiative (sustainability) reports	1	2	3	4	5	6	7
LC-LS4	I understand the importance of corporate social responsibility for organisations	1	2	3	4	5	6	7

SECTION 2: Career Success

1. Employability

Item code	Measurement item	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree

E-E1	I consider myself competent to engage in in-depth, specialised discussions in my job domain	1	2	3	4	5	6	7
E-E2	I consider myself competent to be of practical assistance to colleagues with questions about the approach to work	1	2	3	4	5	6	7
E-E3	I am focused on continuously developing myself	1	2	3	4	5	6	7
E-E4	I consider myself competent to manage to exercise my influence within the organisation	1	2	3	4	5	6	7
E-E5	The time I spend on my work, career and personal development, and relaxation is evenly balanced	1	2	3	4	5	6	7
E-E6	I adapt to developments within my firm	1	2	3	4	5	6	7
E-E7	I quickly anticipate change and take advantage of it in my work environment	1	2	3	4	5	6	7
E-E8	I adapt to changes in my workplace	1	2	3	4	5	6	7

2. Promotion

Item code	Measurement item	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
CS-P1	I was promoted since joining this organisation	1	2	3	4	5	6	7
CS-P2	My job responsibilities have increased significantly since joining the current organisation	1	2	3	4	5	6	7
CS-P3	The scope of my job has broadened significantly since joining the current organisation	1	2	3	4	5	6	7

3. Salary

Item Code	Measurement item	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
CS-S1	I am satisfied with my current gross income (per month)	1	2	3	4	5	6	7
CS-S2	I am satisfied with the gradual increase of my salary	1	2	3	4	5	6	7
CS-S3	My salary increase is in line with increases in the cost of living	1	2	3	4	5	6	7

4. Marketability

Item Code	Measurement item	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
CS-	Given my skills and experience, my firm views me as a value-	1	2	3	4	5	6	7

MK1	added resource							
CS-MK2	My firm views me as an asset to the organisation	1	2	3	4	5	6	7
CS-MK3	There are many opportunities available for me in this firm	1	2	3	4	5	6	7
CS-MK4	I could easily obtain a comparable job with another employer	1	2	3	4	5	6	7
CS-MK5	There are many jobs available for me given my skills and experience	1	2	3	4	5	6	7
CS-MK6	Given my skills and experience, other firms find me a value-added resource	1	2	3	4	5	6	7

SECTION 3: Career Satisfaction

1. **Career Satisfaction**

Item code	Measurement item	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
CS-CS1	I am satisfied with the success I have achieved in my career	1	2	3	4	5	6	7
CS-CS2	I am satisfied with my development progress in the job	1	2	3	4	5	6	7
CS-CS3	I am satisfied working with colleagues	1	2	3	4	5	6	7
CS-CS4	I am satisfied with the contribution achieved during my work to the broader society	1	2	3	4	5	6	7

Appendix C: Ethics Approval Letter

Deputy Pro Vice-Chancellor
(Research & Innovation)
College of Business

GPO Box 2476
Melbourne VIC 3001
Australia

Tel: +61 3 9925 5432
Fax: +61 3 9925 5624

Notice of Approval

Date:	8 March 2016
Project number:	19708
Project title:	*Relationships between logistics competency, employability and career success of logistics professionals in 3PL providers in China*
Risk classification:	Low Risk
Chief Investigator: Student Investigator: Other Investigator:	Professor Shams Rahman Ms Qing Nie Dr Huan Vo-Tran
Project Approved:	**From: 3 March 2016 To: 20 July 2017**

Terms of approval:

Responsibilities of the principal investigator

It is the responsibility of the principal investigator to ensure that all other investigators and staff on a project are aware of the terms of approval and to ensure that the project is conducted as approved by BCHEAN. Approval is only valid while the investigator holds a position at RMIT University.

1. *Amendments*
   Approval must be sought from BCHEAN to amend any aspect of a project including approved documents. To apply for an amendment submit a request for amendment form to the BCHEAN secretary. This form is available on the Human Research Ethics Committee (HREC) website. Amendments must not be implemented without first gaining approval from BCHEAN.
2. *Adverse events*
   You should notify BCHEAN immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
3. *Participant Information and Consent Form (PICF)*
   The PICF must be distributed to all research participants, where relevant, and the consent form is to be retained and stored by the investigator. The PICF must contain the RMIT University logo and a complaints clause including the above project number.
4. *Annual reports*
   Continued approval of this project is dependent on the submission of an annual report.
5. *Final report*
   A final report must be provided at the conclusion of the project. BCHEAN must be notified if the project is discontinued before the expected date of completion.
6. *Monitoring*
   Projects may be subject to an audit or any other form of monitoring by BCHEAN at any time.
7. *Retention and storage of data*
   The investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.

Regards,

Associate Professor Penny Weller
Chairperson
RMIT BCHEAN