Skill requirements and levels within the supply chain management field in South Africa

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A research project submitted to the Gordon Institute of Business Science, University of Pretoria, in partial fulfilment of the requirements for the degree of Master of Business Administration

7 November 2018

Abstract

Supply chain integration (SCI) has received attention within the supply chain/logistics community because of its positive influence on financial performance. Studies have confirmed that organisations which implement external supply chain integration need to ensure that internal integration is implemented successfully because it promotes external integration. Organisations need to ensure that they acquire and appoint the correct set of skills in order to achieve successful supply chain integration.

This research study explores the skill requirements and current skill levels within the South African context. The researcher collected data through 20 in-depth, semi-structured interviews with supply chain experts across various industries. The research results show that the current skill requirements are aligned with the American production and inventory control society (APICS) supply chain manager competency model. Also, the research results showed that, through training and development, organisations are actively improving their supply chain skill levels; as a result, most organisations confirmed that the majority of their employees meet the skill requirements in place.

This study contributes to the supply chain/logistics literature in that it identifies current skill requirements within supply chain/logistics in the South African context. It also contributes to the supply chain literature, focusing on the involvement of human resources. This study confirms the active involvement of human resources within South African organisations.

Keywords

Skill requirements, skill levels, supply chain management

Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination at any other university. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

Name and Surname: Baleseng Ntshabele

Date: 14th November 2018

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Abbreviations

Supply chain management (SCM)

Supply chain operating reference (SCOR)

American production and inventory control society (APICS)

Top management support (TMS)

Information technology (IT)

Business logistics and management (BLM)

Third-party logistics (3PL)

Chapter 1 – Introduction of the research problem

1.1 Introduction

This study aims to explore the skill requirements and skill levels prevalent within the current supply chain/logistics field in South Africa. Chapter 1 provides details behind the rationale for the study and presents the research statement and questions. This chapter also provides the limitations and exclusions. The researcher concludes this chapter by providing definitions of key terms used in the study and presents the structure of the entire mini-dissertation.

1.2 Background and description of the problem

Supply chain management (SCM) has been around for an extended period of time, perhaps hundreds of years. While the subject has not reached its maturity stage, it has however received attention from both practitioners and scholars. The SCOR (supply chain operating reference) model defines supply chain as the integrated processes of the PLAN, SOURCE, MAKE, DELIVER and RETURN from the supplier's supplier to the customer's customer (Bolstorff & Rosenbaum, 2012). Ataseven and Nair (2017) conclude their supply integration study with the recommendation that suggested future studies be undertaken on the skill levels within supply chain/logistics. The motivation for their suggestion came after the findings that showed that internal supply chain integration has a significant effect on the organisation's financial performance. Supporting the suggested future study, Makarius and Srinivasan (2017) note the skills gap within the SCM field that needs to be filled and how it affects filling new vacancies. The supply chain/logistics management field is constantly changing due to external environmental influences (Scholten & Dubois, 2017). In a study by Savage, Jenkins and Fransman (2015) it was reported that, after the marketing and sales teams have created demand in the market, it is vital that resources in the supply chain/logistics functions are able to satisfy the stimulated demand. The reason for this is for an organisation to ensure on-time delivery to its clients. The process includes different stakeholders which include suppliers and third-party logistics (3PL) who provide transport services. As explained by Logan (2000) transport is one of the growing outsourced functions within organisations. It is important to understand the implication and effect regarding skill requirements when organisations outsource part of their delivery function. The contemporary business environment has changed as organisations are competing through their supply chains (Wu, Chuang & Hsu, 2014; Dubey & Gunasekaran, 2015). Most organisations have split the integrated processes among procurement, manufacturing and logistics departments.

Figure 1: The five major management processes of SCOR-model (Bolstorff & Rosenbaum, 2012)
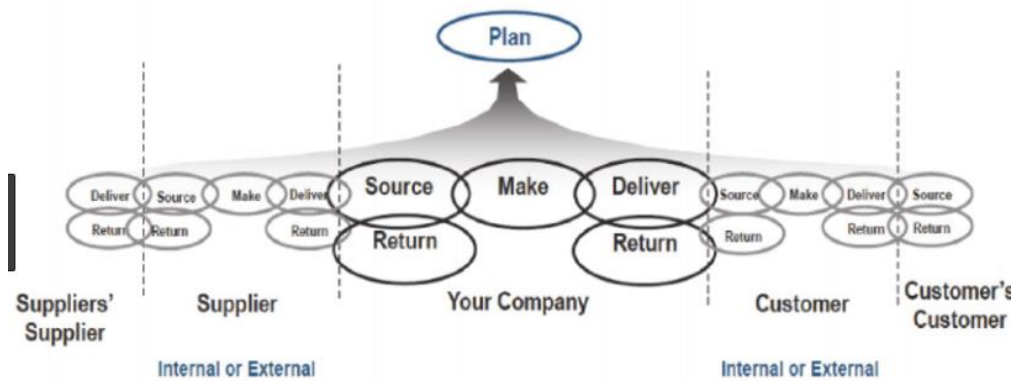
There is a growing concern within literature and business, generally about the available level of skills within the supply chain/logistics field globally (Lorentz, Toyli, Solakivi & Ojala, 2013; Scholten & Dubois, 2017). Some scholars within the SCM field have linked this topic with human resources because training and development would facilitate skills development within organisations (Menon, 2012). Other scholars have taken a different view by looking at universities as the main source of the required skills for employers when hiring graduates (Scholten & Dubois, 2017; Jordan & Bal, 2016).

Being aware of the skill levels within the supply chain/logistics field will allow businesses to efficiently identify, address and develop their employees through skills gap development programmes. Also, this will allow businesses to formulate appropriate skill requirements when hiring (Kotzab, Teller, Bourlakis & Wunsche, 2018). Businesses can thus be aware of the skills gap required to be filled when hiring graduates, without assuming that academic institutes have provided all the necessary skills required to occupy the position (Jordan & Bal, 2016).

In a study by Wu et al. (2014), it was noted that external supply chain integration would be successful upon the successful implementation of internal integration within functions such as operations, sales, marketing and SCM. With this insight, a business can hire suitable new employees; alternatively, development of current employees by focusing their skills gap programmes towards the most beneficial skills to be available within the organisation. These insights allow organisations to rethink their strategies and allow organisations to make informed decisions.

1.3 The research problem

Skills level and requirements within the South African supply chain/logistics field might negatively influence the supply chain integration initiative; Ataseven and Nair (2017) recommend in concluding their supply integration study with suggested future study being undertaken on the skill levels within supply chain/logistics.

The motivation for their suggestion came after the conclusions which showed that internal supply chain integration has a significant effect on the organisation's financial performance. Supporting the suggested future study, Makarius and Srinivasan (2017) note the skills gap within the SCM field and how it affects filling new vacancies.

1.4 Research aim

This research aims to explore skill requirements and levels within the supply chain/logistics field in a South African context. With organisations competing through their supply chains, it is imperative for a business to be aware of what it needs to pay attention to when setting up training strategies (Wu et al., 2014). Organisations rely on employees to ensure that the stimulated demand by sales and marketing is satisfied (Savage et al., 2015; Kisperska-Moroń, 2013).

1.5 Scope of the research

The researcher, using a qualitative research method, will conduct semi-structured interviews within various organisations in Gauteng and Cape Town, which is intended to include supply chain/logistics experts in various industries. The researcher will apply the APICS supply chain manager competency model in order to explore the required skills (APICS, 2014). The researcher will focus on the delivery process as depicted in Figure 1 within the SCOR model. According to Bolstorff and Rosenbaum (2012), the delivery phase of the SCOR model includes the following functions: execute the order management process, generate quotations, configure products, create and maintain customer database, maintain product/price database, manage account receivables, credits, collections and invoicing, execute warehouse processes including pick, pack and configure, create customer specific packaging/labelling, consolidate orders, ship products, manage transportation processes and imports/exports and verify performance. The researcher is aware that various organisations have different structures within; clarity hereon would be vital during the data collection phase.

1.6 Significance of the study

In an article published by McKinsey & Company − *Three ways CEOs can improve the supply chain* − it was reported that an increasing number of CEOs are starting to see the supply chain as a critical point of competitive differentiation (Glatzel, Niemeyer & Rohren, 2014).

Heyns and Luke (2012) reported that due to the changing business environment, skills/competencies such as teamwork and strong communication skills amongst others would be vital to the success of a complex supply chain. Validating the study undertaken by Heyns and Luke (2012), Noble (2015) reported that almost 50 % of South Africa's supply chain managers have admitted to not being skilled in order to get the job done. During the 20th LRN Annual Conference and PhD Workshop 2015, Savage et al. (2015) report that the marketing effort is broken down into stimulating demand and satisfying that demand, in which the latter function would fall into the logistics/supply chain function. It is vital that resources in these functions are able to satisfy the stimulated demand.

Due to the contribution of internal integration on organisational performance, it is vital that organisations, as suggested by Ataseven and Nair (2017), explore the human resource supply chain management factor in organisations which might influence organisational performance.

The findings of this study will add to and extend the body of work already in place in the area of supply chain management.

1.7 Conclusion

This chapter serves as an introduction to this study. During the foregoing discussion, the most significant questions to be answered are: what are the skill requirements needed and what are the current skill levels within the supply chain field in South Africa? The business rationale for this study was to enable the skills gap awareness within the supply chain/logistics field to be identified and allow businesses to plan efficiently. The academic rationale for this study was to continue the conversation from the study that was undertaken by Ataseven and Nair (2017) and also add to the body of work in the area of supply chain management within the South African context.

Another significant contribution to this study is how the data will be collected. Most of the literature within supply chain management addressing skill levels make use of the quantitative research methodology, but in this study the qualitative research method is being used.

This study proceeds as follows: Chapter 2 presents an overview of the literature as it relates to supply chain management; Chapter 3 presents the research questions that form the basis of this study; Chapter 4 outlines the methodology used to collect and analyse the data in this study; Chapter 5 presents the results; Chapter 6 discusses the results and Chapter 7 closes with the business and academic insights derived from the results, followed by suggestions for further research.

Chapter 2: Literature review

2.1 Introduction

This chapter reviews supply chain management literature with specific focus on required skills/competencies and integration topics. Ataseven and Nair (2017) conclude their supply integration study with the suggested recommendation that suggested future studies be undertaken on the skill levels within supply chain/logistics. The motivation for their suggestion came after their conclusions which showed that internal supply chain integration has a significant effect on the organisation's financial performance. Supporting the suggested future study, Makarius and Srinivasan (2017) note the skills gap within the SCM filled and how it affects filling new vacancies.

It is critical to include supply chain integration literature as it has a significant contribution to the organisation's financial performance. This literature provides the reason why organisations need to ensure that they possess the required skills/competencies within their supply chains. The researcher also considered and included literature on the Hertzberg's Two-Factor theory; the literature assisted the researcher to explain the effect of the skills gap and how it affects filling new vacancies as noted by Makarius and Srinivasan (2017). The researcher also accessed literature that focuses on the involvement of the human resources department with the supply chain/logistics field. With the supply chain field being a newly formed business function, the presence of human resource is vital to support the success required (Dinga, Kam, Zhang & Jiea, 2015). Agency theory was also added to the literature because, as confirmed by Logan (2000), many organisations outsource one function in order to focus on core competencies or in order to save money during cost-saving drives. Logan (2000) further explains that transport is one of the growing outsourced functions within organisations. It is important to understand the implication and effect with regards to the skill requirements when organisations outsource part of their delivery function as stipulated in Chapter 1. In a study by Savage et al. (2015) it was reported that the marketing effort is broken down into stimulating demand and satisfying that demand, in which the latter function would fall into the logistics/supply chain function. It is vital that resources in these functions are able to satisfy the stimulated demand.
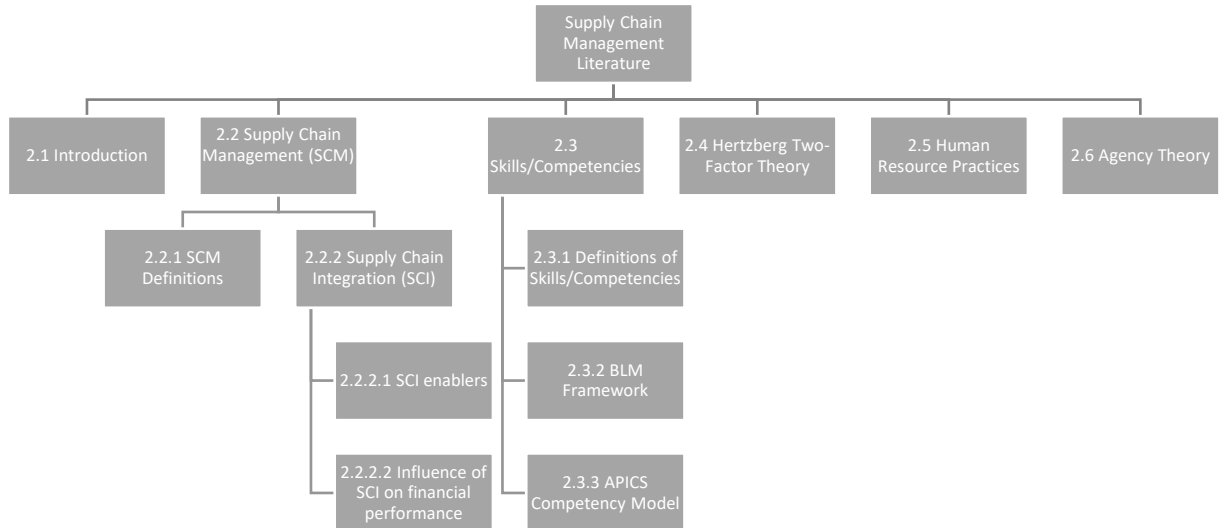
2.2 Supply chain management

2.2.1 Supply chain management defined

Mentzer, DeWitt, Min, Nix, Smith and Zacharia (2001) present an example of the incremental growth in the supply chain. The authors state that, during the annual conference of the Council of Logistics Management in 1995, the number of supply chain topics increased from 13 sessions to 15 sessions in 1997; the increase in sessions showed the increased interest in the topic. Various authors have defined supply chain in varied ways. Table 1 provides a review of some developed definitions by various authors:

Table 1: Summary: Supply chain definition (2001-2014)

Author	Definition
Mentzer et al. (2001)	The supply chain is when more than three organisations are involved in an upstream and downstream flows of manufacturing of goods, services, finance and/or information from a supplier's supplier to a customer's customer.

Bolstorff and Rosenbaum (2012)	Supply chain management (SCM) is the connectedness of planning, sourcing, producing, delivering and the return process.
Wu et al. (2014)	It is a seamless flow of material, information and finance between an organisation, customers and service providers.

The emerging definition from above is that the supply chain is about the flow of information, material, finance, products from the supplier's supplier to the customer's customer. The researcher will adopt the supply chain management as defined by Bolstorff and Rosenbaum (2012) that supply chain management (SCM) as is the connectedness of planning, sourcing, producing, delivering and the return process.

2.2.2 Supply chain integration

2.2.2.1 Enablers of supply chain integration

Ataseven and Nair (2017) propose that, with other enablers of integration including information exchange, joint decision making and more, weight be placed on teamwork. Validating the proposal by Ataseven and Nair (2017), Vermeulen, Niemann and Kotze (2016) also propose information sharing and information technology as enablers to successful integration. Information sharing has received positive results as an enabler in a study conducted by Zhao, Huo, Selen and Yeung, (2011) which reveals some of the enablers of internal supply chain integration are when functional departments within an organisation share information. The second identified enabler is when at a strategic level cross functional goals are setup to facilitate cooperation and team work. In a study undertaken by Kim (2013), she reports that an organisation can only expect to benefit from supply chain integration when there is an internal willingness to share their resources with their supply chain partners. This would be applicable in both internal functions and externally with suppliers and customers.

In most organisations, there still is a sense of disconnect internally as functions are competing with each other and not working towards the same goal as one team; teamwork was previously stressed in a study carried out by Ataseven and Nair (2017). From the literature examined there is consensus among the different authors that information sharing is a valuable enabler in integration because, without information sharing, other enablers such as joint decision making and more weight on teamwork would not be possible. Xu, Huo and Sun (2014) set out to explore top management support (TMS) along with information technology (IT) as an enabler for supply chain integration. Their research results confirmed their hypotheses by revealing that TMS and

IT are indeed vital enablers of supply chain integration. However, in a study by Liu, Wei, Ke, Wei and Hua (2016) it is concluded that there is a lack of empirical support in terms of supply chain integration and information technology fit and the influence it has on the firm's financial support.

In a study by Wang, Kang, Childerhouse and Huo, (2018) it is suggested that in western cultures compared to Chinese cultures, formal work-related relationships would be more important than social relationships. While in the Chinese culture, the opposite will transpire; social relationships are deemed more important than formal work-related relationships. In a study by Jacobs, Yu and Chavez (2016), the research results confirm that internal communication is an important determinant for employee satisfaction and supply chain integration.

With the researcher of this study working in the third-party logistics industry, industry knowledge points out that many manufacturers are sourcing from China. It is with this knowledge that the results of this study are likely to be favourable due to a common culture and the convenience of being in a developing country with all the supply chain partners in close proximity and known to each other. Qi, Huo, Wang and Yeung (2017) studied 4,569 companies in the region in five major Chinese cities and found that when functional departments within an organisation work together, it promotes the workflow with external service provider. The authors have noted that, this aproach is better than relationship commitment. Qi et al. (2017) add to these insights by noting the cultural effect on their study because countries with a collectivism culture like China benefit from relationship management unlike foreign owned organisations because they depend more on technology to maintain the relationships.

2.2.2.2 The influence of integration on performance

In the study undertaken by Ataseven and Nair (2017), the research findings validate the underlying assumption that integration has an impact on business performance. Qi et al. (2017) validate the study carried out by Ataseven and Nair (2017) that integration indeed has a huge effect on business performance (Xu et al., 2014; Kim, 2013; Huo, 2012).

Skipworth, Godsell, Wong, Saghari and Julien (2015) conducted a different study from previous authors covered in this section. They made a strategic contribution to supply chain management by linking supply chain management with strategy. The authors saw supply chain alignment as a key to achieving business performance. In their results it was revealed that customer alignment had more influence on business performance.

In a study performed by Huo, Qi, Wang and Zhao (2014) new insights came from their findings that when organisations integrate internal processs with the supplier or cusomers, this approach will have a positive impact on finances.

In the paper published by McKinsey & Company, titled *Three ways CEOs can improve the supply chain*, performance seemed to be a recurring question that CEOs ask about their supply chain (Glatzel et al., 2014).

From the literature surveyed there is a consensus among the different authors that the supply chain is included from the CEO level as a contributor to business performance. Various international research findings confirm that supply chain initiatives such as integration are indeed key contributors to business performance.

2.3 Skills / competencies

2.3.1 Required SCM skills / competencies

Throughout literature, there are varying opinions when it comes to skills required within SCM. There is a lack of continuity and consistency in terms of suggested future studies in order to build on this body of work. Authors who covered skills in their literature failed to sufficiently define skills. Some authors interchangeably used skills, qualifications and competence (Kotzab et al., 2018). In a study undertaken by Gammelgaard and Larson (2001), the authors differentiates the two constructs as skills are general and they are also independent of the context knowledge, while competencies are based on experience and are dependent on context knowledge. In a study by Green (2017), who defined skills the ability to do sometyhing. Green also reported that skills can be assigned to different domains such as generic skills, specific skills, cognitive skills, interactive skills and physical skills. The author furthermore provided definitions for both qualifications and competence. Kotzab et al. (2018) defined qualification as formal skills. Kotzab et al. (2018) quoted Muller (2008) who had a different view on qualification as Muller (2008) saw the gain of qualification not being important as employees continuously develop and preserve their competences. Ataseven and Nair (2017) concluded their study by stating that there is a link between integration and knowledge-based processes; the authors also believed that the level of skills within supply chain organisations might have an effect on the positive influence supply chain integration has on financial performance. Kisperska-Moroń (2013) concluded in his study that, at the end of the day it is not the system or processes, but employees that provide solutions to logistics tasks and provide organisations with a competitive advantage.

A number of authors have conducted various studies in terms of skills required in the supply chain field. The topic has proven to be a popular subject of enquiry with countries such as China, United Kingdom, Australia and Taiwan having taken part in various literature studies and surveys in order to resolve this issue. However, there has not been an alignment amongst the authors on the focus of skills within the supply chain field. A number of authors have used the business logistics and management (BLM) framework as a tool to assess skill requirements in their country.

In a study by Lorentz et al. (2013), the authors noted that organisations put more emphasis on training suppliers and customers, compared to the lack of training internal employees receive. As a result of the study by Lorentz et al. (2013), three skills were identified within each category of the BLM framework, namely business category (supply chain management, transportation and logistics and business ethics), logistics category (customer service, inventory management, transport and traffic management) and finally the management category (motivate others, people integrity and decision-making ability). However, Tatham, Wu, Kovacs and Butcher (2017) argue that even though the traditional logistics functions can set a firm apart from its competitors, in the current changing business environment, those skills will not be enough. The authors confirm the study by Poist and Murphy (1991); Wong, Grant, Allan and Jasiuvian (2014) which concluded that the supply chain manager should be a manager first and logistician second, as a result of the lack of continuity and consistency in terms of skills levels within the supply chain field. In a study by Sohal and Prajogo (2013), communication and teamwork were deemed important for the success of supply chain integration. Authors such as Kotzab et al. (2018), after analysing 832 job postings, discovered that employers require work experience within logistics/supply chain departments. The impact of this requirement from the employers begs the question on graduates: how do graduates gain the required experience?

Looking at a different focus, authors such as Wu, Huang, Goh and Hsieh (2013) compared views from educators and practitioners on which skills are required by global logistics management. The study ranked the ability to integrate, communicate and analyse the most important skills required by global logistics management. The authors noted that there is still a difference in opinion between practitioners and educators on which skills are important. In order to make an impact and contribution to the field, both in research and academically, Sohal (2013) proposed three initiatives for the industry within the Australian market in order to achieve skills/competency achievement.

The third initiative the author suggested for areas of development being communication and teamwork, are technology skills, initiative and enterprise skills and compliance and legal knowledge. Within each area, the authors provided a list of skills that would assist the Australian market to develop its supply chain professionals.

This is contradictory to the findings in the same year by Lorentz et al. (2013). Lorentz et al. (2013) found the top five skills to be developed within the supply chain profession within Finland to be: demand forecasting and supply chain planning, sourcing and supplier management, customer and distribution channel management, production planning and control, information systems for logistics and production.

2.3.2 BLM Framework

The BLM framework (business, logistics and management) as stipulated in Table 2 is widely used to assess required skills and competencies of supply chain practitioners/logistics professionals. The framework is used to access three different skills/competency groups, being business skills, logistics skills and management skills. Business skills are described as those skills that are directly and indirectly related to business. Logistics skills are described as diverse knowledge within the logistics field. Management skills are described as skills that relate to planning, organising and personal attributes that would enable the supply chain/logistics professional to succeed within the supply chain/logistics environment. Different authors that have used this model within research have made changes to the model as the business environment has changed and skills requirements would change accordingly (Murphy & Poist 1991; Wong et al., 2014, Lorentz et al., 2013).

From a longitudinal study by Murphy & Poist (2007), it was concluded that a supply chain manager should be a manager first and logistician second (Murphy & Poist, 1991; Wong et al., 2014). In 2013, Wu et al. (2013) used the BLM framework to recommend a global logistics management curriculum in Taiwan and it was evident that educators and practitioners had different views on which skills/competencies were important. While the research paper in 2007 by Murphy and Poist was used to update the study in 1991, the 2006 study (Murphy & Poist, 2006) was used to compare whether the same set of skills is required for managers and entry-level logistics professionals. The study found that, within business skills the same set of skills appeared within the two roles, even though it was ranked different.

The difference is that managers were required to have production management skills while an entry-level logistician was required to have electronic commerce skills. Within the logistics skills group and more specifically entry-level logisticians, the order management skill was ranked as the sixth highest ranked skill while management only had the same top skills even though it was ranked differently. For management skills, the required skills level was different for the two roles, which is contrary to the study submitted by the two authors in 2007.

Table 2: BLM Framework - Murphy and Poist, (2006)

Business	Logistics	Management
Accounting	Customer service	Written communication
Business and government	International logistics	Interpersonal relations
Business and society	Inventory management	Plan
Business ethics	Materials handling	Decision-making ability
Business history	Order management	Train / mentor
Business law	Production scheduling	Personal integrity
Business strategy	Packaging	Self-motivation
Business writing	Purchasing	Self-confidence
Computer science	Salvage and scrap disposal	Enthusiasm
Economic geography	Transport and traffic management	Motivate others
Financial management	Warehousing management	Managerial control
Foreign languages	Logistics-related regulations	Oral communication
General business administration	Facilities location	Supervise others
HRM	Forecasting	Delegate
Industrial engineer	Parts and service support	Time management
Industrial sociology	Personnel movement	Adapt to change
Information system management	Return goods handling	Negotiate
Insurance and real estates	Logistics information management	Persuasion
International business		System concept
LRA		Listen and empathise
Macroeconomics		Analytic reasoning
Marketing management		Operational logistics tasks
Microeconomics		Assertiveness
Organisational psychology		Personal grooming
PR		Personal dress
Production management		Statesmanship
Quantitative methods		Visualise future threats / opportunities
Regional planning		Quantitative expertise
Speech communication		Outgoing personality
Statistics		Computer expertise
Transport and logistics		Foreign languages
Transport engineer		

2.3.3 APICS competency model

Table 3 below depicts the latest 2014 APICS competency model. In a study by van Dassie (2013), it was found that the APICS competency model was relevant to dynamic markets such as South Africa. The author identified six competencies that are important to the South African market, being, integrity, internal and external customer focus, being accountable and responsible, being a team player and possessing interpersonal skills. The researcher will adopt the APICS competency model in her analysis as it is relevant, applicable to all industries and, as validated by van Dassie (2013), applicable within dynamic markets.

Figure 3: APICS competency model (APICS, 2014)

Occupational related
Materials manager specific requirements

Bachelors or equivalent degree
Supply chain industry association membership
Supply chain-specific certifications

Profession-related
Supply chain manager knowledge areas and technical competencies

Performance trade-offs	Warehousing
Warehouse management	Distribution
Transportation management	Logistics
Supply chain synchronisation	International regulations
Risk management	Strategic sourcing and supplier relationship
Location facilities	Customer relationship management
Sustainability	Applying lean and six sigma tools

Operations management knowledge areas and technical competencies

Strategy development and application	Project management
Supply chain management	Lean management
Process improvement and six sigma	Enabling technology application
Execution, planning, scheduling control	

Foundational
Academic competencies

Math, statistics, and analytical thinking	Supply chain fundamentals
Reading and writing for comprehension	Foundations of business management
Applied science and technology	Operations and enterprise economics

Workplace and leadership competencies

Problem solving and decision making	Planning and organising
Teamwork and collaboration	Conflict management
Accountability and responsibility	Enabling technology
Customer focus (internal and external)	

Personal effectiveness competencies

Awareness of the needs of others	Effective communication
Integrity	Interpersonal skills
Continuous learning	Creativity

2.4 Herzberg's Two-Factor theory

Alshmemri, Shahwan-Akl and Maude (2017), noted that various authors have confirmed the motivation theory in their studies.

Figure 4: Two-Factor theory by Frederick Herzberg (Hartzell, 2008)
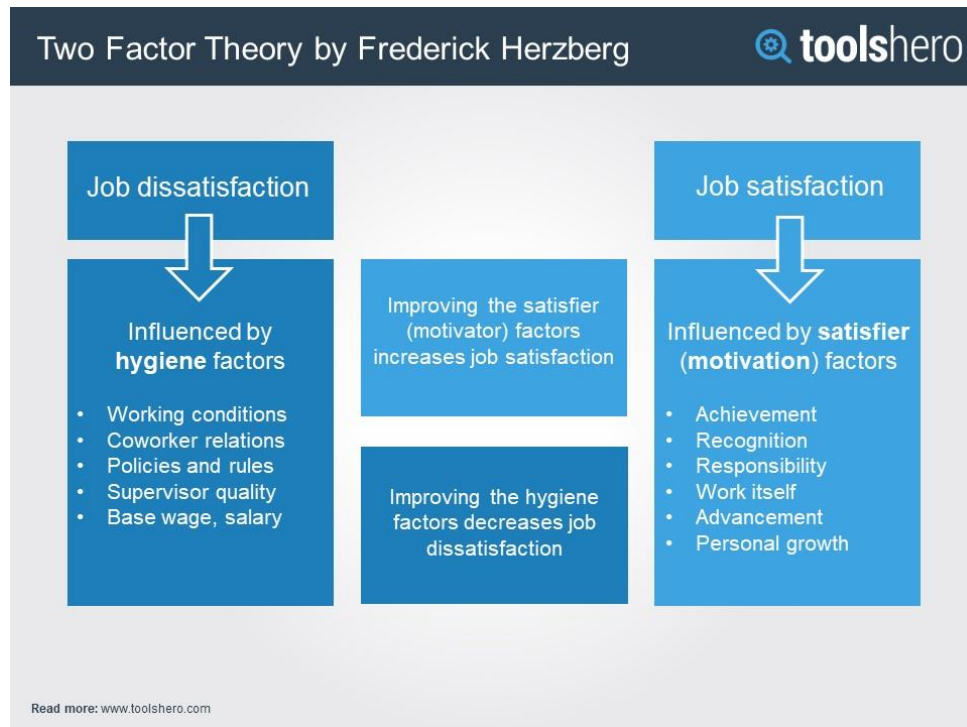
The authors quoted Ruthankoon and Ogunlana (2003, p. 333), where they defined motivation as a process that pushes employees to perform certain tasks because they are expecting a reward. According to Herzberg's theory, it was confirmed that, when employers want to increase job satisfaction, they would need improved motivation factors stated in Figure 2. Below is a brief interpretation provided by Alshmemri et al. (2017) of each motivation factor as quoted by Herzberg (1966) and Adair (2006).

Advancement is explained as when an employee moves upward and has a positive position in their workplace (Alshmemri et al., 2017).

The work itself is explained as the day-to-day job function of the employee which can have a negative or positive effect on the employee. This includes whether the job function is easy or difficult to perform, whether the job function and actual content of job tasks and assignments have either a positive or a negative effect on employees, whether the job is too easy or too difficult or whether the job function is engaging or not (Alshmemri et al., 2017).

Possibility is explained as all opportunities available to the employee to grow and get promoted at work. This will allow the employee to acquire new skills, participate in training and development and grow as a professional (Alshmemri et al., 2017).

Responsibility is explained as a factor that includes responsibility and authority towards their job. When an employer provides an employee with responsibilities, it results in employee satisfaction, as with responsibility, the employee is allowed to make decisions. However, when an employer provides responsibility without the authority to make decisions, this would result in employee dissatisfaction (Alshmemri et al., 2017).

Recognition is explained as situations when employees receive a compliment for a job well done or rewards for meeting their goals; this will result in job satisfaction. In instances where an employee is criticised and blamed for a job function performed, this will negatively affect the employee (Alshmemri et al., 2017).

Achievement represents instances where an employee completes a complex project on time or coming up with a solution for a department problem they are facing; this will result in job satisfaction. On the other hand, whenever an employee does not meet a deadline on a crucial work project or fails to make the right decision on a new responsibility, this would negatively affect job satisfaction (Alshmemri et al., 2017).

Hygiene factors as explained by Alshmemri et al. (2017) are factors that reduce job dissatisfaction. Below is a brief interpretation provided by Alshmemri et al. (2017) of each motivation factor as quoted by Herzberg (1966) and Adair (2006).

Interpersonal relations are explained as employees being able to have relationships with their managers, staff and co-workers which allows for the interactions to be job-related and also be social within the work environment (Alshmemri et al., 2017).

Salary is explained as all forms of compensation, which includes wages, salary, expectations towards salary increases and medical aids (Alshmemri et al., 2017).

Company policies and administration are explained as the process and procedures of the employer ensuring all employees know about the rules, regulations and policies. These are policies that have a direct effect on employees being good or poor. Supervision is explained as the supervisor's ability to be fair and unfair, competent or incompetent in their job. This also includes the willingness of the supervisor to delegate responsibility or teach fairness and knowledge transfer. The supervision factor is an important factor for the employee as it can positively promote job satisfaction (Alshmemri et al., 2017).

Working conditions are explained as factors that have to do with the physical surroundings of the employee's job; this relates to the surroundings being good or poor facilities. The work environment can include the amount of space the employee has, the availability of fresh air, etc. These could make the employee feel satisfied and proud (Alshmemri et al., 2017).

2.5 Human resource practices

With supply chain being at its developing stage, organisations and the human resource field is continuously finding ways to incorporate this function into its practices. This requirement becomes evident when supply chain embarks on initiatives such as integration which requires different departments in an organisation to work together. In a study by Menon (2012), three human resource practices were identified as one of the requirements for a successful supply chain integration; the three practices being a flexible job, team organisation and teamwork training. Adding to the body of work and confirming the research results of Menon (2012), Huo, Han, Chen and Zhao (2015) came forward with the results that confirm that human resource practices designed for an organisation can be used to facilitate supply chain integration, adding to teamwork training. The author supported the recommendation that organisations need to make use of teams to achieve organisational effectiveness. In a study by Dinga et al. (2015) they explored how to make use of human resource practices to contribute to the skills/competency development of logistics professionals. The results showed that both training and development and recruitment and selection showed a positive contribution towards supply chain integration; however, performance management and reward management did not have an influence. The attitude in a workplace, though at times it cannot be controlled or contained, as explained by Kohale (2016) it can stand in the way of an employee's performance (Bartel, Freeman, Ichniowski & Kleiner, 2011).

2.6 Agency theory

In a study by Logan (2000), the author noted that recent studies indicate how organisations make strategic decisions and outsource at least one function in order to save costs. It has been reported by Logan (2000) that author that 85 % of all companies make use of this option, which in turn creates spin-off industries; one of the spin-off industries being transportation. Table 3 explains how organisations outsource certain functions due to a resource-based view by focusing on their core competencies or by either transaction cost economics with the aim to save costs and finally by making a strategic decision to broaden their risk by using the agency theory (Logan, 2000). The author concludes that, in order for the provider to benefit profitably and attain customer satisfaction, two boxes must be ticked. Firstly, both parties must work together to align their goals and values in order to design contracts based on both behaviour and outcome (Logan, 2000). Secondly, there must be an agreement on the information available and measurement criteria that will be used for future reviews. In a research paper by Fayezi, O'Loughlin and Zutshi (2012) which aimed to explain the advantages of making use of agency theory, it was noted that agency theory can be used to maintain, develop or terminate relationships within a supply chain. The authors focused their study on the effect of agency theory on behaviour; it can be used as a guideline on how to respond to transactional disagreements which might cause rational and non-rational behaviour. Focusing on improving supplier operational performance, Maestrinia, Luzzini, Caniato and Ronchi (2018) validated the use of monitoring and incentives for improvement. Some authors believe that a good relationship with a 3PL service provider can affect profits (Mothilal, Gunasekaran, Nachiappanc & Jayaramd, 2012). Confirming the findings, a study by Ali and Kaur (2018) suggested that due to industry competition and customer requirements, it is vital to build a strategic relationship with 3PL service providers. In another study it was suggested that the organisation that uses performance measurements tend to receive more from such tools (Aguezzoul & Pires, 2016).

Table 3: Needs of the customer and the provider with conflict highlighted (Logan, 2000)

Needs	Resource-based view	Transaction cost economics	Agency theory
User	Focus on core competencies	Self-improvement Cost reduction	Third party consultants Measurement
Conflicting	Specificity of service Levels of service	Asset specificity Investment Uncertainty	Outcome vs behaviour-based contracts Alignment of goals and contracts Access to information
Provider	Focus on core competencies Use existing resources	Service improvement Economies of scale Economies of scope Bundles of service Profit	Third party consultants Measurement Develop a reputation

2.7 Conclusion

According to the foregoing analysis, there is a lack of consistency between academic authors on which the topic focuses on in relation to supply chain skills/competencies. Regions such as Europe have taken a stance to resolve this problem by including all players in the supply chain function, being employers, academics and graduates. Several authors did not validate their findings during analysis using any of the generic competency models in place. There is a lack of alignment between required skills/competencies and enablers of supply chain integration. For example, teamwork is the most common skill/competency throughout the literature review (Ataseven & Nair, 2017).

As noted by Savage et al. (2015), it is important for departments such as supply chain/logistics to satisfy the stimulated demand by sales and marketing. Having said that, it becomes crucial for organisations to ensure a good relationship with their 3PL service provider who would have been outsourced to perform the last mile delivery as it can affect profit (Mothilal, Gunasekaran, Nachiappanc & Jayaramd, 2012). As noted by Kisperska-Moroń (2013), it is employees that provide solutions to logistics tasks and provide organisations with a competitive advantage. The reviewed literature will assist the researcher during the analysis stage in terms of answering the current research questions posed, as stipulated in Chapter 3. The next section, Chapter 3, addresses the current research questions the researcher aims to address and confirm according to the research methodology described in Chapter 4, followed by presenting research results in Chapter 5, results analysis in Chapter 6 and finally the conclusion, limitations and recommendations, in Chapter 7.

Chapter 3: Research questions

In Chapter 3, research questions that make up the foundation of this study are stated. The research questions were generated from the literature review discussed in Chapter 2. The researcher created these questions to generate insights on skill levels within the supply chain/logistics field.

3.1 Research questions

Research Question 1: What are the current skill requirements within the supply chain/logistics/procurement department?

The goal of research Question 1 is to identify what the current skill requirements/characteristics/qualifications/competencies are within organisations in the supply chain/logistics field. The question seeks to confirm whether the skills identified within literature are indeed what is required by organisations. Also, this research will add to the body of work in the SCM field within the South African context and furthermore add any new skills identified applicable to the South African environment.

Research Question 2: Do current employees within the organisation, top-down, meet the required skills?

Research Question 2 aims to assess the current skill levels within supply chain departments to confirm whether current employees possess the current skills required by the employer.

Research Question 3: What is the role/involvement of the organisation's human resources function in the supply chain field?

Research Question 3 aims to explore the role/involvement of the human resources department within the supply chain departments.

Research Question 4: Do organisations build required skills or hire ready-made?

Research Question 4 aims to explore whether organisations develop skills internally or acquire them from external sources.

Research Question 5: How do organisations achieve on-time delivery?

Research Question 5 aims to explore the highly outsourced function within the organisation of which transportation of the final product to customers is paramount.

Chapter 4 – Research methodology

4.1 Introduction

In Chapter 4, the researcher discusses the research methodology used in this study, with the aim to answer the questions posed and described in Chapter 3. This chapter was guided by the literature review on the skill requirements and levels within supply chain/logistics field, for the researcher to supplement and contribute to the current body that is being built within the South African context. The researcher followed the qualitative data and an exploratory study approach to ask the what, why and how questions and as a result gained new insights. Data was collected through semi-structured face-to-face interviews and due to distance, telephone interviews. The data was analysed using a deductive process, which enabled the researcher to explore the current skill levels within South Africa using the APICS competency model (Hyde, 2000). The researcher considered the research limitations, ethical considerations, reliability and validity.

4.2 Proposed research methodology and design

The researcher adopted an exploratory research method, which is a cross-sectional, mono method. During the data analysis phase, the researcher adopted a deductive process and frequencies during the coding stage and interpretivism philosophy. The researcher used qualitative data to gain new insights and add to the body of work currently being built within the South African context. The researcher was able to explain the findings and develop new enquiries for future studies (Yin, 2003). The study was an exploratory study; it developed new questions and evaluated the skill requirements and levels within the supply chain/logistics field using different lenses (Saunders & Lewis, 2012). The researcher chose the research method because as defined by Saunders, Lewis and Thornhill (2009) exploratory research can be defined a research method that allows the researcher to find new information on the topic that was not known before.

The philosophy that was chosen for this research study was interpretivism. As claimed by Saunders and Lewis (2009), the interpretivism perspective is very relevant for business and management research, particularly in such fields as organisational behaviour. They followed the deductive approach because the researcher examined the APICS competency model to explore the current research problem posed in Chapter 1.

Hyde (2000) described deductive reasoning as a theory testing process which commences with an established theory or generalisation, and seeks to see if the theory applies to specific instances." (pg. 2). The researcher focused on a mono-method and not mixing research strategies, because it would assist in being focused on the objective and getting new insights on the topic.

This research study was a cross-sectional study. The researcher did not examine various years/months. The research study was a snapshot of a point in time. The researcher conducted semi-structured interviews with supply chain experts/specialists as set out in Annexure 2 to gain insights and ask additional questions as guided by the interview at that time. The interviews were face-to-face and the longest took approximately 45 to 60 minutes. The researcher took notes during every interview and used a recorder where necessary, with the permission of the respondent and thereafter transcribed it to enable the results to be summarised and collated.

4.3 Population

The identified population included department heads, senior management, specialists and industry experts. This study focused on the delivery process within the supply chain operations reference model (SCOR). Due to different organisational structures that exist within organisations in different industries, the researcher was mindful that some organisations might combine the sourcing department with the delivery department.

4.4 Sampling method and size

Saunders and Lewis (2012) defined a sample as a small representation of the bigger group. They further distinguished between different types of sampling that can be utilised, which is either probability or non-probability techniques. In this research, the non-probability technique was used because of not being able to access the complete list of the population. Saunders and Lewis (2012) further state the importance of ensuring the right sampling technique is used to ensure correct interpretation and usage of results. The sample chosen for this research was selected purposively to assist the researcher to answer the research questions and meet the objectives (Saunders & Lewis, 2012). The sample size consisted of 20 individuals who are experts within the supply chain/logistics field who included department heads, senior management and specialists.

The researcher kept a note of all new codes added on Atlas.ti; after the eleventh interview, the researcher was unable to add new codes to the data. Due to various other supporting questions, the researcher interviewed all 20 participants as scheduled. This allowed the researcher to find new insights that would be critical to the supply chain topic within literature.

Figure 5: Number of new codes per interview
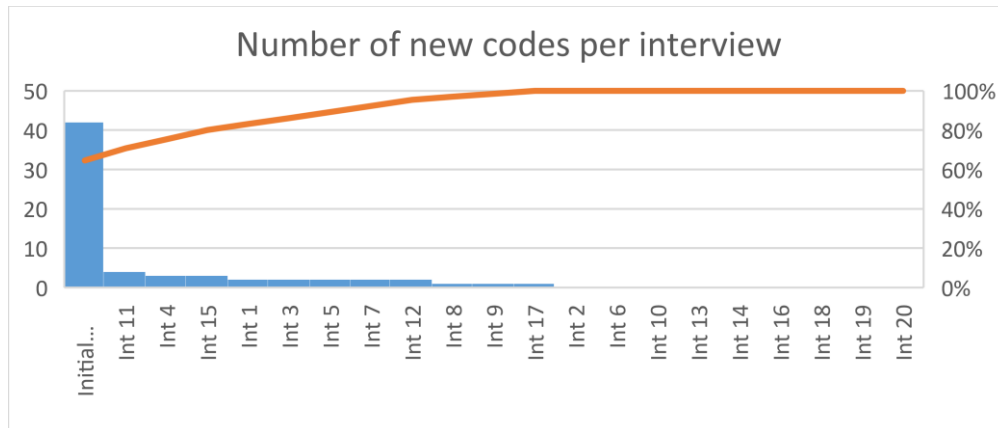
4.5 Unit of analysis

The unit of analysis for this research included the individual perceptions and opinions of specialists/experts within the supply chain/logistics field who consisted of department heads, senior management and specialists on skill requirements and levels within the supply chain/logistics field. The unit of analysis assisted the researcher to meet the research objectives within the study.

4.6 Pre-test

The researcher conducted a pre-test interview with a logistics manager to test the interview questions developed for applicability and relevance. The pre-test allowed the researcher to make amendments to some of the questions before officially beginning with the data collection. The research purposively selected a test with a participant that agreed to assist with the pre-test, with the understanding that it will not form part of the actual study (Yin, 2003). The pre-test was undertaken to ensure that the questions were correctly understood by the participants and to ensure that questions were not leading and were aligned to the qualitative research method (Saunders & Lewis, 2012).

4.7 Data collection tool

The researcher used semi-structured face-to-face interviews with 20 supply chain/logistics supply chain managers, logistics managers and industry experts. Due to distance, the researcher conducted two interviews via the telephone. The longest research interviews took 45 minutes to an hour per session, while the shortest research interviews took 30 minutes to 45 minutes.

The researcher scheduled individual interview sessions with each participant at a location of their choice. All suggested locations were at the participant's workplace. A meeting room was made available for the interview session to avoid interruption and to ensure confidentiality. The invitations were scheduled on each participant's calendar to attain commitment. The purpose of the research was detailed on the consent form.

On the day of the interview, the researcher provided each participant with a consent form that highlighted their rights during the interview (Saunders & Lewis, 2012). The researcher, during some sessions, requested the participant approval to record the interview session. All requested participants approved the recordings which enabled ease of referencing when the researcher was transcribing the interviews. Unfortunately, the interviews conducted via a telephone and Skype video call did not technically allow for a recording, in which case the researcher took notes during these sessions.

The recording was used for transcribing but does not form part of the data collected due to confidentiality requirements by the participants and organisations they represented.

4.8 Data collection

Data was collected using semi-structured, in-depth, open-ended, face-to-face or telephonic interviews of 20 individuals who are experts within the supply chain/logistics who included department heads, senior management and specialists (Yin, 2003). Open-ended questions were employed to allow the participant to provide more details or clarity on their responses. The researcher ensured that adequate preparation was done before each session to avoid confusion and delays. Of the 20 interviews two interviews were conducted using telephone interviews, because the participants work in Cape Town; three interviews in Johannesburg were conducted via Skype video call because of the schedule of the participants and the rest of the interviews were conducted face to face

The researcher began each interview by explaining the focus of research by referencing the SCOR model. This allowed all participants to provide relevant responses.

The researcher ensured that the stages set out by Saunders and Lewis (2012) were followed and adhered to when setting up questions.
- Research questions have been defined from the literature/theory.
- The researcher ensured that the questions would be understood by the participants.
- The researcher ensured that the questions were answered during scheduled interviews with respondents.

4.9 Analysis approach

The researcher ensured that the stages set out by Saunders and Lewis (2012) were followed and adhered to during the analysis phase.
- After the completion of each scheduled interview, the researcher transcribed the interview.
- After the researcher had transcribed all scheduled interviews, the researcher loaded all transcripts on Atlas.ti and analysed the results to test whether the results supported the literature/theory.
- Lastly the researcher did a comparison between the results and the APICS supply chain manager competency model.

The researcher tested the APICS supply chain manager competency model by identifying common competencies between the results and the model and by checking for new insights. The researcher commenced with the analysis phase post to the data collection process. Thematic analysis was used to point out and analyse data. The researcher analysed the results using the thematic process as suggested by Braun and Clarke (2006, p. 87), as detailed below. The researcher used Atlas.ti for the data analysis stage by ensuring that: Phase 1: in order to be familiar with the data, the researcher transcribed all interviews | Phase 2: the researcher deductively coded all transcripts generating initial codes | Phase 3: the researcher used the APICS competency model to search for matching themes while coding | Phase 4: the researcher reviewed the assigned codes to the respective themes by using the notes provided on the competency model by APICS (2014) | Phase 5: the researcher defined an named new insights | Phase 6: the researcher was able to produce an Atlas.ti report containing codes and quotations used during analysis.

4.10 Limitations:

The following limitations have been identified

- Supply chain/logistics are complex per industry and contain many members of the supply chain function who did not form part of the purposive selection.
- The study defined organisations as all private firms, excluding state-owned enterprises and the government who also have extensive supply chain operations.
- The experts used in this study did not represent all the views/opinions of the industry experts that could have been included in the study.

4.11 Data reliability and validity

Saunders and Lewis (2012) defined validity as a concept that checks if the results have a true representation of what they are meant to highlight. In this research study, the researcher considered the principal factors that can threaten the validity of the research findings and conclusions (Saunders & Lewis, 2012). With the researcher working 3PL industry, to ensure that subjective selection does not occur, the research subject was guided by current literature in the supply chain management area.

To ensure that the history factor does not threaten the research study, constant environmental scanning was performed between interviews. This was important for organisations that are in the same industry that would have an environmental change impact on the next set of interviews. In such instances, the events will be noted herein. To ensure that testing was not affected by the willingness of participants to impress the interviewee, the interviews were conducted with respondents that the researcher did not have any type of prior relationship with (Saunders & Lewis, 2012).

To ensure that there was continuity, all selected respondents had possible backups; this not only ensured that the mortality factor has been considered, but it also provided the researcher with flexibility in case of an emergency business requirement from the respondent's side. Lastly, ambiguity about causal direction was considered by explaining the questionnaire to the respondents for both the respondent and the researcher to be on the same page.

Golafshani (2003) suggested that reliability is used to check whether results can be replicased or repeated. Saunders and Lewis (2012) provided factors that can threaten the reliability of research findings and conclusions. These factors were considered in this study to eliminate any reliability threats. The subject error factor was considered in order to produce the same results by ensuring all respondents have similar settings. Subject bias is another factor which the researcher has ensured does not occur by ensuring that respondents understand that everything that has been said during the interview was not made available to the employer and all respondents remained anonymous when the final report was produced. Observer factor as tested during the questionnaire testing phase and any feedback regarding this factor was noted and changes made. With the researcher working within the 3PL industry for the majority of the sample group, this factor remained a threat.

4.11 Ethical clearance

To ensure all interviews were run in an ethical manner, ethical clearance was granted by the University of Pretoria. Another measure was to ensure that all participants knew their rights; therefore, a consent form was signed prior to the commencement of each interview. In order to ensure all participants remained anonymous, the names and respective organisations of the participants were omitted from the research results in Chapter 5.

Chapter 5: Results
5.1 Introduction

In Chapter 4 the researcher discussed the research methodology used in this study, with the aim to answer the questions in Chapter 3. This chapter will be guided by the literature review on the skill levels within the supply chain/logistics field, for the researcher to supplement and contribute to the current body that is being built within the South African context. The researcher followed the qualitative data and an exploratory study approach to ask the what, why and how questions and as a result, gain new insights. Data was collected through semi-structured face-to-face interviews and due to distance, telephonic interviews in two cases. The data was analysed using a deductive process, which enabled the researcher to explore the current skill levels within South Africa using the APICS competency model (Hyde, 2000). The researcher considered the research limitations, ethical considerations, reliability and validity.

5.2 Description of the sample

The identification of the names of both the company and participant have been omitted from the report to ensure anonymity of all participants. The researcher interviewed 20 supply chain experts from various industries within the supply chain field to ensure a heterogeneous sample during the study. The researcher chose all participants using the judgement sampling method because it was convenient to select the 20 participants.

Table 4: Summary of the participants

Respondent number	Job Title	Years within SC	Qualifications	City
Respondent 1	Manager of supply chain sustainability	10 years	Master's in engineering / PhD candidate	Johannesburg
Respondent 2	Logistics director	13 Years	PhD Eng., Industrial engineering	Cape Town
Respondent 3	Logistics senior manager	7 years	BCom Transport & logistics / MBL candidate	Johannesburg
Respondent 4	Logistics manager	20 years	Diploma in SC / BA in SC (In Progress)	Johannesburg
Respondent 5	Operations director	14 years	Civil engineer and MBA	Cape Town
Respondent 6	Management consultant, supply chain specialist	8 years	Master's in engineering / MBA candidate	Johannesburg
Respondent 7	Supply chain manager	14 years	Master's in supply chain	Johannesburg
Respondent 8	National logistics manager	10 years	BCom Honours Logistics / MBA candidate	Johannesburg
Respondent 9	Trade, transport and logistics manager	23 years	International trade and MAP	Johannesburg
Respondent 10	Manufacturing & supply chain	18 years	Engineer and MBA	Johannesburg

	Operations manager			
Respondent 11	Parts distribution manager	23 years	National diploma Logistics	Johannesburg
Respondent 12	Logistics manager	10 years	BCom Transport and logistics (in progress)	Johannesburg
Respondent 13	Business development director	40 years	BCom, LLB, MBA, DBA	Johannesburg
Respondent 14	Manager business process	3 years	BCom Supply chain management	Johannesburg
Respondent 15	Regional supply chain solutions	20 years	Project Management Diploma and Strategic Logistics Management	Johannesburg
Respondent 16	Supply chain advisor	12 years	Master's in supply chain	Johannesburg
Respondent 17	Operations manager	11 years	BCom Business management	Johannesburg
Respondent 18	Operations manager	22 years	Diploma in transport and logistics	Johannesburg
Respondent 19	Director account solutions	20 years	National diploma Logistics	Johannesburg
Respondent 20	General manager	22 years	Diploma in business management and PMD	Johannesburg

The researcher interviewed 20 participants for the study. All participants held a variety of senior positions within the supply chain field as shown in Table 4. Due to different organisational structures, the researcher explained to all participants that the study only focused on the delivery stage of the SCOR model. This allowed all participants to respond to the correct questions. Having said that, there were instances where, due to organisational structures, the planning department also included the last mile delivery function to the customer. Out of 20 participating experts/organisations, two experts were not asked questions 1 and 2 which are supporting questions to the main question. The reason for this is because the first organisation, represented as Respondent 1, is within the energy industry and did not deliver to its customers. The second organisation had its own outbound delivery department. Only 18 organisations made use of a 3PL for their deliveries to their final customer. Of the 20 interviews two interviews were conducted using telephone interviews because the participants work in Cape Town, three interviews in Johannesburg were conducted via Skype video call because of the schedule of the participants and the rest of the interviews were conducted face to face. The researcher allowed the participants to choose a venue of their choice. The interviews were set up at the participant's workplace during working hours. All participants were informed of the purpose of the study during the introductory stage when the meetings were set up and again the day of the interview. The researcher did not provide the participants with the questions prior to the interviews to avoid any bias of interviewees on some exploratory questions. The researcher wanted to observe the body language as the questions were being thought of and answered.

5.3 Research results

5.3.1 Research Question 1

Research Question 1: What are the current skill requirements within the supply chain/logistics/procurement department?

Research Question 1 aimed to identify the current skill requirements, including skills/competencies/qualifications and characteristics within an organisation in the supply chain/logistics field. The question sought to confirm whether or not the skills identified by APICS for the supply chain manager were the same type of skills identified by the selected experts.

5.3.1.1 Skills requirement

Interview Question 3 was included in the literature as part of the two main research questions. The reason behind this logic was that, unless one knows what skills are required, you cannot check and confirm for the competency level. The interview question probed the participants to name requirements when hiring new employees. Using the same skill requirements, participants were then asked how many people in their current departments/teams meet these requirements. With the skills shortage with and as literature explains it, there is a mismatch of skills between what the industry needs and what universities provide (Makarius & Srinivasan, 2017; Noble, 2015). This was a fundamental question because it allowed the researcher to observe the facial expression and body language when the skills level question was asked as a follow-up. Using the APICS competency model, the researcher checked whether the competencies advised by APICS are similar to those received from participants. The researcher highlighted the number of frequencies next to the relevant competency set. Those competency sets without a number next to them mean that the competency set was not mentioned by all participants.

According to APICS (2014), the supply chain manager competency model stipulated on Figure 3 is designed into three tiers. The model includes competencies on each tier and a description of what each competency means, which includes both activities and behaviours required.

Figure 6: APICS Competency model - results – (APICS, 2014)

Occupational related

Materials manager specific requirements

Bachelors or equivalent degree

Supply chain industry association membership

Supply chain-specific certifications

Profession-related

Supply chain manager knowledge areas and technical competencies

Performance trade-offs	**Warehousing**
Warehouse management	Distribution
Transportation management	**Logistics**
Supply chain synchronisation	International regulations
Risk management	**Strategic sourcing and supplier relationship**
Location facilities	**Customer relationship management**
Sustainability	Applying lean and six sigma tools

Operations management knowledge areas and technical competencies

Strategy development and application	**Project management**
Supply chain management	Lean management
Process improvement and six sigma	**Enabling technology application**
Execution, planning, scheduling control	

Foundational

Academic competencies

Math, statistics, and analytical thinking	**Supply chain fundamentals**
Reading and writing for comprehension	**Foundations of business management**
Applied science and technology	**Operations and enterprise economics**

Workplace and leadership competencies

Problem solving and decision making	Planning and organising
Teamwork and collaboration	Conflict management
Accountability and responsibility	**Enabling technology**
Customer focus (internal and external)	

Personal effectiveness competencies

Awareness of the needs of others	**Effective communication**
Integrity	**Interpersonal skills**
Continuous learning	Creativity

5.3.1.1.1 Occupation-related competencies

According to APICS (2014), supply chain managers require industry-specific certification, licences and specialised university degrees. This can be followed by face to face training.

Table 5: Occupational related - materials manager specific requirements

Ranking	Occupational related qualification	Frequency
1	Qualification	8
2	Professional body certificate	2

Out of 20 participants, 8 participants preferred to hire someone with a supply chain/logistics related qualification with the set of skills within this competency set. A senior manager within the logistics department said that, *"if you have your coordinator managing your 3PL and managing your internal staff, they require a diploma"*. Adding to the qualifications, 2 participants out of 20 participants mentioned the APICS certification as a body. One of the manufacturing and supply chain operation managers, without thinking twice, said that they require an "*APICS qualification*".

5.3.1.1.2 Profession related

5.3.1.1.2.1 Supply chain manager knowledge competency

According to APICS (2014), the supply chain manager knowledge competency describes the set of competencies as the knowledge, skills and abilities that are needed by supply chain managers. These set of competencies had a low frequency. Warehouse management and strategic sourcing and supplier relationship were equally identified by 3 participants as a requirement. Transportation management and sustainability were not identified by any participant as requirements.

Table 6: Profession related – supply chain manager knowledge competency

Ranking	Supply chain manager competencies	Frequency
1	Warehouse management	3
2	Strategic sourcing and supplier relationship	3
3	Logistics	2
4	Performance and trade off	1
4	Supply chain synchronisation	1
5	Risk management	1

During the interview one of the logistics division senior managers said that you need to "*understand how the staff fits into one another; where logistics fits into the whole supply chain environment overall*". "He further explained that *"you need to understand the different components in the warehouse and then structure the whole warehouse accordingly".* The senior manager also added to the skill requirement of managing relationships with suppliers that, *"if you have your coordinator managing your 3PL and internal staff, they require a diploma to manage the supplier relationship"*.

5.3.1.1.2.2 Operations management knowledge areas and technical competencies

According to APICS (2014), the operations management knowledge areas and technical competencies described these set of competencies as the knowledge, skills and abilities that supply chain professionals would need within operations and supply chain management roles. These set of competencies received more mentions from the participants compared to the supply chain manager competencies.

Table 7: Operations management knowledge areas and technical competencies

Ranking	Operations management competencies	Frequency
1	Enabling technology	7
2	Process improvement and six sigma	3
3	Strategic development and application	2
4	Execution, planning, scheduling control	2
4	Project management	2
5	Supply chain management	1

Enabling technology was mentioned as a requirement by 7 participants out of 20. The activities within this competency included hardware and software knowledge and the understanding that all technology enables users to perform work functions. One of the participants, the national logistics manager, believed that being tech savvy is vital, he said that *"ERP (enterprise resource planning) and WMS (warehouse management system) are essential. These days everyone asks and if you do not have it, then you do not get the job"*. He said that *"knowledge of Skype, time management, discipline, focus and determination is necessary".* Also adding to the enabling technology, the supply chain specialist elaborated on how skill requirements change according to the technology implemented by an organisation.

The supply chain specialist continued to give an example that, *"when an employee is technologically savvy, he/she would be ideal in such a space, but when you are not technologically savvy, more would be required from you in terms of manual skill requirements, but in the long run, it would be ideal to acquire such skills".* The supply chain specialist said that *"operational level is turning into a thin structure where it is becoming technology based".* Two participants mentioned execution, planning, scheduling and control as a skill requirement within their organisations. During an interview, a supply chain manager mentioned that schedule management is to develop and maintain a cross-functional schedule.

5.3.1.1.3 Foundational

5.3.1.1.3.1 Workplace and leadership competencies

According to APICS (2014), workplace competencies are those set of skills and abilities that allow supply chain/logistics professionals to function within their organisation. With enabling technology being applicable to both operational competencies and workplace and leadership competencies, the skill requirement received equal mentions on both competency sets.

Table 8: Workplace and leadership competencies

Ranking	Workplace and leadership competencies	Frequency
1	Enabling technology	7
2	Problem solving and decision making	2
2	Teamwork and collaboration	2
2	Customer focus	2

An operations director explained during an interview how supply chain/logistics is one big complex problem that is constantly being resolved. From the results it is perplexing that only 2 participants out of 20 require problem solving and decision making as a skill. One of the operations managers said that *"employees should be able to solve problems innovatively".* The ability to function within a team environment and willingness to collaborate also received a low frequency. During an interview with an operations director, the participant made an example and said that *"one minute you are calling the driver to arrange collection, the next thing you are presenting to the MD on your strategic plans".* He said that sometimes those things can happen in one day and that they would not hire someone who doesn't want to get their hands dirty.

5.3.1.1.3.2 Academic competencies

According to APICS (2014), academic competencies are those competencies that are acquired in an academic environment. These competencies also include thought processes and cognitive functions.

Table 9: Academic competencies

Ranking	Academic competencies	Frequency
1	Maths, statistics and analytical thinking	9
2	Foundation	5
3	Supply chain fundamentals	3
4	Applied science and technology	2
4	Operational enterprise economics	2
5	Reading and writing for comprehension	1

Almost 50 % of the participants agreed that mathematical competencies and analytical thinking were the most critical skills required in supply chain/logistics. During an interview with a supply chain manager, the participant said that *"the second skill is the ability to be comfortable with numbers; it is not good enough to be able to add up; you need to be able to synthesise data".* The participant's views were shared again by a supply chain specialist. The participant said that they would need someone who is good with mathematics. Other participants believed that the skill requirements within supply chain/logistics departments need the foundation of business management. During an interview, a parts distribution manager said that *"financial acumen is necessary; to understand landed costing to price well".* Reading and writing for comprehension was not an important skill required within this skill set.

5.3.1.1.3.3 Personal effectiveness competencies

According to APICS (2014), personal effectiveness competencies are a supply chain/logistics professional's interpersonal, self-management styles, motives and traits which are applicable to various industries as well.

Table 10: Personal effectiveness competencies

Ranking	Personal effectiveness competencies	Frequency
1	Continuous learning	5
2	Effective communication	5
3	Interpersonal skills	2

Within these skills competencies, participants equally mentioned the ability to learn and be taught, including effective communication as the required skill. During an interview one of the logistics managers elaborated further to say during an interview if a candidate does not have the required skills set but shows the willingness to be taught, that candidate will have an advantage over other candidates who possess the required skills set. During an interview with a business process manager, the participant explained how important it is to have an employee who is not resistant to learning. The participant explained that when hiring, *"we are looking for someone who is teachable; someone who takes initiative in their growth".* During another interview with a logistics manager the need for effective communication was communicated very strongly when the manager said that communication is definitely something that he picked up with blue-collar employees; *"when you ask them something and then the response is totally different".* He said that there is no reason but miscommunication for that and that internally it is amplified because they are a global company.

5.3.1.1.3.4 Additional skills requirements

Adding to the APICS competency model in a South African context, work experience was mentioned as part of required skills by 45 % of the participants. These participants expressed the importance of work experience due to the type of roles they would be hiring for. One of the logistics managers during the interview said that he would say that two years' experience within logistics is necessary to be a manager. The participants explained how junior/entry positions would need some exposure within supply chain/logistics because when you are in a management role, most organisations build management skills from within.

Table 11: Work experience

Ranking	Work experience	Frequency
1	Work experience	9

Various other skills added to the skill requirements were personality traits. Five participants confirmed that an employee that does not have the culture fit with the organisation will have difficulty adapting. During an interview with an operations director he explained why culture fit is important. He said that *"most of the time people think that the best people to hire for the supply chain are problem solvers because logistics really is all one big problem. But in our organisation, culture is very important and not brains".*

Confirming this requirement during an interview was an operations manager who also felt that the right fit into both company culture and the team is important. Another skill that was mentioned as a requirement was the ability to work under pressure.

Table 12: Personality traits required

Ranking	Personal Trait	Frequency
1	Culture fit	5
2	Ability to work under pressure	4
3	Attention to detail	3
3	Technical ability	3
3	Attitude	3
4	Innovative	2
4	Personal character	2
5	Open minded	1
5	Sense of urgency	1
5	Research and reporting	1
5	Team player	1

5.3.1.2 Summary of research Question1 results

In summary, research Question 1 was answered successfully. Saturation was reached on research Question 1 after the eleventh interview. The results indicate that South African organisations are aligning their skill requirements with the APICS supply chain manager competencies. The results also indicated that during the hiring stage, managers do not only look at skills requirements, but also work experience and personality traits such as having a good attitude at work. These new insights are critical to South African supply chain literature.

5.3.2 Research Question 2

Research Question 2: Do current employees within the organisation, top-down, meet the required skills?

Research Question 2 aims to assess the current skill levels within supply chain departments; whether current employees possess the current required skills by the employer.

5.3.2.1 Current skill levels

Interview Question 4 allowed participants to do an internal assessment with their current staff. The reaction from most participants was that the question came as a surprise. One participant was hesitant to respond to the question and later provided a generic answer. The question was strategically asked after the skills requirement question, while the participants carefully thought of the response to question 1.

Table 13: Skills levels

Ranking	Skills levels	Frequency
1	All	8
2	Majority of the people	6
3	None	3
4	Half of the employees	2
5	Some people	1

Following a question regarding the skills required when looking for new employees, 8 out of 20 participants confirmed that all their current staff met the required skills. A supply chain manager proudly said that *"all staff meet the required skills, that is why they are here".* This was followed by 5 out of 20 confirming that most of the staff met the requirements. Despite the discussions around the lack of skills in South Africa, only 15 % confirmed that none of the employees met the requirements. One of the participants, a management consultant and supply chain specialist, worriedly said that, "*none of the personnel have the required skills; the reason for this is because we are current implementing the S & OP".* The participant also said that *"most employees are lacking in the skillset; they are good at listening to instructions, so it's a rule-based way of doing your planning. You need an analyst, change perspective and question things".* At this moment, according to the participant, the organisation is not hiring the right people.

5.3.2.3 Summary of research Question 2 results

In summary, research Question 2 was answered successfully by all participants. The results confirmed that South African organisations are improving their employees' skill levels. This resulted in most organisations confirming that most of the employees meet the skills required.

5.3.3 Research question 3

Research Question 3: What is the role/involvement of human resources in the supply chain field?

Research Question 3 aims to explore the role/involvement of human resources within the supply chain departments. To assist in answering Question 3, interview Question 6, 8 and 9 were formulated to answer research Question 3.

5.3.3.1 Minimum requirements for a successful performance

Interview Question 6 was set up to explore the 3 minimum requirements needed for the success of the respective departments. This question supports the main research questions of the current skill levels in South Africa because it allowed participants to relate Question 6 with Question 3 and 4. Some participants related the question to Question 3; they provided similar skills required for the department to succeed where some provided new information.

Table 14: Minimum requirements for the success of the department

Ranking	3 Requirements	Frequency
1	Attitude	6
2	Meet goals	3
2	Being proactive	3
2	Communication	3
2	Leaders that walk the talk	3
3	Data analysis	2
3	Flexibility	2
3	Time management	2
3	Ability to learn	2
3	Alignment	2
3	Teamwork	2
3	Culture fit	2
3	Accountability and responsibility	2
4	Competence	1
4	Ability to work under pressure	1

Participants did not seem to think twice when answering this question. Some participants did not provide three requirements but gave the most important requirement/s for their respective organisation.

For the 6 participants that named attitude as one of the requirements, the attitude was the first word that came out with a body language that

said, "it is a must." During an interview with one of the logistics managers, the participant said that *"it is important to have attitude towards your job – people going an extra mile to make sure the job is done. There is an old saying that says "attitude determines your altitude".* Adding to the requirements, one of the operations managers explained how employees with good attitude attribute to also having fun and that they are good team players. Following attitude, participants named the following requirements as minimum requirements, namely meeting goals, being proactive, communication and leaders that walk the talk. During an interview with a logistics director, the participant said that the next requirement is to be able to communicate effectively and that a lack of communication has a huge impact on their service delivery.

Some of the requirements provided had lower frequencies. One of the lowest requirements was innovation. Out of 20 participants, only 1 participant mentioned innovation as a minimum requirement for the success of the department.

5.3.3.2 Human resource interventions

Interview Question 8 was constructed to explore which human resource interventions, including training and development, does the organisation employ to ensure the successful performance of the department. This question supports the main research questions in that employee skills are directly linked to human resource interventions in place within organisations. This question allowed participants to think about human resource interventions they make use of in their departments. Because supply chain is such an expanding new function within the business, the human resource department is still learning about this function and exploring ways to promote departmental success. Some participants provided one intervention and others provided more than one. When asked this question, most participants did not hesitate to respond, as it showed the consistency of these interventions within their departments.

Table 15: Human resource interventions

Ranking	HR Interventions	Frequency
1	Training and development	13
2	Performance reviews	8
3	Sponsored study programmes	3
4	Mentorship	2
5	Psychometric testing	1
5	Balance scorecard	1

Participants who answered this question named training and development as the highest human resource intervention used. Over 60 % of the participants named training and development as an intervention currently used within their organisation. During an interview, one of the logistics managers explained *"our organisation believes in training and development, we have a designated training division. One of our trainers is a super user for all soft skills like MS Office applications".* He said that they also have over-the-shoulder training. At the end of each year they plan for the next year, for example, if there is a new incoterm, they collaborate with their 3PL service provider to arrange training for them. This was followed by monthly, quarterly or annual reviews currently in place to which 40 % of the participants agreed. The lowest human resource intervention provided was psychometric testing and the balanced scorecard.

5.3.3.3 Application of the interventions

Interview Question 9 was asked to support the human resource intervention question, to check how organisations deal with human resource interventions. This interview question was mostly answered with a "but". Participants responded with a choice but clarified that sometimes the situations would require other choices to be considered.

Table 16: Are interventions applied individually or per department

Ranking	HR Interventions - applied	Frequency
1	Individually	10
2	Both depending on the situation	7
3	As a department	3

Half of the participants confirmed that the human resource interventions within their organisations apply the human resource interventions individually. One of the participants said that they do it on an individual basis because people would say that they did not meet their KPIs, to which they ensure to upskill. The other 35 % of participants confirmed that the interventions would apply in a situation, which means it can be individually or per department. Only 15 % of the participants confirmed that human resource interventions are applied per department.

5.3.3.4 Summary of research Question 3 results

In summary, research Question 3 sought to confirm the role/involvement of human resources within the supply chain field. The research question was answered satisfactorily. The results showed that within the South African context the human resources department is active and assisting organisations to improve within. The results showed that organisations needed attitude to win, use training and development as a human resource intervention and that interventions are applied individually and not per department.

5.3.4 Research Question 4

Research Question 4: Do organisations build required skills or hire ready-made?

Research Question 4 aims to explore whether organisations develop skills internally. Question 5, 7 and 10 have been configured to answer research Question 4 in exploring whether organisations develop skills internally. Research Question 4 supports the main research questions of exploring the skill levels within South Africa. Interview Question 5 aims to explore what managers do within organisations when promoting current staff within the organisation that might not have the set of skills or qualifications within the supply chain field. This research question would by default mean that the employee does not meet the skills requirement that the hiring manager is looking for. Research Question 7 was included as part of the question to confirm the response provided in research Question 5. This means that, if an organisation does not consider internal staff that do not meet the required skills, they would hire ready-made employees externally. Research Question 10 supports the main research questions in that, as one of the participants said, the supply chain industry in South Africa recently started hiring graduates, unlike a few years ago. This question confirms whether that is the case.

5.3.4.1 Internal promotions

Interview Question 5 was constructed to explore what happens when organisations hire internally. Would they ensure that the required skills set are maintained and that everyone meet those requirements, or would it mean that internal staff would always have fewer skills than those that meet the requirements? When asked this question, several participants did not hesitate to provide their choice and provide reasoning behind the choice.

Table 17: Internal promotions

Ranking	Internal Hire	Frequency
1	If someone meets our skills requirement we would train them	11
2	Active learning and development	4
3	Organisation believes in hiring from within	3
3	Move people around according to their strong skillset	3
4	Self-initiative	2
5	Job rotation	1
5	External - small company	1

Out of 20 participants, 11 confirmed that they would hire an internal employee that meets the current skill requirements. During an interview with one of the logistics managers, the participant explained how the organisation prefers to hire internal employees. The participant explained that internally, if there is someone who is open minded, teachable and who has the qualification or interest, then they would get first preference and be trained on the job. Adding to the preference with internal employees, a business process manager explained that when an employee is identified, a skills gap analysis would be done and a development plan put in place to ensure the employee meets required skills within the department. There are skills that are required by default within the department. Only 20 % of the participants, believed in training and development, which means the person can do on-the-job training. This was followed by 15 % of the participants whose organisation believe in hiring from within. One of the participants works for a small company which, due to the size of the organisation, would not have the capacity to build skills but would rather hire a ready-made employee.

5.3.4.2 Hiring ready-made employees

Interview Question 7 was formulated to answer the question of whether organisations hire ready-made employees or build skills from within. This question was asked due to the standing skills shortage in South Africa. Various literature sources globally have addressed skills shortage within the supply chain field. This interview question would provide an indication if organisations build skills within or prefer to hire ready-made employees.

Table 18: Hiring readymade employees

Ranking	Ready-made	Frequency
1	Building the skills internally	8
2	Both depends on the position	7
3	Ready-made	3
4	Ready-made because of the thin structure	2

Participants responding to this question mostly believed in building the skills within. From the eight participants that believed in building the skills from within, a logistics manager explained how the rules change when there is an internal employee they are looking to hire. She said that *"our organisation has a culture of hiring internally. If it is internal we would first look if anyone from another department has the skills/qualification that qualifies if we cannot find anyone internally we would then consider external applicant. If someone is appointed from outside, he/she will need 2 years' work experience and a qualification whereas internally they do not need experience".* On the other hand, there are participants whose organisations would consider all requirements presented and decide from there.

The common reason behind considering all requirements mainly is that it depends on the type of role the hiring manager is hiring for. One of the operations managers said that they hire both – some new hires and positions are senior and you therefore, get these already; some are more junior or intermediate, but with a great attitude and potential. He confirmed that they do a lot of training operationally.

5.3.4.3 Hiring graduates

Interview Question 10 was the last interview question and it required a confirmation whether the supply chain/logistics field within South Africa considers graduates when they are hiring. A graduate was defined during the interview as someone who has just graduated, with literature about skill requirements including graduates as a focal point on whether universities are providing the correct skills to employers. It was interesting to witness the passion all participants had when they were asked this question.

Table 19: Hiring graduates

Ranking	Graduates	Frequency
1	Yes	19
2	No	1

Over 90 % of participants confirmed that they hire graduates within their departments. Hiring is defined by having a graduate programme that runs between 1 to 3 years. While keeping in mind that in the South African context having a graduate programme can be a tax saving for organisations, it means 19 out of 20 organisations are actively participating in graduate programmes. One of the logistics managers said "no" due to the size of the organisation. While the supply chain managers agreed that the organisation believes in graduate programmes, one said that they indeed have graduates and that he himself is a product of a graduate programme. He said that their organisation has one of the best graduate programmes, as it sits on the CEO's portfolio. It is a three-year programme. Every 6 months they report to the CEO and have coffee with the CEO twice a year.

5.3.4.3 Summary of research Question 4's results

In summary, research Question 4 was answered successfully. The research results indicated that because organisations are willing to build skills internally, whenever there is an internal appointment and promotion, the employee will receive on-the-job training for all skill gaps identified. Also, the results showed that organisations are hiring graduates.

5.3.5 Research Question 5

Research Question 5: How do organisations achieve on-time delivery?

Research Question 5 aims to explore the highly outsourced function within an organisation where transportation of the final product to customers is paramount.

5.3.5.1 Ensuring on-time delivery

Interview Question 1 was constructed as a supporting question for the main research questions, with transport being regarded as one of the highest outsourced functions within organisations. The interview question aims to understand whether South African organisations outsource this function. Only 18 participants took part in answering interview Question 1. Two participants worked in organisations that did not outsource the transport function and the other participant within the energy sector.

Table 20: Ensuring on-time delivery

Ranking	OTD	Frequency
1	We have set KPIs	9
2	Internal performance matrix	5
2	Performance reviews with 3PL	5
3	Business process and procedure	3
4	Continuous improvement	1
4	Systems	1
4	Realtime management	1

When answering this question, all participants referred to a measurement of some sort. 50 % of the participants agreed that their organisation makes use of key performance indicators (KPI) to ensure on-time delivery. During an interview with a business development director, the participant explained how they have internal controls in place in their organisation with dashboards that the management teams use to ensure on-time delivery. Exceptions and KPI reports are automatically generated and e-mailed to managers on predetermined times for them to review and ensure that any deviations from the agreed-on time delivery KPI are addressed. During an interview with one of the logistics managers, the participant explained how they ensure – within the logistics department − that their 3PL service provider delivers on time by ensuring KPIs are met.

5.3.5.2 All departments within the organisation being held accountable for on-time delivery

Interview Question 2 was a follow-up question to Question 1. With Question 1 being related to the transport function which is outsourced to 3PL service providers, Question 2 allowed the participants to think of the role the organisation played in ensuring on-time delivery. It is easy to measure an external service provider on service delivery without thinking of the effect internal processes have on the last mile delivery.

Table 21: Ensuring on time delivery

Ranking	Accountable for OTD	Frequency
1	Internal performance matrix	7
2	Everyone has to meet their goals	5
2	Implemented S & OP	5
3	We set individual targets	3
3	Performance reviews with 3PL	3
4	Flagging escalations	2
4	Business process and procedure	2
5	Element of trust	1
5	Systems	1

The research results show that various organisations have measures in place to ensure that all departments within the organisation are held liable for ensuring on-time delivery. The theme that came out in interview Question 2 was different internal measurements. Most participants shared that an internal performance matrix is in place to ensure that all departments are accountable. During an interview with one of the logistics managers, the participant explained that within their organisation they *"… have a global scorecard that Africa and EMEA fit into. There are two types of scorecards We have a whole goods scorecard. We check when did we promise the total number of goods and how many where done on time, then it gives a percentage. We allow 5% deviation".* Other participants shared the view that everyone within the organisation was hired to do a job. During an interview with one of the supply chain managers, the participant highlighted the fact that *"We hold everyone accountable for the numbers and if you do not achieve your required KPIs, you need to answer as to what happened".* One of the participants said that one would initiate a process, trusting that the next person will do their job.

5.3.5.3 Summary of research Question 5 results

In summary, it is evident that most organisations use 3PLs to provide the last mile delivery. To ensure both internal and external accountability, organisations are using various measuring tools between internal departments and 3PL service providers.

5.6 Conclusion

All research questions have been answered and new insights discovered. Research Question 1 was answered successfully. Saturation was reached on research Question 1 after the eleventh interview. The results indicate that South African organisations are aligning their skill requirements with the APICS supply chain manager competencies. The results also indicated that during the hiring stage, managers do not only look at skill requirements, but also work experience and personality traits such as having a good attitude at work. These new insights are critical to South African supply chain literature. Research Question 3 sought to confirm the role/involvement of human resources within the supply chain field. The research question was answered satisfactorily. The results show that within the South African context, the human resources department is active and assisting organisations to improve within. The results show that organisations need attitude to win, use training and development as a human resource intervention and that interventions are applied individually and not per department. Research Question 3 was answered successfully. The research results indicated that because organisations are willing to build skills internally, whenever there is an internal appointment and promotion, the employee will receive on-the-job training for all skill gaps identified. Also, the results showed that organisations are hiring graduates.

Chapter 6: Discussion of results

6.1 Introduction

Chapter 6 discusses the research results presented in Chapter 5. The researcher follows the same structure as Chapter 5 to discuss each research question.

6.2 Discussion – Research Question 1

Research Question 1: What are the current skill requirements within the supply chain/logistics/procurement department?

Research Question 1 identifies skills required within supply chain/logistics in a South African context; this question attempts to answer the question posed in the suggested future study by Ataseven and Nair (2017). Question 1 is part of the two main research questions which attempts to identify the current skill levels and requirements within supply chain/logistics in South Africa globally (Thai, 2012; Sohal, 2013; Lorentz et al., 2013). With that being said, there is still a lack of consistency in terms of which skills/competency framework will be followed; BLM framework (Murphy & Poist, 2007) or APICS competency models (APICS, 2014; Dubey & Gunasekaran, 2015). Various industry professional bodies have taken a global stand to provide guidance and training in terms of skills requirements (APICS, 2014). There are various types of organisations within South Africa that exist, which are: firstly, organisations that are aligned with professional bodies and actively aligning their employees to global standards, secondly organisations that trust academic institutes to provide the required skills within the supply chain field and finally there are some organisations that believe in work experience providing the required skill sets.

6.2.1 Skills requirement

6.2.1.1 Qualifications

According to APICS (2014), supply chain professionals either have postgraduate degrees or supply chain logistics degrees. Adding to the postgraduate degrees, professionals also have professional body certification that also provides a community of professionals and a knowledge base. The results show that there are organisations that include academic qualifications as a requirement during the hiring stage. Amongst these organisations, some also preferred a professional body certification.

6.2.1.2 Supply chain manager knowledge competency

The results have shown that organisations are not looking for these types of skill sets when hiring new employees. The low number of organisations mentioning these skills/competencies were organisations whose supply chain/logistics departments worked closely with warehousing which would explain the need for such skills. One can infer that the reason organisations do not focus on these set of skills, such as transport management and distribution, is because the function is outsourced to organisations that are experts in that field (Logan, 2000). When compared to the delivery functions noted by Bolstorff and Rosenbaum (2012), it is clear that the competency set on the supply chain manager knowledge reflect these functions. One can infer that both APICS (2014) and Bolstorff and Rosenbaum (2012) did not consider transport as an outsourced function, as it would reflect within the required skill sets.

6.2.1.3 Operations management knowledge areas and technical competencies

These results support the use of technology as an enabler of supply chain integration (Vermeulen et al., 2016). In a study by Xu et al. (2014), information technology was confirmed as a vital enabler for supply chain integration. Having said that, the results indicate that not all organisations recognise technological skills as a requirement when hiring new employees.

6.2.1.4 Workplace and leadership competencies

Technological skills are equally important for workplace and leadership competencies as previously mentioned under the operations management competencies. This is contrary to literature which confirms teamwork and collaboration as an enabler for supply chain integration (Zhao et al., 2011; Sohal & Prajogo, 2013). The research results showed a low frequency for teamwork and collaboration competency. Sohal (2013) went further on a separate study to suggest areas of development in communication, teamwork and technological skills amongst other skills.

6.2.1.5 Academic competencies

Research results show an alignment to the supply chain definition by Mentzer et al. (2001) and Wu et al. (2014) which view the process as a flow of products, services, finance and information. It is clear that organisations are aware of the skills required when working with such a flow. All competencies under academics were recognised by organisations as vital when hiring a new employee.

6.2.1.6 Personal effectiveness competencies

The research results showed that currently the supply chain/logistics community still viewed teamwork and collaboration, customer focus, effective communication and strategic sourcing and supplier relationship as a must-have when hiring new employees. These results are also confirming the results from a study by Zhao et al. (2011), which showed information sharing between departments as an enabler for internal supply chain integration.

6.2.1.7 New insights

The research results show that South African organisations look for more than skills/competencies. Due to the lack of skills within the industry, organisations are choosing work experience as an indication that a candidate can perform the job functions required (Dubey & Gunasekaran, 2015). During an interview with Business Today, Kharusi (2016) confirms that job training is offered to employees and thereafter skills gap analysis is done.

The research results also support Kisperska-Moroń (2013), with the author concluding in his study that it is not the system or processes but employees that provide solutions to logistics tasks and provide organisations with a competitive advantage. Research results showed that organisations looked at personal traits when looking to hire new employees. The research results show, amongst other traits, culture fit, being able to work under pressure and paying attention to detail as a must-have during the hiring stage.

In summary it is clear that the supply chain/logistics departments within South Africa are still in their development stages in terms of skills. Currently organisations during their hiring stages require four competencies out of the 10 most important competencies identified by van Dassie (2013). Also, these organisations require different types of skills that are noted within each tier of the APICS supply chain manager competency model (APICS, 2014). One can conclude that South African organisations are slowly aligning themselves with APICS.

With a history of skills shortage, supply chain/logistics organisations/departments are finding alternative ways to employ competent employees (Noble, 2015). This is evident in a number of organisations which require work experience as a requirement. Also adding to the new insights found in the research results, organisations require personal traits during the hiring stage. From the research results it is evident that culture fit, being able to work under pressure and paying attention to detail are deemed important, more than any other skills or qualifications.

6.3 Discussion – Research Question 2

Research Question 2: Do current employees within the organisation, top-down, meet the required skills?

Research Question 2 is the main research question for this study. During the study, the researcher was able to get a view of the current skills level. From the research results, supply chain/logistics departments within South Africa are actively involved in ensuring supply chain/logistics professionals are developed for their respective organisations (Kharusi, 2016; Glatzel et al., 2014; Wheatley, 2017).

6.3.1 Current skill levels

Various industry publications have expressed their concern on the current skill levels within South Africa. The research results have indicated that South African organisations are

actively training and developing employees to ensure the level of skills progressively shifts from none to all. As explained by Alshmemri et al. (2017), when organisations provide employees with opportunities to participate in training and development, and an employee acquires new skills to grow as a professional, this in turn positively increases the employee's motivation. These results can be associated with the presence of human resource departments within the organisation, as training and development was mentioned as one of the active human resource interventions currently in place within these organisations (Dinga et al., 2015).

6.4 Discussion – Research Question 3 results

Research Question 3: What is the role/involvement of human resources in the supply chain field?

Research Question 3 provided evidence that human resources are actively involved within supply chain/logistics organisations within South Africa. This is evident by the emphasis placed on training and development on the research results. Another indication is the current skills level which confirms the training and development within organisations (Menon, 2012; Huo et al., 2015). In a study by Dinga et al. (2015) the results show that both training and development show a positive contribution towards supply chain integration.

6.4.1 Human resource interventions

Due to the skills shortage in South Africa, organisations have confirmed that training and development are active within their organisations. This is also evident with the research results regarding skill levels and the responses received when participants were asked if their respective organisations believe in building skills from within or hiring externally. Also attesting to the involvement of human resources within organisations is performance management. These research results are in line with the study done by Menon (2012) and Huo et al. (2015), which shows teamwork training amongst other human resource practices as a requirement for the success of supply chain integration. In a study by Dinga et al. (2015) the results show that both training and development and recruitment and selection show a positive contribution towards supply chain integration.

6.4.2 Application of the interventions

Organisations implement human resource interventions individually, instead of per department and the main reason provided was that employees are different. Some organisations, however, focus on developing the department for the bigger organisation instead of per individual.

6.4.3 Minimum requirements for a successful performance

From the research results it is evident that within some organisations, the right attitude determines the success of the department. When employees have the right attitude, they are able to meet their targets, collaborate with co-workers and be engaged in the workplace. In a study by Kisperska-Moroń (2013), it is noted that it is employees and not systems or processes that provide solutions to logistics tasks and provide organisations with a competitive advantage. When an employee has a positive attitude at work by default, the employee would meet their goals as part of the three requirements needed for the department to succeed (Kohale, 2016; Bartel et al., 2011).

6.5 Discussion – Research Question 4

Research Question 4: Do organisations build required skills or hire ready-made?

Research Question 4 confirms that organisations prefer to build skills as and when they move employees; they use training and development to ensure that there is a skill/knowledge transfer to the new employee. In a study by Dinga et al. (2015) they explored how to make use of human resource practices to contribute to the skills/competency development of logistics professionals. The results showed that both training and development and recruitment and selection showed a positive contribution towards supply chain integration. This research question confirms these findings.

6.5.1 Internal promotions

Organisations confirmed that during internal promotions measures are put in place to ensure the new employee receives training and development. However, it was pointed out that the organisation would assist employees who take their personal growth seriously and not just wait for the organisation. While some organisations place people based on their strengths, as per Tatham et al. (2017) when employees grow within an organisation, it promotes motivation. As previously mentioned, a study by Dinga et al. (2015) shows that both training and development and recruitment and selection showed a positive contribution towards supply chain integration. These results are aligned with the Hertzberg Two-Factor theory discussed in Chapter 2. Recruitment and selection can affect employee motivation (Alshmemri et al., 2017).

6.5.2 Hiring ready-made employees

Research results show that most organisations believe in building required skills from within and only hire externally according to the role. Other organisations prefer to deal with it during the hiring stage by looking at what the role requires. As per Tatham et al. (2017), when employees have the opportunity to acquire new skills through on-the-job training, it promotes

motivation.

6.5.3 Hiring graduates

Organisations confirmed that graduates are considered through a graduate programme or internship. These programmes last between 1 to 3 years. These allow graduates to gain experience and be eligible for employment, for those organisations that seek work experience.

6.6 Discussion - Research Question 5

Research Question 5: How do organisations achieve on-time delivery?

Research Question 5 identifies key measures used by organisations to enable on-time delivery. With organisations making use of third-party logistics, it is critical to put measures in place to ensure delivery. The results point out that organisations rely on key performance indicators to ensure on-time delivery. Literature has provided evidence that in trying to save costs, organisations outsource at least one function to a 3PL service provider to focus on their core competencies (Logan, 2000). Academics have since studied the most effective ways to manage these relationships. As covered within the supply chain integration literature, most of the time organisations focus their attention on 3PL service providers while forgetting the effects internal processes have on the delivery.

6.6.1 Ensuring on-time delivery

The results show that organisations implement key performance indicators (KPIs), internal performance matrix and performance reviews with 3PLs to ensure on-time delivery. In a study by Logan (2000) it was concluded that, in order for a 3PL service provider to profit and retain its customers, it needs to ensure that there is an alignment of goals and values in order to design effective contracts, and secondly, both parties must agree on which information is available and which measurements would be put in place.

The research results confirm the measuring tools/instruments, both internally and externally. In a research paper by Fayezi et al. (2012) which aims to explain the advantages of making use of the agency theory, it was noted that the agency theory can be used to maintain, develop or terminate relationships with a supply chain. Maestrinia et al. (2018) validate the use of monitoring and incentives for improvement. On another hand, authors such as Mothilal et al. (2012) believe that a good relationship with a 3PL service provider can positively affect profit.

6.6.2 All departments within the organisation being held accountable for on-time delivery

The results show that organisations not only holds the 3PL service provider accountable, but it also holds itself accountable. The research results show that using an internal performance matrix, employees meeting their goals and the implementation of the S & OP, assist the organisation in holding internal departments accountable. This would be in line with the supply chain integration literature. In a study by Vermeulen et al. (2016), it is proposed that information sharing and information technology are enablers to successful integration (Zhao et al., 2011; Kim, 2013).

6.7 Conclusion

In Chapter 6 an analysis of results was undertaken and all research questions were answered as the study set out. It was evident that South African organisations during the hiring stage, make use of the APICS supply chain competency model, even for those organisations that are not aligned with APICS. New insights showed that within the South African context, due to the shortage of skills, organisations are using work experience as a workaround to ensure that the new hire is competent to do their function. Also adding to the new insights, at the hiring stage, organisations consider personality traits such as attitude, the ability to work under pressure and paying attention to details amongst others.

Research Question 2 showed that South African organisations are actively taking part in resolving the skills issue. This is evident in most organisations confirming that the majority of their staff meet the required skills. A handful of organisations confirmed that all employees meet the required skills. These positive results can be attributed to the presence of human resource capacity and understanding within the supply chain/logistics field. Confirming these results is the preference for organisations to build required skills from within, instead of hiring
ready-made employees. Also adding to this is the willingness for organisations to give first preference to internal staff before hiring externally.

Research Question 5 confirmed that organisations are actively ensuring, both internally and externally, that on-time delivery is met. This is done by KPIs, review meetings with 3PL service providers and internal performance matrix in place.

Chapter 7: Conclusion

7.1 Introduction

This research study aimed to explore the skill levels within South African organisations and the results arising therefrom came back positive confirming that organisations have taken a stand to resolve the current skills shortage. The research study was able to answer the suggested future study by Ataseven and Nair (2017). The researcher was able to identify the skills required within the South African organisations and provide new insights to the topic (Thai, 2012; Sohal, 2013; Lorentz et al., 2013). The APICS competency model (APICS, 2014) was used as a competency reference (Dubey & Gunasekaran, 2015). Also, training and development are used as a human resource intervention tool within organisations. Human resource departments are active within the supply chain/logistics. The results also reveal that organisations collaborate both internally and externally. In addition to the competency framework, organisations require personal traits at the time of hire. Chapter 7 concludes this study with a summary of the research findings, research implications, limitations and future studies.

7.2 Research findings

7.2.1 Current skill requirements and levels within organisations

Organisations confirmed that during the hiring stage, they look at certain skills, work experience and qualifications. It was positive to realise that research indicated a match between the required skills and the APICS supply chain manager competency model (APICS, 2014). It was also evident that organisations are actively involved in training and development as a human resource intervention. During the results phase, only a few organisations confirmed that none of their employees possessed the required skills set. South African organisations are steadily improving skill levels, contrary to various industry reports (Thai, 2012; Sohal, 2013; Lorentz et al., 2013).

7.2.2 New insights

South African organisations need to look beyond skill requirements when hiring new employees. Due to the historical skills shortage problem currently phasing the country, organisations are finding ways to spot talent without missing it because the person did not meet the required skills set. Organisations are now using work experience as confirmation that the candidate is competent to do the job function. Also, as stipulated on the figure below, organisations are looking at the individual's personality traits to ensure they hire the correct people. The research results are also supported by Kisperska-Moroń (2013).

Figure 7: APICS Supply chain manager competency model – results plus insights

Occupational related	
Materials manager specific requirements	

Bachelors or equivalent degree
Supply chain industry association membership
Supply chain-specific certifications

Profession-related	
Supply chain manager knowledge areas and technical competencies	

Performance trade-offs	**Warehousing**
Warehouse management	Distribution
Transportation management	**Logistics**
Supply chain synchronisation	International regulations
Risk management	**Strategic sourcing and supplier relationship**
Location facilities	**Customer relationship management**
Sustainability	Applying lean and six sigma tools

Operations management knowledge areas and technical competencies

Strategy development and application	**Project management**
Supply chain management	Lean management
Process improvement and six sigma	**Enabling technology application**
Execution, planning, scheduling control	

Foundational	
Academic competencies	

Math, statistics, and analytical thinking	**Supply chain fundamentals**
Reading and writing for comprehension	**Foundations of business management**
Applied science and technology	**Operations and enterprise economics**

Workplace and leadership competencies

Problem solving and decision making	Planning and organising
Teamwork and collaboration	Conflict management
Accountability and responsibility	**Enabling technology**
Customer focus (internal and external)	

Personal effectiveness competencies

Awareness of the needs of others	**Effective communication**
Integrity	**Interpersonal skills**
Continuous learning	Creativity

Personal traits

Culture fit	**Sense of urgency**
Ability to work under pressure	**Research and reporting**
Ability to pay attention to detail	**Team player**
Technical ability	**Personal character**
Attitude	**Open minded**
Innovative	

7.2.3 Training and development

Organisations are actively training and developing their employees according to their individual needs. As per Tatham et al. (2017), training and developing an employee are good for morale and increase motivation. Supporting training and development the organisations also confirmed that at the time of hiring, internal employees would take preference over the external professionals.

7.2.4 Internal and external collaboration to ensure on-time delivery

Organisations are ensuring that the last mile delivery is successful by holding the 3PL service provider and internal departments accountable through various means of measuring tools. This is done through KPIs, internal performance matrix and performance reviews with the 3PL. Confirming the findings, a study by Ali and Kaur (2018) suggests that, due to industry competition and customer requirements, it is vital to build strategic relationships with 3PL service providers. In a study it was suggested that organisations which use performance measurements tend to receive more from such tools (Aguezzoul & Pires, 2016).

7.2.5 The presence of human resource within supply chain/logistics

Human resources in a South African context are actively involved within the supply chain/logistics field. With the supply chain being a relatively new function within organisations, several academics have questioned the readiness of human resources in ensuring supply chain/logistics departments are as effective as the standard functions like finance or operations. From the research results it is evident that within some organisations the right attitude determines the success of the department. When an employee has the right attitude, he/she are able to meet their targets, collaborate with co-workers and be engaged in the workplace. When an employee has a positive attitude at work by default, the employee would meet their goals as part of the requirements needed for the department to succeed (Kohale, 2016; Bartel et al., 2011).

7.3 Implications for business

This research has highlighted the applicable competency model relevant to the South African context. Managers can align their skill requirements with the relevant APICS competency model.

This research provides various insights for managers within the supply chain field. The APICS competency model identifies various competencies required by supply chain professionals that managers can use to assess their current workforce and ensure that the skill gaps are closed.

Managers can also evaluate if they are experiencing a lack of skills when hiring new employees. Managers can consider work experience as an indication that a candidate is competent to perform a certain job function. Human resource can leverage off this study and continue or start implementing training and development programmes for supply chain professionals relevant to the guidance provided by APICS. Supply chain manager can re-evaluate the skill levels within their departments to confirm how many people within their organisations meet the required skill levels. This will allow managers to plan accordingly during individual development plan discussions.

7.4 Limitations

The following limitations have been identified in this study:

- Supply chain/logistics are complex per industry and contain many members of the supply chain function who did not form part of the purposive selection.
- The study defines organisations as private firms, excluding state-owned enterprises and the government who have significant exposure to the supply chain/logistics function.
- The experts used in this study did not represent the various views/opinions of the industry experts that have not been included in the study.

7.5 Suggestions for future research

Following the research results presented in Chapter 6, the following are potential future research studies that can be explored:

- A quantitative study on skills requirements and current skill levels within organisations. This will add to the body of work already done.
- A quantitative study about the role 3PLs play within the SCOR model and the effect of skills required for the organisations making use of 3PLs.
- An exploratory study on the effect of personality traits mentioned in this study on the successful performance of a supply chain/logistics department.

- An in-depth case study on the end-to-end supply chain from the supplier's supplier to the customer's customer in order to ascertain if there is a skill overlap between all functions within a supply chain management function.

7.6 Conclusion

This research study provides new insights that both supply chain/logistics managers together with human resources can use. Through an exploratory qualitative research, the researcher was able to derive rich new insights from the 20 in-depth, semi-structured interviews conducted. South Africa has showed a proactive response by ensuring individuals within their organisations go through training and development to:

- Improve the current skill levels within organisations.
- To provide employees with growth opportunities within the organisations.
- To align with global standards,
- To build morale by believing in hiring internal candidates before considering external candidates.

By hiring the correct individuals within an organisation with the right attitude, people who can work under pressure and pay attention ensure that both the individual and the organisation can meet the set KPIs. Finally, managers can consider work experience and personality traits when hiring to ensure that there is the right culture fit. Even though personality traits and work experience might not be added within the APICS supply chain manager competency model, in a South African context these requirements are critical.

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Annexure 1: Interview Questions

1. Do departments within your organisation to ensure a successful on time delivery
2. What best practices does the organisation employ ensure that all departments are contiinoustly motivated to meet their on time delivery?
3. What are the basic requirements and charateristics during the hiring stage do you look for in the management and employees' role within the supply chain department?
4. How many members of the team/department that are currently employed by the company in Logistics functions meet the basic requirements as listed above?
5. For internal promotions, what best practices does the hiring manager ensure that the new internal hire is developed to ensure that the level of standard is maintained in terms of the specific departmental requirements?
6. What are the three minimum requirements that are a must have for the successful performance of internal supply integration?
7. Does the organisation subscribe to building these requirements through training interventions or does it believe in hiring "readymade" employees?
8. Which human resources interventions, including training and development does the organisation employ to ensure the successful performance of the internal supply chain integration?
9. Are the interventions applied according to individual requirements within the supply chain department or per team/department?
10. Do you hire graduates

Annexure 2: Consent Letter

Dear Sir/Madam

I am conducting research which aims to explor the impact of current skillsets within the supply chain/procurement/logistics departments on successful performance of internal supply chain integration.

The interview is expected to last about an hour, and will help assist the researcher in understanding the impact of skillsets on the successful performance of the supply chain integration within South African supply chain/procurement/logistics departments on business financial performance.

Your participation is voluntary and you can withdraw at any time without penalty. All data will be reported without identifiers. If you have any concerns, please contact my supervisor or me. Our details are provided below.

Baleseng Ntshabele	Len Konar
symaxbee@gmail.com	len.konar@orcaservices.co.za
0825729267	0825543920

Signature of participant: _____

Date: _____

Signature of researcher: _____

Date: _____

Annexure 3: Ethical Clearance Letter

Gordon Institute of Business Science
University of Pretoria

08 August 2018

Ntshabele Baleseng

Dear Baleseng

Please be advised that your application for Ethical Clearance has been approved.

You are therefore allowed to continue collecting your data.

Please note that approval is granted based on the methodology and research instruments provided in the application. If there is any deviation change or addition to the research method or tools, a supplementary application for approval must be obtained

We wish you everything of the best for the rest of the project.

Kind Regards

GIBS MBA Research Ethical Clearance Committee