Building a Profession: Towards a Supply Chain and Logistics Body of Knowledge

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Declaration

I, Adam Voak, declare that the DBA thesis entitled ‘Building a Profession: Towards a Supply Chain and Logistics Body of Knowledge’ is no more than 65,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work.

Adam Voak Date: 28 February 2020

Abstract

Continual advances in understanding the elements and interactions underpinning Supply Chain and Logistics (SCL) processes have become invaluable within the industry for improving organisational performance and securing competitive advantage. However, notwithstanding the importance of this enhanced understanding, there are still crucial concepts of consequence to the management of SCL practices which are not fully comprehended, nor universally recognised. This lack of clarity and accord within the area allows significant uncertainties to arise in the pursuit of maintaining and evolving professional practice.

Uncertainty about the elements and interactions underpinning SCL processes accords with the lack of a generally accepted and universally agreed body of knowledge (BOK). An agreed BOK is pivotal for a profession because it informs its intellectual and formal development. These problems of comprehension must be resolved to ensure SCL's acceptance and recognition by the broader academic community as a specialist discipline, and that its intellectual development is raised to levels equivalent to its essential global economic contribution. A secure theoretical footing is necessary to build the intellectual frameworks needed to support and firmly establish academic understandings of SCL, which will allow its recognition as a profession.

The conceptual framework for this research was derived from a novel deployment of Bloom's Revised Taxonomy (Anderson et al., 2001). Bloom's Revised Taxonomy assists in the reworking and merging of three discrete but relevant academic constructs: national qualification frameworks (NQFs), a summary of higher education qualifications and parallel BOK frameworks which exist for cognate professions. The research methodology included a qualitative review of existing contributions to the field, with data being analysed using Attride-Stirling's (2001) thematic analysis approach. The survey focused on a purposively selected sample of Masters by coursework SCL programs in the public domain, restricting the selection to those that met specific accreditation criteria and university ranking requirements. They were taken

from first-generation NQF jurisdictions, namely Australia, New Zealand, South Africa, the United Kingdom (excluding Scotland) and Scotland (separately).

The outcomes of this investigation were identification of substantial consistency in SCL developmental themes in first-generation NQF providers, a tentative formulation of a baseline BOK for the SCL profession, and a path-breaking methodological approach to distilling agreed knowledge within emerging disciplines that seek to develop professional status.

Preface

"Building a Profession: Towards a Supply Chain and Logistics Body of Knowledge" is the outcome of several years of research into the intellectual basis of practice in the area. After entering the logistics sector at the age of 17 as a low-skilled worker, I observed, first-hand, the use of a changing panoply of buzz words and a pervasive penchant for chasing the latest fads. After over 20 years in the industry, to my dismay, this trend continues. However, having also practised in law, I had come to understand in more detail how a profession is shaped. In particular, I noted the broader community's trust in and respect and acknowledgement for the legal profession. I also began to appreciate the importance of the significant investments of time and effort from key figures to ensure the lasting and consensual public status of legal professionals.

In contrast to the situation in law, in Supply Chain and Logistics (SCL), in which I have been involved at both worker and management levels, I had to invest heavily in my own professional development. I continued to find the notion and specific description of an SCL professional to be elusive. While there was a palpable lack of investment in people within the sector, it was not until I began teaching in this field that I developed an awareness of the concept of human capability development, and the disconnect between industry practice and academia. At this point, it seemed clear to me that, if knowledge was shared more freely within the area and an open dialogue could be encouraged, practitioners and academics could learn much from each other. However, I also realised that a body of knowledge which would have facilitated such engagement did not exist, and this was likely to be one of the issues preventing the area from being regarded as a real profession.

In hindsight, the seeds for this doctoral project had been growing for some years in my mind. Still, it was not until I was enrolled in a Doctor of Business Administration course that I was able to formulate and articulate a research question worthy of intense investigation. This question became the basis of this thesis, and in answering it, I produced several scholarly presentations and publications. I believe this academic output has contributed to a better

understanding of the SCL area and created a basis from which the beginnings of a professional body of knowledge could be developed.

Scholarly presentations and publications during the period of candidature

Throughout his candidature, the researcher produced academic and scholarly publications about the human capability development challenges in the logistics sector and, more broadly, across global supply chains (SCs). These publications are mostly articles in conference proceedings. The researcher believed that using conferences as a delivery channel, as opposed to academic journals, was more effective in highlighting the importance of this issue to his colleagues in the field.

Conference Papers

Smith, M., Wimalasuriya, R., & Voak, A. (2019). *Better transport connectivity in ASEAN: Impacts on commodity trade.* Paper presented at the 63rd AARES Annual Conference (No. 2186-2019-1421), Melbourne, VIC 12–15 February 2019.

Voak, A., & Fairman, B. (2019). Crossing borders: anticipated challenges in building a body of knowledge for the digital printing sector to promote relevant human capability and mobility, 10th Asian Symposium on Printing Technology (ASPT2019) – Strengthen the knowledge to increase opportunities in business, Bangkok, Thailand, 17 September 2019.

Voak, A., & Smith, M. (2019). *The rise of 3D printing: its human capability impacts and the nature of emerging interdependencies along the global supply chain***,** 10th Asian Symposium on Printing Technology (ASPT2019) – Strengthen the knowledge to increase opportunities in business, Bangkok, 2019, Thailand, 17 September 2019.

Fairman, B., Voak, A., & Sujatmaka, U. (2019). International Seminar and Conference on Learning Organization, Bandung, Indonesia, 9–10 October 2019.

Fairman, B., Voak, A., & Abdullah, H. (2019). *Reflections on the 'Malang Declaration': models of engagement within a research program*, International

Conference on Art, Design, Education and Cultural Studies (ICADECS) 2019, Malang, Indonesia, 11 October 2019.

Fairman, B., Voak, A., Abdullah, H & Indarjo, A. (2019). *Re-skilling vocational education and training practitioners in Indonesia,* IConVET 2019 – The 2nd International Conference on Vocational Education and Technology, Bali, Indonesia, 1 November 2019.

Fairman, B., Voak, A., & Maliki. (2020). *Nurturing local talent: shattering the nexus between perceived foreign expertise and building in-country human capability in the Further Education and Training Sector in Indonesia*, 2nd ICTEL 2020 – International Conference on Teaching, Education & Learning, Melbourne, Australia, 02-03 March 2020.

Journal Articles

Smith, M., Gunasekera, D., Wimalasuriya, R., Newth, D., & Voak, A. (2019). Effects of ASEAN transport connectivity enhancement. *Australasian Agribusiness Review*, *27,* 149-176.

Voak, A. and Smith, M., 2020. The rise of 3D printing: its human capability impacts and the nature of emerging interdependencies along the global supply chain. *Journal of Printing Science and Technology*, *57*(1), 23-28.

Voak, A. and Fairman, B., 2020. Crossing borders: anticipated challenges in building a body of knowledge for the digital printing sector to promote relevant human capability and mobility in a local context. *Journal of Printing Science and Technology*, *57*(1), 29-32.

Fairman, B., Voak, A., Abdullah, H. and Indarjo, A. 2020. Re-skilling vocational education and training practitioners in Indonesia. *Journal of Physics: Conference Series*, 1516 (1), 012045.

Accepted Conference Papers

Smith, M., Voak, A., & Gunasekera, D. (2020). *Approach, challenges and impacts of Asian regional multimodal logistics and supply chain integration and*

interdependencies, ICLS 2020, 15th International Congress on Logistics and SCM Systems, Poznan, Poland, July 2020.

Acknowledgments

As stated earlier, this project had been brewing for decades in my mind, but it was not until I (so fortunately) met my eventual principal supervisor, Associate Professor James Sillitoe, that I was able to formulate a research question worthy of investigation. The research experience was very challenging, forcing me to expand my thinking and skills. The famous Lao Tzu proverb says, "*When the student is ready the teacher will appear. When the student is truly ready... The teacher will disappear"*. I sincerely hope that Jim wishes to continue to mentor and coach me, as I still have much to learn. Also, to my co-supervisor Dr Thu-Huong Nguyen, a sincere thank you for your support, guidance and positivity throughout the journey.

A special thank you to the focus group participants for taking time out of their busy schedules to share valuable industry insights. I have also been fortunate to have so many opportunities to debate issues with my colleagues, friends and family.

Dr Campbell Aitken provided professional editing services in accordance with the Institute of Professional Editors' *Guidelines for editing research theses*.

Finally, to my parents, thank you for choosing to invest in my education and planting the seeds of learning. Your encouragement, wise counsel and prayers have made all the difference.

Abraham Lincoln stated that "*the best way to predict your future is to create it".* I intend for my doctoral program to enable me to create a future that puts people first.

I sincerely hope you enjoy your reading.

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Abbreviations and acronyms

APICS – American Production and Inventory Control Society

AQF – Australian Qualifications Framework

BOK – Body of Knowledge

CQFW – Credit and Qualifications Framework for Wales

FHEQ – Framework for Higher Education Qualifications

IMT – information management technology

IT – Information Technology

NQF – National Qualification Framework

NZQF – New Zealand Qualifications Framework

OMBOK – Operations Management Body of Knowledge

QF – Qualification Framework

RQFs – Regulated Qualifications Frameworks

SANQF – National Qualifications Framework of South Africa

SC – Supply Chain

SCL – Supply Chain and Logistics

SCLBOK – Supply Chain and Logistics Body of Knowledge

SCM – Supply Chain Management

SCQF –Scottish Credit and Qualifications Framework

UK – United Kingdom

VU – Victoria University

VUHREC - Victoria University Human Research Ethics Committee

Chapter 1 – Introduction

1.1 Background

For decades, the supply chain and logistics (SCL) sector has been grappling with the problem of attaining recognition as a discipline equivalent to similar professional areas (Fawcett and Waller, 2011, Touboulic and Walker, 2015). Such acceptance is agreed to be essential for the development of the field since it will provide the basis for professional bodies to attain national and international status, and increase offerings of academic SCL courses in institutions of higher education. In addition, as with other emerging fields of study, like project management (Morris et al., 2006a) and information technology (IT) (Agresti, 2008), SCL is struggling to codify and describe its academic credentials in a way which overcomes the demanding array of challenges to establishing broad professional and community acceptance. SCL can mean different things depending on context (Lummus et al., 2001, Stock and Boyer, 2009), and this uncertainty has severely hampered the formation of an agreed (standardised) body of knowledge (BOK). As recently as 2017, a scenario planning study (Department of Infrastructure, 2019, November 22) conducted to understand Australia's freight and supply chain (SC) priorities called for establishment of a common BOK. There is still significant work to be done across national borders to coordinate and resolve the various formulations of emerging knowledge in SCL into a BOK that could assist in the consensual framing of SCL into a widely respected profession.

1.2 Addressing Present and Future Concerns

In addition to the task of describing, systematising and codifying existing practice in the SCL area, like any developing profession SCL faces significant future disruptions as the global marketplace continues to expand and become increasingly complex (Pettit et al., 2010). Already, it has been observed that dramatic commercial interruptions are changing how professional practices and interrelationships are defined, adapted and subsequently refined (Vakharia and Yenipazarli, 2009). In response to this trend, it is imperative that higher education institutions purposefully review, modify and refresh their curricula to ensure the professional relevance and currency of their approaches

to SCL in this new expanded context (Zajda, 2007). Further, they should include forward-looking material to ensure the next generation of SC managers is made ready for the introduction of new technologies. It is essential to ensure that the qualifications of future professionals will be sufficiently flexible to meet these continually changing technological, strategic and community demands (Zajda, 2007).

1.3 The Development of the Research Topic

In light of these concerns, it was considered vital to understand the current status of material relevant to the development of a BOK for SCL. Further, it was decided to determine the steps needed to codify and strengthen this material so that it be recognised as a coherent and well-grounded profession in the future. The researcher concluded that, for the SCL sector to achieve appropriate professional recognition, an initial unification of the existing models, theories, and curricula within the field should be attempted. It is essential for consistent benchmarks and professional knowledge frameworks to be established to ensure that national and international SCL postgraduate qualifications meet the current and future requirements of the profession. These developments must be robust, flexible and appropriately focused.

1.4 Aims of the Research

The researcher aimed to facilitate the harmonisation and codification of the SCL concepts, terminology and activities that aggregate to the conceptualisation of a professional domain. Such a collection (commonly referred to as a body of knowledge) is valuable to the profession in that it:

- acts as a standard, consensual guide for practitioners in their work (Oliver, 2012);
- provides a coherent framework of concepts and practices against which to build a globally recognised academic syllabus; and
- prescribes an aggregation of mastered knowledge to provide a cohesive basis for certification procedures (Ören, 2005).

The researcher contends that the development of a consensual BOK for the SCL field will be a fundamental step towards establishing its professional status. In particular, this BOK will contribute to ensuring the construction of standardised structure, content and learning outcomes for SCL qualifications

which will meet minimum core skills and knowledge requirements for the sector. Additionally, development of a BOK for the SCL sector will serve to:

- find agreement on the fundamental concepts, terminology, and activities of the SCL discipline;
- provide valuable protection of public and commercial interests by ensuring SCL professionals are adequately qualified; and
- illuminate the vital role the subject plays in ensuring the efficient and cost-effective provision of high-quality goods and services for the broader community.

The primary objective of this study is to develop baseline guidance for the formalisation of an SCL profession through the construction of a BOK.

1.5 Research Questions

The researcher sought to address two fundamental questions:

- To what extent do consistent themes exist within the specialist supply chain and logistics Masters by coursework programs currently found across first-generation national qualification framework jurisdictions?
- To what degree can these consistent content themes be used to inform and potentially platform the formulation of a baseline supply chain and logistics body of knowledge?

1.6 Contribution to Knowledge

This study claims a significant contribution to knowledge, based on the outcomes of a novel application of Bloom's Revised Taxonomy (Anderson et al., 2001) which was used to unify the discrete constructs of national qualification frameworks (NQFs), higher education course designs and assessment, and the existing BOK frameworks for allied professions. The researcher used Bloom's Revised Taxonomy to identify shared knowledge themes within the discipline. The research extracted thematic constructs from documents describing a carefully selected sample of accredited postgraduate Masters courses related to SCL specialisations. The results represent a theoretical advancement of knowledge and the establishment of a systematic BOK for SCL. Also, this investigation could serve as the foundation for the development of a new approach to illuminating universal themes of knowledge

within immature disciplines. It is intended that this thesis will add to the broader theoretical discussion surrounding the concept of a BOK, and more specifically contribute to the status and strength of the emerging specialist discipline of SCL by consolidating its claims as a legitimate area of intellectual thought.

1.7 Significance of Study

The researcher's initial investigations indicated that there was no widely agreed BOK for the SCL profession, and no universally agreed standard approach informing cross-sectoral or cross-national SC initiatives. This is the case despite many professional SCL associations worldwide advancing themselves as thought leaders and theoretical custodians of the industry. This lack of agreement is problematic because, in an industry which increasingly involves cross-border interactions, a globally accepted BOK is needed to provide a mechanism to outline the core principles and teachings of the profession unambiguously. Such foundational knowledge also forms the systematic basis for course designs and determining levels of competence.

A BOK describes those minimum knowledge requirements for a professional within a particular discipline and the attributes that should be mastered to claim global accreditation. Such a systematised schema allows transparent certification that a suitably qualified practitioner can apply this minimum knowledge in a professional setting. Without a widely agreed BOK, there is no framework for objective interrogation of the knowledge and competence of an SCL professional.

Furthermore, in a rapidly growing international marketplace, without an established BOK, the public and private sectors have no real way of independently comparing graduates from courses across jurisdictions. Nor can they have the confidence that these graduates have the minimum knowledge needed to discharge their professional responsibilities. Achieving this confidence in the profession is made more difficult by the cross-disciplinary nature of the SC sector since SCL practitioners come from a wide variety of experiential and educational backgrounds. While this diversity can be regarded as one of the sector's most useful assets, it is also a significant obstacle to the industry's establishment of an agreed and standardised BOK.

It is anticipated that the outcomes of this study will be applied well beyond the SCL domain. The findings could also be used to develop BOKs in other emerging disciplines, especially those fields in which knowledge and definitions are not widely agreed and therefore professionally disputed, and have been developed independently within national borders.

1.8 Research Approach

This study, based on qualitative document analysis, was an intensive and systematic examination of knowledge in the SCL field. It focused solely on Masters by coursework SCL programs in the public domain across all first-generation NQF jurisdictions[1], namely Australia, New Zealand, South Africa and the United Kingdom (UK).

The researcher was always mindful of the fact that a BOK cannot exist in a social, commercial or legal vacuum. It must have formal revisions processes to accommodate changing business environments, future educational issues that may arise and emerging thought leadership within the field. Consequently, it is essential, when developing a BOK, that the knowledge is clustered into domains or themes. This research was designed to contribute to the clarification and development of new knowledge by codifying existing knowledge to highlight areas which are either consistently shared or divergent across course offerings in different jurisdictions.

An inductive research approach was taken (Patton, 1990), with data collection and analysis conducted as an integrated process (Ezzy, 2002). Data was analysed using Attride-Stirling's (2001) approach to thematic analysis, in which thematic networks are intended to be used to explore the understanding of an issue or the signification of an idea, rather than to reconcile conflicting definitions of a problem. Further details are given in Chapter Four – Research Methodology.

[1] Implementation started between the late 1980s and the mid-1990s; 2nd Generation Frameworks implementation and development started in the late 1990s or early 2000s and 3rd Generation frameworks thereafter.

1.9 Thesis Outline

Chapter One provided the context and rationale for the research. Chapter Two critiques the existing literature relevant to this investigation. Chapter Three outlines the conceptual framework for this study. It describes the research paradigm, research design and qualitative methodology, and presents a discussion of the underpinning conceptual framework which informed data collection and analysis. In Chapter Four, methods of collection of publicly available secondary data are outlined, and details of the data coding and analysis methods are given. The results of the investigation, the thematic areas that emerged from the data, are presented in Chapter Five. Chapter Six describes the testing of the trustworthiness of these results using feedback from a purposively selected specialist industry focus group. Chapter Seven filters thematic areas through a detailed 'funnelling' process using respected SCL academic theory. Chapter Eight examines the research contributions and reflects on the possible ways in which the research outcomes can be utilised. Finally, Chapter Nine concludes the thesis, drawing the results together and relating them to the research questions.

1.10 Summary

The primary objective of this research was to develop a baseline for guiding the construction of a BOK, which can underpin the management and development of the SCL profession. In addition, the research was designed to add to the broader theoretical discussion surrounding the concept of a BOK and to specifically contribute to the emerging specialist discipline of SCL by strengthening its claims to be a legitimate area of intellectual thought. It is anticipated that the research outcomes will be applied to develop BOKs in other emerging disciplines.

The next chapter, Literature Review, presents a critical evaluation of the academic literature relating to the key SCL concepts and theoretical underpinnings associated with this investigation.

Chapter 2 – Literature Review

2.1 Introduction

Literature reviews of the SCL field to date have not established conclusively whether a BOK exists (Power, 2005, Touboulic and Walker, 2015). Indeed, only a few studies have even attempted to outline or characterise SCL as a discrete speciality (Burgess et al., 2006, Seuring and Müller, 2008). This relative intellectual immaturity has made SCL prone to transient buzzwords (Tan, 2001). Consequently, this has resulted in some unfortunate definitional inconsistencies (New, 1997). Christopher (2016) further contended that SCL has only matured sufficiently as an academic area to begin to address critical business concerns.

Swanson et al. (2018) further confounded this problem by reinforcing the views of Fawcett and Waller (2011) and Zinn and Goldsby (2014), who claimed that SCL has an identity crisis. They suggested that this crisis emerges from SCL's continually expanding scope, which results in significant scholarly overlap with other disciplines. They implied that because SC is interdisciplinary, many scholars fall into the trap of pursuing topics which are 'hot' for only a short time. However, it is persistent attempts by academics to increase understanding of those areas that are fundamental to SC thinking which will build a salient and enduring BOK (Swanson et al., 2018).

The SCL field emerged from two distinctly different pathways: the industrial buyer who views the management of SC from a purchasing and SC standpoint and, the merchant who slants their interest towards the transport and logistics perspective (Tan, 2001). These two perspectives subsequently merged to form a more intimately connected approach (Tan, 2001). Nonetheless, Storey et al. (2006), in a one-year study of 72 companies and six SCs in Europe, revealed significant gaps in systematic thinking about SCL manifested in real differences between practice and theory, ultimately hindering its maturity as a discipline (Storey et al., 2006). Halldórsson et al. (2015) also suggested that further theorising in SC is needed.

This lack of theoretical recognition of SCL was highlighted over a decade ago, when Chen and Paulraj (2004), in a significant piece of work, attempted to synthesise information about SC management. They concluded, after reviewing 400 articles, that significant advances were needed not only in the measuring instruments used in the sector but, importantly, in the theoretical models used to improve understanding within the field. However, some evidence exists of a move away from the many linear models towards complex adaptive systems (Carter et al., 2015).

This understanding was not lost in Liu and McKinnon's (2019) review of 57 theory-driven SC studies in China, which concluded that SC research does not translate to actual knowledge for practitioners. This view was shared by Sweeney (2011) and Sweeney et al. (2018), who suggested that considerably more work is needed to develop more robust theoretical foundations. This investment in development, they alleged, would give SC social licence around practitioner guidance and work to reduce the divergence in thinking between academics and professionals. Giannakis and Croom (2004) also analysed the theoretical and conceptual developments in the area of SC and proposed a useful paradigmatic framework consisting of three pillars: synthesis, synergy, and synchronisation. These pillars were used to classify and segment research streams and informant theories systematically. However, while Giannakis and Croom (2004) work provided valuable assistance in the sorting of functions and outputs within an SC, it does not outline the critical fundamentals for a BOK needed by an SCL professional. These gaps have not been satisfactorily addressed by professional bodies, academic institutions, practitioners or scholars in the field. They have been instrumental in the logistics sector being hampered in its efforts to achieve professional recognition, resulting in low status compared to other industries. Ultimately, this has led to SCL's inferior position in the search for talent on the open market (McKinnon et al., 2017).

2.2 Sources of Literature

Seuring and Müller (2008) undertook a comprehensive literature review on the research constructs of interest to SCL, finding that SCL could be described as an 'emerging discipline'. As such, the researcher decided to undertake a

holistic approach towards research synthesis. This process involved working towards a deeper comprehension of the academic literature in the area relative to Seuring and Müller (2008).

The goal of the current literature review was to identify relevant investigations and studies that could better inform the research questions. As a result, this researcher believes that it was essential to target articles published in related areas to consolidate the concept of a BOK for SCL and to broaden the discussion regarding the 'professionalisation' of academic disciplines.

Based on the research questions, the researcher developed key terms to identify and evaluate the literature and to minimise bias. In late 2018, and again in early 2019, the researcher identified and collected literature using the search terms 'supply chain' and 'logistics', plus one or more of the following: 'knowledge', 'knowledge requirements', 'body of knowledge', 'knowledge and skills'. Searches were conducted in EBSCOHOST, ABI/Informs, Elsevier and Google Scholar. Papers with titles containing the search terms listed above were selected, and their abstracts scanned for suitability. As articles were reviewed, the articles they cited were assessed and added as appropriate. The researcher focused on literature published between 1980 and 2019 to understand the evolution of the concepts being investigated.

The researcher again reviewed available literature in mid-2020 after thesis examination, identifying two additional articles (Gámez-Pérez et al., 2020, Wagner et al., 2020). These articles confirm the penurious situation in which the SCL sector still finds itself regarding the articulation of an agreed BOK. The shortage of studies between 2016 and 2019, noted in these papers, reinforced the results of the researcher's previous literature surveys and the claim that this doctoral study will serve as a valuable primer for sectoral discussion.

2.3 The Concept of the Profession and the Professional

The *Oxford English Dictionary* defines a profession as *'a vocation in which professed knowledge of some department of learning or science is used in its application to the affairs of others or in the practice of an art founded upon it'*.

A ‘knowledge of some department’, which is at the core of this definition, is now widely assumed to take the form of a specialised BOK (Johnston et al., 2001), which provides an agreed, public benchmark against which to evaluate the discipline’s professional status. This benchmark gives the profession the autonomy to self-regulate its quality and standards, particularly as they relate to this professed knowledge (Johnston et al., 2001, Starr, 1982a, Starr, 1982b). Paradoxically, given the SCL profession’s societal importance, the field is considered sterile from a definitional and theoretical perspective (Klegon, 1978, Johnson, 2016). However, in more recent times, SCL has been making a resurgence (Saks, 2012, Sciulli, 2010, Brante, 2011), albeit with some way to go.

The task of defining professions began to become a serious pursuit in the 1950s (Saks, 2012). This taxonomic approach strongly suggested that professions possessed unique characteristics which differentiated them from other occupations. The approach identified aspects of knowledge and expertise seen as characteristic of the profession that allowed it to play a positive role in the commercial world. By comparison, the earlier neo-Weberian approach reflected in competitive environments, shaped by macro-political power and economic interests (Saks, 2012). In the taxonomic perspective, a profession was seen to gain standing through the creation of boundaries that aimed to delineate a particular territory of knowledge. Examples of such well-bounded professions include medicine, accountancy, law and architecture.

It is worth commenting that these knowledge boundaries are typically linked to high levels of income, status and power (Saks, 2016, Saks, 2003). Wilensky’s (1964) view that a profession consists of the highest standards of expertise, and knowledge is consistent with this concept. Greenwood (1957) also believed that organised knowledge based on abstract propositions played an essential role in clearly delineating a profession. Later, Saks (2012) expanded on these viewpoints by emphasising the protected nature of professions, gained through completion of higher-order learning and credentials.

Professions essentially claim an explicit service provision specialisation; as a consequence, they expect to define and control that knowledge, and strictly

monitor entry to the field. Notwithstanding this general understanding, satisfactory definitions of a profession have not progressed much beyond the six criteria proposed by Abraham (1915):

- intellectuality combined with considerable individual responsibilities;
- precursor elements are drawn from considered learning;
- professional practice;
- techniques distributed by education;
- self-organisation; and
- magnanimous motivations.

Barber (1963), (Barber, 1978, Barber, 1983, Barber, 1985) looked closely at these characteristics, and identified the following key facets of a profession:

- high levels of systematic knowledge;
- an orientation towards a societal interest; and
- a voluntary association which is controlled through a code of ethics.

Therefore, it seems an agreed sociological definition of a profession consists of an industry possessing the following traits and attributes: a publicly recognised cognitive base, legal licensing of aspects of the labour carried out, a significant degree of work autonomy, an agreed level of colleague control, a publicly proclaimed code of ethics, and the existence of professional associations associated directly with the profession (Sarfatti Larson, 1977). Moreover, the acceptance of a level of professionalism related to an occupation implies an advanced division of labour, which adhere to the same system of policies (Di Luzio, 2006, Evetts, 2006, Pfadenhauer, 2006, Evetts, 2011, Scanlon, 2011, Evetts, 2013). In essence, professional status requires members to be worthy of public trust, to practise putting clients first, to maintain confidentiality in sensitive transactions, and to refrain from using their knowledge for illegal activities (Scanlon, 2011, Evetts, 2013). In return for being recognised as a professional, many rewards flow, including the perception of specialist authority, status, and financial and other remuneration manifestations (Halliday, 1987). Yet, the concept of a profession is being challenged by political and economic change (Crompton, 1990). Greenwood et al. (1996) and Newman and Reed (1996) asserted that the notion of

‘professionalism’ was appearing in previously unforeseen fields, like project management. These views support Wilensky’s (1964) prediction that professionalism would be embraced by diverse groups who claim specific practice or knowledge.

Professions are traditionally respected as occupations holding a high specificity of knowledge accumulated during or based on significant periods of learning and acquisition of experience (Evetts, 2013). It is commonly the case that professionals deal with high levels of risk, accommodated by protocols or frameworks applied using expert knowledge and skills to reduce client uncertainty (Evetts, 2013). Pragmatically, an occupation becomes recognised as a profession when independent organisations such as universities, state instrumentalities and public offices accept its credentials (Wise and Leibbrand, 1993, Wise, 2005).

As can be seen from the discussion above, it is widely accepted that a profession is formed from a group of people whose practice is shaped by agreed training and credentialing, carefully benchmarked against a proven, rigorous body of knowledge (Sapsford and Abbott, 1992, Abbott and Meerabeau, 1998, Abbott, 2014). Indeed, Abbott (2014) stated that this knowledge was framed by clearly defined boundaries of practice, jurisdictional knowledge and ethical behaviour (Marutello, 1981).

2.4 Body of Knowledge

If, as indicated above, a BOK refers to an agreed set of the generally accepted teachings and skills required to work in a particular field or industry (Oliver, 2012), it is, therefore, a core element in defining and unifying a professional community (Ören, 2005). A BOK is essentially a systematic collection of constructs, models, concepts, terms and activities that constitute a professional, usually defined by a professional organisation, association or society, through self-reflective growth (Romme, 2016, Romme and Reymen, 2018). In the construction and review of a BOK, members of the profession continually outline what knowledge forms the foundation for the attainment of a qualification or designation (Romme, 2016). People seeking to enter the profession must display their mastery of the BOK to receive accreditation that

enables them to practise this knowledge, and this display is attested to by the passing of rigorous examinations (Wiley, 1995, Naveda and Seidman, 2005, Nelson, 2007). Put more simply, a BOK is a statement of the accepted ontology for a specific domain (Abran et al., 2006). It includes the underpinning of professional practice by a comprehensive and systematic body of academic literature (Martin and Guerin, 2006, Morris et al., 2006a, Morris et al., 2006b, Brooks, 2013, Coole et al., 2017). It is this intellectual momentum and process of development of territorial boundaries and educational standards that the SCL sector has lacked to date.

It is crucial, at this point, to reconsider why commentators have suggested that a BOK is needed to underpin the professional status of the SCL field. Firstly, history shows that wealth creation largely depends on an individual's level of knowledge or skill. Further, as mature economies move to service-related trading environments, work, as never before, is linked to knowledge attainment and application (Elliott and Jacobson, 2002). These authors further argued that a new type of 'information professional' has resulted from this shift in economic models. As a result of this trading shift, there is a substantial market demand for knowledge-rich staff. Second, to create a positive influence in the marketplace, a profession needs to be seen to take ownership of its BOK, because this is what gives it transparency (Morris et al., 2006a). It is for this reason that emerging professions invest heavily in the development of BOKs, along with educational and certification frameworks, to build credibility (Morris et al., 2006a). Thirdly, Wasonga and Murphy (2006) contended that organisations could only achieve success through engaging skilful and knowledgeable workers. These workers need to be imbued with relevant knowledge and practices, disseminate these through the organisation, and embody this leading-edge thinking into their company's products, services and systems. Knowledge, therefore, serves as an enabler, assisting workers to process and connect within a work setting (Hynie et al., 2011). Agresti (2008) also asserted that multiple benefits can be realised through the deployment of a BOK, including harmonised education and certification, currency of knowledge, framed continuous professional development, organisational improvement and international relevance.

To better understand the components and mechanisms behind a BOK, key terms must be defined. Important terms and their definitions are:

- competencies – a combination of three key facets germane to the focus area: knowledge, skills and abilities;
- knowledge – recognition of appropriate and agreed perceptions of real or relative information of use to the area;
- standard practices - that organisations use to identify, create, represent and distribute knowledge;
- taxonomy – the analytical organisation of information into an integrated structure[2]; and
- proficiency – a level of accomplishment for each competency that permits individuals to be admitted into the profession.

A BOK is pivotal in provisioning and promoting a common lexicon within a profession (Stefl, 2008). It plays a crucial role in etching out the profession's knowledge, which in turn fosters advancement, understanding and public recognition. A well-structured BOK also underpins the development and maintenance of university curricula, because accreditation bodies are increasingly looking for formal processes that drive relevance to practice. However, these links to industry practice are wanting as experienced faculty members generally administer course design and development utilising their individual and faculty expertise (Dunne et al., 2007). Systematic processes of curriculum development and maintenance also enable integration and connections with related disciplines and recognise the need for course review to accord with rapidly changing marketplaces.

Constant diligence is paramount in ensuring the relevance of the curriculum in globally competitive marketplaces (Fanning and Camplin, 2008). As a particular curriculum evolves and is revised, accreditation bodies and professional associations require that university staff close the loop by obtaining feedback and measuring the success of the changes (Dunne et al.,

[2] For the purposes of this study, the link between taxonomies and the BOK is pivotal in better understanding sectoral professionalism.

2007). Metrics for evaluation may include local employer surveys, graduate surveys, desktop analysis and reviews of peer university offerings. Additionally, universities should continually monitor changes within the BOK to ensure their curriculum remains current (Dunne et al., 2007).

2.5 Supply Chain and Logistics

On the surface, there is a broad consensus that an SC consists of a network of organisational involvement, both up and downstream, aimed at producing value for products and services for the customer (Stadtler and Kilger, 2002, Kilger et al., 2015, Christopher, 2016). Although logistics is an integral component of SCs, it is considered more of a building block, consisting of the management of flows of money, information and materials (Asgari et al., 2016). The term 'supply chain' was conceived in 1982 by Booz Allen Hamilton consultants (Laseter and Oliver, 2003). Since then, a significant volume of articles, publications and books on SCs has been published. However, it is only in more recent times that we have gained a better understanding of trends in the area and the knowledge gaps that require attention (Asgari et al., 2016). SCL still suffers from ignorance of its commercial value in practice and lacks the dynamism concerning theory development (Chen and Paulraj, 2004).

It has been claimed that SC exists within permeable conceptual environs (Petersen and Autry, 2014) and that this divergence poses substantial challenges for systematic SC knowledge development. Further, the vast array of theoretical views about SCs has made the interpretation of research findings difficult (Archer et al., 2013). Indeed, (Carter et al., 2015) suggested that while a multitude of research investigations have been undertaken in the area of SCL, there is still no real agreement or consensus on what an SC represents. This contestation arises because SCs are a socially constructed concept rather than (realist) physical entities *per se* (Berger, 1967, Sayer, 1999).

The debate within SC circles over an agreed definition of an SC continued into the 2000s (Giannakis and Croom, 2004). As a result, many commentators believe the dynamism of SCs could be responsible for much of the variability in the existing research (Arlbjørn and Paulraj, 2013). There is much to be done to reach an agreement about the definition of an SC (Liberatore et al., 2013).

SC is variously regarded as a business philosophy, merely another term for logistics, or a form of strategy or process (Kotzab and Bjerre, 2005, Gibson et al., 2005).

The SC concept may merely be an outgrowth of the concept of logistics, in which the role of Grand Mareshal de Logis was created and tasked with providing lodging and support for French troops in the field (Jomini, 1830). However, Lummus et al. (2001) wrote that lively debate continued about the difference between the concepts of SC and logistics. It seems that the functions of the logistician have been the focus of discussion (Gudehus and Kotzab, 2009). In this respect, logistics is considered as a series of activities that create time and place utility (Simchi-Levi et al., 2008, Bjerreskov Dinitzen and Bohlbro, 2010, Erturgut and Soysekerci, 2011). This somewhat broad view still leaves much to interpretation and reiterates a real lack of precision as to the understanding of the meaning of SCL in practice (David and Stewart, 2010, Farahani et al., 2014). This complexity is highlighted by Langevin and Riopel's (2005) attempt to provide a more structured approach to the definition of logistics which encapsulated a more expansive approach consisting of 48 decision areas.

This backdrop of disparity and dynamism at the conceptual level has ultimately led to concern about whether SC or SCL constitute a discipline (Harland et al., 2006, Cousins et al., 2006). These authors' research involved thorough testing of specific published criteria and discussion, which engaged with such issues as coherence, quality and observed impacts of the ongoing debate, and concluded that SC is more accurately described as an emergent academic discipline. As a result of this uncertainty of position, no universal standardised taxonomy of logistics activities exists (McKinnon et al., 2017). Furthermore, Chen and Paulraj (2004) and Tiwari et al. (2014) suggested that despite SC's popularisation in the 1980s, it is considered to be a discipline which is still in its formative state. These authors indicate that SC, as a term, has been globally accepted by the academic community, but lacks agreement in industry.

The increasing acceptance of SC as a term has stimulated a gradual introduction of an array of terminology including demand, pipeline and/or value

stream management, and network sourcing (Farmer and Van Amstel, 1991, Lamming, 1993, Hines, 1999, Christopher, 2016), which are all used interchangeably. Burgess et al. (2006) confirmed this fragmentation in nomenclature through an analysis of 100 randomly selected SC journals, which alarmingly revealed no real consensus as to its meaning. This fragmentation has created a situation in which researchers from many disciplines have studied overlapping and related concepts. While this divergence of thought may create and encourage an environment of lively academic debate, it has led to a body of literature characterised by a confusing diversity of theoretical perspectives, intersecting constructs and inconsistent findings (Cousins et al., 2006).

Despite these theoretical problems, logistics and supply chain management (SCM) play a critical role in all countries, with their skilled workforces contributing significantly to economic success (Thai et al., 2011). Efficient SCs are widely agreed to be a vital contributor to broader economic development through the facilitation of trade integration (McKinnon et al., 2017). Daugherty (2000), along with Lambert and Burduroglu (2000), contended that SC practitioners contribute to a competitive mindset. SCL's importance to the economy of a country is often expounded and seldom challenged (Coyle et al., 2003, Bowersox et al., 2009). It is for this reason that pursuing professionalisation becomes a significant issue, and its outcome is keenly sought.

Attempts at bringing coherence to the SCL field are being prosecuted within a rapidly changing business environment, which means that novel challenges are constantly emerging. These challenges demand the availability of well-trained and skilled SCL professionals as trouble-shooters (Thai et al., 2011). Furthermore, with the increasing globalisation of markets, the modern SCL professional must now possess well-developed inter-cultural aptitude in addition to other more general talents such as high levels of communication ability, the capacity to work within teams, the vision to see the 'big picture', decision-making skills, facility to cope positively with the change, insightful problem-solving capabilities and advanced leadership abilities (Luke and Heyns, 2012).

Thus, in practice, SCL is a complex system and is represented through the lens of seemingly endless activities dispersed across multiple functions, processes and organisations (Maleki and Cruz-Machado, 2013). Notwithstanding this, Teller et al. (2012) believed that most SCL implementation attempts fail, or at very least, are not completed – a very disappointing and serious situation. Some commentators have claimed that this is due to both a lack of recognition of human factors in the SC (Rossetti and Dooley, 2010, Prajogo and Sohal, 2013) and the effects of negative integration impacts (Kotzab and Bjerre, 2005, Cousins et al., 2006). They argued that SC was viewed more tactically in its infancy, considered more as a mechanism for coordinating workflows, logistics and related information (Handfield and Nichols Jr, 1999). Others asserted that SC encompasses a more competitive sensibility, as it is SCs that compete not organisations (Handfield and Nichols Jr, 1999). In a further manifestation of the complexity of this area, in an increasing environment of competition within cognate areas, competing firms often act as collaborating partners, each contributing value to the SC, which, as a result of this combination, means they achieve things otherwise unattainable by themselves (Spekman et al., 2002).

Of particular importance to the professionalisation of SCL is that the relatively recent emergence of the global marketplace has necessitated the refocusing of SCM towards a network concept, allowing a more systemic approach to increasingly complex events, options, and constraints (Gimeno and Woo, 1996, Mentzer et al., 2001). However, while the importance of the development of SCL in the increasingly global context began to be recognised at the company board level, it still lacked acceptance for its overall business value compared to more traditional disciplines (Ozment and Keller, 2011). Indeed, Lancioni et al. (2001) asserted that difficulty in accepting SCL as a discipline. Consequently, SCL has become increasingly disconnected from academia and industry (Neureuther and O'Neill, 2011). For some, SC is the management of a set of integrated functions (Lambert, 2008), while others believe it is about controlling inventory within the purchasing function (Neureuther and O'Neill, 2011). These tensions between experts in the field arise from differing assumptions and antecedent causes. These differences are likely to impact on attempts to construct a BOK and curriculum designs which simultaneously

meet employer and student needs. These tensions continue to have a direct impact on broader industry/academic conversations about how to ensure the robustness of SCL curricula within business schools (Neureuther and O'Neill, 2011). It is also noted that differences of opinion are rooted in the highly differentiated theoretical understandings of university faculty members (Gardner, 2011, Kuhn, 2012).

Early investigations highlight several barriers associated with the design and development of SCL programs, which appear to revolve around a lack of:

- student awareness of career opportunities in the area (Knemeyer and Murphy, 2004);
- supply of competent faculty (Closs and Stank, 1999);
- relevant developmental course offerings (Russell, 1994, Gravier and Theodore Farris, 2008); and
- employer interest in SCL graduates (Slone et al., 2007).

2.6 The Emergence of the Human Element

During the critical early stages of the development of the SCL field, there were disagreements between academics and industry professionals regarding the design of curricula (Ballou and Piercy, 1974, Dadzie, 1982). However, some players have attempted to differentiate logistics from the management of SCs (Kotzab and Bjerre, 2005, Gibson et al., 2005). In particular, Lambert (2008) asserted that managers and academics need to begin a dialogue around the interconnectedness of the management of SC and broader traditional business functions. As the complexity of work demands increase, discussants are becoming more cognizant of the specific skills and knowledge demanded of professionals in the area (Zieminski, 2009). Aquino and Draper (2008) further contended that companies face a lack of supply of adequately prepared SCL professionals at all levels, and this is suggested to be linked to a realisation in the sector that humans, and human competency development, play an integral role in balanced staff deployment (Thornton et al., 2013, Thomas, 2014). In this respect, SCL managers are pivotal in ensuring essential SC strategies are realised (Van Hoek, 2001, Lorentz et al., 2013).

It is also argued that managing SCs is a balancing act between achieving cost efficiency and the maintenance of high levels of customer service and improved supplier relationships (Christopher, 2016). Beth et al. (2003) believed that the key to this complexity is the often forgotten human element, whilst Gattorna (2006) suggested that the assumption that SCs consist of an equal mix of infrastructure and IT is ill-conceived. Indeed, Gattorna (2006) asserts that the dynamic breakdown of an SC is typically 45% due to the influence of human behaviour, 45% due to flaws in systems technology, and 10% to problems of infrastructure. Andraski and Novack (1996) shared the view people are a crucial component – if not the most critical facet – of an SC. If such a perspective is valid, it follows that companies will need to focus intensively on the human element (Daugherty, 2000) and people-related innovations to achieve the next wave of improvements within SCs.

2.7 Creating a Supply Chain and Logistics Body of Knowledge

Some authors regard SCL as a disparate discipline housed in a multitude of departments within higher education institutions domestically and globally (Gravier and Theodore Farris, 2008). Further, considerable accord exists around the shallowness, lack of solidarity and theoretical basis for the area, which supports concern about whether SCL can support its own specialist field (Cousins et al., 2006). Yet-to-be-answered but vital questions about SCL professionals are ‘what do we do?’ and ‘who are we?’ (Fawcett et al., 2008). SCL’s identity remains poorly defined, leaving significant variances in the understanding of an SCL professional’s scope of responsibilities (Zinn and Goldsby, 2014).

This problem is exacerbated by the fact that as SCL activities become more complex, job requirements widen. Not only do SCL professionals need to possess specific sectoral competencies, but employers are also concurrently placing increasing importance on more general competencies (Kovács et al., 2011), and de Abreu and Alcântara (2015) identified a growing interest in the ‘thematic’ aspects of SCM. This theming is evidenced by the emergence of the ‘soft’ aspects of SCL (that is, the human and behavioural dimensions) seen as essential contributors to achieving SC integration. This interpolation of the

humanistic elements of SCL further complicates the development of a BOK. Constrained by organisational barriers and combined with rapid flows of information and interconnectedness of companies, can restrict BOK development (Clawson, 2016). Unfortunately, these barriers have led to SCL education often lagging behind industry needs (Ozment and Keller, 2011).

Throughout the 1990s, investigators began to focus on the significant breadth of skills that logisticians need to acquire (LaLonde, 1990, Gibson et al., 1998b, Murphy and Poist, 1998). The one constant of these studies is that SCL professionals require a multitude of abilities and an increasingly expansive breadth of knowledge, and must possess almost superhuman characteristics to perform the abundance of actions (Harvey and Richey, 2001) deemed necessary to be considered capable. Gibson et al. (1998a) concluded that SCL skills could be characterised within four distinct categories: people, communication, analytics and IT. Murphy and Poist (1991) classified an SCL professional needed 83 items they posited into the broad skills categories of business, management and logistics. Pilnick and Gabel (1998) and LeMay and McMahon Jr (1999) found that the necessary skills for logistics managers were vast and encompassed technological, organisational and interpersonal abilities.

Pyke and Johnson (2000) later stated that 12 distinct areas of knowledge should be present in an SCL program. These 12 categories were identified by analysing existing course curricula in a way similar to the present study. In addition, Mangan et al. (2001) identified broad, yet relevant, categories of SC skills needed by the future professional. These included, among others, people management, the ability to communicate and negotiate, an understanding of IT and advanced SCL management. Gammelgaard and Larson's (2001) investigation emphasised that an SCL professional must possess decision-making and problem-solving abilities, a requirement to work productively within teams and an ability to 'see the bigger picture'. These attributes were required in addition to a capacity to prioritise and show cross-functionality SC awareness. Gammelgaard and Larson's highlighted the critical importance of an aptitude for oral and written communication. Abdur Razzaque and Shafreen Bin Sirat (2001), in a study of logisticians within Asia, using a research

framework outlined by Murphy and Poist (2007), suggested that knowledge of ethics, transportation and logistics, information systems, general business administration and human resource management were also critical.

While research conducted throughout the 1990s highlighted the diverse and changing roles played by SCL professionals, Abdur Razzaque and Shafreen Bin Sirat (2001) promulgated that a lack of focus exists in outlining the agreed attributes and skills needed by a logistician. Gammelgaard and Larson (2001) also suggested that little previous research had considered the skills and competencies that SCL professionals need. Kisperska-Moroń (2010) wrote that logistics qualifications were continually evolving as a result of the sectoral dynamism. In contrast, Luke and Heyns (2012) noted that these broader discussions were not producing the skills required. Therefore, there must be a focus placed on clearly defining the duties discharged by SC professionals (Cottrill, 2010).

Clearly worried about the direction of SCL academic musings, Luke and Heyns (2012) called for a real commitment to developing academic courses and training programs that address these critical concerns. Indeed, in this period there were several studies on the delineation of an SCL professional's profile (Lambert and Burduroglu, 2000, Mangan and Christopher, 2005, Esper et al., 2010, Menon, 2012, Jim Wu et al., 2013, Fawcett and Waller, 2013, Dubey and Gunasekaran, 2015).

Ahn and McLean (2008), in their study of logistics human resource development initiatives at a Korean port, found that knowledge and information were pivotal in a new industrial structure. They opined to enhance economic success, competency studies should be conducted regularly so that university curricula can remain relevant and current, focusing not only on initial preparation but on the continuous learning required for those employed in the industry. Bahouth et al. (2014) revealed that even among SCL practitioners, there is significant disagreement around the specific tools and topics that must be mastered for success in the sector. Further, their examination of the top 10 undergraduate SCM programs suggested that the study of SCM is still in its formative years, with wide variation in how universities treated the field and its

BOK (Bahouth et al., 2014). Furthermore, Hassini and Larson (2008) conducted a survey that exposed contrasting views about the discipline's scope and the areas that should be emphasised within training and education programs.

A growing number of investigations around this period began to emphasise the importance of humanistic elements within SCM. Rahman et al. (2009) found SCL professionals need a combination of soft and hard skills, and Keller and Ozment's (2009) study provided valuable insights into humanistic knowledge and its relationship with organisational awareness and understandings of the logistics industry. Thai et al. (2011) study of knowledge and skills requirements found an SCL professional's essential skills and traits were the ability to plan and manage client relationships, problem-solving, personal integrity and the ability to control costs. Additionally, McCrea (2012) suggested that SCL professionals, along with knowledge of the latest technologies and trends, needed strong communications skills and technical competence. As SCL is a cross-functional discipline, competitive advantages may arise primarily from a BOK which could be considered pre-paradigmatic (Crespo de Carvalho et al., 2014).

Dubey et al. (2018) attempted to test the importance of SC knowledge within the Indian context. They found that the discussions around knowledge in the sector are beginning to provide valuable insight into the talent crisis. While this crisis has created a burgeoning area of investigation for SCL researchers, the question of whether an agreed supply chain and logistics body of knowledge (SCLBOK) exists remains to be answered conclusively (Wagner and Kemmerling, 2014). A disparity in perspectives across the sector, both practical and academic, has led to an array of responses. For example, in 2012, the American Production and Inventory Control Society (APICS) formulated an Operations Management Body of Knowledge (OMBOK)[3]. This BOK was primarily formulated around Mangan and Christopher's (2005) work and drew on over 20 areas of knowledge, including finance, strategy, sustainability,

[3] In Australia, the APICS channel partner is the Australasian Supply Chain Institute (formerly known as the Australasian Productivity and Inventory Control Society.

customer relationship management, statistics and the application of Lean[4] and Six Sigma[5] skills. While operations-focused, the APICS's OMBOK reflects the multidisciplinary personality of the SCL sector and expounds the broad scope of knowledge and skills which are considered to be of value (Prajogo and Sohal, 2013). Essentially, SCL professionals must be equipped with a myriad of skills and knowledge, that change to accommodate technological change and future challenges (Prajogo and Sohal, 2013).

The increasingly complex and rapidly changing global marketplace places new demands on SCL professionals, which means the BOK must evolve continuously in response (Richey et al., 2006, Ellinger and Ellinger, 2014). The broad emphasis on logistics, financial and business knowledge makes defining a SCLBOK challenging (Canadian Logistics Skills Committee, 2005). Wasonga and Murphy (2006) asserted that traditional elements, such as transportation management, are no longer the logistician's central role, which is shaped by more complex issues derived from globalised trade, IT advances and cross-firm relationships. Mangan and Christopher (2005) similarly found that a modern-day SCL professional needs an array of skills and knowledge, including an understanding of the financial, IT and management/strategy domains.

While research in skill and knowledge requirements of SCL professionals has continued since the 1990s, little has been directed at university curricula (Matopoulos et al., 2013). Higher education institutions are charged with the responsibility of ensuring that the marketplace has sufficient highly trained professionals to meet the needs of the SCL sector (Prestwich and Ho-Kim, 2007). Van Hoek (2001) identified three criticisms of contemporary logistics education's attempts to fill the talent gap. First, curricula have lacked practical relevance (Matopoulos et al., 2013); second, practical and professional skills development is often missing; and thirdly, students are graduating without the necessary research capabilities. The researcher, when trying to establish a

[4] A methodology gleaned from Japanese manufacturing systems that focuses on minimising waste.
[5] A set of techniques and tools developed by Bill Smith while an Engineer at Motorola aimed at building process improvement.

plan for dissemination of SCL knowledge, found that the same lack of connection to industry was evident (Melnyk et al., 2007).

More recently, several strategies have been deployed to determine the skill and knowledge requirements of SCL professionals. Cevik Onar et al. (2013) proposed that SCL needed a combination of skills areas ranging from hard to soft sciences, extending to SCM topics such as finance and law. Tatham et al. (2017) and Kovacs and Spens (2012) also identified an increasing diversity of skills categories. These 'T-shape type skills analyses'[6] reflect the work of Mangan and Christopher (2005), who specified a combination of in-depth sectoral competence and broader competencies. Ozelkan and Rajamani (2006) further postulated that functional SCM curricula could not only assist students in entering the sector but serve as valuable enablers for companies to achieve SC excellence. While SCL can be taught from a variety of perspectives, for a course or program to be effective, it must endeavour to assist professionals in better understanding the end-to-end coverage of SC processes and their associated decision phases (Ozelkan and Rajamani, 2006, Özelkan and Rajamani, 2006).

Finally, Cevik Onar et al. (2013), motivated by the shortage of investigations aimed to classify SC education into two broad categories that they called 'diversified' and 'focused'. SCL specificity of skills and knowledge as 'expanded' or 'compact'; the latter classification is dependent on how many modules were offered in SCL knowledge and skills subareas. These authors, however, acknowledged the small sample size of their study and further suggested more research could be undertaken with a much larger sample of courses to produce a more accurate picture of SC graduate education. For this reason, the research described in this thesis deployed a multi-jurisdictional approach to maximise diversity within the survey sample.

[6] The T-Shape Skills approach aims to illustrate the key or desirable attributes needed by a worker in a particular field. The vertical element of the T describes the expert knowledge needed, and the horizontal element references one's ability to work collaboratively with a preparedness to share the knowledge gained.

2.8 Limitations

While every attempt was made to undertake this literature review systematically, shortfalls and limitations need to be acknowledged. The search was limited to peer-reviewed journal articles available online via the researcher's university library system and written in the English language. Rectifying this language gap could potentially enhance or contradict the findings of this review; however, the researcher believes its impact would be modest because the concept of a BOK has (anecdotally) been embraced most enthusiastically in Europe. A further limitation of the review is the defined time period used for the analysis. Given the youthful nature of SCL theory, a more expansive discipline adjacent review of literature might yield a better understanding of the evolution of SCL theory in particular. Finally, given different research questions, the literature review would use empirical evaluation tools to assess the quality of quantitative and qualitative research (Parris and Peachey, 2013).

2.9 The Significance of Future Research and Expected Contribution to Knowledge

The discussion above shows that if a SCLBOK does exist, it is certainly not agreed, nor universal; it would currently be better characterised as being disparate and inconclusive. Moreover, the literature suggests that the SCL professional would need to be superhuman to understand the breadth of knowledge covered in academic discussions in the field in recent decades. The researcher, therefore, sought to determine a baseline or platform from which to build a SCLBOK. The researcher contends that to build a profession, a foundation of knowledge must be constructed; happily, this literature review highlights that some agreement does exist across jurisdictions. It is anticipated that these commonalities could be used to create an agreed SCLBOK, which could then be used as a guide to the fundamental core knowledge needed to give SCL formal status as a profession.

Further theoretical development within SCL is also needed to advance an agreed BOK. This study has identified the lack of sufficient coherence and academic impact to enable the claim that SCL is a fully formed discipline; it is more akin to an emerging or developing discipline. To build fundamental SCL

knowledge and achieve professionalism for the sector, some questions remain to be answered[7]. The BOK is merely the first step in shaping SCL into a recognised profession. Considerable work is needed to identify the attributes, characteristics and traits graduates need to contribute to a profession effectively.

The development of an agreed SCLBOK is needed urgently to ensure building an agreed industry-required knowledge framework which is then subsequently reflected in graduate outcomes within educational programs. Such a framework could also include formal references to minimal professional standards which then would be reflected in a graduate's academic capabilities to promote professionalism. Establishment of this knowledge framework would also ensure that university and college graduates are equipped to explore the commercially positive dimensions of pursuing a career in the SCL sector.

2.10 Conclusion

A BOK should be a living framework, constructed to remain current, relevant and fit for purpose (Shepherd and Atkinson, 2011). It is for this reason that the researcher drew on experiences of attempting to formulate a BOK from other sectors. This analysis highlighted issues around the acquisition of SCL knowledge, its construction and how it can be represented. It is agreed that BOKs serve a valid purpose, but conflicting priorities and competing interests in the SCL sector have hindered the development of a sector-specific BOK and undermined its potential usefulness (Shepherd and Atkinson, 2011). Further, a BOK's relevance becomes even more critical as new professions, such as SCL, emerge within the economy. As these emergent professions develop, they face several challenges, particularly around social recognition. Unless an emerging profession is underpinned by a BOK, allowing its knowledge to be clearly articulated, it becomes tough to make the case for professional recognition. This knowledge acquisition process must be ongoing, and be intrinsically linked to curricula and credentialling (Manley and Valin, 2017). In order to achieve professional recognition of SCL, educational institutions and

[7] Can definitional agreement ever be reached across academia an industry? Do the educational systems of 1st Generation NQF jurisdictions encourage sufficient engagement between academia and industry to close this gap in knowledge perception?

professional associations need to establish an internationally recognised BOK with which to benchmark practitioners at all stages of their careers (Manley and Valin, 2017).

To date, the disparity and breadth of definitions, particularly around the concept of SC, have made the construction of an agreed SCLBOK problematic. The logistics sector has faced many challenges over many decades in its development as a discipline (Harper, 1965). Even today, we lack an agreed SCLBOK across jurisdictions. Further, the comprehensive review of the literature presented in this chapter revealed many challenges to the development of a SCLBOK. Because SCL is a broad field and rapidly growing area of study, an array of perspectives exists (Ozment and Keller, 2011). This investigation aims to close this gap by creating a better understanding of how to establish a universally agreed, cross-jurisdictional SCLBOK. Chapter Three presents the conceptual framework and research methodology deployed for this purpose.

Chapter 3 – Conceptual Framework

3.1 Introduction

As a consequence of the fragmentary conceptual underpinning of the SCL area, as indicated in Chapter Two, the professional status of the discipline has yet to be established. If nobody of shared SCL knowledge exists in the scholarly literature, what can be done to build such a framework? A useful perspective on this matter came from Harland et al. (2006), who believed that there was some theoretical coherence. Notwithstanding this encouraging comment, they said that the discipline clearly still lacked standing in the broader general management field. They noted that there was insufficient evidence of subject matter debate (Harland et al., 2006) to mount a strong argument for the standalone nature of the field. On this basis, these authors classified SCM as an emergent field, implying that more work in solidifying thought and systematising conceptual understanding was required to move the area forward.

In an effort to contribute to the required systematisation of understanding of SCL concepts, this thesis introduces a 'research onion' framework (Saunders et al., 2007), represented diagrammatically below in Figure 3.1. It is a layered model that identifies a taxonomy of fundamental elements[8] which need to be addressed whilst systematising work designed to answer relevant research questions. The components of the outer layers of the research onion are research philosophy, approach, and strategy, intermediate layers relate to methodological choice, and the core layers focus on the practical issues of data collection, techniques and procedures for research analysis.

This conceptual framework chapter describes the researcher's choices of the elements involved in the outer layers of the research onion, which must be carefully detailed and justified to support the research design. The next chapter contains a more detailed discussion of the data analysis process, ethical

[8] This approach is similar to that of Crotty (1998), who advocated four consistently defined fundamental elements: the epistemological approach, the theoretical framework, the methodology and the research methods.

considerations and outcome validation consistent, with the directions set by the conceptual framework.

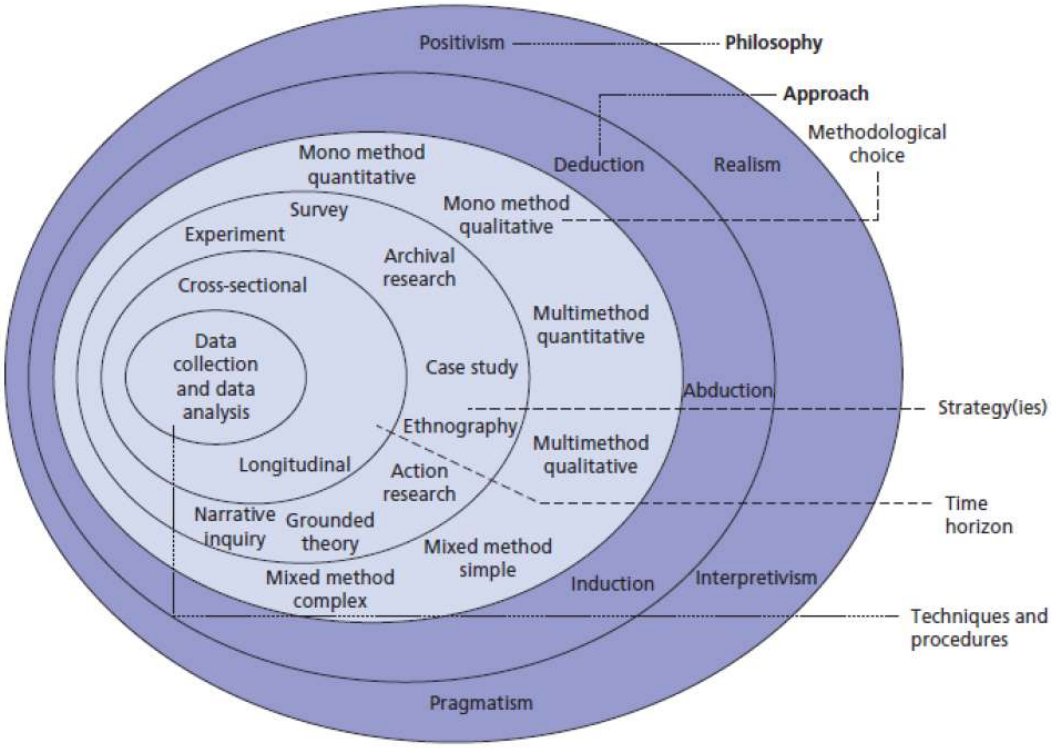

Figure 3.1: The research onion (Saunders et al., 2009)

The review of the literature undertaken in Chapter Two revealed the uncertainties within the longstanding debate around the professionalisation of the SCL sector. This comprehensive review strongly suggested that a systematic and detailed examination of the underlying knowledge concepts of the area is needed. Hence, section 3.3 presents a discussion of the researcher's ontological stance and theoretical perspective. This section provides a foundational review and justifies the adoption of a relativist stance. It further indicates how constructed knowledge, which is consistent with a relativist perspective, can be generated from an interpretivist standpoint, and how it can provide a useful understanding of the SCL sector at this time and place. Section 3.4 explains how an inductive research strategy, as one possible aspect of interpretivism, intellectually fits within the research presented herein,

and how it can generate themes which can inform and guide the systematic development of the SCL discipline.

3.3 Research Philosophy

The paradigm for this investigation relates to a 'reference culture' based on beliefs, values and assumptions (Kuhn, 1962, Kuhn, 2012) which, in this case, underpin current SCL practice. In Kuhn's view, a paradigm is a model for examining the world; it implies a structure, pattern or system of academic ideas (Kuhn, 1962, Kuhn, 2012). This approach fits nicely with the concept of a BOK. However, there are two possible and contrasting positions, those of objectivism and constructionism (Neuman and Kreuger, 2003), either of which could have been used to inform the current investigation. The first, objectivism, is founded on the belief that there is an independent reality associated with the issue under investigation that can be uncovered by careful and repeatable observations which are independent with respect to time and place (Neuman and Kreuger, 2003). Constructionism assumes that, with relation to the issue under investigation, there is a constructed reality which is experienced at a particular place and time, and further, it is a product of social processes (Neuman, 2003), which can be elucidated by a thorough examination of current social practices.

Constructionism informed the current investigation, which was conducted under the assumption that a BOK reflects a relative, socially constructed view of the world. Thus, research in this area involves uncovering the meanings which evolve from these social (professional) interactions (Easterby-Smith and Thorpe, 2002). Further, based on these socially mediated understandings, it is critical to understand that these experiences and perceptions may differ between individuals. Subsequently, it can change over time, with experience, or through changing context (Eriksson et al., 1999, Eriksson and Kovalainen, 2008). Mertens (2005) argued that 'research outcomes are socially constructed', which means that it is of critical importance to determine how influential people within the area undertake sense-making through shared experiences and understandings through language (Easterby-Smith and Thorpe, 2002). As a logical consequence of this essential feature, the approach chosen for this research reflects an investigation of the manner of ordering the world constituted by social experience (von Glasersfeld and Watzlawick, 1984).

Ponterotto (2005) stated that an appropriate epistemology needs to be established to provide a consistent, practical grounding for the knowledge sought (King and Horrocks, 2010). Nonetheless, interpretations of the constructed reality may vary as a result of the investigator's experience (Crotty, 1998). This tentative aspect of the nature of the constructivist paradigm was beneficial for this investigation, because it enabled work within and across educational jurisdictions, with a basic understanding that knowledge is not fixed but is socially and historically constructed. Constructivism allowed the researcher to be reflexive during a largely subjective exploration. An interpretivist approach to knowledge generation recognises that whilst humans subjectively create meaning (Crabtree and Miller, 1999), a researcher produces a version of the social world mediated by the data collected and ultimately, the processes deployed to analyse the data (Coffey and Atkinson, 1996). In this study, the philosophical approach was aligned with the researcher's perspectives gained from years of experience in the field and willingness to approach the subjective dimensions of human actions (Gill and Johnson, 2002).

3.4 Research Approach

An inductive approach was deployed in this study (see Figure 3.1). With research outcomes reflected in the search for patterns from the analysis and the subsequent development of explanations of data obtained from reliable informants and records (Bernard, 2002). An inductive approach explores the dataset to identify relationships and patterns and from them, build theory (Saunders et al., 2007, Saunders and Lewis, 2012). In essence, the inductive approach begins with individual detailed observations and then aims to move towards an abstraction of ideas based on the recurrence of themes (Neuman and Kreuger, 2003). This 'bottom-up' approach to knowing is deployed as a researcher observes specific instances to construct or describe a coherent picture of the aspect being examined (Lodico et al., 2010).

3.5 Research Framework

This study began with an investigation of whether a platform for a BOK in the SCL area could be constructed from existing specialised SCL Masters by coursework curricula. The research used a systemised approach, detailed in Chapter Four (Methodology), to examine and link the following three related constructs.

3.5.1 Construct 1: Existing Qualification Frameworks

Qualifications frameworks (QFs) are an essential component of national and sometimes regional quality assurance arrangements. QFs are critical in qualification level clarification and for providing the subsequent links between them; they also offer a qualification pathway for learners in each jurisdiction (Coles, 2006).

National qualification frameworks play a valuable role in outlining the formal education structure of jurisdictions. They identify the hierarchy of qualifications and frame their requirements, allowing a candidate to understand what is required to be awarded a qualification at each level (QAA, 2014).

These frameworks map out a continuum of learning by outlining consistent descriptions of qualifications (Keevy et al., 2007). Such documents are valuable tools that secure academic standards, going some way to enabling valid comparisons of international qualifications between jurisdictions, thus facilitating a student's global mobility (QAA, 2014). These NQFs are robust descriptors of the requirements and criteria of qualifications at a particular cognitive level within a country (Young, 2003, Keating, 2008). This study examined NQFs from first-generation jurisdictions, namely Australia, New Zealand, the United Kingdom (excluding Scotland), South Africa and Scotland, detailed descriptions of which follow.

Australian Qualifications Framework

The Australian Qualifications Framework (AQF) is an extensive regulated framework of qualifications which incorporates formal requirements across the entire education sector, namely schools, vocational education and training and higher education (AQFC, 2013). First introduced in 1995 (Wheelahan, 2011), the AQF has undergone several iterations, but the framework's continuing aim

is to underpin a national qualification system for the education and training sectors (AQFC, 2013). As an integrated policy, it outlines the learning achievements and the qualification type at each level and specifications for the development and accreditation of qualifications. These specifications include surrounding qualifications issuance policy, definitions of terminology, authorised organisations for the issuance and accreditation of qualifications, and the requirements around adding and removing qualification types (AQFC, 2013, Keating, 2003, Keating, 2008).

To illustrate the distinct characteristics of each level and to establish the relationships between specified qualifications, the AQF deploys a taxonomic structure shown through learning outcomes (AQFC, 2013, Wheelahan, 2011). Each level aims to describe what graduates are expected to do and to understand (AQFC, 2013, Gibson et al., 2014). Primarily, each of the ten discipline-free levels aims to define the depth and complexity of achievements needed at each of these levels (AQFC, 2013), expressed in terms of the skills and knowledge required, together with their application (AQFC, 2013, Gibson et al., 2014).

New Zealand Qualifications Framework

The New Zealand Qualifications Framework (NZQF) was vested in 1989, and became a fully unified framework in 2010 (NZQA, 2014). Similar to the AQF, the NZQF is based on learning outcomes describing required knowledge, skills and attributes and their application at each level (NZQA, 2014). The framework involves qualifications issued at both senior secondary level and those within the tertiary education sector (Philips, 2003). The NZQF was designed to facilitate the recognition of educational achievement by conveying the skills, knowledge and attributes of graduates through a coherent qualification structure (NZQA, 2014).

The NZQF was created to provide a transparent, simple structure, ensuring that awarded qualifications reflect outcomes as defined by a set of agreed criteria. It outlines the number of credits required for graduation and a statement of the level at which the qualification is listed (NZQA, 2014). Similar to the Australian and South African NQFs, the NZQF has ten levels, ranging

from Certificate level one to Doctoral qualifications. However, the NZQF differs from the AQF in that all qualifications have a credit value. The credit value relates to the amount of learning in the qualification at each level, with one credit equivalent to a notional ten hours of learning.

Regulated Qualifications Frameworks
incorporating Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies (FHEQ) for qualifications awarded by bodies across the United Kingdom (excluding Scotland) with degree-awarding powers.

In the UK, Regulated Qualifications Frameworks (RQFs) are more challenging to navigate than other 1st Generation NQFs as they both mix and exclude various jurisdictions, and incorporate an equivalent higher education framework. RQFs in the UK define and link levels and their credit values which are required to meet specific qualification requirements. The current RQFs in the UK are somewhat complicated due to the local control exercised by the separate countries. Ofqual administers the RQFs for general and vocational qualifications in England (Ofqual, 2018), the Council for the Curriculum Examinations and Assessment regulates those in Northern Ireland (NIE, 2018), and Qualifications Wales administers the Credit and Qualifications Framework for Wales (CQFW) (HEFCW, 2018). Note that the Scottish Credit and Qualifications Framework (SCQF) (SQA, 2019) needs to be discussed separately.

Higher education qualifications run in a parallel framework called the Framework for Higher Education Qualifications (FHEQ) (QAA, 2014), which operates in Northern Ireland, Wales and England. The FHEQ consists of higher education qualifications issued by UK accredited bodies, all of which have degree-awarding powers (QAA, 2014). Within the credit frameworks, the UK RQFs use a credit point structure, in which one credit, as in the NZQF, is equivalent to 10 nominal hours of learning.

The RQF in Northern Ireland and England is a framework of nine levels; there is an entry-level, which includes a three-level subdivision, followed by levels one through eight (Ofqual, 2018, NIE, 2018). The CQWF has the same nine levels as the English and Northern Irish frameworks, adopting the same level descriptors for regulated non-degree qualifications (HEFCW, 2018). The FHEQ

has five levels, numbered four to eight to match the equivalent RQF/CQFW levels (QAA, 2014). In this investigation, the researcher makes specific reference to the FHEQ within the contextual framework of the broader RQF schema.

The National Qualifications Framework of South Africa

South Africa's NQF (SANQF), like the AQF, is a single integrated system co-ordinating the qualifications found within the sub-frameworks for general and further education, training, higher education, trades, and occupations (Wedekind, 2018, SAQA, 2018). As a comprehensive system, it facilitates access to and mobility and progression within education, training and employment opportunities (SAQA, 2018). The SANQF is organised into ten levels like the AQF and NZQF and outlines the learning achievement required at each level through descriptors (SAQA, 2018). These level descriptors for each of the ten levels ensure coherence in qualifications and part-qualifications, by reinforcing the applied competence, which aligns with the outcome-based theoretical framework (Wedekind, 2018, SAQA, 2018). Ten categories are used within the level descriptors to describe these applied competencies (SAQA, 2018).

Scottish Credit and Qualifications Framework

In 2001, the Scottish Qualifications Authority deployed a framework, called the SCQF, designed to describe and specify credit requirements for qualifications at each level (SCQFP, 2018, SQA, 2019). The SCQF is also more broadly deployed as a tool used for recruitment and workforce development (SQA, 2019). It has evolved into a framework with an extensive national and international reach. It incorporates qualifications for specific organisations such as the Scottish Police Force and the Microsoft corporation (SCQFP, 2018, SQA, 2019). The SCQF consists of 12 levels, with credit ratings for qualifications at each level. The framework also serves as a valuable map to assist learners and other stakeholders' progression and credit transfer opportunities (SCQFP, 2018). The SCQF uses two key measures to structure learning in Scotland: the level of a qualification and the number of credit points awarded (SCQFP, 2018, SQA, 2019). Like the UK NQFs, the level of qualification indicates the level of difficulty, number of credit points required, and the time needed to complete a qualification at each level (SCQFP, 2018,

SQA, 2019). As in other frameworks, in the SCQF, one credit point is equivalent to a 10-hour learning requirement (SCQFP, 2018, SQA, 2019).

3.5.2 Construct 2: Available Masters Qualifications

These are specialised SCL Masters by coursework qualifications from first-generation NQF jurisdictions: Australia, New Zealand, UK, Scotland and South Africa. Table 3.1 shows the equivalence of these Masters programs based on the level of completion required.

Table 3.1: Comparative equivalence of Masters qualifications using jurisdictional NQFs

Australia	New Zealand	United Kingdom	South Africa	Scotland
Masters AQF Level 9	Masters NZQF Level 9	Masters RQF Level 7	Masters NQF Level 9	Masters SCQF Level 11

Note that the learning outcomes of qualifications at AQF Level 9 level or its equivalent are constructed using verbs from the 'evaluating' or 'creating' levels of cognition within Bloom's Revised Taxonomy (Figure 3.2) (Anderson et al., 2001). These learning outcomes reflect an 'advanced and integrated understanding of a complex body of knowledge in one or more disciplines within a field of practice' (AQFC, 2013).

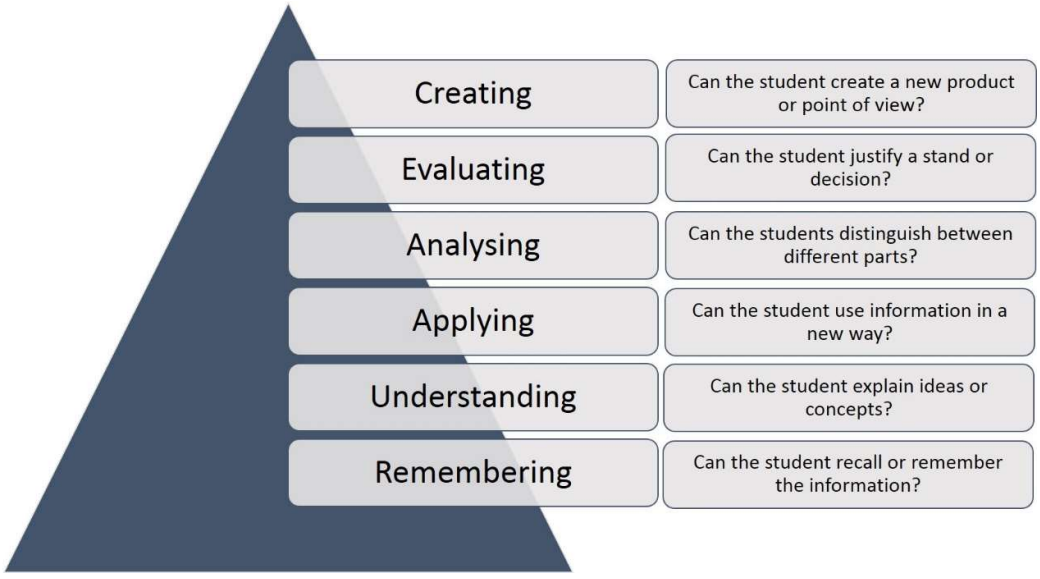

Figure 3.2: Bloom's Revised Taxonomy (Anderson et al., 2001)

Furthermore, note that a statement of learning outcomes represents one of the essential components for assuring public transparency within higher education systems and qualification descriptions (Gudeva et al., 2012). Learning outcomes aim to outline the concepts a learner is required to understand, and thus form the fundamental building blocks within contemporary qualifications frameworks (Aamodt et al., 2018). This range of expected learning outcomes can be represented and categorised by defining observable outcomes in a multitude of combinations (Aamodt et al., 2018). A learning outcome is constructed by combining an action verb and an object customarily represented by a noun (Aamodt et al., 2018). Generally, the verb plays a critical role in referencing those actions to be enunciated within the intended cognitive process (Aamodt et al., 2018), whilst the object aims to describe the acquisition of knowledge acquisition expected (Anderson et al., 2001, Aamodt et al., 2018). Learning outcomes are drafted within the cognitive domain, with discrete decisions needed around the levels of thinking students will be required to display in order to confirm that successful learning has occurred (Aamodt et al., 2018). Once levels are determined, it is characterised using words chosen from the set of action verbs in Bloom's Revised Taxonomy (Anderson et al., 2001), shown in Figure 3.2. Some verbs may be associated with more than one level; thus, the classifications are not entirely categorical.

3.5.3 Construct 3: Emerging aspects of a body of knowledge

While several BOK definitions have been promulgated, the one developed by the Institute of Operations Research and Management Sciences (2009) is the most relevant to this study. It defines a BOK as the prescribed and agreed to standards and nomenclatures – the lexicon pertaining to a discipline or profession. The purpose of this study was to investigate whether there is sufficient evidence to claim that an agreed and accepted set of knowledge (Oliver, 2012) exists which can then be used to unify the SCL community (Waite, 2004). The researcher examined the interrelationship and

interconnection of these constructs, as illustrated in Figure 3.3, using Bloom's Revised Taxonomy, in order to:

- underpin the classification and recognition of NQFs (Adam, 2004);
- assist educators in writing instructional objectives, the alignment of curriculum and the development of assessment regimes (Kennedy, 2006); and
- guide and interpret a BOK (Hoffmann et al., 2010).

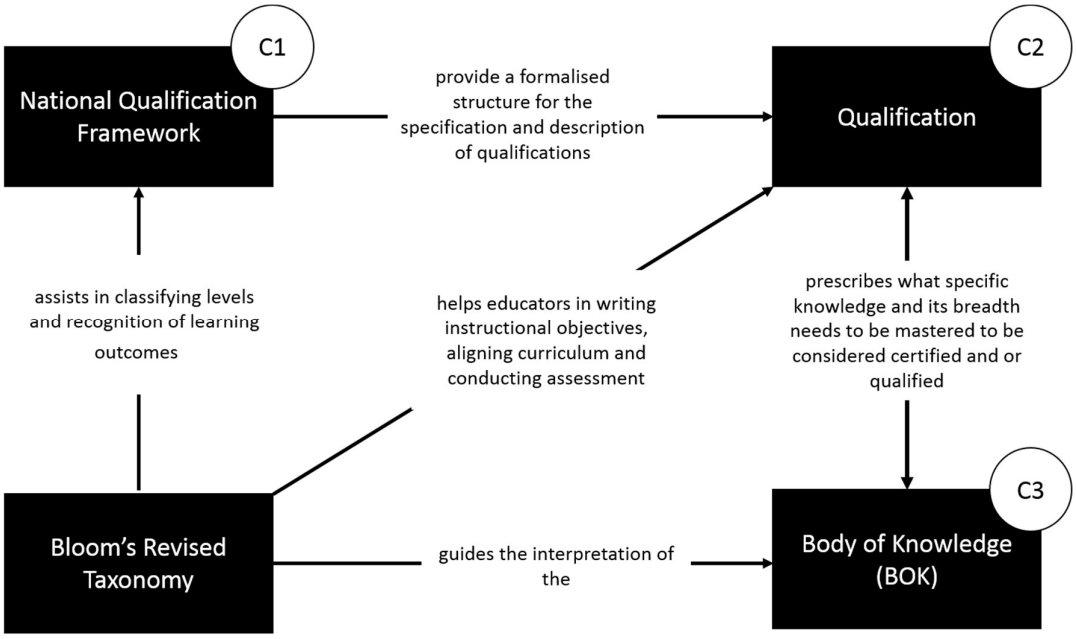

Figure 3.3: Relationship between constructs C1, C2, C3 and Bloom's Revised Taxonomy

3.5.4 The relationship between National Qualification Frameworks (C1) and Qualifications (C2)

In NQF jurisdictions, qualifications are shaped by descriptors which outline or platform the desired skills and knowledge at designated levels. As described previously in this chapter, learning outcomes indicate the level of student engagement required., Bloom's Revised Taxonomy (Anderson et al., 2001) provides a list of verbs with increasing levels of complexity in cognitive activities and functions, and this construction is used widely across the sector for specifying the nature of student learning activities. Further, the objective of

Bloom's Revised Taxonomy is to provide valuable descriptors to the learner about the requirements for each step before making significant progress at the next level (Robinson, 2009).

3.5.5 The relationship between Body of Knowledge (C3) and Qualifications (C2)

The AQF enunciates the relationship between C3 and C2 in the claim that Masters by coursework graduates will have a BOK that includes the understanding of recent developments in a discipline and/or area of professional practice (AQFC, 2013). Further, the objective of a Masters by coursework is to qualify 'individuals who apply an advanced BOK in a range of contexts for professional practice or scholarship and as a pathway for further learning' (AQFC, 2013). For example, the civil engineering (Fridley et al., 2018), project management (Farkas, 2018) and software engineering (Burgueño et al., 2019) professions all have prescribed BOK requirements which directly inform qualification design. Again, Bloom's Revised Taxonomy plays a pivotal role in describing the learning to be acquired within the particular BOK and helps to determine the level the candidate must achieve to meet agreed professional requirements.

Making a connection between C2 and C3, or 'reverse engineering' courses, to provide the basis for an identified professional BOK is not a new concept. For example, the legal sector in Australia has instituted what has become known as the 'Priestly 11' (Thomson, 2019). The Priestley 11 are the 11 law subjects that students must complete for admission as a legal practitioner in Australia (Thomson, 2019). They are named after Lancelot John Priestley, the chairman of the 1992 Law Admissions Consultative Committee, which clearly outlined the academic minima (the minimum BOK) needed for legal practice admission in Australia (Colbran et al., 2018).

The link or 'theoretical glue' between these constructs is Bloom's Revised Taxonomy (Anderson et al., 2001), which is used to connect these three fundamental constructs. It thus provides the basis from which to reverse engineer a BOK through a content analysis of a carefully selected sample of national qualifications. Bloom's Revised Taxonomy has successfully been

deployed to develop learning objectives and outcomes for both qualification development and professional BOKs in areas including accounting ethics (Kidwell et al., 2013), engineering (Aoyama et al., 2010), higher education (Carter, 1985), software engineering (Bourque et al., 1999) and computer science (Starr et al., 2008).

3.6 Chapter Summary

For this investigation of whether a SCLBOK exists within the available literature, a constructivist research paradigm and an inductivist epistemological approach was appropriate. This chapter also discussed in detail the conceptual framework used within this study, and the vital role played by Bloom's Revised Taxonomy in connecting the constructs. In addition, the chapter shows that a research design based upon the research onion concept allowed a systematic and justifiable investigative methodology to be developed. This methodology is outlined in detail in Chapter Four.

Chapter 4 – Research Methodology

4.1 Introduction

This chapter outlines the practical aspects of this investigation. In 4.2, Methodological Choice, details related to the selection of an appropriate methodology are outlined, with attention given to the constructed nature of the knowledge sought. Then, Section 4.3, Research Strategy, describes the research approach employed for the investigation. An important issue here is the time horizon, dealt with separately in Section 4.4. Section 4.5 outlines the data collection process, ultimately aiming to demonstrate congruence between the philosophical approach and the principles of ethical behaviour within qualitative research. The qualifications criteria used in the study are presented in Section 4.6, whilst Section 4.7 describes the methods of data analysis. Finally, Section 4.8 explains the methods used to validate data, and the chapter is summarised in section 4.9.

4.2 Methodological Choice

The research onion's third layer (Saunders et al., 2009) shown in Figure 3.1, is a methodological choice. Researchers must determine the most suitable research methodology for their study, which might be qualitative, quantitative or a mixture of both (Saunders et al., 2009). This research employed a qualitative approach, and this choice is justified below.

While there is no single definition of qualitative research (Long and Godfrey, 2004), the term broadly refers to research into the concepts, definitions, meanings and descriptions of things (Berg and Lune, 2007). It is characterised by not starting with a formal hypothesis but instead considering the underlying issues and context of a situation to formulate a sound basis for further decision-making (Dobrovolny and Fuentes, 2008). It focuses on gaining greater understandings of a phenomenon, including uncovering any trends over time (Bluhm et al., 2011). Bluhm et al. (2011) described a qualitative research strategy as emphasising words rather than numbers as data. The inductive approach of qualitative research, these authors argued, allows for the relationship between research and theory to be highlighted (Bryman, 1994).

Qualitative research allows the researcher to extract depth and richness from data sources, enabling analysis to probe deeply into emerging themes (Johnson and Waterfield, 2004, Hanley-Maxwell et al., 2007). Accordingly, the researcher determined that a qualitative mono-method study was the most effective strategy for achieving the intended aims of this investigation. While no one specific process informs this method, general characteristics built into this approach assisted the researcher to conceptualise the complex phenomena involved within a SCLBOK. Qualitative research includes interpretive and emergent methods, and mean that data collection can take place in a natural setting (Bogdan and Biklen, 1992, Creswell, 2016). Further, as an 'interpreter' (Bogdan and Biklen, 1992, Creswell, 2016) the researcher is placed squarely within the process. The tolerance of interpretation Creswell et al. (2007) make qualitative methods instrumental in a social research situation and assisted the researcher in building a deep understanding of related experiences across the jurisdictions involved in this study (Sherman and Webb, 1988).

Qualitative research includes methods developed in a humanistic research setting, which are suitable here because the research questions examined are primarily exploratory (Parse, 1996). This exploratory approach allowed the investigator to accumulate reliable insights into the thesis topic despite a paucity of literature directly relevant to SCL (Creswell, 2016). The researcher sought to produce a novel understanding of themes in postgraduate qualifications across multiple first-generation NQFs. He also aimed to improve perceptions of the BOK implicit within these qualifications by analysing information available in published curricula of specialist SC and logistics programs. This study attempted to achieve a 'thick description' by studying phenomena in detail (Minichiello et al., 2008) and probing the meanings embedded in the curricula.

4.3 Research Strategy

The research onion's fourth layer (Figure 3.1) refers to the selection of a research strategy (Saunders et al., 2009). As described earlier, it was determined that archival research was the most appropriate way to collect the data needed to answer the research questions. Archival research involves a

variety of activities applied to investigate existing documents or textual materials produced by reputable organisations; this status is needed to lend veracity to the collected material (Dowler, 1988, Moers, 2006). The researcher examined publicly available electronic textual documents. A purposive sample of this material was selected for analysis, thereby ensuring that it was thoroughly related to the research questions.

This study followed the steps enunciated by Bordens and Abbott (2008), which cover a variety of issues that need to be considered when conducting archival research. The researcher, firstly, ensured that he could gain access to the records, which, in this case, were publicly available course-related documentation. No permission or consent was needed in accessing these digital textual documents because all data was freely and publicly presented on university websites. Secondly, once the researcher gained access to the records, they were examined for completeness – to ensure the records provided the necessary and relevant information to be included in the dataset.

4.4 Time Horizon

The research onion's fifth layer (Figure 3.1) depicts the two time-horizon perspectives: those of longitudinal and cross-sectional research (Saunders et al., 2009). Events and behaviours studied over extended periods are referenced as longitudinal horizons, which can be explored through qualitative and quantitative approaches, essentially investigating the dynamics of a problem or phenomenon by examining phenomena over time. These repeated observations aim to reveal the nature of phenomena, particularly concerning change and development (Saunders et al., 2009). However, while cross-sectional designs can also use qualitative and quantitative approaches, they focus on a single point in time. They aim to measure an aspect or behaviour or compare them (Saunders et al., 2009). The researcher decided to deploy a cross-sectional strategy to investigate differential contexts within the data (Saunders et al., 2009).

4.5 Data Collection

In all qualitative research approaches, the researcher's own stance is an influential interpretive factor (Walsham, 1995). Whilst in this research, as far as possible, the researcher's values, assumptions and biases were

acknowledged, and efforts were made to minimise their influence on the study, it is appropriate to note that the researcher has worked and taught within the SCL sector for many years. These experiences within the industry and working as an SCL educator for close on 30 years across Australia and South East Asia make him an insider-researcher, with valuable insider knowledge (Crossley and Watson, 2003).

To ensure as much veracity and objectivity in the data collection process as possible, as indicated previously, the researcher established criteria for the inclusion of particular qualifications in the dataset. All qualifications included in the study met the following selection criteria:

1. A Masters by coursework program from a first-generation QF jurisdiction, namely Australia, New Zealand, the UK (excluding Scotland), Scotland or South Africa. This ensured that the qualifications under analysis were the most mature and respected examples of courses in the area.
2. Logistics and/or SC within its nomenclature of the selected qualification to enable the intention of the course to be established clearly. Examples are:
    a. Master of Commerce, Master of Science, Master of Arts or Master of Business followed by the notation (Supply Chain), (Logistics) or (Supply Chain and Logistics)
    b. Master of Logistics and Supply Chain, Master of Logistics, Master of Logistics Management, Master of Supply Chain and Logistics, Master of Supply Chain and/or Master of Supply Chain Management.
3. Offered by a university or other higher education provider ranked in the top 250 on the Times Higher Education Impact Rankings as at 19 January 2019.

4. Accredited by both the Chartered Institute of Logistics[9] and Transport and the Chartered Institute of Purchasing and Supply[10] as of 19 January 2019. This requirement for accreditation by these leading and longstanding professional bodies is to ensure that the curricula in the courses are seen to meet the agreed standards and foci of the profession.
5. The qualification and the unit learning outcomes had to be freely available from the appropriate institutional website. Such transparency affords clear and unambiguous descriptions of the content and intentions of the course.

4.6 Procedures for Data Analysis

The research scrutinised the data for thematic connections (as pictorially represented in Figure 4.1) between claimed learning outcomes from specialised SCL Masters by coursework qualifications from first-generation NQF jurisdictions (Tuck, 2007), namely South Africa, Australia, New Zealand, Scotland and the UK. The sample of qualifications from these jurisdictions was carefully selected using the criteria presented in section 4.5. The study omitted undergraduate qualifications with specialisations in SCL to ensure a tight postgraduate focus, providing a manageable sample size for this study. The investigation aimed to consolidate themes from the surveyed qualifications, and then to platform those findings as a potential baseline or foundation for the framing of a SCLBOK. The researcher also endeavoured to identify any agreed commonality in the qualification offerings studied.

[9] This includes their regional representatives outside of the UK – the Chartered Institute of Logistics and Transport Australia, Chartered Institute of Logistics and Transport New Zealand and Chartered Institute of Logistics and Transport South Africa.

[10] This includes their regional representatives outside of the UK – the Chartered Institute of Purchasing and Supply Australia and New Zealand and Chartered Institute of Purchasing and Supply Africa.

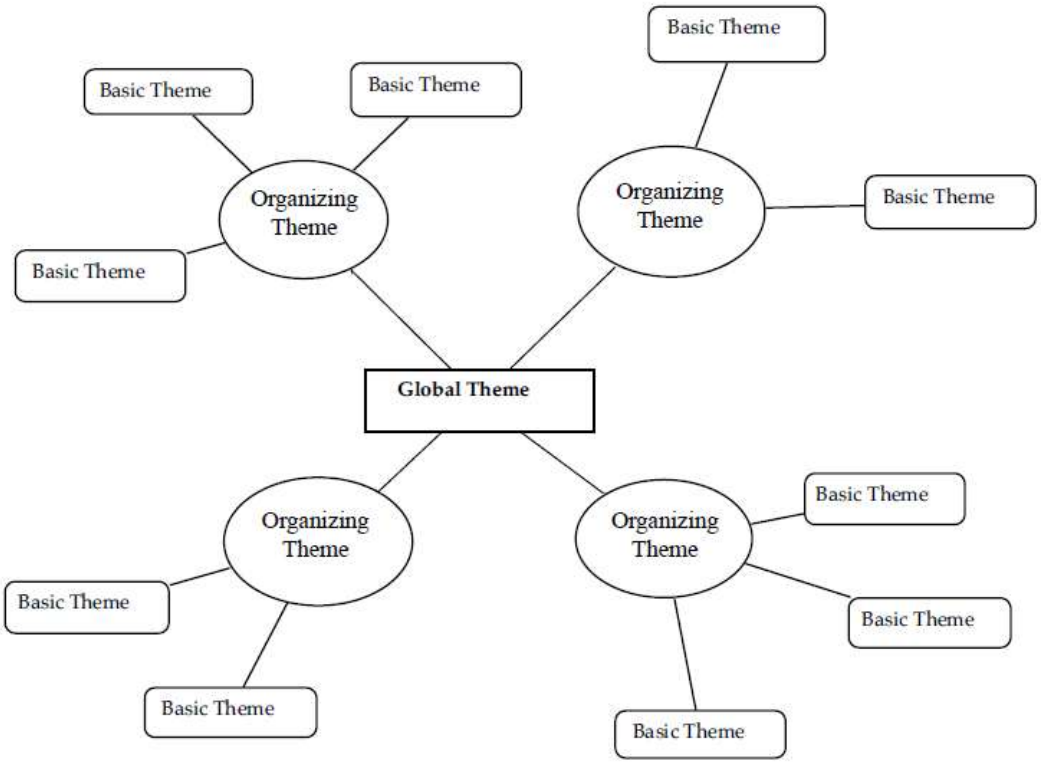

Figure 4.1: Pictorial representation of a thematic analysis (Attride-Stirling, 2001).

Course and unit descriptors were analysed using a cyclical process of analysis, which involved reading, rereading, assimilating, interpreting and understanding the sampled material (Rose and Webb, 1998) to support the emergence of basic themes, organising themes and global themes. Consistent with the work of (Attride-Stirling, 2001), themes were pictorially illustrated as an interconnecting thematic web or network. The evaluation of whether or not the research findings represent a credible conceptual interpretation of the data (Thomas and Magilvy, 2011) was demonstrated by detailed coded thematic analysis and the presentation of extensive quotes to support the interpretations.

4.7 Thematic Analysis

Thematic analysis, as described by Morphew and Hartley (2006), McLeod (2011) and Javadi and Zarea (2016), is a method which seeks to reveal patterns of meaning within data and generate existential questions about their status (McLeod, 2011, Braun and Clarke, 2012). This approach depends on whether one tends towards a nominalist, realist or a hermeneutic stance, with

most researchers navigating between the three approaches (McLeod, 2011). In this investigation, the researcher took the curriculum documents – the published accounts of course details – at face value, suspending judgment on the accuracy of their representations. He did not consider the processes behind each institutions' course development, attempt to understand the mind of the drafter or evaluate the political, commercial or organisational environment in which the courses were designed. Taking the course documents at face value meant that the researcher ascribed trustworthiness to these academic artefacts.

The researcher's thematic analysis then combined the different accounts of what constitutes a Master's by coursework qualification in SCL, effectively constructing a new context for every account. This created hermeneutic meaning, especially around the links between the curricula selected. The themes generated in the analysis were viewed comparatively.

Braun and Clarke (2012) provided a step-by-step guide to thematic analysis, characterised by six discrete phases. Although the researcher modified[11] parts of their approach for this study, the following phases structured the research.

Data Familiarisation

This study involved the reading and re-reading of texts, noting initial ideas, refining them and ultimately, defining research questions. On completion of this phase or step, the researcher had systematically determined the set of texts included in the analysis (the dataset) by applying the exclusion and inclusion criteria described in detail earlier in this chapter.

Data Attendance

This phase consisted of the identification of interesting features within the data, and the researcher extracting text segments with a direct relationship to the research questions. The researcher determined the meanings of text segments and subsequently recorded them as codes. This phase involved implementation of the mechanics and rationale of coding, described in detail in Chapter Five.

Thematic Searching

[11] The modifications are described in detail in Chapter Five.

Here, the researcher searched for consistent themes by inductively collating codes into first-order themes.

Theme Review

The researcher undertook an iterative process which involved relating the parts of the analysis to the complete dataset. It consisted of checking and rechecking themes of every level against the initial codes and the original text segments. This phase, carried out in a staged thematising process, is described in more detail in Chapter Five.

Theme Definition and Naming

This phase involved collating first-order themes into higher-order themes which are defined more clearly. Braun and Clarke (2012) suggested that conceptualisation can occur in a variety of ways. In this study, the researcher undertook a clustering process which illuminated theme networks that described the most frequent or highest-order themes, an approach inspired by Attride-Stirling (2001).

Report Production

The final step of the analysis was to illustrate each theme using compelling data extracts. In Chapter Five, all themes found through the analysis process are described in detail in this way.

It should be noted that while these steps appear at first glance to be logical phases, they are not a strictly linear sequence of tasks. As Willis et al. (2007) outlined, thematic analysis is, by its very nature, a non-linear iterative process in which data collection, analysis, and resultant interpretation influence each other (Willis et al., 2007, Attride-Stirling, 2001).

4.8 Defining Themes

Braun and Clarke (2012) asserted that a theme is characterised by its importance and captures those facets within the data as they relate to the research questions. In fact, it actually represents some form of patterned dataset response. Themes also emphasise a pattern observed by the researcher, who makes this judgment during the reviewing phase when the interpretation of themes is undertaken (Braun and Clarke, 2012). Boyatzis

(1998) also stressed that thematic analysis is principally aimed at the implied, tacit, implicit or latent level, an expression of underlying ideas and conceptualisations.

This examination involves interpretation by the researcher at the level of theme development (Boyatzis, 1998, Attride-Stirling, 2001, Pollio and Ursiak, 2006, Braun and Clarke, 2012, Vaismoradi et al., 2016). Theme development is a significant facet of this study. The analysis is inductive-driven – constructed through the meanings of the text from the ground up. As researchers, it is incumbent on us to disclose the rationales, judgements and techniques deployed through the process of analysis (Joffe, 2012). The broad parameters of the study are outlined in Chapter Three.

4.9 The Researcher's Approach to Thematic Analysis

The researcher deployed inductive thematic analysis because of its applicability and relevance to the study's objectives. The guidelines outlined by Braun and Clarke (2012) and Attride-Stirling (2001) were followed, but with slight modifications in line with the researcher's experience, to ensure that the methods matched both the subject matter and the developed understandings of the content (Joffe, 2012). The research continued to be conducted in a systematic way, which involved the researcher addressing a range of issues, including reducing the complexity of the meanings revealed in the data. This complexity reduction had to be done while still preserving the richness of the data, conceptualising themes through clustering (Attride-Stirling, 2001), and analysing the existence of interrelationships within the data (Pollio and Ursiak, 2006).

The thematic analysis was conducted manually rather than using computer software, e.g. NVivo; the researcher believes that this manual approach assisted in the close examination of the data by allowing greater immersion in the details inherent in the data. This immersion was vital in providing data 'closeness' and the detection and assignment of links between associated meanings. Ultimately, this led to the elucidation of valuable connections and interrelationships, which might not have been identified by merely analysing the frequencies of occurrence of words using data-orientated software packages.

4.10 Data Validation

The validation of data is critical in ensuring the trustworthiness of research findings (Miles et al., 1994). Elements of repeatability were designed into the process to ensure validity (Lee, 1991), and this section gives a transparent assessment of the evaluation mechanisms used in this study. The section also describes the lens through which data was viewed and interpreted. It is essential to recognise that the researcher's conclusions are consistent with preconceived understandings. The researcher was mindful at every step of the research process to ensure validity and reliability was maintained. The researcher also deployed a systematic data collection and analysis approach (Collis and Hussey, 2003, Collis and Hussey, 2009). The researcher was mindful that the study could be undermined by errors (Thornhill et al., 2009, Collis and Hussey, 2009). To avoid these errors within the research, the researcher developed and enunciated detailed criteria for data inclusion and employed a systematic approach to both data collection and analysis.

Firstly, to ensure data validity, the researcher applied distinct, precise and specified criteria for data to be included within the dataset. Clear criteria were established to ensure that all qualifications examined were specialist SCL programs and accredited by at least two external professional bodies (see 4.5). Secondly, thematic analysis was employed to ensure that the data analysis was conducted in a structured and systematic manner.

It must be understood that the reliability of qualitative research is never fully determinable since findings are not necessarily repeatable. They reflect a snapshot of a phenomenon – and thus a distinct social reality – at the specific time when the data was collected, understanding that the findings are subject to change (Marshall and Rossman, 2014). Furthermore, as noted earlier, findings may reflect a researcher's biases (Thornhill et al., 2009). To avoid the risk of researcher bias, the emergent themes underwent a second independent verification stage using an unstructured focus group and a modified Delphi approach (Dalkey and Helmer, 1963). The focus group (Kellmereit, 2015) involved five carefully selected SCL industry experts. These group members were asked to consider and discuss their level of disagreement or agreement with the preliminary themes and the dominant category findings, and in this way provided valuable opinion and comments through their impartial, external

lens. This process offered valuable unbiased and informed feedback by allowing expert consensus to check the trustworthiness of the preliminary findings.

The focus group members met face-to-face in a private room in Melbourne on Thursday evening of the 12th September, 2019. Participants were formally invited to take part in the focus group by telephone; during each call, the researcher outlined relevant information about the research project and its purpose. The participants were carefully selected according to their level of expertise in the area, practical experience and availability. The student researcher acted as the moderator and asked the SCL specialists about their level of agreement or disagreement with the preliminary themes (or categories). Each member of the focus group was given the opportunity to think about and comment on what others said in the group. The researcher took notes and evaluated them carefully after the discussion.

Themes were carefully developed as part of the reading and rereading process. Each theme's inclusion was based on its importance and relevance to the development of a SCLBOK. Focus group feedback played a valuable role in clarifying the findings of this study. The method aligns with Cresswell (1998) recommendations about the benefits of the use of 'multiple and different sources, methods, investigators and theories to provide corroborating evidence' (p. 202).

The researcher mainly obtained corroborating evidence using thematic analysis and focus group verification. As Hussey and Hussey (1997) noted, as did Cresswell, different approaches can assist in triangulation and therefore contribute to the validity and reliability of a study.

Focus groups have particular advantages in the process of data validation. They are considered less naturalistic than other methods because they involve the researcher or a moderator and/or in some cases both, who can immerse themselves in the group and therefore into a discussion (Kellmereit, 2015). This immersion can lead to bias in the discussion, so the researcher must be ever-mindful of maintaining the focus of the group (Smith, 1995, Kitzinger and Barbour, 1999, Kellmereit, 2015). In addition, as Jaccard and Jacoby (2009) stated, focus group conversations often get side-tracked, so for both reasons

the moderator, in this case, the researcher, worked hard to keep the participants on task.

Moreover, the researcher was mindful of reducing the possibility of personal bias affecting the results by avoiding the unintentional or intentional provision of cues and not attempting to influence a consensus on topics (Stewart and Shamdasani, 2014). The researcher was also conscious not to implant himself into the discussions (Kleiber, 2004). It was recognised that within a focus group situation, the participants could skew the data, particularly when influential, opinionated or dominant behaviours could bias discussion and produce tainted results (Krueger and Casey, 2015b). Such members could induce hesitation in other participants and thus hinder active discussion (Krueger and Casey, 2015b). Conformity within the group or merely the presence of others could also prevent participants from expressing their views or experiences (Jaccard and Jacoby, 2009, Stewart and Shamdasani, 2014, Carey and Asbury, 2016).

During the focus group design and the actual conversation, the researcher made systematic efforts to minimise the impacts of the limitations outlined above. Notwithstanding these issues, the focus group approach was justified for the following reasons:

- they are an effective way to explore and gain insight into an issue (Cavana et al., 2001, Cooper et al., 2006);
- the moderator can encourage positive group dynamics to enable quality data to be revealed through participant views and expectations (Krueger and Casey, 2015a);
- the environment allows them to make unpressured comments (Zikmund et al., 2013) and to share personal experiences with their peers in a safe and less formalised environment (Krueger and Casey, 2015a);
- their flexibility assists in encouraging discussion and allows the researcher to explore new areas revealed or initiated by the group (Cavana et al., 2001), with a single comment often triggering a chain of insightful responses;
- comfortable group members will often express their ideas and feelings at a much deeper level (Zikmund et al., 2013); and

- they are inexpensive to organise relative to one-on-one interviews and have the benefit of gaining data from several people simultaneously (Kidd and Parshall, 2000).

These strengths indicate that a focus group is an affordable yet practical approach to validating the results of thematic analysis, the first phase of the study.

Focus groups are a suitable data collection method when examining a variety of perspectives on an issue (Kitzinger and Barbour, 1999, Barbour and Kitzinger, 1999). Their unique ability to prompt exploration of beliefs and thoughts means they can elucidate a variety of perspectives within a profession. Thus, the focus group met the need of the present study to explore multiple standpoints in relation to the formation and/or development of a SCLBOK.

As both Liamputtong (2011) and Flick (2018) have commented, focus groups are less costly than personal interviews because they require less investment of a researcher's time. A focus group gave access to participants' in-depth thoughts, views and experiences at the lowest possible cost. As a result, the researcher also believed that data validity would be strengthened by incorporating a focus group into the study. This notion is based on the ability of the investigator to probe and further question focus group participants in a safe and flexible setting and thus delve into the participant's intended meanings (Thornhill et al., 2009). Further, validity considers the trueness of the results within the study (Haskins and Kendrick, 1993, Johnson, 1997, Golafshani, 2003).

A multi-method approach provides the investigator with data from several sources. It thus allows for further investigation into areas of emerging interest, as well as providing valuable triangulation[12] (Thornhill et al., 2009, Heale and Forbes, 2013); if the analyses of data from these sources concur, they provide transparency, rigour and greater trustworthiness in the data and the results (Sekaran 2000). Indeed, data collected from several sources provides confidence in the 'goodness' of the data (Sekaran 2000).

[12] the combination of two or more data collection methods

4.11 Ethics Approval

Several researchers and theorists have articulated particular ethical concerns about qualitative research (Smith, 1995, Van den Hoonaard, 2002, Vaismoradi et al., 2013). Careful consideration was given to the ethical issues that could arise throughout the study. Ethical approval, located in the Appendix, was sought from the Victoria University Human Research Ethics Committee (VUHREC) and was obtained on the 1st of January 2019. The VU ethics identification number for this study is HRE18-235. Data gathering and validation approaches commenced after the study was approved.

At the request of one focus group participant, no recording was made. The researcher took detailed notes of the discussion, with all participants' feedback and comments remaining anonymous. Further, they are not identified herein by their place of work, but only by their status and perspectives.

A Plain Language Statement (as outlined in the Appendix) was used to inform focus group participants of the objectives of the research and obtained written consent. The documents were prepared in advance of the focus group and formed part of the researcher's ethics application.[13] Before potential participants signed the informed consent form, the study was explained in detail, and they were given time to review the written information and encouraged to ask any questions before deciding whether to participate. Participants were informed that they could withdraw from the study at any time, without having to provide a reason. No incentives were provided for participation in the focus group.

Ethical research requires a researcher to commit to a lifelong obligation to act ethically and to endeavour to protect participants from harm (physical, mental, reputational and any other form of harm) (Yin, 2015). The researcher gave considerable thought to his dealings with focus group participants before commencement. All research data gathering tools and documents developed for this study were formally presented to the VUHRC for their approval before distribution. Furthermore, all VUHRC ethical policies and requirements in regards to human researchers and their conduct were followed diligently. Such conduct included gaining the informed consent of the participants, articulating

[13] All ethics documents are provided in the Appendix.

their complete right of withdrawal, an explanation of possible harm resulting from participation, an outline of VU's formal complaints process, the participants' rights to view a draft report, and anonymity and confidentiality issues.

Only the researcher and his supervisors have access to the focus group discussion notes (with all personal names removed). For reasons noted below, participants were also informed that the researcher, in the absence of audio recordings, would take detailed handwritten notes. All sources of data collected from the focus group participants remain confidential, and their identities are anonymised. During the focus group, all members were advised formally of the confidentiality requirements surrounding the data, and all participants were explicitly asked not to talk about the discussion outside of the group. This was reiterated because, while all investigators will maintain confidentiality in the recording and reporting of this study, anonymity within the focus group could not be maintained should focus group participants share information.

Participants of the focus group signed an informed consent form agreeing to their participation, thus allowing the investigator to moderate the focus group. However, it must be noted that, just before the commencement of the discussion, one participant, who wishes not to be identified, requested that the discussion not be recorded. At their request, the researcher with the verbal consent of the other focus group participants agreed to take notes of the discussion. The focus group was conducted in a professional manner which ensured that at all times focused on the protection of the participant's wellbeing and to minimise any potential harm to the focus group members ultimately. Additionally, the researcher ensured the protection of individual and organisational to further secure and protect their identity.

4.12 Generalisability

Given the small number of course curricula analysed and the fact that only one focus group was conducted for verification and validation of data, the results, therefore, cannot be generalised confidently (Thornhill et al., 2009). Nonetheless, the verification procedures suggest that the outcomes of the study will be of substantial value to the SCL profession.

4.13 Chapter Summary

Chapter Four describes the underlying principles of the data collection and analysis methods deployed within this investigation. A constructivist and interpretivist research paradigm, an inductive approach was adopted. Primary data collection involved archival research, using clear and concise criteria for data inclusion, and yielded rich sources of information that were used to answer the study's research questions. Data analysis processes are outlined, including the steps taken to ensure the validity and reliability of the data collected, and all ethical considerations, and the study's approval by the VUHREC[14], are noted and/or discussed. Chapter Five, which follows, presents the results of the thematic analysis.

[14] Outlined in the Appendix.

Chapter 5 – Results of Thematic Analysis

5.1 Introduction

Chapter Five presents the results of the thematic analysis of the dataset, in which 15 major themes were identified. Chapter Four outlines how this qualitative analytical approach was based on a clustering of frequently occurring and relevant concepts, which led to the groupings of interrelated sub-themes. These groups allowed identification and explication of the 15 themes of particular interest to this work. For the veracity and trustworthiness of this investigation, these major themes must be seen as being logically constituted through a transparent network of interrelated sub-themes.

While the primary purpose of the study was to determine whether a tacit SCLBOK already exists, albeit in a distributed form within existing postgraduate teaching discourses across first-generation NQF jurisdictions. To ensure the accuracy and clarity of theme collection, concepts derived from publicly available documents and web information were reframed according to the perspectives of SC practitioners, in a focus group situation. The reframed results of the research were presented through the lens of the two research questions. This process better informed the researcher's understanding of the inter-relatedness of the data. At this point, it was also appropriate to examine whether the collection could shape the construction of a formal, agreed SCLBOK.

This chapter describes the development of thematic networks from the data and elucidates meanings through narrative descriptions captured within each of the themes. The chapter begins with a section on the analysis, outlining how the outcomes were derived and how they are presented. This discussion is followed by individual sections that examine the 15 major themes.

5.2 Data Gathering and Analysis

In the data analysis process, a thematic analysis method was utilised to elicit information and meaning from the dataset. The thematic analysis enabled the researcher to find patterns in the data, and the flexibility to structure those themes systematically (Attride-Stirling, 2001, Braun and Clarke, 2006). The derivation of these patterns allows the researcher to locate the essence of the

data by elucidating meaning within the dataset (Attride-Stirling, 2001, Braun and Clarke, 2006, Braun and Clarke, 2012). To increase the veracity and repeatability of the research process, six distinct phases of analysis were employed, as illustrated in Figure 5.1.

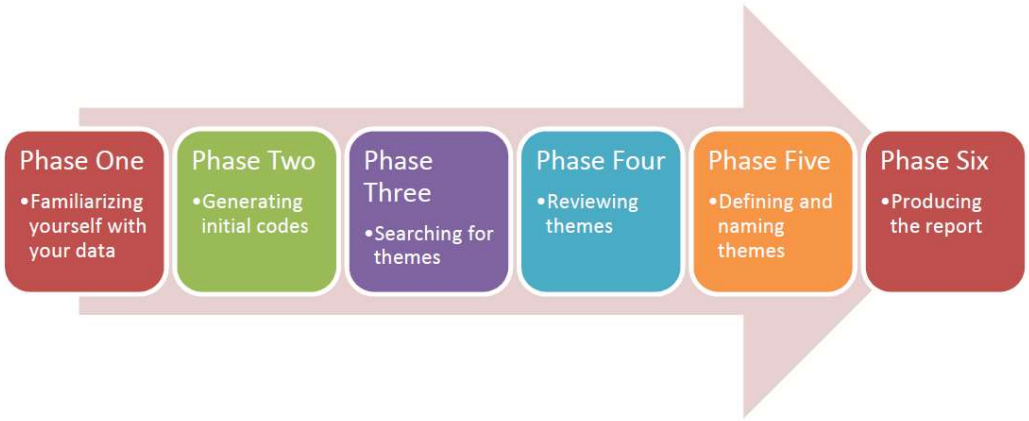

Figure 5.1: A guide to thematic analysis (Braun and Clarke, 2006)

To gain a deep and complete understanding of the data, the researcher must be actively engaged with the data and attempt to reconcile and interpret the breadth and depth of the content (Attride-Stirling, 2001, Braun and Clarke, 2006, Braun and Clarke, 2012). In essence, the researcher needs to be fully immersed in the process, repeatedly looking for patterns in the content and actively reading and rereading the data. Through an in-depth investigation, the researcher can identify patterns and ideas in the data (Braun and Clarke, 2006, Braun and Clarke, 2012). To assist in the process of data immersion, the researcher took notes, marking down relevant signposts and ideas before a formal coding process began in earnest. The researcher increased his familiarity with the data by firstly transcribing the data from the course outlines onto cards, then began close reading to build a complete understanding of the material.

Phase two involved the creation of initial codes. As the researcher began actively engaging with the content, he generated a list of ideas related to the critical issues of the study (Braun and Clarke, 2012). These codes reveal themselves as interpreted features of the dataset (Boyatzis (1998). In this phase, the investigator reread the data that was previously transcribed onto

cards, highlighting the unrestricted emergent codes represented by direct extracts to avoid data slippage. This process was repeated several days later so that the researcher approached the data with fresh eyes.

During phase three, the investigator purposively searched for commonality in the data. Braun and Clarke (2006) stated that this phase of a refocused search aims to locate broader cognate themes through the matching of the collected codes. In this identification and thematic building phase, the researcher, based on many years of industry experience, systematically organised the codes according to relevant SCL content similarities.

In phase four, the researcher firstly deidentified the data to ensure anonymity and then began a process of content theme refining. Braun and Clarke (2006) suggested that during this phase, the researcher must consolidate previously listed themes that were deemed unsuitable to be built into major themes. In addition to this, the researcher found that some of the emerging themes could be logically subsumed within others (Braun and Clarke, 2006, Braun and Clarke, 2012).

In phase five, the investigator defined and redefined themes present in the data analysis that could be perceived as being elements of a SCLBOK. Braun and Clarke (2006) argued that this process of theme defining and refining brings out the essence of the data and allows the researcher to outline which aspect of the data each theme represents and captures. (Chapter Six describes the interrogation of these themes through a semi-structured focus group involving five expert SCL industry representatives.)

The final phase of the thematic analysis process involved report production, based on a set of fully worked-out themes which tell the complex story of the data (Attride-Stirling, 2001, Braun and Clarke, 2006, Vaismoradi et al., 2016). During this phase, the researcher developed an in-depth report that contributed to the content of Chapter Five (Results) and Chapter Eight (Findings and Discussion).

5.3 Issues Illuminated through the Presentation of Results

Chapter Five provides a comprehensive summary of the thematic analysis. Braun and Clarke (2006) emphasised that the investigator should furnish evidence of the data reflected in the emergent themes, through highlighting extracts or excerpts which justify their development. Similarly, Joffe (2012) suggested that researchers can achieve data transparency by illuminating extracts which would convince a sceptical reader of the relationship between the evidence and the researcher's interpretation. Hence, the researcher used the following tools to describe the emergence of and justify each major theme:

(a) an introduction;

(b) a table illustrating the network and clustering of sub-themes that combine to form the major theme; and

(c) a discussion of its position within the major theme network.

5.4 Framing the Results

The setting of the study across all first-generation NQF jurisdictions is of critical importance because it gave a sufficiently broad platform on which to build a trustworthy dataset. As outlined in Chapter Four, the research approach formulated for this study focused on an analysis of accredited Masters by coursework programs that met strict selection criteria. These detailed criteria are outlined in Chapter 4. Nine courses were determined to meet the selection criteria. One program was randomly removed from this selection to aid in the de-identification of higher education providers. A sample of the Thematic Data Analysis conducted by the researcher is illustrated below in Figure 5.2.

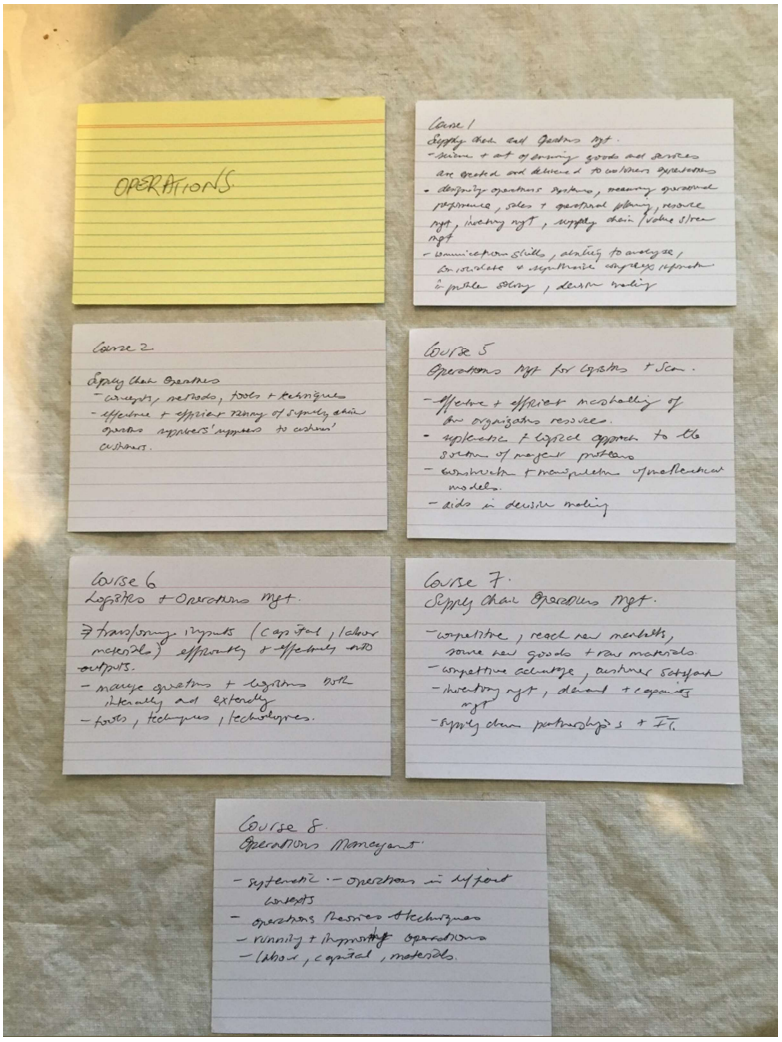

Figure 5.2: Thematic data analysis sample – Operations theme

5.5 Separating the Discussion and Presentation of Results

As described in detail above, the researcher subjected richly detailed unit descriptors to a systematic thematic analysis. As noted previously, the thematic analysis aims to reduce data complexity by presenting meaning through identifiable patterns in the data. The researcher also recognises that course design is a complex process, and therefore the data may otherwise, include innate levels of considered argument and reasoning not apparent at first glance. Thus, the summaries of the relevant results in this chapter include reflections and discussions, subthemes and the broader thematic network, and how meaning is captured within themes evidenced through selected data extracts. Chapter Seven contains a more detailed discussion of these findings and their implications.

The rest of the chapter is divided into discrete sections that present, in detail, the 15 major themes which emerged during the analysis. They are:

- Strategy;
- Sustainability;
- Service and Value;
- Systems;
- Decision-Making and Problem-Solving;
- Financial Management;
- Organisations and People Management;
- Quality and Continuous Improvement;
- Information and Technology Management;
- Project Management;
- Operations;
- Logistics and Physical Distribution;
- International Business and Globalisation;
- Supply Chain Management; and
- Procurement.

As noted previously, these 15 themes represent concepts that frequently recurred within the dataset and were highly salient; many are intertwined with descriptors in other major themes. Each section contains an outline of the relationships within the data, followed by a table which summarises the thematic analysis results, and concludes with a narrative account using extracts from the data to illuminate meaning/s captured within the theme.

5.6 Themes

5.6.1 Theme I: Strategy

This theme frequently arose in the dataset. Interrelationships between major themes are clarified as the discussion continues.[15] Table 5.1 outlines Theme 1- Strategy.

Table 5.1: Theme I – Strategy

First-order theme clusters	Organising themes	Major theme
Organisational strategy in context Strategic perspectives Strategic formulation Strategic practice and management Competitive strategy and competitive performance E-business strategy Frameworks and models of strategy Links between corporate and financial strategy	Perspectives and practice of strategy Models and frameworks of strategy Context and formulation of strategy Links between operational, financial and competitive strategy	Strategy

The essence of the word strategy is best described through its Greek origins, 'strategos', meaning 'the art of the general'. A strategy consists of five key steps: of a plan, pattern, position, ploy and perspective (Mintzberg, 1987a,

[15] This important notion of theme relationships is discussed further in Chapter Seven.

Mintzberg, 1987b, Mintzberg, 1987c). Strategy, in its planning form, is based on leadership and consciously building a situational course of action (Mintzberg, 1987a, Mintzberg, 1987b, Mintzberg, 1987c). Glueck (1980), extends this notion, describing it as a comprehensive and integrated plan built around provisioning the business objectives of the enterprise. Strategy can also be described as a ploy to outplay or outwit a business competitor (Mintzberg, 1987c, Mintzberg, 1987b, Mintzberg, 1987a). As noted above, the word 'strategy' has its roots in military theory, as has the word 'logistics', another major theme revealed within the thematic analysis. Clausewitz in Howard and Paret (1976) the influential military theorist, wrote two seminal letters on strategy. These letters ventilated the idea that strategy is about the alignment of weighty things to achieve desirable results, involving positioning, references to the environment, and acting as a mediating force balanced internally and externally (Hofer and Schendel, 1980). Strategy also looks inwardly to understand the nature of any entrenched practices to more accurately regulate their behaviour (Mintzberg, 1987a, Mintzberg, 1987b, Mintzberg, 1987c).

5.6.2 Theme II: Sustainability

This second major theme has three sub-themes, as illustrated in Table 5.2. They gather meanings relating to the trade-offs and benefits surrounding corporate environmental and socially responsible choices, made within the frameworks of regulation, policy and the maintenance of corporate performance.

Table 5.2: Theme II – Sustainability

First-order theme clusters	Organising themes	Major theme
Lean and green issues and practices Trade-offs Operational and environmental choice Logistics and the environment Environmental regulations Frameworks of environmental management including policy Sustainable and environmentally friendly Corporate sustainability Sustainable performance	Green and environmental frameworks and practices Impacts of logistics on the environment Corporate sustainability and performance	Sustainability

Climate change is emerging as a key global business issue to which organisations of all shapes and sizes must be prepared to respond. An organisation's ability to meet economic, social and environmental challenges within the SC, and understand that it operates as an interrelated system, is essential to its survival (Zaklad et al., 2003). Organisations must adapt and respond to this growing globalised complexity by better understanding the sustainability aspects of their SCs (Voak, 2009). SC sustainability aspects include the exploitation of workers, ozone depletion, global warming and

deforestation (Voak, 2009). These issues can be further segmented according to economic, social and environmental aspects (Seuring and Müller, 2008), and the dependencies and interdependencies between distribution channels can be defined (Svensson, 2007). Sustainability serves as a primer for driving efficiencies throughout the SC (Voak, 2009). Organisations also need to be mindful of existing and proposed legislation relating to sustainability and should consider the broader public and stakeholder interests carefully (Jayaraman et al., 2007, Linton et al., 2007).

5.6.3 Theme III: Service and Value

This theme consists of two sub-themes, outlined in Table 5.3, which describe the dimensions of the organisational capacity needed for service provision. The strategic theme is relevant here, providing a vital link between design and deployment. The creation of value and the emergence of the notion of 'servitisation' relate directly to meeting customer expectations and how an enterprise can create a competitive advantage through delivering quality service (Vandermerwe and Rada, 1988, Vendrell-Herrero et al., 2017)

Value or provisioning value is often equated to competitive advantage, especially in an increasingly globalised competitive marketplace (Bovet and Martha, 2000, Bowman and Ambrosini, 2000, Ketchen Jr and Hult, 2007), with this value often contextualised into a specific environment (Amit and Schoemaker, 1993). Vargo et al. (2008) further contended that creating value is elemental to economic exchange. Service-orientated ecosystems are driven by the interactions between and among human, technological and information resources, and their interconnections to other systems via value propositions (Maglio et al., 2009). Cronin Jr et al. (2000) agreed that the proposition of value is intrinsically linked to the intentions found within behavioural relationships, and Grönroos (2008) argued that service, as a logistics requirement, is more complicated than imagined at first glance. With respect to the complexity of service, there are two logics in play, those of consumption and service provision, which ultimately lead to a paradigm of co-creation linked to a customer's participation and requirements.

Table 5.3: Theme III – Service and Value

First-order theme clusters	Organising themes	Major theme
Service characteristics, dimensions, typologies and capacity Designing services and strategic links Cultural issues as they relate to services Service and customer relationships Value and servitisation Customer value Releasing value	Service and customer relationships Value Propositions	Service and Value

5.6.4 Theme IV: Systems

'Systems' is an all-encompassing theme which includes six first-order theme clusters and two key sub-themes (Table 5.4). Here, we come to understand that systems are more than the 'thinking approach' employed and the simple deployment of a specific collection of tools and methodologies.

A system is a group of things working together as parts of a complex, interconnecting network (Angerhofer and Angelides, 2000). This system essentially creates a unified whole, grouped by interacting and interrelated entities and delineated by its distinctive and temporal boundaries, which is surrounded and influenced by its environment (Backlund, 2000). The term 'system' has its origin in the Latin term 'systema', which means 'a whole concept made of several parts or members' (Backlund, 2000). Based on this complexity, the researcher made the conscious decision that a single major theme best represents a network of concepts.

Table 5.4: Theme IV – Systems

First-order theme clusters	Organising themes	Major theme
Design and management of supply chain systems Theories and principles of systems thinking Methodologies for improving and designing systems Testing and measuring systems Technical, information and social systems Logistics systems Supply networks	Designing and managing systems and networks Systems Thinking – theories and methodological approaches	Systems

Several definitions of the term 'system' exist, and as a result, it lacks precision (Backlund, 2000). Backlund (2000), however, wrote that a system cannot be divided into its independent parts but must be considered as a whole and cannot be divided into independent components(Arnold and Wade, 2015). A system is thence taken as an entirety and is seen to derive from the characterisation and interaction of its parts rather than separate actions (Ackoff, 1981), and embodies the idea of a set of elements connected and showing unique properties of the whole (Checkland, 1999). Furthermore, intangible elements known as assumptions and norms are essential factors in understanding how a system functions.

5.6.5 Theme V: Decision-Making and Problem-Solving

This major theme is linked to other major themes, notably 'Financial Management', 'Strategy' and 'Operations'. Despite this interdependence, 'Decision-Making and Problem Solving' is a major theme in its own right. Table 5.5 shows how this major theme consists of two organising themes and theme clusters. Decision-making is bound by constraints and uncertainty and facilitated by analysis and interpretation of results and data within risk management frameworks. It is always linked to problem-solving, and thus is imbued with the techniques and approaches used to solve problems, and is framed by ethical issues which reflect the human element implicit in the issues.

Decision-making consists of the actions or processes of making decisions (Edwards, 1954). A decision, in the context of this study, is defined as a purposively chosen course that has resulted from a set of alternatives to achieve managerial or organisational goals and objectives (Edwards, 1954). Highlighting the innate complexity of this concept, Edwards (1954) proposed that decision-making is characterised by either riskless or risky choices, while Saaty (2008) wrote that decisions result from 'trading off' intangibles. It is also important to remember that we are all decision-makers, with everything we do being consciously or unconsciously the result of some decisions (Saaty, 2008). Further, decision-making is directly linked to the solving of a problem, and it is widely accepted that problem-solving involve either rational or organic parameters or styles. Rational problem-solving deploys comprehensive and logical approaches, whereas organic problem-solving is highly adaptable to understanding and explanation of chaotic changes that occur daily (Saaty, 2008).

Table 5.5: Theme V – Decision-Making and Problem-Solving

First-order theme clusters	Organising themes	Major theme
Decision-making under constraints and uncertainty Analysis and interpretation of results and data Hypothesis testing Consequence modelling Risk management and risk-inferred decision-making Tools and techniques	Decision-making	Decision-Making and Problem-Solving
Approaches used to solve problems Ethical issues Visualising techniques Analytical thinking and problem-solving Roots of problems	Problem-solving	

5.6.6 Theme VI: Financial Management

This theme captures economic and financial management – an active force across all 15 themes. This major theme relates to financial principles and the economic reality of participating in trade. It also emerges through the sub-themes of financial principles and data and decision-making. Thus, it inevitably impacts on how information is analysed and then subsequently deployed as

part of an organisational decision-making process. It is also informed through the other sub-theme, financial information, which relates to the quality of data and the strategic aspects of finance, including planning and control.

Table 5.6: Theme VI – Financial Management

First-order theme clusters	Organising themes	Major theme
Principles of accounting and financial management Financial decision-making Interpretation of data and control of resources Strategic aspects of finance Tools and techniques used in developing financial information Interpreting financial reports and financial information Management accounting practices Operational financial planning and control	Financial principles, data and decision-making Financial information	Financial Management

The management of SCs aims to integrate product, information and financial flows, which are essential attributes of a well-functioning organisation. Hofmann (2005) argued that financial management begins with financing and capital budgeting decisions (a major theme which was identified as part of the

thematic analysis). Financial management is also associated with value creation (another major theme previously discussed in this chapter) and ends after payment from the customer is received. The financial and operating activities of an organisation are closely connected and interdependent, and financial management can be effectively deployed to assist organisations in creating value (Hofmann, 2005, Ellinger et al., 2011). Pfohl and Gomm (2009) claimed that financial management aims to optimise cross-company financial processes, explicitly dealing with the analysis of money and investments within organisations to make better decisions (another theme discussed within this chapter). Again, the theme is linked to an organisation's financial strategy (again another interdependent theme discussed within this chapter). It should be remembered that financial flows form an essential component within SCL, as they serve as enabler to facilitate movement of product towards to the customer.

5.6.7 Theme VII: Organisations and People Management

This major theme consists of two organising themes, 'Organisations' and 'People Management', under each of which are three first-order themes (see Table 5.7). This theme is intrinsically linked to all of the other themes since an organisation is a socially constructed entity.

Adaptive and robust leadership is increasingly required to ensure organisations remain effective in a rapidly changing world. A focus on concrete results and flexible strategies allows an organisation to respond to both threats and opportunities. Moreover, organisations need to build a culture of innovation, learning and collaboration to accommodate a multitude of stakeholders, as well as to motivate employees for high performance and productivity. People management deals with financial, strategic and policy issues, as well as the day-to-day management of people. For people management to generate returns for the organisation, it must be focused on its contribution to organisational performance, creating a fit or seamless link between people management practices and the broader strategic objectives of the business (Scarbrough, 2000, McAfee et al., 2002, Gómez-Cedeño et al., 2015). Employees who have a clear idea of what their organisation wants are in a better position to help to achieve it. Thus, constant communication and

development of the right culture are crucial aspects of people management (McAfee et al., 2002, Gowen Iii and Tallon, 2003, McCarter et al., 2005).

Table 5.7: Theme VII – Organisations and People Management

First-order theme clusters	Organising themes	Major theme
Organisational behaviour and the nature of human behaviour Individual, group and organisational processes Strategic and organisational responses	Organisations	Organisations and People Management
Human implications of change Strategic management of people Managing people resources Effective people management	People management	

5.6.8 Theme VIII: Quality and Continuous Improvement

This major theme, relating to quality and continuous improvement, integrates the meanings encapsulated in two subtheme clusters listed in Table 5.8 below. This theme is linked intrinsically to several other major themes, particularly those of 'Strategy', 'Operations' and 'Service and Value'.

Table 5.8: Theme VIII – Quality and Continuous Improvement

First-order theme clusters	Organising themes	Major theme
Quality issues and the quality imperative Quality concepts, tools and techniques Quality in service Quality function deployment Total quality management	Quality	Quality and Continuous Improvement
Continuous improvement Process improvement Lean Six Sigma Methodology Service quality and reliability Statistical tools and methods Lean operations strategy and lean thinking	Continuous Improvement	

While quality is a broad term, when considered through an organisational lens, it becomes a desire for efficient, consistent, continuous and value-added

systems, together with services and internal/external processes that aim to deliver customer value. The processes of quality involve striving to improve the overall effectiveness of the system while making all aspects of the organisation fit in a more operationally sensible manner. Quality is about assisting organisations in performing optimally for their stakeholders, focusing on the improvement of products, services, systems and processes with an eye to the entire organisation becoming 'fitter' through increased effectiveness and efficiency (Foster and Ganguly, 2007). Managing quality means always pursuing excellence, assuring that what your organisation does is fit for purpose, and not only stays that way but keeps improving (Foster and Ganguly, 2007). Continuous improvement strategy has been mostly applied in the field of quality improvement (Terziovski, 2002). The concept embodies initiatives that enhance operational performance and reflects research in the area which highlights crucial success factors, capabilities and business evidence (Terziovski, 2002).

Continuous improvement – as a business management technique – aims to improve processes, services and products, with efforts manifesting as incremental improvements or breakthroughs (as a once-off activity) (Gilmore, 1990). To achieve a level of quality or to continuously improve business processes, a variety of popular tools and theories such as Six Sigma, Lean, and Change Management can be deployed (Antony et al., 2003, Goldsby et al., 2006, Cudney and Elrod, 2010, Myerson, 2012). The practice of continuous improvement focuses not only on the processes but the output of actions to sustain those improvements.

5.6.9 Theme IX: Information Management Technology

This theme reveals the growing and rapidly emerging use of information gathering and technology which can be deployed to manage SC data. This theme has two first-order clusters, which highlight the role of technology in market competitiveness together with the development of strategy (another major theme discussed earlier). The organising theme 'Technology' captures technology deployment and enterprise resource planning and highlights their role as enablers in the SC. The other organising theme, 'Information

Management', is clustered around the role of information, information capture, data mining and data warehousing.

Table 5.9: Theme IX – Information and Technology Management

First-Order theme clusters	Organising themes	Major theme
Role of technology in market competitiveness and business strategy Enterprise resource planning Technology deployment including technology enablers and tools Information systems Information capture and communication/transaction protocols Business information management Role and functions of enterprise systems Machine learning, data mining and data warehousing	Technology Information Management	Information Management Technology

Information management technology (IMT) has become a critical component of daily business practice (Turban 2008, Copacino 2019). It enables 'big data type insights' which aid in driving business strategies, matching demand with supply and providing compliance frameworks (Nguyen et al., 2018, Tiwari et al., 2018). Very few modern business processes are not dependent on or

benefit from IMT. IMT is also often perceived as an enabler of organisational efficiency, in ways similar to those in which physical technology has historically assisted workers to improve productivity (Treadwell, 2018).

IMT can be further segmented into functional categories. These segments include the enterprise-class IMT activities such as enterprise relationship management, enterprise resource management and enterprise records management. IMT, as the title implies, looks to technology for the management of information. It evolved from earlier, more straightforward file management functions to encompass data and application integration, among others (Treadwell, 2018).

5.6.10 Theme X: Project Management

This major theme relates to three organising themes, as illustrated in Table 5.10 below. These clusters essentially describe the life cycle of projects, including the necessary engagement with stakeholders and interrelationships with operations and service delivery. The theme also encapsulates the methodologies deployed as part of project management, including planning, control tools and techniques.

Project management is known as the art and science of managing every step and aspect of a project, from inception to closure (Kerzner, 2018). It usually connotes a temporary endeavour that has a definite beginning and end (Harrison and Lock, 2017). It is deployed to ensure outcomes are achieved via manipulating costs, schedules and specifications to meet customer expectations (Harrison and Lock, 2017, Kerzner, 2018).

Table 5.10: Theme X – Project Management

First-order theme clusters	Organising themes	Major theme
Different types and stages of projects Project life cycle Managing project teams Project planning, scheduling and approaches Stakeholder management Effective and efficient use of resources Interrelationship between project management and operations/service delivery Project planning and control tools and techniques	Project cycle management Stakeholder and resource management Project management tools and techniques	Project Management

5.6.11 Theme XI: Operations

This theme emerged across the entire dataset and was prominent as a descriptor for defining the parameters of other major themes. 'Operations' refers to the various ways in which practical procedures are conducted within

the SC. Thematic analysis of the data focused on the descriptive language of operations used, and its implicit importance in the management of the flows of goods, finance and information was noted frequently. ‘Operations’ as a major theme describes a pattern of meanings in the data which enunciate a close link between strategy and implementation of actions.

The researcher found two organising themes under *‘Operations*’ (see Table 5.11). The first-order theme clusters reveal the art and science associated with service and goods delivery, including the support systems that encapsulate the operations function. Further, the terms ‘efficient’ and ‘effective’ become more prevalent as defining descriptors of the theme.

Operations management encompasses those processes that combine to produce the end product and includes planning, organising, managing, directing, motivating, controlling and supervising the production and manufacturing processes (Schroeder, 2000, Hill, 2005). Every industry, in essence, deploys similar practices regardless or irrespective of their operation and the nature of the goods being produced, and ultimately aims to make these daily activities seamless (Waller, 1999, Schroeder, 2000). It also endeavours to maximise the usage of resources, including labour, raw material, money and time (Lewis, 2019) and plays a vital productivity role for the organisation (Slack, 2018). The operations management discipline focuses on maximising the usage of available resources to achieve the outcome of improved productivity (Reid and Sanders, 2019) and contributes to the alignment of the outputs or products with customer expectations.

Table 5.11: Theme XI - Operations

First-order theme clusters	Organising themes	Major theme
Art and science of delivering goods and services Systematic operations in different contexts Operations systems Measuring operational performance Concepts, methods, tools and techniques Effective and efficient deployment of supply chain operations Transforming inputs and outputs Demand and capacity management	Operations management theories, techniques and methodologies Effective and efficient operational deployment and transformation of resources	Operations

Operations are at the heart of every organisation (Reid and Sanders, 2019), and if deployed successfully, can lead to significant improvements and enhance profitability (Swink et al., 2017). They also play a critical role in broader operational activities and the design and maintenance of systems that support the transformation of inputs and outputs (Swink et al., 2017).

5.6.12 Theme XII: Logistics and Physical Distribution

This major theme captures the physicality of goods movement, the interplay of services and the patterns identified through analysis of the flow of goods along and within the SC. The theme is organised into two organising themes, 'Physical Distribution' and 'Logistics' (Table 5.12). The first-order theme clusters reveal the physical activities and processes that are involved in freight transportation and the distribution of goods, and interrelates them closely with the major theme of globalisation, particularly in regard to global trade. The other first-order themes cluster around the transport modality, including the importance of theoretical frameworks and the broader role of logistics.

In the 1960s, physical distribution was characterised as those activities that combine to form the effective and efficient movement of finished goods to the consumption point (Bowersox et al., 1968). Physical distribution, as a function of these movements, takes place within the many channels that move these products to the end consumer, and involves numerous elements like inventory control, materials handling, packaging and warehousing (Chow et al., 1994). This function forms part of a much larger process that serves the end customer and includes retailing and wholesaling (Mentzer et al., 1989).

The term 'logistics management' is broad, and refers to functions of procurement and movement of goods, including information flows through marketing channels to ensure current and future profitability (Christopher, 2005, Christopher, 2016). Unlike SC, logistics management has a much more established agreed meaning (Vogt et al., 2005, Grant, 2006, Christopher, 2016). This view of logistics was encapsulated in what has become known as the Seven Rs – receiving the right product or service in the right quantity, of the right quality, in the right place, at the right time, delivered to the right customer, and at a reasonable cost (Shapiro and Heskett, 1985).

Table 5.12: Theme XII – Logistics and Physical Distribution

First-order theme clusters	Organising themes	Major theme
Activities and processes involved in freight transportation including route planning and distribution Activities and resources used in distribution centres Inventory management Multi-echelon networks Shipping and port operations Global trade Transport modality including intermodal and multimodal Third-party logistics International, freight, container and shipping logistics Theoretical frameworks and the role of logistics	Physical distribution Logistics	Logistics and Physical Distribution

5.6.13 Theme XIII: International Business and Globalisation

In this major theme, the recurrent theme *'Globalisation'* is clustered with the growing presence of international business within complex modern SCs. Table 5.13 focuses on the organising themes of *'International Business'* and *'Globalisation'*, highlighting the importance of international trade and the globalised business environments in which they operate. Of great importance here is understanding the impacts of cultural factors across borders, how these factors impact on enterprise expansion and how they operate in foreign markets. The theme of globalisation flows through several other major themes and highlights the internationalisation of markets and the competing interplay between national interest and globalisation.

Table 5.13: Theme XIII – International Business and Globalisation

First-order theme clusters	Organising themes	Major theme
International trade International business environments Cultural factors across borders International expansion and foreign markets International business environments Multinational enterprises National and global perspectives	International business	International Business and Globalisation

International business and globalisation theory Internationalisation of market strategies	globalisation	

The researcher defined international business as those activities and relationships that facilitate the trade of services and goods, capital management and knowledge across borders, and the service's technologies that serve as enablers to undertake these operations (Meixell and Gargeya, 2005, Shenkar et al., 2014). International business, therefore, is more than just international trade. It encompasses those complexities which are inevitably involved as entities interact and engage in transactions across and through countries. This process consists of sharing knowledge around regulations and laws, macro trading environments and cultural mores (Dunning, 2002, Shenkar et al., 2014). These transactions are growing in size and complexity. They include not only the important transactions noted above, but capital, skills and personnel to facilitate international production, design and delivery of physical goods and services. They also encompass finance, banking, insurance, and a multitude of other related activities (Dunning, 2002, Shenkar et al., 2014). More recently, international business has risen in importance, as more and more organisations attempt to enter national markets to develop new forms of comparative advantage (Shenkar et al., 2014).

The free flow of services, goods, and capital underpins globalisation and increases the importance of international business competence. Coupled with rapidly changing technologies, this makes the area extremely dynamic. The global transformation of SCs is changing the spatial organisation of operating paradigms, as communities from across the world come together into a loosely conjoined single society (Albrow and King, 1990, Held, 2002). Globalisation is intensifying these worldwide commercial interactions and social relationships, being shaped almost daily by global political events and changing power structures (Lemoine and Dagnæs, 2003, Robertson, 2012).

5.6.14 Theme XIV: Procurement

The theme of 'Procurement' is related closely to several other themes. (These major theme interrelationships became more apparent as the research progressed, and the importance and relevance of this melding of themes are discussed further later in the thesis.) Table 5.14 shows two clusters of first-order themes organised by two organising themes, 'Sourcing' and 'Purchasing'. They gather meanings relating to the procurement process, or what is commonly called 'the procurement cycle'.

The term 'procurement' is often used to refer to business functions that combine to enable the purchasing of goods and services (Novack and Simco, 1991). In practice, the terms procurement and purchasing have been used interchangeably. However, the researcher believes the terms should be treated separately because procurement reflects the strategic selection of goods and suppliers, and sourcing products through negotiation; in contrast, purchasing covers the steps involved in ordering those goods or services, which represents a transactional process (Touboulic and Walker, 2015). Procurement is inherently more complicated because it involves multiple functionalities that serve to fulfil the strategic objectives of the organisation and build business relationships (Roberta Pereira et al., 2014). An important understanding is that procurement's primary role is exploratory because it includes seeking out new market opportunities. Consequently, procurement involves the implementation of resourcing strategies that aim to build a comparative competitive advantage. Effective procurement also requires the organisation to maintain corporate governance and regulatory compliance obligations, maintain supplier relationships, and to manage risk (Carr and Smeltzer, 1997, Rowlinson, 1999, Roberta Pereira et al., 2014).

Table 5.14: Theme XIV – Procurement

First-order theme clusters	Organising themes	Major theme
Performance management Purchasing strategies that contribute to competitiveness Sourcing systems, processes and strategy Supplier development and outsourcing Procurement processes and strategies Value of collaboration Customer satisfaction Functions, integration of purchasing strategies Supplier-client and strategic relationships Contracts and contractual obligations	Sourcing Purchasing	Procurement

5.6.15 Theme XV: Supply Chain Management

The theme 'Supply Chain Management' has also featured strongly within the data set. The analysis generated eight first-order themes, grouped into two second-order themes (Table 5.15).

Table 5.15: Theme XV – Supply Chain Management

First-order theme clusters	Organising themes	Major theme
Supporting tools and techniques SC performance Virtual SCs Sustainable SC practices	SCM perspective	Supply Chain Management
SC collaboration SC partnerships Global SCs SC integration	Supply management	

Kasi (2005) acknowledged that an SC is made up of a myriad of activities that combine through the journey from raw materials to the final customer. While a multitude of definitions of SC exists, as outlined in Chapter Two, they share a common theme – that of a focus on organisational externalities (Croom et al., 2000). These externalities include multiplicity, human capacity and capability, an increasingly globalised business ecosystem and a myriad of intersecting functions that operate within dynamic environments (Van Der Zee and Van Der Vorst, 2005) which aim to serve an end customer. Further, organisations are increasingly challenged to coordinate the interplay of process, people and technology to gain a competitive advantage (Childerhouse and Towill, 2000, Christopher, 2005, Christopher, 2016). Research has mostly focused on building efficiency and effectiveness in SCs, particularly within manufacturing environments (Tan, 2001). Yet, SCs are much more complicated than the

transactional surface implies. Underlying in SCs are interdependencies and interrelationships that can be explored to create efficiencies (Venkateswaran et al., 2002).

In the early 2000s, there was a shift towards better understanding organisational externalities through the lenses of design and implementation of SCL strategies (Terzi and Cavalieri, 2004). However, as the literature review in Chapter Two revealed, there are still many gaps in the development of an agreed BOK and an agreed definition for SCL which could be used as the basis of developing the field academically (Tan, 2001, Power, 2005, Gold et al., 2010, Daugherty, 2011, Touboulic and Walker, 2015). Many argue these challenges as a discipline are derived from growing complexities and the vastness of the interdependencies and dependencies within supply networks and business ecosystems (Terzi and Cavalieri, 2004).

5.7 Conclusion

The work described in this chapter played an important role in the achievement of the primary objective of the research. The identification and justification of the 15 major themes which arose from the analysis of the data provide the substance for the following chapters, which address the issue of creating a BOK for the SCL area.

The themes identified in this chapter outline an interconnectedness, interrelatedness and a patterned framework. Also, these themes link and are reliant on the deployment of others. The resultant interplay of diverse areas all contributes to the beginnings of a BOK. Thus, in combination, they represent the concepts that need to come together to constitute fundamental elements of what SCL professionals need in their repertoire.

The next chapter focuses on feedback on the themes received from a focus group of industry experts. It outlines the potential beginnings of the development of a SCLBOK.

Chapter 6 – Focus Group Validation

6.1 Introduction

This chapter presents the process and results of focus group validation of the thematic results. The chapter analyses the focus group participant feedback on the 15 themes that emerged from the data listed in Table 6.1.

Table 6.1: Themes

Themes		
Strategy	Sustainability	Service and Value
Organisations and People Management	Decision-Making & Problem-Solving	Information and Technology Management
Systems	Financial Management	Supply Chain Management
Project Management	Operations	Procurement
Quality and Continuous Improvement	Logistics and Physical Distribution	International Business and Globalisation

The views of the five members of the focus group were sought to determine whether the themes assembled by the author were reasonable, valid and broad enough to capture the practice of SCL. The participants were asked to specifically highlight the themes that would, in their expert view, constitute 'core knowledge' for an SCL professional. This feedback was then later used to support the filtering process using the funnel refinement model outlined in Chapter Seven.

Feedback from the focus group was considered carefully; how their valuable comments were integrated into the findings is detailed throughout the chapter. The researcher believes the absence of an agreed approach for the refinement of a professional BOK necessitated objective filtering to narrow the options down to a core body of generally agreed knowledge.

6.2 Focus Group Agenda

Due to circumstances outside the researcher's control, two participants who were initially invited were unable to attend. All participants held senior positions in their organisations, and the discussion included the Chief Executive Officer of a large international logistics company (see Table 6.2). Table 6.2 summarises the participants' employment classification and Table 6.3 illustrates the agenda of the focus group.

Table 6.2: List of focus group participants

Participant	Position of the Participant	Company
1	General Manager	A
2	Senior Business Manager	A
3	Senior Quality and Innovation Manager	B
4	Chief Executive Officer	C
5	General Manager	D

Table 6.3: Focus group agenda

Agenda	
5.30–6.00pm	Arrival and refreshments
6.00–6.15pm	Welcome, introductions and instructions
6.15–7.00pm	First round of questions and discussions
7.00–7.10pm	Break
7.10–8.10pm	Second round of questions and discussions
8.10–8.20pm	Final remarks

Before the focus group, the researcher prepared a set of critical questions to allow the resultant themes which emerged from the thematic analysis to be evaluated adequately and to promote discussion. Chapter 3's Research Onion was shown to the participants to aid their understanding of the study. The researcher also outlined the valuable role the participants played in helping to validate the results of thematic analysis. The primary purpose of the initial presentation was to describe the parameters of the discussion. During the discussion sessions, the researcher actively encouraged interaction between participants, which ultimately fostered more open discussion and equal participation. The participants' feedback was reflected in the detailed notes taken by the researcher throughout the focus group. Additionally, individuals completed forms to record their ratings of the themes.

6.3 Focus Group Process

The researcher explained to the participants that their feedback would be a vital component in the process of addressing the study's research questions. To recap, these questions were:

- To what extent do consistent themes exist within the specialist supply chain and logistics Masters by coursework programs currently found across first-generation national qualification framework jurisdictions?
- To what degree can these consistent content themes be used to inform and potentially platform the formulation of a baseline supply chain and logistics body of knowledge?

Following the brief initial presentation to the participants, the participants were asked to consider each of the emergent themes in turn. They were also encouraged to indicate their disagreement or agreement with the preliminary results. During these discussions, they provided valuable opinions and perspectives on the thematic analysis through an impartial, external lens. The focus group was invaluable to the study, because it provided meaningful feedback on the results of the initial thematic research, but also allowed the construction of an expert consensus that fundamentally validated the trustworthiness of the preliminary results.

The focus group participants actively engaged in the discussions, ventilating their thoughts and ideas and articulating specific connections, interrelationships and their views as to the importance of each theme from an industry perspective. The focus group atmosphere was positive, and although both indirect and direct commercial relationships existed between the members, they did not inhibit the activity.

The researcher believes the focus group produced important and constructive contributions towards the analysis. First, participants indicated that they enjoyed the opportunity to express their views, because industry input, particularly in the design of SCL education programs, was often an *'afterthought'*. Second, all participants reached a consensus that each theme was critical in fabricating a broader SCLBOK. However, they indicated that some themes were more operationally essential than others. Third, the focus group welcomed the investigation, saying that the sector-focused too little on continuous professional development, and any study that contributes to the improvement of knowledge about the requirements of the industry was valuable. Fourth, they commended the study, agreeing that it was difficult to recruit talent into the sector because new entrants did not understand what knowledge was needed. One focus group participant said *'people don't know the sector and that there are lots of opportunities within it'* and that *'wonderful career paths are on offer'.* Finally, a robust discussion occurred as to the key theoretical differences between the terms 'SC' and 'logistics'. One group member stated that *'even the industry is not using [this] terminology correctly'* and the *'language we use is imperative as it impacts on our ability to recruit talent into the sector'.*

6.4 Final Views and Feedback of the Focus Group

The focus group members individually ratings the 15 themes resulting from the thematic analysis as being of low, medium and high importance. Their views helped the researcher to decide whether a theme constituted a core area of knowledge. Their feedback was analysed by the researcher and is summarised in Table 6.4.

Table 6.4: Focus group core themes evaluation

Theme	Participant				
	1	2	3	4	5
• Strategy	M	L	H	H	H
• Sustainability	M	L	H	L	H
• Service and Value	H	H	H	L	H
• Systems	H	H	H	H	H
• Decision-Making and Problem-Solving	H	H	H	H	H
• Financial Management	H	H	H	H	H
• Organisations and People Management	H	H	H	M	H
• Quality and Continuous Improvement	H	M	H	H	H
• Information and Technology Management	H	H	H	H	H
• Project Management	M	L	L	H	L
• Operations	H	H	H	H	H
• Logistics and Physical Distribution	M	M	H	H	H
• International Business and Globalisation	L	L	L	L	L
• Procurement	L	L	H	L	L
• Supply Chain Management	M	M	M	H	H

Rating: L- Low, M-Medium and H-High.

The focus group discussion revealed some interesting insights into how a SCLBOK may be constructed and/or contextualised. Multiple participants agreed that core knowledge requirements would remain ultimately dependent on an individual's perspectives and experiences within the industry. Further, the participants were mindful that personal views would be shaped by the jobs they hold, the size of the organisation, where the organisation sits along the SC, and whether SCL in their opinion is a strategic, tactical and/or operational function. All five focus group participants, however, agreed that the themes of Systems, Decision-Making and Problem-Solving, Financial Management, Information and Technology Management and Operations should be considered core knowledge.

The group believed that an SCL professional must understand new technologies, particularly innovative technologies that add value to the business. One group member suggested that this cross-disciplinary perspective should have a '*highest-order focus'* since it facilitates better decision-making. The importance of accessing data promptly, along with reliable data analysis skills, meant that SC operatives needed to have abilities *'across the disruptive and emerging technologies'*. The group also believed that financial management was an integral knowledge area for an SCL professional to acquire. One group member stated that '*financial management is positioned at the core of SC knowledge and actually impacts on most of the listed themes'.* Another group member suggested that financial management *'needs to be well up there'*, with another suggesting strongly that SCL professionals *'need to know their numbers'*.

The group members also unanimously expressed the view that a knowledge of systems is *'one of the core pillars'*, *'really important'* and *'a core component of the body of knowledge, because systems support strategy, sustainability and service outcomes'.* Decision-making and problem-solving were also identified as core areas of knowledge by the whole group, with one mat ember stating that they were *'highly desirable components and closely to related sustainability, financial management and service standards and outcomes'.* This member of the group also believed it was also '*a human factor and quickly evolving ... and is at the core of understanding'*. Another member agreed and added that an SCL professional is more akin to being a conductor, coordinating all of the different functions within the system. They stated that they are in effect *'the conductor of the band … bringing everything together … a*

coordinator that brings everything together, with their success in the sector determined by their ability to link and bring these themes together'. The final area that was unanimously agreed to be core knowledge was Operations.

The researcher identified a secondary layer of agreement in the focus group data. These second-layer themes enjoyed either four out of five group members' support, or at least three out of five medium ratings. They were:

- Service and Value;
- Organisations and People Management;
- Quality and Continuous Improvement; and
- Logistics and Physical Distribution.

The theme of Service and Value was considered significant. Its status was reflected in group members' comments like *'the value proposition in any supply chain operation, or process must be underpinned by a commitment to superior service and outcomes',* and that service and value were *'extremely important'*. The group members also emphasised that an SCL professional must have the ability '*to manage people'* and *'influence within any organisation remains a critical factor in [its] sustainability and effectiveness'*. In addition, Quality and Continuous Improvement was characterised by the majority of members as a core knowledge area. This view was supported by remarks like *'effectiveness and efficiency remain a total focus around supply chain integrity',* and that quality and continuous improvement were *'fundamental'* because they can mediate and influence human behaviour. Further, Logistics and Physical Distribution was seen to play a pivotal role in project execution.

The group believed three themes should be viewed as either non-core or elective themes. These were:

- Project Management;
- International Business and Globalisation; and
- Procurement.

Furthermore, while the focus group agreed upon and validated the thematic analysis, several group members mentioned additional knowledge areas, which they considered were essential and should form part of a broader BOK for the SCL sector. These areas were:

- Legal (including contract law) and Regulatory Compliance;
- Human Resource Development;
- Occupational Health and Safety;
- Risk Management; and
- Leadership.

These knowledge areas were reflected in several studies covered in the literature review. The researcher appreciated the value added by these extra concepts and devised a model which would aid in the 'filtering' process. This filtering process forms a substantial component of the next chapter.

Table 6.5 outlines the nine themes (in green) which the focus group believed should constitute the core areas of knowledge for an SCL professional. These nine themes were the result of detailed feedback received from the focus group and analysis of the focus group data. The researcher later mapped out themes of strong consensus by establishing groupings amongst those themes that reflected a majority of industry support. Those with four and five high ratings were automatically considered mutually agreed to themes. The researcher also chose to include those themes that received at least three high ratings (Logistics and Physical Distribution, and Strategy). The researcher ultimately included Logistics and Physical Distribution, because it received two medium ratings in addition to three high ratings, and it was raised consistently and positively throughout the focus group discussion. Table 6.5 presents the final list of agreed and added core themes.

Table 6.5: Final collection of core themes

Theme	Focus Group
• Strategy	
• Sustainability	
• Service and Value	**Yes**
• Systems	**Yes**
• Decision-Making and Problem-Solving	**Yes**
• Financial Management	**Yes**
• Organisations and People Management	**Yes**
• Quality and Continuous Improvement	**Yes**
• Information and Technology Management	**Yes**
• Project Management	

• Operations	**Yes**
• Logistics and Physical Distribution	**Yes**
• International Business and Globalisation	
• Procurement	
• Supply Chain Management	

6.5 Focus Group Validation Limitations

The researcher recognises that there are some limitations to this component of the study. As Hussey and Hussey's (1997) noted, focus groups have limitations that can affect the results of the research. The researcher, therefore, must describe these limitations as accurately and objectively as possible. In this respect, the researcher was mindful that the feedback collected from the focus group could be biased because the researcher was also the moderator (Bryman, 1994). However, to minimise the possible effect of these impacts, the researcher carefully encouraged both negative and positive discussions and avoided making judgments. Particular attention was paid to eliminating signalling of preferences through body language by being cognizant of physical gestures of approval or disapproval (Hines, 2000). The researcher strongly believes that moderating the focus group did not affect the nature of the data collected or its quality (Ryan et al., 2014). Another limitation to the investigation may be the narrowness of the discussion: participants were only asked about their views on the themes resulting from the thematic analysis. However, it was felt that the open nature of the discussions allowed ample opportunity for the emergence of any new themes of particular importance to the participants (and some did, as described above).

The rationale for the selection of a focus group as a verification approach because they:

- enable the generation of new insights and an opportunity to explore an issue, especially if little existing information is available (Cavana et al., 2001, Cooper and Schindler, 2014);
- often allow high-quality data to emerge through the group dynamic, especially when participants' expectation and views are encouraged (Hair et al., 2003, Stokes and Bergin, 2006);
- provide flexibility in a format so as to encourage discussion and allow a multitude of opportunities for the researcher to explore areas raised by the group (Cavana et al., 2001); and

- are cheap to organise and efficient, because the researcher can collect data from several participants simultaneously (Greenbaum, 1999, Sekaran, 2000, Zikmund et al., 2013).

Additionally, within the focus group environment, responses may be more spontaneous because individuals may feel less pressured than in one-on-one interviews (Zikmund et al., 2013). The researcher endeavoured to encourage a group dynamic that allowed for the ventilation of the participant's expectations and views (Hair et al., 2003, Krueger and Casey, 2015a). The open-ended style of discussion and the careful selection of focus group participants allowed them to comment freely and to share their experiences openly because their peers were of equivalent corporate standing (Stokes and Bergin, 2006).

The focus group encouraged discussion and thus allowed a more detailed exploration of the preliminary results of the thematic analysis (Cavana et al., 2001). Often, it is the case that a single response can trigger a chain of responses within a focus group, which results in more in-depth insights (Zikmund et al., 2013). This manifestation was the case in this focus group on several occasions. The low cost of assembling and facilitating a focus group was appealing to the researcher because it allowed high-quality data to be collected from multiple participants simultaneously (Greenbaum, 1999). Overall, the focus group was an affordable, yet effective approach to verifying and validating the results generated from the thematic analysis.

The researcher took extensive notes during the focus group discussions and evaluated them afterwards. During the reading and rereading process, themes were rated on their importance. The outcomes are shown in Tables 6.4 and 6.5, and this considered feedback helped to clarify the findings of this investigation. The researcher is conscious of the importance of multiple and different sources of data, and in this thesis documentary and the physically collected material was available. This data, along with the multiple methods of thematic analysis and the confirming process of the focus group, provided corroborating evidence (Creswell, 1998). Hussey and Hussey (1997) also believe that the combination of different approaches, techniques and methods, can be a valuable enabler towards triangulation, while at the same time strengthening the validity and reliability of the study, particularly if the two

methods should arrive at very similar conclusions. The researcher, therefore, believes much value was derived by incorporating the focus group and including the SCL professional's perceptions since it increased the study's trustworthiness.

6.6 Conclusion

In this study, the focus group was vital in providing feedback on the 15 themes and whether they could be categorised as core knowledge areas considered important by industry experts. The focus group confirmed that recognising core areas, and obtaining full agreement on which knowledge areas might become the underpinnings of an agreed BOK, are difficult tasks. This difficulty arises because of the strong interrelationships found within and between relevant themes. These interconnections, interdependences and interrelationships are detailed in the following chapter. The researcher developed a model allowing the results of the thematic analysis and the focus group validation to be distilled simultaneously to create a discrete knowledge core. This funnelling filter approach is outlined in more detail in Chapter Seven.

Chapter 7 – Refined Analysis

7.1 Introduction

The previous chapters describe how the researcher refined knowledge themes within the SCL field using three discretely focused 'filters'. Firstly, the researcher identified relevant knowledge areas from available literature published in English. Secondly, the researcher performed a thematic analysis of a set of specially curated specialist SCL postgraduate qualifications (Masters by coursework only) from first-generation NQF jurisdictions.

During this analysis, the researcher began to identify core data for the potential underpinnings of a BOK for the SCL sector, revealing 15 themes. The results of the second data filtering conducted during the thematic analysis were then presented to a focus group of invited industry specialists in the field for criticism and review, and further refined down to nine themes: Service and Value, Financial Management, Organisations and People Management, Information and Technology Management, Operations, Logistics and Physical Distribution, International Business and Globalisation, Procurement and Supply Chain Management.

This chapter outlines the final refinement, which involved passing the nine themes through an even finer fourth filter, using three widely accepted and respected SC and logistics theoretical models. This further filtering enables the researcher to identify any agreement amongst academia, education and industry with respect to knowledge domains. The filtering process allowed movement towards establishing potential core themes for a BOK for the sector.

7.2 Funnel Refinement Model

To purposively refine a core BOK, the researcher deployed a notional 'funnel refinement model'. This model assisted in improving understanding of the core themes of knowledge already revealed and seeking out commonality across the knowledge areas extracted from the literature, the results from the thematic analysis, the themes rated as critically important by the focus group members, and knowledge areas promulgated by major SC models and theories. This process of refinement and filtering is expressed diagrammatically in Figure 7.1.

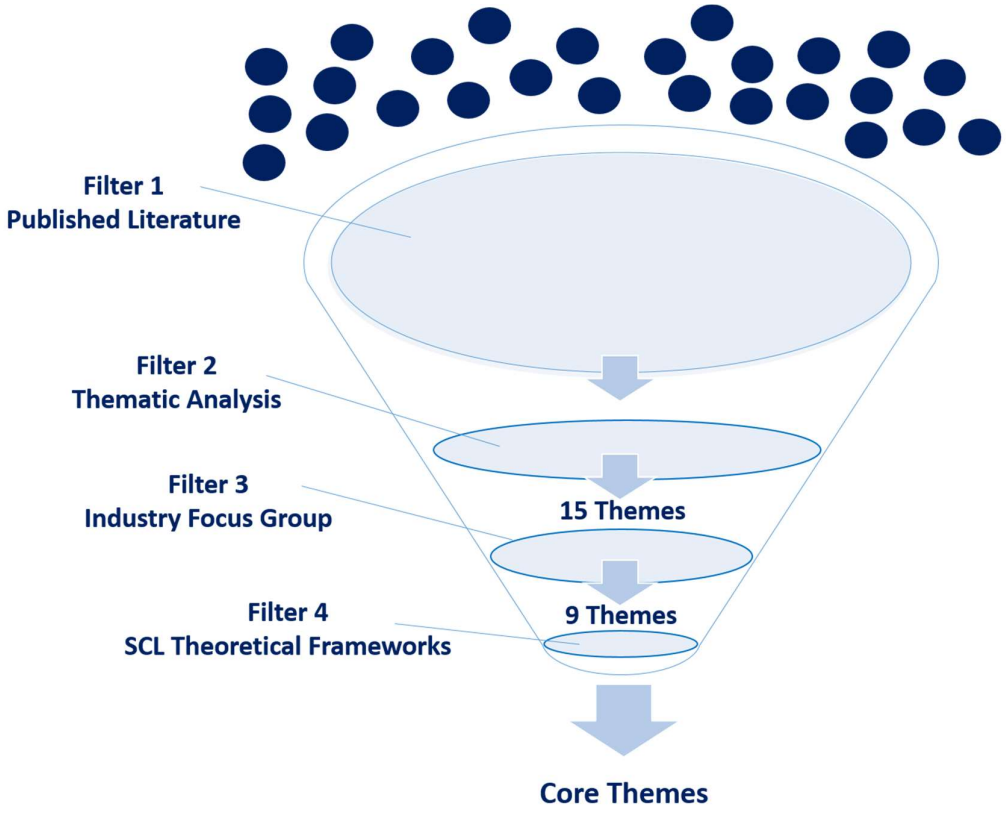

Figure 7.1: Funnel refinement model

7.3 The Four Funnelling Filters

7.3.1 Published Literature – Filter 1

Filter 1 is the output from the review of the literature outlined in Chapter Two. In this filter, broad topics emerged from the use of key phrases and words. They represented the results of previous commentaries on SC issues related to core knowledge areas. Multiple studies have confirmed that the array of knowledge areas perceived as valuable by academics, education professionals and industry are vast and sometimes contradictory. Unfortunately, this hinders refinement to those core themes which could underpin the development of an agreed SCLBOK. It is for this reason that the investigator employed other measures for generating agreement about the relative importance of themes. This filtering process is continued below, with each filter playing an essential role in not only refining the findings from the review of the literature (academia), and the thematic analysis of accredited

SCL Masters courses (the profession), but industry perspectives (the focus group) and of respected theorists (SCL theoretical frameworks).

7.3.2 Thematic Analysis – Filter 2

Filter 2 reflects the results of the thematic analysis, as described in Chapter Five. In this filter, topics and issues which emerge from the analysis of first-generation NQF specialist SCL Masters by coursework programs. As noted earlier, these programs must be accredited by leading professional associations and offered by a world-class, high-ranking academic institution. These published lists were used in a refinement process that led to the identification of 15 themes.

7.3.3 Focus Group – Filter 3

Filter 3 constitutes the suggestions from the industry expert focus group, as described in Chapter Six. The focus group consensus was that, of the 15 themes which emerged from the thematic analysis, only nine could be regarded as core knowledge areas for a SCLBOK.

7.3.4 Supply Chain and Logistics Theoretical Framework – Filter 4

The final filter, Filter Four, comes from a detailed process of cross-referencing the verified themes from the focus group (Filter Three) against the value and supply chain theoretical frameworks promulgated by Porter (1985), Cooper et al. (1997) and Mentzer et al. (2001). More details on this filter are presented below.

7.4 Filter 4 Discussion – Supply Chain and Logistics Theoretical Frameworks

7.4.1 Porter's Value Chain Model

Porter's value chain model (Porter, 1985) is focused on systems and how they transform inputs into outputs that are subsequently purchased by consumers. This model describes a chain of activities which are common to all organisations and then divides them into primary and support categories (Figure 7.1).

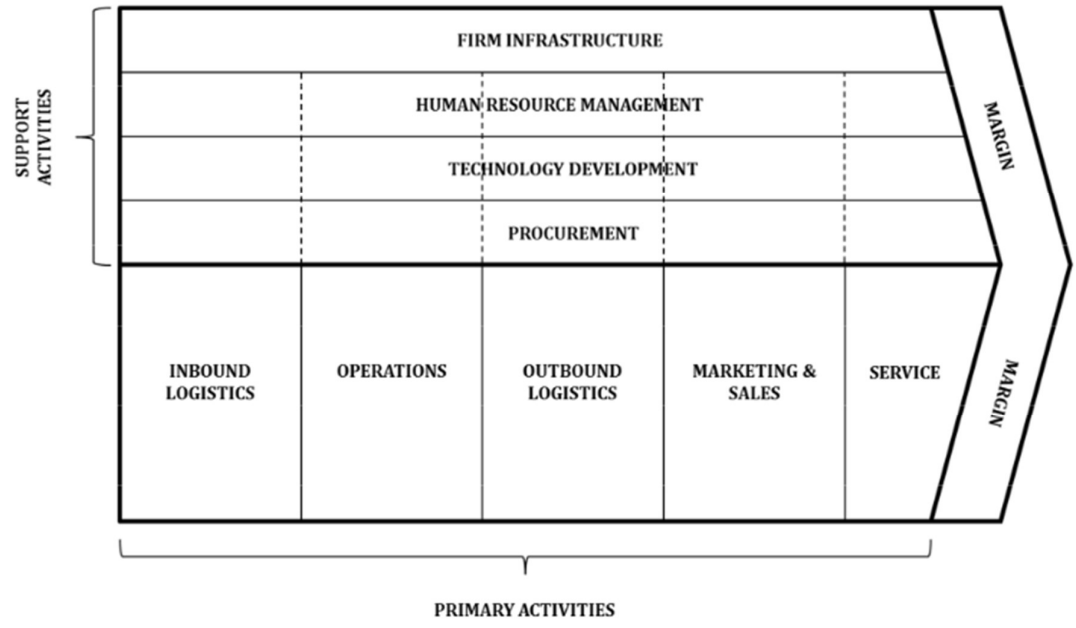

Figure 7.2: Porter's (1985) Value Chain Model

Primary activities outlined in Porter's Model involve the physical creation, maintenance, sale and support of the service or product. Porter also highlighted inbound logistics, operations, outbound logistics, marketing and sales, and service, and illustrates several support activities ranging from infrastructure to procurement. In Porter's value chain model (Porter, 1985), critical theoretical components and their relationship to the core knowledge themes that emerged from within this study. Of the nine themes verified by the focus group, the six themes of Service and Value, Financial Management, Organisations and People Management, Information and Technology Management, Operations, and Logistics and Physical Distribution are shared with Porter's value chain model.

7.4.2 Cooper, Lambert and Pagh's SCM Framework

Cooper et al. (1997) represented the SC as a sequence of processes that integrate companies through their material and information flows. The authors discussed SCM in terms of business processes, management components and structures. Cooper et al. (1997) suggested that ten management components exist. The first six components have tangible and measurable impacts on the organisation. The last four are more difficult to assess because they relate to behavioural and managerial aspects (Cooper et al., 1997). The ten components are presented in Figure 7.3 below.

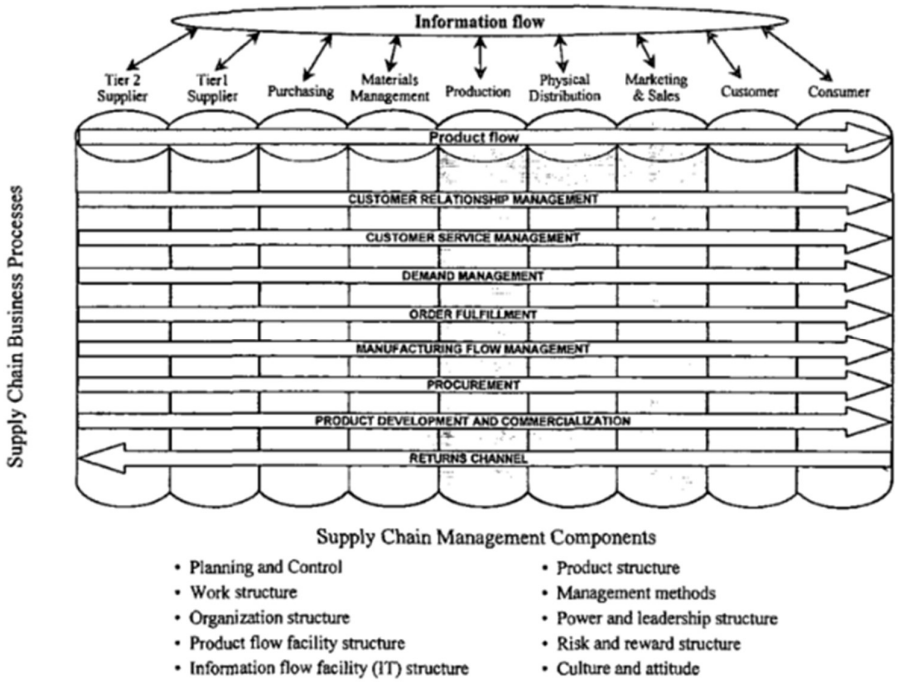

Figure 7.3: Cooper et al.'s framework for SCM (Cooper et al., 1997)

The key theoretical components of Cooper et al. (1997) SCM framework and its relationship to the core knowledge themes that emerged from within this study are outlined in Table 7.1. Six themes identified in the current study – Service and Value, Financial Management, Organisations and People Management, Information and Technology Management, Operations. Logistics and Physical Distribution, Procurement and Supply Chain Management – match concepts in Cooper et al. (1997) SCM framework.

7.4.3 Mentzer et al. Model of SCM

Mentzer et al. (2001) presented a detailed SCM framework that emphasises those cross-functional interactions between SC members and the organisation. This framework, illustrated in Figure 7.4 below, outlines the integration of directional SC flows, traditional business functions and the critical roles of customer value and satisfaction.

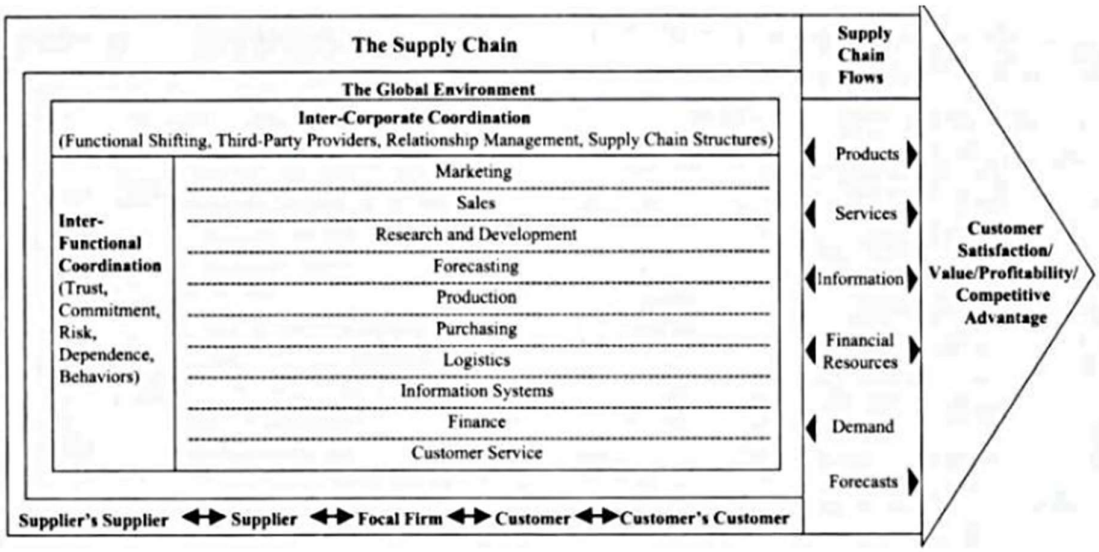

Figure 7.4: Mentzer et al.'s model of SCM (Mentzer et al. 2001)

Mentzer et al. (2001) SCM model's vital theoretical components and their relationship to the themes that emerged from within this study are shown in Table 7.1. It shares five of the core themes – Service and Value, Financial Management, Information and Technology Management, Operations, and Logistics and Physical Distribution – identified in the focus group stage of the current research.

7.5 Tentative Core Knowledge Areas of a SCLBOK Mapping

Analysis of the three theoretical frameworks cited above identified five shared knowledge areas, as represented in Table 7.1. The five common themes – components of all three theoretical frameworks, and the themes independently derived in the current research – are Service and Value, Financial Management, Information and Technology Management, Operations and Logistics and Physical Distribution.

Table 7.1: Core themes mapped against filters

Filter 2 – Thematic Analysis (15 Themes)	Filter 3 - Focus Group (2019) (9 Themes)	Filter 4 – Funnel Refinement Model			Core Themes
		Porter's Value Chain	Cooper et al. (1997)	Mentzer et al. (2001)	
Strategy					
Sustainability					
Service and Value	**Yes**	**Yes**	**Yes**	**Yes**	**CORE**
Systems	**Yes**				
Decision-Making and Problem-Solving	**Yes**				
Financial Management	**Yes**	**Yes**	**Yes**	**Yes**	**CORE**
Organisations and People Management	**Yes**	**Yes**	**Yes**		
Quality and Continuous Improvement	**Yes**				
Information and Technology Management	**Yes**	**Yes**	**Yes**	**Yes**	**CORE**
Project Management					
Operations	**Yes**	**Yes**	**Yes (Production)**	**Yes (Production)**	**CORE**
Logistics and Physical Distribution	**Yes**	**Yes**	**Yes**	**Yes**	**CORE**
International Business and Globalisation				**Yes**	
Procurement		**Yes**	**Yes**	**Yes**	
Supply Chain Management			**Yes**	**Yes**	

7.6 Conclusion

Table 7.1 shows five themes that remain after sieving through four filters: the academic literature, thematic analysis, verification and ranking by an expert focus group, and three highly regarded value chain and SC theoretical frameworks. As a consequence of this considered focusing, the researcher has revealed five knowledge themes:

- Service and Value;
- Financial Management;
- Information and Technology Management;
- Operations; and
- Logistics and Physical Distribution

These themes could potentially form the basis for the beginnings of a SCLBOK.

In the following chapter, the researcher discusses the findings, looking closely and reflectively at the five core knowledge themes. The chapter also presents a discussion of the interrelationships and interdependencies of these core themes. It explores the paradoxes of the SC, along with the professional implications and the broad practical considerations of the research results.

Chapter 8 – Findings

8.1 Introduction

This chapter presents a reflective discussion of the five core knowledge themes or areas and their implications for the construction of a tentative core BOK for the SCL sector. The account begins with the interrelationships among the five core themes. Following on from these initial discussions are dedicated sections about the potential development or underpinnings of a SCLBOK. The final sections address the professional practice implications of the development of this SCLBOK, and the limitations of the research. The sequence of section topics is as follows:

- interrelationships among the five major core themes;
- practice and professional implications of the results for the SC and logistics sector;
- research limitations and potential implications for further research;
- a detailed summary of findings of the study; and
- conclusion.

8.2 Interrelationships and Interdependencies of the themes

It has been observed that the level of inter-relationship and inter-reliance in modern SCs is increasing (Cox, 2001, Dubois et al., 2003). This complexity suggests that we must first understand the many issues facing the formation and expansion of advanced SC activities, several things should be considered. Firstly, it can be unhelpful to envisage SCs as a suite of linear supplier and customer interactions. Secondly, taking a systems-based overview of SC arrangements can mitigate over-simplistic, reductionist solutions to significant SC problems (Capaldo and Giannoccaro, 2015). In the modern economic area, with carefully regulated flows of goods and services, SCs commonly involves a series of complex networks on both domestic and international scales.

Supply chains have become sophisticated, multi-tier systems with a range of customers and suppliers, and due to the demand for seamlessness, they are becoming increasingly more mutually reliant. As a result, there is an emerging paradox here: members of SCs in related areas are economic competitors, which

implies that they should be independent within a modern market, and simultaneously share mutually beneficial infrastructure and information, which makes them closely interdependent (Kembro and Selviaridis, 2015). The researcher believes that managing and developing modern SCs is becoming increasingly problematic and requires a significant reconceptualisation of earlier notions of simplistic market competition.

This notion of interdependence in SC literature has been dealt with in a limited way. SC literature and research are primarily used within intra-firm situations (Dubois et al., 2003) to examine how functions are dependent upon each other. As noted above, increasingly complex dependency exists, but with emerging globalised SCs in some areas, these complexities may dissolve, disappear or re-emerge in different ways as they are reshaped. These notions of interdependencies and interrelationships were exposed in this study. All core knowledge areas revealed herein how they predominantly, but not exclusively, relate.

The development of competitive advantage is predicated on the notion that organisations compete with each other in designing, procuring, marketing producing and delivering their products (Porter, 2011). Understanding the composition of these activities and their performance leads to a better formulation of not only their market differentiation but also their cost position (Porter, 2011). These notions are reflected in the thematic relationships revealed in this thesis, particularly between the themes of Operations and Logistics and Physical Distribution, and also between Information and Technology Management and Service and Value, particularly around technology's role in monitoring, enabling and provisioning service experiences. Moreover, the core theme of Information and Technology Management is pervasive and plays an integral role across all of the five core themes in some capacity. Indeed, many themes such as Financial Management, Logistics and Physical Distribution, and Operations are interdependent with the technologies and information systems which manipulate and report data from these knowledge domains.

8.3 The Paradoxes of Supply Chain Theory

The core knowledge areas identified in this study, together with their interrelationships, not only affirm the complex nature of modern-day SCs but highlight the tensions and paradoxes that can occur. The precise delineation of these tensions and inconsistencies in terms of a systematic interpretation of SC is beyond the scope of this study; however, the core knowledge areas identified in this study capture and display the diversity of knowledge required for a modern-day SC operative. The themes also reflect the growing tensions between the decision-making processes needed and the resultant planning necessary to ensure that SCs remain competitive. Improvements in efficiency and effectiveness usually achieve this competitiveness. In attempting these improvements, changes in any one of these core thematic knowledge components will create waves of influence that propagate throughout the SC. These metaphoric waves are reflected in the flows of materials, prices, and subsequent inventory levels which are discretely embedded in the system. These dynamics introduce another level of complexity, based on an array of demand, production and manufacturing uncertainties. For example, decisions regarding the replenishment of manufacturing requirements often involve a complex communication process which triggers interactions between a multitude of system entities (Hwarng and Xie, 2008).

It has been suggested that the very success of an organisation is wholly dependent upon the management of its SCs (Christopher, 2016). However, it is also argued that an organisation is largely reliant on the performance of its suppliers. In many instances, organisations within the SC, paradoxically, conduct their businesses independently and have differing individual objectives. These differences can even develop into a heightened state of antagonism, supporting an incongruence with the fundamental purpose of why partnerships are formed within an SC. Additionally, the fast-paced nature of modern SCs results in limited time to build the trust necessary to build sustainable relationships (Campbell et al., 1995).

The system complexity created through interconnectedness and interdependency in SCs poses particular challenges in gaining agreement for a

more comprehensive agreed SCLBOK. However, any such interpretations would require a clear understanding of what we mean by 'system'. Systems theory originated in the sciences of physics and biology but has been adopted by many other disciplines (New and Westbrook, 2004). A system is essentially a sophisticated collection of interacting processes and resources which exist to meet a more complex overarching objective.

Research into the lack of order or predictability found in many systems has produced insights that are highly relevant to SCs. Unless there is continuous organisation within a system, involving appropriate energy and resource inputs, the system will naturally tend to disorder and therefore become debilitated. This continuous yet gradual debilitation ultimately leads an under-resourced and disorganised system to extinction (New and Westbrook, 2004). As indicated earlier, a paradoxical situation is created when individual companies within an SC are only interested in strengthening their competitive advantage; this can only be achieved at the expense of delivering benefits to the whole SC. However, it is commonly accepted that a single company cannot satisfactorily perform its contribution to the chain unless all components of its work are optimised towards a common goal. Without this crucial element, the SC cannot endure and suffers entropic death.

8.4 Practice and Professional Implications for the SCL Sector

The results of this investigation raise numerous significant practical and professional issues. The core knowledge areas that survived the four filtering processes operate on educational, commercial and theoretical levels. The analysis showed that even though SCs are growing in complexity, there is agreement on a core suite of concepts that could potentially constitute the underpinnings of a SCLBOK. It is suggested here that these five core knowledge domains could form the basis for a new, more disciplined and focused examination of the field.

As the results of this investigation show, gaining agreement on SCL knowledge domains is challenging due to the lack of definitional agreement and the complex nature of the sector, characterised by specific contexts and specialisations which

operate within the broader economic trading system. The findings of this work suggest that entangled SCs often make it difficult to prioritise one knowledge requirement over another, thus resulting in the necessity for more and more knowledge domains that must be simultaneously mastered by the SCL professional. Hence, as SCs increase in complexity, it is, more than ever, essential to reach agreement on the field's core knowledge areas that an SCL professional must master before they specialise or take on more senior leadership roles.

The findings further illustrate that there is a real and present need to improve and utilise SCL practices. However, researchers and practitioners need to be careful in applying SCL concepts narrowly since the knowledge are complex and part of a much bigger system. They need to take into account their specific context and the pluralistic nature of SC networks and the embedded suite of relationships.

This thesis furnishes a new perspective into what may constitute an agreed BOK, and a better understanding of what constitutes an SCL professional, through an analysis of course curricula, subsequent industry validation, and application of SC theory. The study shows that a clear understanding of SCL practice can improve operational performance and lead to better products and services. While this claim needs to be studied further and critically evaluated, it is asserted that more advanced analysis techniques are required to understand the complex network of knowledge domains. It is also confidently asserted that this research has laid a systematic foundation for identifying the underpinnings of a SCLBOK through its identification of five core themes. As such, the study represents a basis for further research that aims to develop a resilient SCLBOK.

8.5 Findings within a Broader Context

The core SCL themes identified within this study show that the beginnings and/or underpinnings of an agreed BOK exist. However, note that a profession's BOK is that suite of abstract knowledge practitioners need to perform the profession's work with confidence; they still must know how to evaluate their daily work and their practices. The BOK should not be confused with the practical skills SCL professionals need to perform their tasks. A BOK, essentially, is the currency of a profession and provides evidence of its legitimacy and value to the broader

community (Abbott, 2014). The researcher argues that once the SCL field successfully identifies a systematic statement of its abstract knowledge, then and only then can SCL professionals communicate within and beyond the sector about the work they perform.

This study has materially aided in determining the knowledge domains which represent SCL practice today. This knowledge will enable SCL professionals to understand the elements needed to construct a recognised discipline, articulate future professional requirements, and map out a path to professionalism. Additionally, it is imperative the profession understands and articulates its professional boundaries because this act of knowing will play a vital role in filling growing vacancies in the sector. This will also perform a valuable role in attracting the talent needed to validate the essential role of SCL in the broader economy and ensure ethical and accepted practices underpin the profession's conduct.

The recommendations presented herein could be further analysed to facilitate discussions about the development of an academically accepted management discipline, particularly with respect to the profession's increasingly global role. To achieve this end, the findings of this study need to be carefully compared and ultimately combined with those of studies that look more broadly across other jurisdictions, languages and cultures.

The initial work in this investigation, which highlighted 15 themes from a study of the literature, revealed the considerable breadth of knowledge required by a modern-day SCL operative.

These 15 themes were then filtered down to five core agreed themes which could potentially serve as the basis for a SCLBOK. Even if these underpinning core knowledge areas could be proposed as the basis of a SCLBOK, a framework must be agile enough to allow for the recognition of the interdependence of increasingly globalised and complexity SCs. Therefore, any proposed SCLBOK must provide a dynamism that suitably provisions the pursuit of professional practice through the lenses of industry, the educational community and accepted theorists in the field. If this goal is achieved, novice and experienced SCL professionals may benefit from comparing their working knowledge with the five core domains revealed from the model.

8.6 Limitation of this Research and Implications for Further Research

This study, while focused and systematic, had several limitations, each of which triggers ideas for further research. A significant limitation of this investigation is its restriction to English-language literature. Given that SCL is a global field, future researchers could investigate literature published in other major trading languages, such as Mandarin and Spanish, to determine if any new core themes emerge.

This study focused on a specific type and level of qualification to ensure the robustness of the findings. However, further studies could look more broadly across qualifications and programs, including those outside of first-generation NQF jurisdictions, and also to qualifications offered by educational institutions in non-English-speaking countries.

A particular limitation of this study is its specificity of focus on selected qualifications that met the purposively constructed criteria. A broader perspective may be achieved through research that incorporates qualifications from non-QF nations, such as the United States and Canada, or countries in South America, Europe and Asia. This inclusion of curricula from programs outside the parameters of this study would add an interesting cultural perspective to the findings. Moreover, a separate study of second and third-generation QF nations and blocks, such as those accredited under the European Qualifications Framework, could be beneficial for comparison.

A further promising avenue for investigation which could build on the findings of this study is how the SCL sector might attempt to build a more responsive and agile BOK around the principles of strategic, tactical and operational activities. Such an analysis could enable SCL professionals to improve their understanding of the specialised knowledge that needs to be acquired to take on senior roles within the industry.

While the technique of thematic analysis is now widely applied, it is as yet under-theorised. The results presented here could be tested against a critical content analysis of the same texts in the dataset, which would show the weaknesses and strengths of the chosen methodology.

This study was based on published documents which reflect scenarios at a single point in time, and in some cases, that point was many years before the current day.

Finally, the study's results could have been strengthened by testing the initial thematic findings with a much larger industry practitioner sample. However, the study was intended to provide a starting point for the definition and documentation of the core knowledge components of a SCLBOK. It is hoped that the work presented herein will drive constructive dialogue and debate as this emerging profession struggles to define its academic position.

8.7 Discussion

The most important findings of this study are as follows:

- a more precise understanding of the growing complexity of global SCs;
- the impact of this complexity on the knowledge requirements of SCL operatives;
- the revelation that many direct and indirect relationships, interrelationships and interdependencies can be found between knowledge themes, which further increases the complexity of the area; and
- an understanding that, while complexity exists, major knowledge themes can be identified and could be used as the underpinnings of a SCLBOK.

Supply chains do not exist in isolation but are essential structures that govern the interrelationship of materials and information between manufacturing and distribution systems. Interest in SCM, catalysed by the aggressive globalisation of markets and supply sources, together with intensifying competition and an increasing emphasis on customer focus, increased during the last century (Gunasekaran et al., 2001). The modern complexity of SCL is reflected in the results of this study. The five core themes have significant impacts on the flow of goods and services along SCs. In addition, they define the movement of the inputs and the products to their final destinations for consumption.

8.8 Conclusion

The main achievement of this research is to bring greater clarity to the core areas of knowledge associated with the SCL sector. This illumination was derived from published literature, thematic analysis of postgraduate Masters qualifications from first-generation NQF jurisdictions, a specialist industry focus group and three SC theoretical frameworks. The novel use of filters to systematically sieve enduring themes of knowledge in the various manifestations and aspects of knowledge is worth further consideration. This process has revealed five core knowledge areas – Service and Value, Financial Management, Information and Technology Management, Operations, and Logistics and Physical Distribution – that could potentially be used in the development of a SCLBOK.

This study offers concrete evidence about an SCL professional's abstract core knowledge, reflected in the five core themes remaining after application of four

filters. The findings can then assist educators to design future programs and more confidently integrate agreed theory into core components of the curriculum to provide a foundational framework for the SCLBOK. The researcher encourages his successors to work to maximise practitioner interest and professionalism, particularly with respect to the sector's engagement with educational institutions and playing a more direct role in co-design of educational programs. The researcher also challenges the SCL sector to develop further and solidify the foundations of its knowledge and support further theory development. It is hoped that the work presented herein will encourage others to continue the task of refining and ensuring the currency of the BOK into the future.

The final chapter, Chapter Nine, presents the conclusions, implications and recommendations of the study.

Chapter 9 - Conclusion

9.1 Introduction

Chapter nine is focused on reflection on how the findings of this study address the research questions.

9.2 Research Questions and Answers

The investigation sought to address two fundamental questions:

- To what extent do consistent themes exist within the specialist supply chain and logistics Masters by coursework programs currently found across first-generation national qualification framework jurisdictions?
- To what degree can these consistent content themes be used to inform and potentially platform the formulation of a baseline supply chain and logistics body of knowledge?

The study revealed that the beginnings or underpinnings of a SCLBOK do exist, as demonstrated by the isolation of five core knowledge areas. These consistent themes of Service and Value, Financial Management, Information and Technology Management, Operations, and Logistics and Physical Distribution emerged from four distinct levels of filtration. Firstly, through a comprehensive and detailed literature review, secondly by a thematic analysis of purposively selected materials, thirdly by a semi-structured industry-based focus group and finally via a cross-mapping against three SC theoretical frameworks. How these themes could be useful to the field was discussed thoroughly.

9.3 The Future of Supply Chain and Logistics

Notwithstanding the distillation of the essential elements of a SCLBOK described in this thesis, modern-day globalised SCs are becoming increasingly more complex, bringing challenges, risks and opportunities. While SC has received attention from multidisciplinary researchers (Krajewski, 2002), neither trends in SCs nor their conceptual basis are comprehensively understood (Slone, 2004, Slone et al., 2007). The future of SCL will depend on both the development of and fundamental agreement on a BOK. The investigation described in this thesis has contributed to the future development of a SCLBOK and will serve as an essential foundation on which to build new knowledge in the SCL field. Indeed, it is hoped that these first small steps toward an agreed SCLBOK will soon

influence in the way one sees, analyses and manages increasingly globalised and complex SCs.

9.4 Contribution to Knowledge and Industry

Research related to SCL has in the main centred around operation and control. This study makes a valuable contribution to the field in that it has, for the first time, introduced a novel approach to finding knowledge agreement across an industry. It also serves as a valuable warning for educational providers to ensure that their courses meet industry expectations and that greater engagement is needed to bridge the divide between academia and professional practice.

9.5 Limitations

Firstly, this qualitative study did not produce widely generalisable results and generated critical perspectives that relate to a specific time. At best, the findings may be extrapolated only to those jurisdictions teaching similar courses in non-first generation national qualification environments. Secondly, the lack of prior investigations in this area meant that considerable effort had to be devoted to developing a suitable methodology to reveal the core themes. Third, given the limited time and budget, the validation process was limited to one focus group only. Nonetheless, the researcher made every effort to ensure as much information was received from the five-member group as possible.

9.6 Focusing Framework: Key Application Findings

The funnel refinement model developed for this investigation permitted the refinement of the dimensions of knowledge of the SCL field identified from various sources. This conceptual focusing was one of the study's key strengths. It enabled triangulation of themes of knowledge through multiple qualitative approaches, and linked established theoretical models and key education frameworks.

The funnelling process also provided new insights about existing agreed knowledge, showing that the five knowledge themes could be used as a starting point for further discussions. SCL is clearly a broad field composed of several loosely related subjects and in many cases divergent viewpoints and theoretical understandings. This complexity should not widen differences but serve as a

challenge for the field to accommodate more open discussions across a sector in pursuit of holistic agreement on a BOK.

Rigid and context-specific theories were avoided in this investigation, allowing a degree of flexibility. The methods used may be usefully applied to other emerging and/or developing industries, different cultures and localised practices. Furthermore, the refinement model outlined herein is sufficiently broad and adaptive to accommodate the development of specialist streams or higher-order knowledge within the SC. For example, the approach could be used to examine key knowledge requirements for specialist SCs, such as those with specific sustainability concerns, culturally important restrictions such as halal food handling, national food security, personal and product risk avoidance, and future technological construction.

It is asserted that the proposed funnel model could provide a new way of understanding how the themes of 'agreed' knowledge are revealed. The research on the BOK of the SCL industry should materially assist organisations in recruiting SCL professionals and help them gain a complete understanding of the core knowledge their workforce requires.

The contributions outlined above, facilitated by the funnel filtering model, are the key strengths of the study. Other advantages arose from the choice of research method, which, in contrast to much of the previous research in SCL, used a qualitative approach. It was thus able to reveal new insights about areas of agreement, rather than testing preconceived hypotheses as occurs in much quantitative research within the sector. Because SCL is a multidisciplinary field, it lends itself to qualitative research approaches that allow data to be considered through multiple interpretive lenses.

9.7 Recommendations for Future Research

Future research around the development of a SCLBOK and subsequently, the underpinnings of professional status, could benefit from being based on practice in the field. A study which focused on industry perspectives only across the 1st Generation NQF jurisdictions could provide the data for a more detailed comparative analysis between the views of academia and industry. Further investigations could focus on a comparative study of qualifications delivered

across Europe, Northern America and Asia, in jurisdictions that have either second or third-generation QFs. Such a study could also be extended to universities outside of the Times Education top rankings, allowing the inclusion of universities which offer less traditional qualifications. Another possible direction is to explore the practical impacts of the development of an agreed SCLBOK across industry, academia and professional associations. This better understanding could be achieved by surveying all of these actors within one study and looking for points of agreement.

It is important to state that the SCL sector must recognise that the core knowledge areas will need to be updated as new intellectual thoughts emerge, and as technology advances. Therefore, it is vital that an agreed SCLBOK must be reviewed and renewed regularly to ensure relevance and currency. If such a BOK is perfected, explicit learning behaviours could be derived for each knowledge theme. This implies that an appropriate standard of instructional content would need to be designed and created to reinforce each knowledge area, along with a set of proficiency requirements to meet minimal knowledge requirements.

Outside the SCL sector, the filtration model could be used to analyse developments in other emerging professions. Within the SCL field, given the far-ranging externalities that exist within specific SCs, it would also be valuable to determine whether interrelationships between core knowledge themes exist. Such an analysis could show how jurisdictions could cope with over or undersupply of professions, and suggest how mobility may be encouraged across jurisdictions and professions. Additional studies of how an agreement can be reached on core SCL knowledge areas could be undertaken, hence validating best practice solutions in this emerging field. Possible sector-wide professional assessment tools or mechanisms require further investigation, as does the level of adherence to the five core knowledge areas in Masters course delivery. The level of adherence to the delivery of the five core knowledge areas might be used as a benchmark in the evaluation of universities and education providers.

9.8 Final remarks

The investigation described in this thesis was undertaken to close the recognised gap in our understanding of whether core knowledge areas existed in the SCL

field. A comprehensive literature review, analysis of the views of respected SCL practitioners, and the interrogation of theoretical models related to the area all reinforced the need for more detailed research.

The thesis outlines the following contributions.

- At the methodological level, it presents a coherent model which could be deployed to distil core knowledge areas in emerging and/or developing management disciplines.
- At the theoretical level, it shows how a detailed and comprehensive filtering process was used to derive core knowledge areas that can form the basis of the underpinnings of a SCLBOK.

Finally, the researcher recommends:

- that the filtering model be subjected to further testing via validation in a more significant number of focus groups, and using a broader curriculum base that includes second and third-generation NQFs and those jurisdictions yet to develop an NQF, such as the United States;
- further analysis of postgraduate SCL qualifications in jurisdictions which deliver programs in languages other than English;
- application of the core knowledge areas in organisations that vary by size, revenue and complexity, and along with different parts of the SC, to discover their impact on a broad spectrum of organisations, jurisdictions, cultures, and product and service related-landscapes; and
- integration of the core knowledge areas into the existing SCL human resource development programs to allow determination of the extent to which future interventions lead to the professionalism of the field.

References

AAMODT, P. O., FRØLICH, N. & STENSAKER, B. 2018. Learning Outcomes–a Useful Tool in Quality Assurance? Views from Academic Staff. *Studies in Higher Education,* 43**,** 614-624.

ABBOTT, A. 2014. *The System of Professions: An Essay on the Division of Expert Labor,* Chicago, IL, University of Chicago Press.

ABBOTT, P. & MEERABEAU, L. 1998. *The Sociology of the Caring Professions,* London and New York, Routledge.

ABDUR RAZZAQUE, M. & SHAFREEN BIN SIRAT, M. 2001. Skill Requirements: Perception of the Senior Asian Logisticians. *International Journal of Physical Distribution & Logistics Management,* 31**,** 374-395.

ABRAHAM, F. 1915. Is Social Work a Profession? *School and Society,* 1.

ABRAN, A., CUADRADO, J. J., GARCÍA-BARRIOCANAL, E., MENDES, O., SÁNCHEZ-ALONSO, S. & SICILIA, M. A. 2006. Engineering the Ontology for the SWEBOK: Issues and Techniques. *Ontologies for Software Engineering andSsoftware Technology.* Berlin, Heidelberg: Springer.

ACKOFF, R. L. 1981. Creating the Corporate Future John Wiley & Sons. *New York*.

ADAM, S. Using Learning Outcomes. Report for United Kingdom Bologna Seminar, 2004. 1-2.

AGRESTI, W. W. 2008. An IT Body of Knowledge: The Key to an Emerging Profession. *IT Professional,* 10**,** 18-22.

AHN, Y.-S. & MCLEAN, G. N. 2008. Competencies for Port and Logistics Personnel: An Application of Regional Human Resource Development. *Asia Pacific Education Review,* 9**,** 542-551.

ALBROW, M. & KING, E. 1990. *Globalization, Knowledge and Society: Readings from International Sociology,* London, UK, Sage.

AMIT, R. & SCHOEMAKER, P. J. 1993. Strategic Assets and Organizational Rent. *Strategic Management Journal,* 14**,** 33-46.

ANDERSON, L. W., KRATHWOHL, D. R., AIRASIAN, P., CRUIKSHANK, K., MAYER, R., PINTRICH, P., RATHS, J. & WITTROCK, M. 2001. A

Taxonomy for Learning, Teaching and Assessing: A Revision of Bloom's Taxonomy. *New York. Longman Publishing.*

Artz, AF, & Armour-Thomas, E.(1992). Development of a Cognitive-Metacognitive Framework for Protocol Analysis of Mathematical Problem Solving in Small Groups. Cognition and Instruction, 9**,** 137-175.

ANDRASKI, J. C. & NOVACK, R. A. 1996. Marketing Logistics Value: Managing the 5 P's. *Journal of Business Logistics,* 17**,** 23.

ANGERHOFER, B. J. & ANGELIDES, M. C. System Dynamics Modelling in Supply Chain Management: research Review. Proceedings of the 32nd Conference on Winter Simulation, 2000. Society for Computer Simulation International, 342-351.

ANTONY, J., ESCAMILLA, J. L. & CAINE, P. 2003. Lean Sigma [Production and Supply Chain Management]. *Manufacturing Engineer,* 82**,** 40-42.

AOYAMA, M., NAKATANI, T., SAITO, S., SUZUKI, M., FUJITA, K., NAKAZAKI, H. & SUZUKI, R. A Model and Architecture of REBOK (Requirements Engineering Body of Knowledge) and its Evaluation. 2010 Asia Pacific Software Engineering Conference, 2010. IEEE, 50-59.

AQFC, A. Q. F. C. 2013. Australian Qualifications Framework Second Edition I. *In:* EDUCATION, D. O. I. S. R. A. T. (ed.). Adelaide, Australia.

AQUINO, D. & DRAPER, L. 2008. Supply Chain Talent: State of the Discipline. *AMR Research***,** 1-22.

ARCHER, M., BHASKAR, R., COLLIER, A., LAWSON, T. & NORRIE, A. 2013. *Critical Realism: Essential Readings,* London, UK, Routledge.

ARLBJØRN, J. S. & PAULRAJ, A. 2013. Special Topic Forum on Innovation in Business Networks from a Supply Chain Perspective: Current Status and Opportunities for Future Research. *Journal of Supply Chain Management,* 49**,** 3-11.

ARNOLD, R. D. & WADE, J. P. 2015. A Definition of Systems Thinking: A systems Approach. *Procedia Computer Science,* 44**,** 669-678.

ASGARI, N., NIKBAKHSH, E., HILL, A. & FARAHANI, R. Z. 2016. Supply Chain Management 1982–2015: A Review. *IMA Journal of Management Mathematics,* 27**,** 353-379.

ATTRIDE-STIRLING, J. 2001. Thematic Networks: An Analytic Tool for Qualitative Research. *Qualitative Research,* 1**,** 385-405.

BACKLUND, A. 2000. The Definition of System. *Kybernetes,* 29**,** 444-451.

BAHOUTH, S., HARTMANN, D. & WILLIS, G. 2014. Supply Chain Management: How the Curricula of the Top Ten Undergraduate Universities meet the Practitioners Knowledge Set. *American Journal of Business Education (AJBE),* 7**,** 285-289.

BALLOU, R. H. & PIERCY, J. E. 1974. A Survey of Current Status and Trends in Transportation and Logistics Education. *Transportation Journal***,** 27-36.

BARBER, B. 1963. Some Problems in the Sociology of the Professions. *Daedalus***,** 669-688.

BARBER, B. 1978. Control and Responsibility in the Powerful Professions. *Political Science Quarterly,* 93**,** 599-615.

BARBER, B. 1983. *The Logic and limits of Trust*, Rutgers University Press New Brunswick, NJ.

BARBER, B. 1985. Beyond Parsons's Theory of the Professions. *Neofunctionalism. London: Sage*.

BARBOUR, R. & KITZINGER, J. 1999. *Introduction: The Challenge and Promise of Focus Groups,* London, Sage.

BERG, B. L. & LUNE, H. 2007. *Qualitative Research Methods for the Social Sciences,* Boston, MA, Pearson.

BERGER, P. 1967. *The Sacred Canopy: Elements of a Sociological Theory of Religion,* New York, Anchor Books.

BERNARD, R. H. 2002. *Research Methods in Anthropology-Qualitative and Quantitative Approaches,* Walnut Creek, CA, Altamira Press.

BETH, S., BURT, D. N., COPACINO, W., GOPAL, C., LEE, H. L., LYNCH, R. P. & MORRIS, S. 2003. Supply Chain Challenges. Building Relationships. *Harvard Business Review,* 81**,** 64-73, 117.

BJERRESKOV DINITZEN, H. & BOHLBRO, D. 2010. Value-Added Logistics in Supply Chain Management. *Academica, Copenhagen***,** 56-58.

BLUHM, D. J., HARMAN, W., LEE, T. W. & MITCHELL, T. R. 2011. Qualitative Research in Management: A Decade of Progress. *Journal of Management Studies,* 48**,** 1866-1891.

BOGDAN, R. & BIKLEN, S. 1992. Qualitative Research for Education. Boston. *MA: Allyn and Bacon*.

BORDENS, K. & ABBOTT, B. 2008. Research Methods and Design: A Process Approach. New York, NY, McGraw-Hill.

BOURQUE, P., DUPUIS, R., ABRAN, A., MOORE, J. W. & TRIPP, L. 1999. The Guide to the Software Engineering Body of Knowledge. *IEEE software,* 16**,** 35-44.

BOVET, D. & MARTHA, J. 2000. Value Nets: Reinventing the rusty Supply Chain for Competitive Advantage. *Strategy & Leadership,* 28**,** 21-26.

BOWERSOX, D., SMYKAY, E. W. & LALONDE, B. J. 1968. *Physical Distribution Management*, University of Bradford. Management Centre.

BOWERSOX, D. J. C., DAVID, J. & COOPER, M. B. 2009. Chain Logistics Management. Kalmar: Studentlitteratur.

BOWMAN, C. & AMBROSINI, V. 2000. Value Creation versus Value Capture: Towards a Coherent Definition of Value in Strategy. *British Journal of Management,* 11**,** 1-15.

BOYATZIS, R. E. 1998. *Transforming Qualitative Information: Thematic Analysis and Code Development*, Thousands Oaks, California, Sage.

BRANTE, T. 2011. Professions as Science-Based Occupations. *Professions and Professionalism,* 1.

BRAUN, V. & CLARKE, V. 2006. Using Thematic Analysis in Psychology. *Qualitative Research in Psychology,* 3**,** 77-101.

BRAUN, V. & CLARKE, V. 2012. Thematic Analysis. *In:* COOPER, H., CAMIC, P., M, LONG, D., L, PANTER, A., T, RINDSKOPF, D. & SHER, K., J (eds.) *APA Handbook of Research Methods in Psychology, Vol. 2. Research Designs: Quantitative, Qualitative, Neuropsychological, and Biological.* American Psychological Association.

BROOKS, D. J. 2013. Corporate security: Using Knowledge Construction to Define a Practising Body of Knowledge. *Asian Journal of Criminology,* 8**,** 89-101.

BRYMAN, A. B. 1994. E.(2007) Business Research Methods. New York, Oxford University Press.

BURGESS, K., SINGH, P. J. & KOROGLU, R. 2006. Supply Chain Management: a Structured Literature Review and Implications for Future Research. *International Journal of Operations & Production Management,* 26**,** 703-729.

BURGUEÑO, L., CICCOZZI, F., FAMELIS, M., KAPPEL, G., LAMBERS, L., MOSSER, S., PAIGE, R. F., PIERANTONIO, A., RENSINK, A. & SALAY, R. 2019. Contents for a Model-Based Software Engineering Body of Knowledge. *Software and Systems Modeling,* 18**,** 3193-3205.

CAMPBELL, A., GOOLD, M. & ALEXANDER, M. 1995. The Value of the Parent Company. *California Management Review,* 38**,** 79-97.

CAPALDO, A. & GIANNOCCARO, I. 2015. Interdependence and Network-level Trust in Supply Chain Networks: A Computational Study. *Industrial Marketing Management,* 44**,** 180-195.

CAREY, M. A. & ASBURY, J.-E. 2016. *Focus Group Research,* New York, Routledge.

CARR, A. S. & SMELTZER, L. R. 1997. An Empirically Based Operational Definition of Strategic Purchasing. *European Journal of Purchasing & Supply Management,* 3**,** 199-207.

CARTER, C., ROGERS, D. & CHOI, T. 2015. Toward the Theory of the Supply Chain. *Journal of Supply Chain Management,* 51**,** 89-97.

CARTER, R. 1985. A Taxonomy of Objectives for Professional Education. *Studies in Higher Education,* 10**,** 135-149.

CAVANA, R. Y., DELAHAYE, B. L. & SEKARAN, U. 2001. *Applied Business Research: Qualitative and Quantitative Methods,* Australia, John Wiley & Sons Inc.

CEVIK ONAR, S., AKTAS, E., ILKER TOPCU, Y. & DORAN, D. 2013. An Analysis of Supply Chain Related Graduate Programmes in Europe. *Supply Chain Management: An International Journal,* 18**,** 398-412.

CHECKLAND, P. 1999. Systems Thinking. *Rethinking Management Information Systems***,** 45-56.

CHEN, I. J. & PAULRAJ, A. 2004. Towards a Theory of Supply Chain Management: the Constructs and Measurements. *Journal of Operations Management,* 22**,** 119-150.

CHILDERHOUSE, P. & TOWILL, D. 2000. Engineering Supply Chains to match Customer Requirements. *Logistics Information Management,* 13**,** 337-346.

CHOW, G., HEAVER, T. D. & HENRIKSSON, L. E. 1994. Logistics Performance: Definition and Measurement. *International journal of Physical Distribution & Logistics Management,* 24**,** 17-28.

CHRISTOPHER, M. 2005. *Logistics and Supply Chain Management: Creating Value-adding Networks,* Harlow, UK, Pearson.

CHRISTOPHER, M. 2016. *Logistics & Supply Chain Management*, Pearson UK.

CLAWSON, C. L. 2016. Consolidating Supply Chain Management Education Through Professional Certification. Air Force Institute of Technology.

CLOSS, D. J. & STANK, T. P. 1999. A Cross-functional Curriculum for Supply Chain Education at Michigan State University. *Journal of Business Logistics,* 20**,** 59.

COFFEY, A. & ATKINSON, P. 1996. *Making Sense of Qualitative Data: Complementary Research Strategies,* London, UK, Sage Publications, Inc.

COLBRAN, S., BEATTIE, S. & GILDING, A. 2018. Legal Education xMOOCs-A Mirage in the Australian Regulatory Environment. *Legal Educ. Rev.,* 28**,** 1.

COLES, M. 2006. *A review of International and National Developments in the use of Qualifications Frameworks*, ETF Turin.

COLLIS, J. & HUSSEY, R. 2003. Business Research (ed.). New York: Palgrave Macmillan.

COLLIS, J. & HUSSEY, R. 2009. Business Research: A Practical Guide for Undergraduate and Postgraduate Students. London, Palgrave Macmillan.

COOLE, M. P., BROOKS, D. J. & MINNAAR, A. 2017. The Physical Security Professional: Mapping a Body of Knowledge. *Security Journal,* 30**,** 1169-1197.

COOPER, D. & SCHINDLER, P. 2014. *Business Research Methods,* New York, McGraw Hill.

COOPER, D. R., SCHINDLER, P. S. & SUN, J. 2006. *Business Research Methods,* New York, McGraw-Hill.

COOPER, M. C., LAMBERT, D. M. & PAGH, J. D. 1997. Supply Chain Management: More than a new name for Logistics. *The International Journal of Logistics Management,* 8**,** 1-14.

COTTRILL, K. 2010. Are you prepared for the supply chain talent crisis? *MIT Center for Transportation and Logistics, Cambridge, MA***,** 1-11.

COUSINS, P. D., LAWSON, B. & SQUIRE, B. 2006. Supply Chain Management: Theory and Practice–the Emergence of an Academic Discipline? *International Journal of Operations & Production Management,* 26**,** 697-702.

COX, A. 2001. Understanding Buyer and Supplier Power: a Framework for Procurement and Supply Competence. *Journal of Supply Chain Management,* 37**,** 8-15.

COYLE, J. J., BARDI, E. J. & LANGLEY JR, C. J. 2003. The Management of Business Logistic: A Supply Chain Perspective. *Estados Unidos, South-Western/Thomson Learning*.

CRABTREE, B. F. & MILLER, W. L. 1999. *Doing Qualitative Research,* London, UK, Sage Publications.

CRESPO DE CARVALHO, J., GUIMARÃES, C. & MARTINS, A. 2014. Exploring Interconnections in SCM Body of Knowledge. *Journal of Management and Strategy***,** 39-48.

CRESSWELL, J. W. 1998. Qualitative Inquiry and Research Design: Choosing among Five Traditions. Thousand Oaks, CA, Sage.

CRESWELL, J. 1998. W.(1998). *Qualitative Inquiry and Research Design: Choosing among Five Traditions,* 2.

CRESWELL, J. 2016. Research Design: Qualitative, Quantitative, Mixed Methods Approaches. Nebraska, University Of Nebraska-Lincoln.

CRESWELL, J. W., HANSON, W. E., CLARK PLANO, V. L. & MORALES, A. 2007. Qualitative Research Designs: Selection and Implementation. *The Counseling Psychologist,* 35**,** 236-264.

CROMPTON, R. 1990. Professions in the Current Context. *Work, Employment and Society,* 4**,** 147-166.

CRONIN JR, J. J., BRADY, M. K. & HULT, G. T. M. 2000. Assessing the Effects of Quality, value, and Customer Satisfaction on Consumer Behavioral Intentions in Service Environments. *Journal of Retailing,* 76**,** 193-218.

CROOM, S., ROMANO, P. & GIANNAKIS, M. 2000. Supply Chain Management: An Analytical Framework for Critical Literature Review. *European Journal of Purchasing & Supply Management,* 6**,** 67-83.

CROSSLEY, M. & WATSON, K. 2003. *Comparative and International Research in Education: Globalisation, Context and Difference,* London, UK, Routledge.

CROTTY, M. 1998. *The Foundations of Social Research: Meaning and Perspective in the Research Process,* London, UK, Sage.

CUDNEY, E. & ELROD, C. 2010. Incorporating Lean Concepts into Supply Chain Management. *International Journal of Six Sigma and Competitive Advantage,* 6**,** 12-30.

DADZIE, K. Q. 1982. Management Education for Physical Distribution and Logistics. *International Journal of Physical Distribution & Materials Management,* 12**,** 49-62.

DALKEY, N. & HELMER, O. 1963. An Experimental Application of the Delphi Method to the use of Experts. *Management Science,* 9**,** 458-467.

DAUGHERTY, P. J. 2000. Linking Compensation and Retention. *Suppy Chain Management Review,* 4**,** 64-72.

DAUGHERTY, P. J. 2011. Review of Logistics and Supply Chain Relationship Literature and suggested Research Agenda. *International Journal of Physical Distribution & Logistics Management,* 41**,** 16-31.

DAVID, P. & STEWART, R. 2010. *International Logistics: The Management of International Trade Operations,* Mason, Ohio, Thomson.

DE ABREU, A. & ALCÂNTARA, R. L. C. 2015. Supply Chain Managers: Professional Profile and the Role in the Cross-functional Integration of Supply Chain Management. *Independent Journal of Management & Production,* 6**,** 44-63.

DEPARTMENT OF INFRASTRUCTURE, T., CITIES AND REGIONAL DEVELOPMENT. 2019, November 22. *Inquiry into National Freight and Supply Chain Priorities* [Online]. Available: https://www.infrastructure.gov.au/transport/freight/freight-supply-chain-priorities/index.aspx [Accessed 2nd December 2019].

DI LUZIO, G. 2006. A Sociological Concept of Client Trust. *Current Sociology,* 54**,** 549-564.

DOBROVOLNY, J. L. & FUENTES, S. C. G. 2008. Quantitative versus Qualitative Evaluation: A Tool to decide which to use. *Performance Improvement,* 47**,** 7-14.

DOWLER, L. 1988. The Role of use in Defining Archival Practice and Principles: a Research Agenda for the availability and use of records. *The American Archivist,* 51**,** 74-86.

DUBEY, R., ALTAY, N., GUNASEKARAN, A., BLOME, C., PAPADOPOULOS, T. & CHILDE, S. J. 2018. Supply Chain Agility, Adaptability and Alignment: Empirical Evidence from the Indian Auto Components Industry. *International Journal of Operations & Production Management,* 38**,** 129-148.

DUBEY, R. & GUNASEKARAN, A. 2015. Supply Chain Talent: The Missing Link in Supply Chain Strategy. *Industrial and Commercial Training,* 47**,** 257-264.

DUBOIS, A., HULTHÉN, K. & PEDERSEN, A.-C. Interdependence within and among Supply Chain. 12th International IPSERA Conference–Budapest, 2003. Citeseer.

DUNNE, B. E., BLAUCH, A. J., DULIMARTA, H., FERGUSON, R., STERIAN, A. & WOLFFE, G. Work In Progress-CE Curriculum Development Based on IEEE-CS/ACM Body of Knowledge Recommendations. 2007 37th Annual Frontiers In Education Conference-Global Engineering: Knowledge Without Borders, Opportunities Without Passports, 2007. IEEE, F3H-1-F3H-2.

DUNNING, J. H. 2002. Theories and Paradigms of International Business Activity. *Books*.

EASTERBY-SMITH, M. T. & THORPE, R. 2002. R. and Lowe, A.(2002). *Management Research: An Introduction,* 2**,** 342.

EDWARDS, W. 1954. The Theory of Decision Making. *Psychological Bulletin,* 51**,** 380.

ELLINGER, A. E. & ELLINGER, A. D. 2014. Leveraging Human Resource Development expertise to improve Supply Chain Managers' Skills and Competencies. *European Journal of Training and Development,* 38**,** 118-135.

ELLINGER, A. E., NATARAJARATHINAM, M., ADAMS, F. G., GRAY, J. B., HOFMAN, D. & O'MARAH, K. 2011. Supply Chain Management Competency and firm Financial Success. *Journal of Business Logistics,* 32**,** 214-226.

ELLIOTT, R. K. & JACOBSON, P. D. 2002. The Evolution of the Knowledge Professional. *Accounting Horizons,* 16**,** 69-80.

ERIKSSON, P. & KOVALAINEN, A. 2008. Qualitative Methods in Business Research. Introducing Qualitative Methods. *SAGE Publications Ltd, London,[Accessed 21 November 2018], doi,* 10**,** 9780857028044.

ERIKSSON, P. K., JOHANSSON, E., KETTANEH-WOLD, N., WIKSTRÖM, C. & WOLD, S. 1999. A.(2008). *Qualitative Methods in Business Research*.

ERTURGUT, R. & SOYSEKERCI, S. 2011. Professional Manager Education on Logistics and Supply Chain Management. *Procedia-Social and Behavioral Sciences,* 15**,** 2771-2775.

ESPER, T. L., CLIFFORD DEFEE, C. & MENTZER, J. T. 2010. A Framework of Supply Chain Orientation. *The International Journal of Logistics Management,* 21**,** 161-179.

EVETTS, J. 2006. Introduction: Trust and professionalism: Challenges and occupational changes. SAGE London, Thousand Oaks, CA and New Delhi.

EVETTS, J. 2011. A New Professionalism? Challenges and Opportunities. *Current Sociology,* 59**,** 406-422.

EVETTS, J. 2013. Professionalism: Value and Ideology. *Current Sociology,* 61**,** 778-796.

EZZY, D. 2002. Coding Data and Interpreting Text: Methods of Analysis. *Qualitative Analysis: Practice and Innovation***,** 80-112.

FANNING, F. & CAMPLIN, J. 2008. Body of Knowledge. *Professional Safety,* 53**,** 54.

FARAHANI, R. Z., REZAPOUR, S., DREZNER, T. & FALLAH, S. 2014. Competitive Supply Chain Network Design: An Overview of Classifications, Models, Solution Techniques and Applications. *Omega,* 45**,** 92-118.

FARKAS, E. B. 2018. Review Guide to the Project Management Body of Knowledge 6th Edition. *PODIUM***,** 85-88.

FARMER, D. H. & VAN AMSTEL, R. P. 1991. *Effective Pipeline Management: How to Manage Integrated Logistics,* UK, Gower Publishing Company.

FAWCETT, S. E., MAGNAN, G. M. & MCCARTER, M. W. 2008. Benefits, Barriers, and Bridges to effective Supply Chain Management. *Supply Chain Management: An International Journal,* 13**,** 35-48.

FAWCETT, S. E. & WALLER, M. A. 2011. Cinderella in the C-suite: Conducting Influential Research to advance the Logistics and Supply Chain Disciplines. *Journal of Business Logistics,* 32**,** 115-121.

FAWCETT, S. E. & WALLER, M. A. 2013. Considering Supply Chain Management's Professional Identity: The Beautiful Discipline (or,"we don't cure cancer, but we do make a big difference"). *Journal of Business Logistics,* 34**,** 183-188.

FLICK, U. 2018. *An introduction to Qualitative Research,* Thousand Oaks, CA, Sage Publications Limited.

FOSTER, S. T. & GANGULY, K. K. 2007. *Managing Quality: Integrating the Supply Chain*, Pearson Prentice Hall Upper Saddle River, New Jersey.

FRIDLEY, K. J., HAINS, D., BARRY, B., SANFORD, K. & NOLEN, L. The Third Edition of the Civil Engineering Body of Knowledge: An Update and Overview. Proceedings of the 2018 ASEE Annual Conference & Exposition, 2018.

GÁMEZ-PÉREZ, K. M., SARMIENTO, A. M., GARCIA-REYES, H. & VELÁZQUEZ-MARTÍNEZ, J. C. 2020. An International University-industry Collaboration Model to develop Supply Chain Competences. *Supply Chain Management: An International Journal*.

GAMMELGAARD, B. & LARSON, P. D. 2001. Logistics Skills and Competencies for Supply Chain Management. *Journal of Business logistics,* 22**,** 27-50.

GARDNER, H. 2011. *Frames of Mind: The Theory of Multiple Intelligences*, Hachette Uk.

GATTORNA, J. 2006. *Living Supply Chains: How to Mobilize the Enterprise around Delivering what your Customers want*, Pearson Education.

GIANNAKIS, M. & CROOM, S. R. 2004. Toward the Development of a Supply Chain Management Paradigm: A Conceptual Framework. *Journal of Supply Chain Management,* 40**,** 27-37.

GIBSON, A., KITTO, K. & WILLIS, J. A Cognitive Processing Framework for Learning Analytics. Proceedings of the Fourth International Conference on Learning Analytics and Knowledge, 2014. ACM, 212-216.

GIBSON, B., GIBSON, M. & RUTNER, S. 1998a. Careers in Logistics. *Council of Logistics Management, Oak Brook, IL*.

GIBSON, B. J., GIBSON, M. A. & RUTNER, S. M. Findings from Careers in Logistics: Logistics Salaries on the Rise. Annual Conference Proceedings, Council of Logistics Management, 1998b.

GIBSON, B. J., MENTZER, J. T. & COOK, R. L. 2005. Supply Chain Management: The Pursuit of a Consensus Definition. *Journal of Business Logistics,* 26**,** 17-25.

GILL, J. & JOHNSON, P. 2002. *Research Methods for Managers,* London, UK, Sage.

GILMORE, H. L. 1990. Continuous Incremental Improvement: An Operations Strategy. *SAM Advanced Management Journal,* 55**,** 21.

GIMENO, J. & WOO, C. Y. 1996. Hypercompetition in a Multimarket Environment: The role of Strategic Similarity and Multimarket Contact in Competitive De-escalation. *Organization Science,* 7**,** 322-341.

GOLAFSHANI, N. 2003. Understanding Reliability and Validity in Qualitative Research. *The Qualitative Report,* 8**,** 597-606.

GOLD, S., SEURING, S. & BESKE, P. 2010. Sustainable Supply Chain Management and Inter-organizational Resources: A Literature Review. *Corporate Social Responsibility and Environmental Management,* 17**,** 230-245.

GOLDSBY, T. J., GRIFFIS, S. E. & ROATH, A. S. 2006. Modeling Lean, Agile, and Leagile Supply Chain Strategies. *Journal of Business Logistics,* 27**,** 57-80.

GÓMEZ-CEDEÑO, M., CASTÁN-FARRERO, J. M., GUITART-TARRÉS, L. & MATUTE-VALLEJO, J. 2015. Impact of Human Resources on Supply Chain Management and Performance. *Industrial Management & Data Systems,* 115**,** 129-157.

GOWEN III, C. R. & TALLON, W. J. 2003. Enhancing Supply Chain Practices through Human Resource Management. *Journal of Management Development,* 22**,** 32-44.

GRANT, D. 2006. *Fundamentals of Logistics Management,* New York, NY, McGraw Hill Education.

GRAVIER, M. J. & THEODORE FARRIS, M. 2008. An Analysis of Logistics Pedagogical Literature: Past and Future Trends in Curriculum, Content, and Pedagogy. *The International Journal of Logistics Management,* 19**,** 233-253.

GREENBAUM, T. L. 1999. *Moderating Focus Groups: A Practical Guide for Group Facilitation,* London, Sage Publications.

GREENWOOD, E. 1957. Attributes of a Profession. *Social Work***,** 45-55.

GREENWOOD, R., LACHMAN, R., GREENWOOD, R. & LACHMAN, R. 1996. Change as an Underlying Theme in Professional Service Organizations: An introduction, Thousand Oaks, CA, Sage Publications.

GRÖNROOS, C. 2008. Service Logic Revisited: Who Creates Value? And who Co-creates? *European Business Review,* 20**,** 298-314.

GUDEHUS, T. & KOTZAB, H. 2009. Tasks and Aspects of Modern Logistics. *Comprehensive Logistics.* Berlin: Springer.

GUDEVA, L., DIMOVA, V., DASKALOVSKA, N. & TRAJKOVA, F. 2012. Designing Descriptors of Learning Outcomes for Higher Education Qualification. Social and Behavioral Science. *Social and Behavioral Sciences,* 46**,** 1306 – 1311.

GUNASEKARAN, A., PATEL, C. & TIRTIROGLU, E. 2001. Performance Measures and Metrics in a Supply Chain Environment. *International journal of Operations & Production Management,* 21**,** 71-87.

HAIR, J. F., BABIN, B., MONEY, A. H. & SAMOUEL, P. 2003. Essentials of Business Methods Research. Hoboken, NJ: Wiley.

HALLDÓRSSON, Á., HSUAN, J. & KOTZAB, H. 2015. Complementary Theories to Supply Chain Management revisited–from borrowing theories to theorizing. *Supply Chain Management: An International Journal,* 20**,** 574-586.

HALLIDAY, T. C. 1987. *Beyond monopoly: Lawyers, State Crises, and Professional Empowerment,* Chicago, University of Chicago Press.

HANDFIELD, R. & NICHOLS JR, E. 1999. *Introduction to Supply Chain Management,* Englewood Cliffs, NJ, Prentice Hall.

HANLEY-MAXWELL, C., AL HANO, I. & SKIVINGTON, M. 2007. Qualitative Research in Rehabilitation Counseling. *Rehabilitation Counseling Bulletin,* 50**,** 99-110.

HARLAND, C., LAMMING, R. C., WALKER, H., PHILLIPS, W. E., CALDWELL, N. D., JOHNSEN, T. E., KNIGHT, L. A. & ZHENG, J. 2006. Supply Management: is it a Discipline? *International Journal of Operations & Production Management,* 26**,** 730-753.

HARPER, D. V. 1965. What's Next for Transportation Education. *Transportation Journal,* 13**,** 21-28.

HARRISON, F. & LOCK, D. 2017. *Advanced Project Management: A Structured Approach,* London, UK, Routledge.

HARVEY, M. G. & RICHEY, R. G. 2001. Global Supply Chain Management: The Selection of Globally Competent Managers. *Journal of International Management,* 7**,** 105-128.

HASKINS, J. B. & KENDRICK, A. 1993. *Successful Advertising Research Methods,* London, Natl Textbook Co Trade.

HASSINI, E. & LARSON, P. D. 2008. Accreditation Program Design: A Survey of Supply Chain Professionals. *Journal of Enterprise Information Management,* 21**,** 377-392.

HEALE, R. & FORBES, D. 2013. Understanding Triangulation in Research. *Evidence-Based Nursing,* 16**,** 98-98.

HEFCW, H. E. F. C. O. W. 2018. *Credit and Qualifications Framework for Wales* [Online]. Qualifications Wales. Available: https://www.hefcw.ac.uk/policy_areas/learning_and_teaching/credit_framework.aspx [Accessed 2nd December 2018].

HELD, D. 2002. *Cosmopolitanism: Ideas, Realities and Deficits,* Cambridge, Polity Press.

HILL, T. 2005. *Operations Management,* New York, Palgrave Macmillan.

HINES, P. 1999. Future Trends in Supply Chain Management. *In:* WATERS, D. (ed.) *Global Logistics and Distribution Planning.* London, UK: Kogan Page.

HINES, T. 2000. An Evaluation of two Qualitative Methods (Focus Group Interviews and Cognitive Maps) for conducting Research into

Entrepreneurial Decision Making. *Qualitative Market Research: An International Journal,* 3**,** 7-16.

HOFER, C. W. & SCHENDEL, D. 1980. *Strategy Formulation: Analytical concepts*, West Publ.

HOFFMANN, M. H., HAMPE, M., MÜLLER, G., BARGSTÄDT, H.-J., HEIß, H.-U. & SCHMITT, H. Knowledge, Skills, and Competences: Descriptors for Engineering Education. Education Engineering (EDUCON), 2010 IEEE, 2010. IEEE, 639-645.

HOFMANN, E. 2005. Supply Chain Finance: Some Conceptual Insights. *Beiträge Zu Beschaffung Und Logistik***,** 203-214.

HOWARD, M. & PARET, P. (eds.) 1976. *On War,* USA: Princeton.

HUSSEY, J. & HUSSEY, R. 1997. *Business Reearch,* Basingstoke, Macmillan Press.

HWARNG, H. B. & XIE, N. 2008. Understanding Supply Chain Dynamics: A Chaos Perspective. *European Journal of Operational Research,* 184**,** 1163-1178.

HYNIE, M., JENSEN, K., JOHNNY, M., WEDLOCK, J. & PHIPPS, D. 2011. Student Internships Bridge Research to Real World Problems. *Education + Training,* 53**,** 237-248.

JACCARD, J. & JACOBY, J. 2009. *Theory Construction and Model-Building Skills: A Practical Guide for Social Scientists,* New York, Guilford Press.

JAVADI, M. & ZAREA, K. 2016. Understanding Thematic Analysis and its Pitfall. *Journal of Client Care,* 1**,** 33-39.

JAYARAMAN, V., KLASSEN, R. & LINTON, J. D. 2007. Supply Chain Management in a Sustainable Environment. *Journal of Operations Management,* 25**,** 1071-1074.

JIM WU, Y.-C., KEVIN HUANG, S., GOH, M. & HSIEH, Y.-J. 2013. Global Logistics Management Curriculum: Perspective from Practitioners in Taiwan. *Supply Chain Management: An International Journal,* 18**,** 376-388.

JOFFE, H. 2012. Thematic Analysis. *Qualitative Research Methods in Mental Health and Psychotherapy,* 1.

JOHNSON, R. & WATERFIELD, J. 2004. Making Words Count: The Value of Qualitative Research. *Physiotherapy Research International,* 9**,** 121-131.

JOHNSON, R. B. 1997. Examining the Validity Structure of Qualitative Research. *Education,* 118**,** 282.

JOHNSON, T. J. 2016. *Professions and Power,* New York, NY, Routledge.

JOHNSTON, S., CRUESS, S. & CRUESS, R. 2001. Ethical Leadership in Modern Medicine. *Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration,* 18**,** 291-297.

JOMINI, A., H 1830. Tableau Analytique des principales combinaisons De La Guerre, Et De Leurs Rapports Avec La Politique Des États: Pour Servir D'Introduction Au Traité Des Grandes Opérations Militaires.

KASI, V. 2005. Systemic Assessment of SCOR for Modeling Supply Chains. Proceedings of the 38th Annual Hawaii International Conference on System Sciences, 2005. IEEE, 87b-87b.

KEATING, J. 2003. Qualifications Frameworks in Australia. *Journal of Education and Work,* 16**,** 271-288.

KEATING, J. Qualifications Systems and National Qualifications Frameworks. Conference Paper presented to the Monash University—ACER Centre for the Economics of Education and Training Annual Conference, Melbourne, 2008.

KEEVY, J., BLOM, R. & AUTHORITY, S. A. Q. The Integration of Education in Training in a comprehensive linked National Qualifications Framework: a Critical Reflection on recent developments in South Africa. Paper presented at the All Africa IVETA Regional IFTDO ASTD Conference, 2007. 16.

KELLER, S. B. & OZMENT, J. 2009. Research on Personnel issues published in leading Logistics Journals: What we know and don't know. *The International Journal of Logistics Management,* 20**,** 378-407.

KELLMEREIT, B. 2015. Focus Groups. *International Journal of Sales, Retailing, and Marketing,* 4**,** 42-52.

KEMBRO, J. & SELVIARIDIS, K. 2015. Exploring Information sharing in the extended Supply Chain: An Interdependence Perspective. *Supply Chain Management: An International Journal,* 20**,** 455-470.

KENNEDY, D. 2006. *Writing and using Learning Outcomes: a Practical Guide*, Cork, Irerland, University College Cork.

KERZNER, H. 2018. *Project Management Best Practices: Achieving Global Excellence,* Hoboken, New Jersey, John Wiley & Sons.

KETCHEN JR, D. J. & HULT, G. T. M. 2007. Bridging Organization Theory and Supply Chain Management: The Case of Best Value Supply Chains. *Journal of Operations Management,* 25**,** 573-580.

KIDD, P. S. & PARSHALL, M. B. 2000. Getting the Focus and the Group: Enhancing Analytical rigor in Focus Group Research. *Qualitative Health Research,* 10**,** 293-308.

KIDWELL, L., FISHER, D., BRAUN, R. & SWANSON, D. 2013. Developing Learning Objectives for Accounting Ethics Using Bloom's Taxonomy. *Accounting Education,* 22**,** 44-65.

KILGER, C., MEYR, H. & STADTLER, H. 2015. *Supply Chain Management and Advanced Planning: Concepts, Models, Software, and Case Studies,* Berlin, Springer.

KING, N. & HORROCKS, C. 2010. *An Introduction to Interview Data Analysis,* London, Sage.

KISPERSKA-MOROŃ, D. 2010. Evolution of Competencies of Logistics and Supply Chain Managers. *Electronic Scientific Journal of Logistics,* 6**,** 21-31.

KITZINGER, J. & BARBOUR, R. 1999. *Developing FocusGgroup Research: Politics, Theory and Practice,* Thousand Oaks, CA, Sage.

KLEGON, D. 1978. The Sociology of Professions: An Emerging Perspective. *Sociology of Work and Occupations,* 5**,** 259-283.

KLEIBER, P. 2004. Focus Groups: more than a Method of Qualitative Inquiry. Dans K. deMarrais, & SD Lapan (Éds), Foundations for Research: Methods of Inquiry in Education and the Social Sciences (pp. 87-102). Mahwah, NJ: Lawrence Erlbaum.

KNEMEYER, A. M. & MURPHY, P. R. 2004. Evaluating the Performance of Third-party Logistics Arrangements: A Relationship Marketing Perspective. *Journal of Supply Chain Management,* 40**,** 35-51.

KOTZAB, H. & BJERRE, M. 2005. *Retailing in a SCM-perspective,* Copenhagen, Netherlands, Copenhagen Business School Press DK.

KOVACS, G. & SPENS, K. M. 2012. *Relief Supply Chain Management for Disasters: Humanitarian Aid and Emergency Logistics,* Hershey, United States, Information Science Reference Hershey, PA.

KOVÁCS, Z., PATÓ, B. & ELBERT, N. 2011. Competence Requirement Dertmination and Development in Supply Chains. *Problems of Management in the 21st Century,* 2.

KRAJEWSKI, L. 2002. Reflections on Operations Management Research. Amsterdam, Netherlands: Elsevier Science.

KRUEGER, R. & CASEY, M. 2015a. Focus Groups: A Practical Guide for Applied Research (H. Salmon, et al. Ed. Thousand Oaks, CA: Sage.

KRUEGER, R. & CASEY, M. 2015b. Participants in a Focus Group. *Focus Groups A Practical Guide for Applied Research, edited by: Krueger, RA and Casey, MA, Sage Publications, Inc, USA*.

KUHN, T. S. 1962. *The Structure of Scientific Revolutions,* Chicago, University of Chicago Press.

KUHN, T. S. 2012. *The structure of scientific revolutions,* Chicago, University of Chicago Press.

LALONDE, B. J. 1990. Update Logistics Skills for the Future. *Transportation and Distribution,* 31**,** 46-8.

LAMBERT, D. M. 2008. *Supply Chain Management: Processes, Partnerships, Performance*, Supply Chain Management Inst.

LAMBERT, D. M. & BURDUROGLU, R. 2000. Measuring and Selling the Value of Logistics. *The International Journal of Logistics Management,* 11**,** 1-18.

LAMMING, R. 1993. Beyond,". *Partnership: Strategies for Innovation and Lean Supply," Prentice-Hall, Hemel Hempstead*.

LANCIONI, R., FORMAN, H. & SMITH, M. F. 2001. Logistics and Supply Chain Education: Roadblocks and Challenges. *International Journal of Physical Distribution & Logistics Management,* 31**,** 733-745.

LANGEVIN, A. & RIOPEL, D. 2005. *Logistics Systems: Design and Optimization,* Berlin, Springer.

LASETER, T. & OLIVER, K. 2003. When will Supply Chain Management grow up? *Strategy and Business***,** 32-37.

LEE, H. 1991. Accuracy, Precision, Repeatability and Compatibility of the Pavedex PAS 1 Automated Distress Measuring Device. *Transportation Research Record,* 1311**,** 136-143.

LEMAY, S. A. & MCMAHON JR, R. The Growth and Development of Logistics Personnel: Retail Warehousing. Annual Conference Proceedings 1999, 1999.

LEMOINE, W. & DAGNÆS, L. 2003. Globalisation Strategies and Business Organisation of a Network of Logistics Service Providers. *International Journal of Physical Distribution & Logistics Management,* 33**,** 209-228.

LEWIS, M. A. 2019. *Operations Management: A Research Overview,* London, UK, Routledge.

LIAMPUTTONG, P. 2011. *Focus Group Methodology: Principle and Practice*, Sage Publications.

LIBERATORE, F., PIZARRO, C., DE BLAS, C. S., ORTUÑO, M. & VITORIANO, B. 2013. Uncertainty in Humanitarian Logistics for Disaster Management. A review. *Decision Aid Models for Disaster Management and Emergencies.* New York, Springer.

LINTON, J. D., KLASSEN, R. & JAYARAMAN, V. 2007. Sustainable Supply Chains: An Introduction. *Journal of Operations Management,* 25**,** 1075-1082.

LIU, X. & MCKINNON, A. C. 2019. Practical Relevance of Theory-Driven Supply Chain Management Research: Evidence from China. *The International Journal of Logistics Management,* 30**,** 76-95.

LODICO, M. G., SPAULDING, D. T. & VOEGTLE, K. H. 2010. *Methods in Educational Research: From Theory to Practice,* San Francisco, CA, John Wiley & Sons.

LONG, A. F. & GODFREY, M. 2004. An Evaluation Tool to assess the Quality of Qualitative Research Studies. *International Journal of Social Research Methodology,* 7**,** 181-196.

LORENTZ, H., TÖYLI, J., SOLAKIVI, T. & OJALA, L. 2013. Priorities and Determinants for Supply Chain Management Skills Development in Manufacturing Firms. *Supply Chain Management: An International Journal,* 18**,** 358-375.

LUKE, R. & HEYNS, G. 2012. Skills Requirements in the Supply Chain Industry in South Africa. *Journal of Transport and Supply Chain Management,* 6**,** 107-125.

LUMMUS, R. R., KRUMWIEDE, D. W. & VOKURKA, R. J. 2001. The Relationship of Logistics to Supply Chain Management: Developing a Common Industry Definition. *Industrial Management & Data Systems,* 101**,** 426-432.

MAGLIO, P. P., VARGO, S. L., CASWELL, N. & SPOHRER, J. 2009. The Service System is the Basic Abstraction of Service Science. *Information Systems and e-Business Management,* 7**,** 395-406.

MALEKI, M. & CRUZ-MACHADO, V. 2013. A Review on Supply Chain Integration: Vertical and Functional Perspective and Integration Models. *Economics and Management,* 18**,** 340-350.

MANGAN, J. & CHRISTOPHER, M. 2005. Management Development and the Supply Chain Manager of the Future. *The International Journal of Logistics Management,* 16**,** 178-191.

MANGAN, J., GREGORY, O. & LALWANI, C. 2001. Education, Training and the Role of Logistics Managers in Ireland. *International Journal of Logistics,* 4**,** 313-327.

MANLEY, D. & VALIN, J. 2017. Laying the foundation for a Global Body of Knowledge in Public Relations and Communications Management. *Public Relations Review,* 43**,** 56-70.

MARSHALL, C. & ROSSMAN, G. B. 2014. *Designing Qualitative Research,* New York, NY, Sage.

MARTIN, C. S. & GUERIN, D. 2006. The Interior Design Profession's Body of Knowledge.

MARUTELLO, F. 1981. Thesemantic Definition of a Profession. *Southern Review of Public Administration***,** 246-257.

MATOPOULOS, A., OWEN, C. & VLACHOPOULOS, P. 2013. Exploring Supply Chain Related Graduate Programmes in the UK: A View on their Structure, Content and Learning Approaches. *20th Conference of European Operation Management.* Dublin, Ireland.

MCAFEE, R. B., GLASSMAN, M. & HONEYCUTT JR, E. D. 2002. The Effects of Culture and Human Resource Management Policies on Supply Chain Management Strategy. *Journal of Business Logistics,* 23**,** 1-18.

MCCARTER, M. W., FAWCETT, S. E. & MAGNAN, G. M. 2005. The Effect of People on the Supply Chain World: some overlooked issues. *Human Systems Management,* 24**,** 197-208.

MCCREA, B. 2012. What Hiring Managers are Looking for Today. *Supply Chain Management Review***,** S3.

MCKINNON, A., FLÖTHMANN, C., HOBERG, K. & BUSCH, C. 2017. *Logistics Competencies, Skills, and Training: A Global Overview*, The World Bank.

MCLEOD, J. 2011. *Qualitative Research in Counselling and Psychotherapy,* New York , NY, Sage.

MEIXELL, M. J. & GARGEYA, V. B. 2005. Global Supply Chain Design: A Literature Review and Critique. *Transportation Research Part E: Logistics and Transportation Review,* 41**,** 531-550.

MELNYK, S., LUMMUS, R., VOKURKA, R. & SANDOR, J. 2007. Supply Chain Management 2010 and Beyond: Mapping the Future of the Strategic Supply Chain. APICS–Educational & Research Fundation. *Inc. June*.

MENON, S. T. 2012. Human Resource Practices, Supply Chain Performance, and Wellbeing. *International Journal of Manpower,* 33**,** 769-785.

MENTZER, J. T., DEWITT, W., KEEBLER, J. S., MIN, S., NIX, N. W., SMITH, C. D. & ZACHARIA, Z. G. 2001. Defining Supply Chain Management. *Journal of Business Logistics,* 22**,** 1-25.

MENTZER, J. T., GOMES, R. & KRAPFEL, R. E. 1989. Physical Distribution Service: A Fundamental Marketing Concept? *Journal of the Academy of Marketing Science,* 17**,** 53-62.

MERTENS, D. M. 2005. *Quality Criteria in Qualitative Research,* Thousand Oaks, CA, Sage Publications.

MILES, M. B., HUBERMAN, A. M., HUBERMAN, M. A. & HUBERMAN, M. 1994. *Qualitative Data Analysis: An Expanded Sourcebook,* Thousand Oaks, CA, Sage Publications.

MINICHIELLO, V., ARONI, R. & HAYS, T. 2008. *In-depth Interviewing: Principles, Techniques, Analysis,* Sydney, Pearson Australia Group.

MINTZBERG, H. 1987a. *Crafting Strategy*, Harvard Business Review Boston.

MINTZBERG, H. 1987b. The Strategy Concept I: Five Ps for strategy. *California management Review,* 30**,** 11-24.

MINTZBERG, H. 1987c. The Strategy Concept II: Another look at why Organizations need Strategies. *California Management Review,* 30**,** 25-32.

MOERS, F. 2006. Doing Archival Research in Management Accounting. *Handbooks of Management Accounting Research,* 1**,** 399-413.

MORPHEW, C. C. & HARTLEY, M. 2006. Mission Statements: A Thematic Analysis of Rhetoric across Institutional Type. *The Journal of Higher Education,* 77**,** 456-471.

MORRIS, P. W., CRAWFORD, L., HODGSON, D., SHEPHERD, M. M. & THOMAS, J. 2006a. Exploring the Role of Formal Bodies of Knowledge in Defining a Profession–The case of Project Management. *International Journal of Project Management,* 24**,** 710-721.

MORRIS, P. W., JAMIESON, A. & SHEPHERD, M. M. 2006b. Research Updating the APM Body of Knowledge 4th edition. *International Journal of Project Management,* 24**,** 461-473.

MURPHY, P. & POIST, R. F. 2007. Skill Requirements of Senior-level Logisticians: A Longitudinal Assessment. *Supply Chain Management: An International Journal,* 12**,** 423-431.

MURPHY, P. R. & POIST, R. F. 1991. Skill Requirements of Senior-level Logistics Executives, *Journal of Business Logistics,* 12**,** 73.

MURPHY, P. R. & POIST, R. F. 1998. Third-party Logistics Usage: An Assessment of Propositions based on Previous Research. *Transportation Journal,* 37**,** 26-35.

MYERSON, P. 2012. *Lean Supply Chain and Logistics Management*, New York, NY, McGraw-Hill.

NAVEDA, J. F. & SEIDMAN, S. B. 2005. Professional Certification of Software Engineers: The CSDP Program. *IEEE Software,* 22**,** 73-77.

NELSON, P. D. 2007. Striving for Competence in the Assessment of Competence: Psychology's Professional Education and Credentialing Journey of Public Accountability. *Training and Education in Professional Psychology,* 1**,** 3.

NEUMAN, W. L. & KREUGER, L. 2003. *Social Work Research Methods: Qualitative and Quantitative Approaches,* Boston, Massachusetts, Allyn and Bacon.

NEUREUTHER, B. D. & O'NEILL, K. 2011. Sustainable Supply Chain Management Programs in the 21st Century. *American Journal of Business Education,* 4**,** 11-18.

NEW, S. & WESTBROOK, R. 2004. *Understanding Supply Chains: Concepts, Critiques, and Futures*, OUP Oxford.

NEW, S. J. 1997. The Scope of Supply Chain Management Research. *Supply Chain Management: An International Journal,* 2**,** 15-22.

NEWMAN, R. & REED, G. M. 1996. Psychology as a Health Care Profession: Its Evolution and Future Directions. *Health psychology through the Life Span: Practice and Research Opportunities***,** 11-26.

NGUYEN, T., LI, Z., SPIEGLER, V., IEROMONACHOU, P. & LIN, Y. 2018. Big Data Analytics in Supply Chain Management: A state-of-the-art Literature Review. *Computers & Operations Research,* 98**,** 254-264.

NIE, N. I. E. 2018.

Council for the Curriculum, Examinations and Assessment. Available: http://ccea.org.uk/ [Accessed 2nd December 2018].

NOVACK, R. A. & SIMCO, S. W. 1991. The Industrial Procurement Process: A Supply Chain Perspective. *Journal of Business Logistics,* 12**,** 145.

NZQA, N. Z. Q. A. 2014. The New Zealand Qualifications Framework.

OFQUAL. 2018. Available: https://www.gov.uk/government/organisations/ofqual [Accessed 2nd December 2018].

OLIVER, G. 2012. *Foundations of the Assumed Business Operations and Strategy Body of Knowledge (BOSBOK): An Outline of Shareable Knowledge*, Darlington Press.

ÖREN, T. I. 2005.Toward the Body of Knowledge of Modeling and Simulation. Interservice/Industry Training, Simulation, and Education Conference (I/ITSEC), 2005. 1-19.

OZELKAN, E. & RAJAMANI, D. 2006. An Effective framework for teaching supply chain management. Proceedings of the American Society for

Engineering Education (ASEE) Annual Conference & Exposition, Chicago, IL, 2006.

ÖZELKAN, E. C. & RAJAMANI, D. 2006. 5P Framework for Teaching and Characterizing Supply Chains Effectively. IIE Annual Conference. Proceedings, 2006. Institute of Industrial and Systems Engineers (IISE), 1.

OZMENT, J. & KELLER, S. B. 2011. The Future of Logistics Education. *Transportation Journal,* 50**,** 65-83.

PARRIS, D. L. & PEACHEY, J. W. 2013. A Systematic Literature Review of Servant Leadership Theory in Organizational Contexts. *Journal of Business Ethics,* 113**,** 377-393.

PARSE, R. R. 1996. Building Knowledge through Qualitative Research: The Road Less Traveled. *Nursing Science Quarterly,* 9**,** 10-16.

PATTON, M. Q. 1990. *Qualitative Evaluation and Research Methods*, California, SAGE Publications, inc.

PETERSEN, K. J. & AUTRY, C. W. 2014. Supply Chain Management at the Crossroads: Divergent Views, Potential Impacts, and Suggested Paths Forward. *Journal of Business Logistics,* 35**,** 36-43.

PETTIT, T. J., FIKSEL, J. & CROXTON, K. L. 2010. Ensuring Supply Chain Resilience: Development of a Conceptual Framework. *Journal of Business Logistics,* 31**,** 1-21.

PFADENHAUER, M. 2006. Crisis or decline? Problems of Legitimation and Loss of Trust in Modern Professionalism. *Current Sociology,* 54**,** 565-578.

PFOHL, H.-C. & GOMM, M. 2009. Supply Chain Finance: Optimizing Financial Flows in Supply Chains. *Logistics Research,* 1**,** 149-161.

PHILIPS, D. 2003. Lessons from New Zealand's National Qualifications Framework. *Journal of Education and Work,* 16**,** 289-304.

PILNICK, S. & GABEL, J. E. 1998. A Case of Mission Impossible. *Human Systems International, Boca Raton, FL*.

POLLIO, H. R. & URSIAK, M. J. 2006. A Thematic Analysis of Written Accounts: Thinking about Thought. *Qualitative Research Methods for Psychologists.* Amsterdam, Netherlands: Elsevier.

PONTEROTTO, J. G. 2005. Qualitative Research in Counseling Psychology: A Primer on Research Paradigms and Philosophy of Science. *Journal of Counseling Psychology,* 52**,** 126.

PORTER, M. 1985. *Competitive Advantage,* New York, NY, The Free Press.

PORTER, M. E. 2011. *Competitive Advantage of Nations: Creating and Sustaining Superior Performance,* UK, Simon and Schuster.

POWER, D. 2005. Supply Chain Management Integration and Implementation: A Literature Review. *Supply Chain Management: An International journal,* 10**,** 252-263.

PRAJOGO, D. & SOHAL, A. 2013. Supply Chain Professionals: A Study of Competencies, use of Technologies, and Future Challenges. *International Journal of Operations & Production Management,* 33**,** 1532-1554.

PRESTWICH, R. & HO-KIM, T.-M. 2007. Knowledge, Skills and Abilities of International Business Majors: What we teach them versus what companies need them to know. *Journal of Teaching in International Business,* 19**,** 29-55.

QAA, U. 2014. Quality Code for Higher Education. *Part C: Information about HE Provision*.

RAHMAN, S., BUTCHER, T. & YANG, L. Logistics Manager Skill Requirements: Comparing International Practices. 7th ANZAM Operations, Supply Chain and Service Management Symposium, 2009. Monash University, 1-16.

REID, R. D. & SANDERS, N. R. 2019. *Operations Management: An Integrated Approach,* Hoboken, New Jersey, John Wiley & Sons.

RICHEY, R. G., TOKMAN, M. & WHEELER, A. R. 2006. A Supply Chain Manager Selection Methodology: Empirical Test and Suggested Application. *Journal of Business Logistics,* 27**,** 163-190.

ROBERTA PEREIRA, C., CHRISTOPHER, M. & LAGO DA SILVA, A. 2014. Achieving Supply Chain Resilience: The role of Procurement. *Supply Chain Management: an International Journal,* 19**,** 626-642.

ROBERTSON, R. 2012. Globalisation or Glocalisation? *Journal of International Communication,* 18**,** 191-208.

ROBINSON, C. 2009. Lessons on Learning. *The Journal for Quality and Participation,* 32**,** 25.

ROMME, A. G. L. & REYMEN, I. M. 2018. Entrepreneurship at the Interface of Design and Science: Toward an Inclusive Framework. *Journal of Business Venturing Insights,* 10**,** e00094.

ROMME, G. 2016. *The Quest for Professionalism: The Case of Management and Entrepreneurship,* Oxford, UK, Oxford University Press.

ROSE, K. & WEBB, C. 1998. Analyzing Data: Maintaining Rigor in a Qualitative Study. *Qualitative Health Research,* 8**,** 556-562.

ROSSETTI, C. L. & DOOLEY, K. J. 2010. Job Types in the Supply Chain Management Profession. *Journal of Supply Chain Management,* 46**,** 40-56.

ROWLINSON, S. 1999. A Definition of Procurement Systems. *Procurement Systems: A guide to Best Practice in Construction***,** 23-48.

RUSSELL, S. H. 1994. The Coming of Age of Business Logistics. *Journal of Education for Business,* 70**,** 91-94.

RYAN, K. E., GANDHA, T., CULBERTSON, M. J. & CARLSON, C. 2014. Focus Group Evidence: Implications for Design and Analysis. *American Journal of Evaluation,* 35**,** 328-345.

SAATY, T. L. 2008. Decision Making with the Analytic Hierarchy Process. *International Journal of Services Sciences,* 1**,** 83-98.

SAKS, M. 2003. The Limitations of the Anglo-American Sociology of the Professions: A Critique of the current neo-Weberian Orthodoxy. *Knowledge, Work and Society,* 1**,** 13-31.

SAKS, M. 2012. Defining a Profession: The Role of knowledge and Expertise. *Professions and Professionalism,* 2.

SAKS, M. 2016. A Review of Theories of Professions, Organizations and Society: The Case for neo-Weberianism, neo-institutionalism and Eclecticism. *Journal of Professions and Organization,* 3**,** 170-187.

SAPSFORD, R. & ABBOTT, P. 1992. *Research into Practice: A Reader for Nurses and the Caring Professions*, London: Open University Press.

SAQA, S. A. Q. A. 2018. *National Qualifications Framework* [Online]. Available: http://www.saqa.org.za/list.php?e=NQF [Accessed 2nd December 2018].

SARFATTI LARSON, M. 1977. *The Rise of Professionalism: A Sociological Analysis,* Berkeley, University of California Press.

SAUNDERS, M., LEWIS, P. & THORNHILL, A. 2007. *Research Methods,* Edinburgh Gate, Harlow, Financial Times Prentice Hall.

SAUNDERS, M., LEWIS, P. & THORNHILL, A. 2009. Research Methods for Business Students. Essex. *Financial Times/Prentice Hall*.

SAUNDERS, M. N. & LEWIS, P. 2012. *Doing Research in Business & Management: An Essential Guide toPlanning your Project*, New York, Pearson.

SAYER, A. 1999. *Realism and Social Science,* Thousand Oaks, CA, Sage.

SCANLON, L. 2011. Becoming a Professional. *"Becoming" a Professional.* Berlin: Springer.

SCARBROUGH, H. 2000. The HR Implications of Supply Chain Relationships. *Human Resource Management Journal,* 10**,** 5-17.

SCHROEDER, R. G. 2000. *Operations Management: Contemporary Concepts,* New York, NY, Irwin/McGraw-Hill.

SCIULLI, D. 2010. Why Professions Matter: Structural Invariance, Institutional Consequences, Bias. *Comparative Sociology,* 9**,** 744-803.

SCQFP, S. C. A. Q. F. P. 2018. *Scottish Credit and Qualifications Framework* [Online]. Available: https://scqf.org.uk/ [Accessed 2nd December 2018].

SEKARAN, U. 2000. *Research for Business: A Skill-Building Approach*, New York, John Wiley.

SEURING, S. & MÜLLER, M. 2008. From a Literature Review to a Conceptual Framework for Sustainable Supply Chain Management. *Journal of Cleaner Production,* 16**,** 1699-1710.

SHAPIRO, R. D. & HESKETT, J. L. 1985. *Logistics Strategy: Cases and Concepts,* Eagan, Minnesota, West Group.

SHENKAR, O., LUO, Y. & CHI, T. 2014. *International Business,* London, Routledge.

SHEPHERD, M. & ATKINSON, R. 2011. Project Management Bodies of Knowledge; Conjectures and Refutations. *Electronic Journal of Business Research Methods,* 9.

SHERMAN, R. R. & WEBB, R. B. 1988. Qualitative Research in Education: A Focus. *Qualitative Research in Education: Focus and Methods***,** 2-21.

SIMCHI-LEVI, D., KAMINSKY, P., SIMCHI-LEVI, E. & SHANKAR, R. 2008. *Designing and Managing the Supply Chain: Concepts, Strategies and Case Studies,* USA, Tata McGraw-Hill Education.

SLACK, N. 2018. *Essentials of Operations Management*, London, Pearson UK.

SLONE, R. E. 2004. Leading a Supply Chain Turnaround. *Harvard Business Review,* 82**,** 114-21, 158.

SLONE, R. E., MENTZER, J. T. & DITTMANN, J. P. 2007. Are you the weakest link in your Company's Supply Chain? *Harvard Business Review,* 85**,** 116.

SMITH, M. W. 1995. Ethics in Focus Groups: A few concerns. *Qualitative Health Research,* 5**,** 478-486.

SPEKMAN, R. E., SPEAR, J. & KAMAUFF, J. 2002. Supply Chain Competency: Learning as a Key Component. *Supply Chain Management: An International Journal,* 7**,** 41-55.

SQA, S. Q. A. 2019. What is the Scottish Credit and Qualifications Framework (SCQF)?

STADTLER, H. & KILGER, C. 2002. *Supply Chain Management and Advanced Planning*, NY, Springer.

STARR, C. W., MANARIS, B. & STALVEY, R. H. Bloom's Taxonomy Revisited: Specifying Assessable Learning Objectives in Computer Science. ACM SIGCSE Bulletin, 2008. ACM, 261-265.

STARR, P. 1982a. *The Social Origins of Professional Sovereignty,* New York, NY, Basic Books.

STARR, P. 1982b. *The Social Transformation of American Medicine: The Rise of a Sovereign Profession & the Making of a Vast Industry,* New York, NY, Basic Books.

STEFL, M. E. 2008. Common Competencies for all Healthcare Managers: the Healthcare Leadership Alliance model. *Journal of Healthcare Management,* 53.

STEWART, D. W. & SHAMDASANI, P. N. 2014. *Focus Groups: Theory and Practice,* Thousand Oaks, CA, Sage Publications.

STOCK, J. R. & BOYER, S. L. 2009. Developing a Consensus Definition of Supply Chain Management: A Qualitative Study. *International Journal of Physical Distribution & Logistics Management,* 39**,** 690-711.

STOKES, D. & BERGIN, R. 2006. Methodology or “Methodolatry”? An Evaluation of Focus Groups and Depth Interviews. *Qualitative Market Research: An international Journal,* 9**,** 26-37.

STOREY, J., EMBERSON, C., GODSELL, J. & HARRISON, A. 2006. Supply Chain Management: Theory, Practice and Future Challenges. *International Journal of Operations & Production Management,* 26**,** 754-774.

SVENSSON, G. 2007. Aspects of Sustainable Supply Chain Management (SSCM): Conceptual Framework and Empirical Example. *Supply Chain Management: An international Journal,* 12**,** 262-266.

SWANSON, D., GOEL, L., FRANCISCO, K. & STOCK, J. 2018. An Analysis of Supply Chain Management Research by Topic. *Supply Chain Management: An International Journal,* 12**,** 100-116.

SWEENEY, E. 2011. Towards a Unified Definition of Supply Chain Management: the Four Fundamentals. *International Journal of Applied Logistics (IJAL),* 2**,** 30-48.

SWEENEY, E., GRANT, D. B. & MANGAN, D. J. 2018. Strategic Adoption of Logistics and Supply Chain Management. *International Journal of Operations & Production Management,* 38**,** 852-873.

SWINK, M., MELNYK, S. A., HARTLEY, J. L. & COOPER, M. B. 2017. *Managing operations across the Supply Chain*, McGraw-Hill Education New York, NY.

TAN, K. C. 2001. A Framework of Supply Chain Management Literature. *European Journal of Purchasing & Supply Management,* 7**,** 39-48.

TATHAM, P., WU, Y., KOVÁCS, G. & BUTCHER, T. 2017. Supply Chain Management Skills to Sense and Seize Opportunities. *The International Journal of Logistics Management,* 28**,** 266-289.

TELLER, C., KOTZAB, H. & GRANT, D. B. 2012. Improving the Execution of Supply Chain Management in Organizations. *International Journal of Production Economics,* 140**,** 713-720.

TERZI, S. & CAVALIERI, S. 2004. Simulation in the Supply Chain Context: A Aurvey. *Computers in industry,* 53**,** 3-16.

TERZIOVSKI, M. 2002. Achieving Performance Excellence through an Integrated Strategy of Radical Innovation and Continuous Improvement. *Measuring Business Excellence,* 6**,** 5-14.

THAI, V. V., CAHOON, S. & TRAN, H. T. 2011. Skill Requirements for Logistics Professionals: Findings and Implications. *Asia Pacific Journal of Marketing and Logistics,* 23**,** 553-574.

THOMAS, E. & MAGILVY, J. K. 2011. Qualitative Rigor or Research Validity in Qualitative Research. *Journal for Specialists in Pediatric Nursing,* 16**,** 151-155.

THOMAS, R. 2014. In Modern Supply Chains, the soft stuff is the hard stuff. *International Journal of Physical Distribution & Logistics Management,* 44.

THOMSON, J. 2019. Update on the Legal Profession Uniform Law Scheme. *Brief,* 46**,** 3.

THORNHILL, A., SAUNDERS, M. & LEWIS, P. 2009. *Research Methods for Business Students*, Prentice Hall: London.

THORNTON, L. M., ESPER, T. & MORRIS, M. 2013. Exploring the Impact of Supply Chain Counterproductive Work Behaviors on Supply Chain Relationships. *International Journal of Physical Distribution & Logistics Management,* 43**,** 786-804.

TIWARI, R., SHEPHERD, H. & PANDEY, R. 2014. Supply Chain Management in Construction: a Literature Survey. *International Journal of Management Research and Business Strategy,* 3**,** 7-28.

TIWARI, S., WEE, H. M. & DARYANTO, Y. 2018. Big Data Analytics in Supply Chain Management between 2010 and 2016: Insights to industries. *Computers & Industrial Engineering,* 115**,** 319-330.

TOUBOULIC, A. & WALKER, H. 2015. Theories in Sustainable Supply Chain Management: a Structured Literature Review. *International Journal of Physical Distribution & Logistics Management,* 45**,** 16-42.

TREADWELL, M. 2018. Encyclopedia of Computer Science and Technology. *Reference Reviews*.

TUCK, R. 2007. An Introductory Guide to National Qualifications Frameworks. *ILO*.

VAISMORADI, M., JONES, J., TURUNEN, H. & SNELGROVE, S. 2016. Theme Development in Qualitative Content Analysis and Thematic analysis.

VAISMORADI, M., TURUNEN, H. & BONDAS, T. 2013. Content Analysis and Thematic Analysis: Implications for Conducting a Qualitative Descriptive Study. *Nursing & Health Sciences,* 15**,** 398-405.

VAKHARIA, A. J. & YENIPAZARLI, A. 2009. Managing Supply Chain Disruptions. *Foundations and Trends® in Technology, Information and Operations Management,* 2**,** 243-325.

VAN DEN HOONAARD, W. C. 2002. *Walking the Tightrope: Ethical Issues for Qualitative Researchers,* Toronto, Canada, University of Toronto Press.

VAN DER ZEE, D.-J. & VAN DER VORST, J. G. 2005. A Modeling Framework for Supply chain Simulation: Opportunities for Improved Decision Making. *Decision Sciences,* 36**,** 65-95.

VAN HOEK, R. I. 2001. Logistics Education: Achieving Market and Research Driven Skill Development. *International Journal of Physical Distribution & Logistics Management,* 31**,** 505-519.

VANDERMERWE, S. & RADA, J. 1988. Servitization of Business: Adding Value by adding Services. *European Management Journal,* 6**,** 314-324.

VARGO, S. L., MAGLIO, P. P. & AKAKA, M. A. 2008. On Value and Value Co-creation: A Service Systems and Service Logic Perspective. *European Management Journal,* 26**,** 145-152.

VENDRELL-HERRERO, F., BUSTINZA, O. F., PARRY, G. & GEORGANTZIS, N. 2017. Servitization, Digitization and Supply Chain Interdependency. *Industrial Marketing Management,* 60**,** 69-81.

VENKATESWARAN, J., SON, Y.-J. & KULVATUNYOU, B. Manufacturing Supply Chain Applications: Investigation of Influence of Modeling Fidelities on Supply Chain Dynamics. Proceedings of the 34th Conference on Winter simulation: Exploring new Frontiers, 2002. Winter Simulation Conference, 1183-1191.

VOAK, A. 2009. *Green Supply Chain Logistics: 'Cradle-to-Grave' Material Flow Frameworks. International,* Melbourne, Australia, ISS Institute Inc.

VOGT, J. J., PIENAAR, W. J. & DE WIT, P. W. C. 2005. *Business Logistics Management: Theory and Practice*, Oxford University Press South Africa.

VON GLASERSFELD, E. & WATZLAWICK, P. 1984. *The Invented Reality,* New York, W W Norton.

WAGNER, C., SANCHO-ESPER, F. & RODRIGUEZ-SANCHEZ, C. 2020. Skill and Knowledge Requirements of Entry-level Logistics and Supply Chain Management Professionals: A Comparative Study of Ireland and Spain. *Journal of Education for Business,* 95**,** 23-36.

WAGNER, S. M. & KEMMERLING, R. 2014. Supply Chain Management Executives in Corporate Upper Echelons. *Journal of Purchasing and Supply Management,* 20**,** 156-166.

WALLER, D. 1999. *Operations Management: A Supply Chain Approach,* Australia, Cengage Learning.

WALSHAM, G. 1995. Interpretive Case Studies in IS Research: Nature and Method. *European Journal of Information Systems,* 4**,** 74-81.

WASONGA, T. A. & MURPHY, J. F. 2006. Learning from Tacit Knowledge: The Impact of the Internship. *International Journal of Educational Management,* 20**,** 153-163.

WEDEKIND, V. 2018. THE SOUTH AFRICAN QUALIFICATIONS AUTHORITY.

WHEELAHAN, L. 2011. From Old to New: the Australian Qualifications Framework. *Journal of Education and Work,* 24**,** 323-342.

WILENSKY, H. L. 1964. The Professionalization of Everyone? *American Journal of Sociology,* 70**,** 137-158.

WILEY, C. 1995. Reexamining Professional Certification in Human Resource Management. *Human Resource Management,* 34**,** 269-289.

WILLIS, J. W., JOST, M. & NILAKANTA, R. 2007. *Foundations of Qualitative Research: Interpretive and Critical Approaches,* Thousand Oaks, CA, Sage.

WISE, A. E. 2005. Establishing Teaching as a Profession: The Essential Role of Professional Accreditation. *Journal of Teacher Education,* 56**,** 318-331.

WISE, A. E. & LEIBBRAND, J. 1993. Accreditation and the Creation of a Profession of Teaching. *Phi Delta Kappan,* 75**,** 133.

YIN, R. K. 2015. *Qualitative Research from Start to Finish*, Guilford Publications.

YOUNG, M. F. 2003. National Qualifications Frameworks as a Global Phenomenon: A Comparative Perspective. *Journal of Education and Work,* 16**,** 223-237.

ZAJDA, J. 2007. Credentialism in the 21st Century: The Importance of Qualifications. *Educational Practice and Theory,* 29**,** 61-79.

ZAKLAD, A., MCKNIGHT, R., KOSANSKY, A. & PIERMARINI, J. 2003. A New Approach to Sustainable Supply Chain Excellence. North Brookefield: Profit Point.

ZIEMINSKI, N. 2009. *Help Still Wanted, Global Talent Crunch Persists* [Online]. Reuters. Available: https://www.reuters.com/article/us-manpower-talent/help-still-wanted-global-talent-crunch-persists-idUSTRE54R0SO20090528 [Accessed 2nd December 2018].

ZIKMUND, W. G., CARR, J. C., BABIN, B. & GRIFFIN, M. 2013. *Business Research Methods,* Toronto, Canada, Nelson Education.

ZINN, W. & GOLDSBY, T. J. 2014. Logistics Professional Identity: Strengthening the Discipline as Galaxies Collide. *Journal of Business Logistics,* 35**,** 23-28.

Appendix

Quest Ethics Notification - Application Process Finalised - Application Approved

From: quest.noreply@vu.edu.au

To: James.Sillitoe@vu.edu.au

Cc: adam.voak@live.vu.edu.au; Thu-Huong.Nguyen@vu.edu.au

Date: Wednesday, 9 January 2019, 12:35 pm AEDT

Dear ASPR JIM SILLITOE,

Your ethics application has been formally reviewed and finalised.

» Application ID: HRE18-235
» Chief Investigator: ASPR JIM SILLITOE
» Other Investigators: MR Adam Voak, DR THU-HUONG NGUYEN
» Application Title: Becoming a Profession: Towards a Supply Chain and Logistics Body of Knowledge (SCLBOK)
» Form Version: 13-07

The application has been accepted and deemed to meet the requirements of the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007)' by the Victoria University Human Research Ethics Committee. Approval has been granted for two (2) years from the approval date; 09/01/2019.

Continued approval of this research project by the Victoria University Human Research Ethics Committee (VUHREC) is conditional upon the provision of a report within 12 months of the above approval date or upon the completion of the project (if earlier). A report proforma may be downloaded from the Office for Research website at: http://research.vu.edu.au/hrec.php.

Please note that the Human Research Ethics Committee must be informed of the following: any changes to the approved research protocol, project timelines, any serious events or adverse and/or unforeseen events that may affect continued ethical acceptability of the project. In these unlikely events, researchers must immediately cease all data collection until the Committee has approved the changes. Researchers are also reminded of the need to notify the approving HREC of changes to personnel in research projects via a request for a minor amendment. It should also be noted that it is the Chief Investigators' responsibility to ensure the research project is conducted in line with the recommendations outlined in the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007).'

On behalf of the Committee, I wish you all the best for the conduct of the project.

Secretary, Human Research Ethics Committee
Phone: 9919 4781 or 9919 4461
Email: researchethics@vu.edu.au

VICTORIA UNIVERSITY
MELBOURNE AUSTRALIA

CONSENT FORM FOR PARTICIPANTS INVOLVED IN RESEARCH

INFORMATION TO PARTICIPANTS:

We would like to invite you to be a part of a focus group to validate the preliminary findings of a research project seeking to address two fundamental questions:

1. To what extent do consistent content themes exist within specialist Supply Chain and Logistics (SCL) Masters by Coursework programs found across 1st Generation National Qualification Frameworks (NQF) jurisdictions?

2. To what degree can these themes be used to inform and potentially platform the formulation of a baseline SCL Body of Knowledge (BOK)?

CERTIFICATION BY PARTICIPANT

I, _____

of _____

certify that I am at least 18 years old* and that I am voluntarily giving my consent to participate in the study:

Becoming a Profession: Towards a Supply Chain and Logistics Body of Knowledge being conducted at Victoria University by: Assoc Prof James Sillitoe, Dr Thu-Huong Nguyen and Adam Voak.

I certify that the objectives of the study, together with any risks and safeguards associated with the procedures listed hereunder to be carried out in the research, have been fully explained to me by:

Adam Voak

and that I freely consent to participation involving the below mentioned procedures:

- Participation in a five-member specialist face-to-face focus group, which will be used to establish consensus and thus test the veracity of the student researcher's preliminary findings.

I certify that I have had the opportunity to have any questions answered and that I understand that I can withdraw from this study at any time and that this withdrawal will not jeopardise me in any way.

I have been informed that the information I provide will be kept confidential.

Signed:

Date:

Any queries about your participation in this project may be directed to the researcher
Assoc Prof James Sillitoe
Mob: [redacted]

If you have any queries or complaints about the way you have been treated, you may contact the Ethics Secretary, Victoria University Human Research Ethics Committee, Office for Research, Victoria University, PO Box 14428, Melbourne, VIC, 8001, email Researchethics@vu.edu.au or phone (03) 9919 4781 or 4461.

VICTORIA UNIVERSITY
MELBOURNE AUSTRALIA

INFORMATION TO PARTICIPANTS INVOLVED IN RESEARCH

You are invited to participate

You are invited to participate in a research project entitled 'Becoming a Profession: Towards a Supply Chain and Logistics Body of Knowledge (SCLBOK)'.

This project is being conducted by a student researcher Adam Voak as part of a Doctor of Business Administration at Victoria University under the supervision of Principal Investigator Assoc. Prof James Sillitoe from the College of Business and Associate Investigator Dr Thu-Huong Nguyen also from the College of Business.

Project explanation

This research project is seeking to address two fundamental questions:

1. To what extent do consistent content themes exist within specialist Supply Chain and Logistics (SCL) Masters by Coursework programs found across 1st Generation NQF jurisdictions?

2. To what degree can these themes be used to inform and potentially platform the formulation of a baseline SCL Body of Knowledge (BOK)?

The veracity of the preliminary findings will be tested using a modified Delphi approach (Dalkey & Helmer, 1963)) consisting of a focus group (Krueger &Casey, 2015). What is a focus group? A focus group is an interactive group discussion where the student researcher can gain several valuable specialist perspectives about interim conclusions reached about a topic. Members of the group will be asked to read these conclusions, and provide their immediate comments. This will be done in a group setting, so that you can hear what others have said in the group, and indicate your agreement or otherwise.

You are being asked to form part of this focus group composed of five carefully selected SCL experts who meet detailed specified criteria. As indicated briefly above, as a panel member you will be asked to consider each of the resultant themes (major category) findings. The panel will be asked to discuss their level of agreement or disagreement with the interim findings, and this will thus provide valuable opinions and perspectives through an impartial external lens.

This process will not only provide important informed feedback on the initial research, but it will also allow expert consensus which will fundamentally check the trustworthiness of the preliminary findings. It is also important to note that as a participant, your comments and participation will be treated as confidential, thus you will not be identified in any report by your name nor your place of work. However, to add veracity to the project, your professional status will be acknowledged by your depersonalised Job Title.

What will I be asked to do?

You will be asked to participate in a five-person focus group (recorded by Dictaphone so that it can be transcribed). Each panel member will asked to mark "agree" or "disagree" beside each of the resultant themes (major categories) which are the findings of the study, and in this way will thus provide valuable opinions and comments through an impartial external lens.

This focus/discussion group will be recorded to ensure accuracy of reporting and to reduce the chance of misinterpreting any comments. All tapes and transcripts will be kept secure by the student researcher, and will not be available for any third party (examiner) access unless the tapes are depersonalised. Whilst names will be removed from transcripts, each participant will have a code number, only known the student researcher, in order that comments can be linked to a participant's position.

Only the student researcher and thesis supervisors will have access to transcripts (with all personal names removed) of the focus group. Focus group members will be asked if abbreviations or acronyms are used, that the member state the full name at least once to aid transcription. The use of a "flip chart" may be used to write down key points during the focus group and take notes.

What will I gain from participating?

While there will be no remuneration available for participating in the Focus Group, your valuable participation will assist in testing the veracity of the preliminary findings of this study, and thus play an important role in shaping the potential future development of a Body of Knowledge for the Supply Chain and Logistics sector.

How will the information I give be used?

The information provided from the Focus Group will be used to check the veracity of the Student Investigator's preliminary findings.

What are the potential risks of participating in this project?

All sources of data collected from the focus group will be confidential and anonymous. During the focus group, all specialist participants will be made aware of the confidentiality requirements of the data and they will be asked not to talk about discussions outside of the group. This is because while confidentiality will be maintained by all investigators in the recording and reporting of this study, anonymity within the Focus Group obviously cannot be maintained, and participants will be asked to cooperate in this matter.

How will this project be conducted?

In a Focus Group situation, the members will meet in a face-to-face setting, where the validation of the student researcher's preliminary findings will be checked for veracity through an interactive group discussion. The student researcher will act as chairperson, and ask for SCL specialist perspectives regarding agreement and/or disagreement about a series of themes (categories) which are the initial findings of the previous phase of the study. Members of the focus group will also be given the opportunity think about, and comment on, what others have said in the group.

Who is conducting the study?

Chief Investigator: Assoc Prof James Sillitoe – [redacted]

Associate Investigator Dr Thu-Huong Nguyen - [redacted]

Student Investigator: Adam Voak – [redacted]

Any queries about your participation in this project may be directed to the Chief Investigator listed above.
If you have any queries or complaints about the way you have been treated, you may contact the Ethics Secretary, Victoria University Human Research Ethics Committee, Office for Research, Victoria University, PO Box 14428, Melbourne, VIC, 8001, email researchethics@vu.edu.au or phone (03) 9919 4781 or 4461.