Systemic Organisational Knowledge Management:

An action research study in a

high-performance sport institute

By

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To Olivia,

for the warmest cuddles

and her unconditional love.

Abstract

Knowledge management (KM) is increasingly gaining significance in the academic and professional realms as a source of organisational competitive advantage. However, despite the promise of competitive advantage, knowledge management initiatives can sometimes be unsuccessful. Historically, the discipline of knowledge management has multidisciplinary roots in various organisational sciences. Added to that, there exist multiple definitions and perspectives in the field, all influencing the way in which knowledge management is implemented in organisations. Further, the organisational context in turn plays a key role in outlining the knowledge management strategy. As such, there is a lack of a standard framework for knowledge management implementation, adding to the dilemma of how organisations plan and implement knowledge management.

The KM literature points to the need for an integrated effort for knowledge management implementation, embracing the complexity inherent in the field marked by the interconnectedness of multiple critical success factors, networks of knowledge and the critical role of knowledge management in facilitating competitive advantage. Knowledge audits have been cited as the critical first step in the design and implementation of knowledge management practice. However, the current knowledge audit methodologies in the literature predominantly adopt a systematic, snapshot and fragmented approach to inquiry conducted by external consultants in order to recommend and design independent knowledge management solutions. This appears to be at odds with the need for an integrated effort for knowledge management implementation.

This research contributes to the knowledge audit literature by rethinking the audit methodology. A knowledge management review methodology is proposed emphasising a systemic and iterative approach to inquiry, facilitated by the embeddedness of the researcher in the context. The study contributes by arguing that knowledge management practice that is systemically embedded across the organisation is more likely to be sustainable and resilient to changes in the context and provide continuous competitive advantage. The knowledge management review methodology draws from an interaction of three action research approaches, insider

action research, systemic action research and critical participatory action research, to contribute to theoretical understanding and practice of knowledge audits.

The research is conducted in a high-performance sport institute where the researcher was embedded as an employee. The case study organisation is further recognised as a knowledge intensive firm and a public-sector organisation, with specialised and esoteric knowledge that interacts in multilinear ways to facilitate the attainment of the organisation's strategic objectives. As such, the case study organisation presents a unique opportunity to conduct and review the methodology for informing their knowledge management practice. The iterative and systemic approach to inquiry, facilitated by the interaction between the three action research approaches, was instrumental in simultaneously enhancing the learning across the organisation and facilitating systemic organisational knowledge management.

The research further positions itself amongst the ongoing debates on the future of the discipline of knowledge management, emphasising true systemic integration of knowledge management practice in the organisational context, functions and objectives for sustained competitive advantage.

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Abbreviations

BOA	British Olympic Association
BPA	British Paralympic Association
CPAR	Critical participatory action research
EIS	English Institute of Sport
HOS	Heads of Service
HR	Human resource
I2S	Integration and implementation science
IAR	Insider action research
ICA	Intellectual capital accounts
ICT	Information and communications technology
IT	Information technology
KIF	Knowledge intensive firm
KM	Knowledge management
KMR	Knowledge management review
NGB	National Governing Body
OCOG	Organising committees of Olympic Games
OGKM	Olympic Games Knowledge Management
PhD	Doctor of Philosophy
PSO	Public sector organisation
SAR	Systemic action research
SMT	Senior management team
SNA	Social network analysis

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Chapter 1: Introduction

Chapter 1: Introduction

1.1 Introduction

This chapter presents an introduction to the research, setting the context for the study and guiding the reader through the structure of the thesis. Section 1.2 presents an overview of the research problem, critical for situating the research in the knowledge management literature. Section 1.3 outlines the research question, aim and objectives that guided this research. Thereafter, Section 1.4 presents the research context, introducing the case study organisation where the research was set. Section 1.5 presents the thesis structure, followed by the key contributions of this research outlined in Section 1.6. Finally, Section 1.7 contemplates the question 'why knowledge management' considering the transdisciplinary impact and contribution of this research.

1.2 Research background and problem overview

This research investigates the role of knowledge audits in facilitating systemic organisational knowledge management, through targeting the sustainability, integration and success of knowledge management practice. The analysis is based on a knowledge management review conducted in a high-performance sport institute. The term knowledge management review is used in this thesis to refer to and reflect the philosophy and principles of the knowledge audit methodology proposed and implemented in this research. Further discussion on the rationale behind this decision as well as the knowledge management review methodology are presented in Chapter 5.

Drucker (1993) influentially described knowledge and knowledge workers as the most valuable assets of the 21st century. Today, while there are many definitions of knowledge management, reflecting the multifaceted evolution of the field, at its simplest it can be defined as "getting the right knowledge to the right person at the right time" (Bayat, 2016, pp.169). Managing an organisation's knowledge has become critical to provide sustained competitive advantage, optimising business competencies, facilitating learning and innovation and equipping organisations to respond and adapt to the demands of their context (Davenport and Prusak, 1998; Becerra-Fernandez and Sabherwal, 2014). Subsequently, the last few decades have seen an exponential rise

in a concerted effort to define, research and apply knowledge management in a range of different contexts (Barley, Treem and Kuhn, 2018). The discipline of knowledge management has made forays in industries such as the manufacturing sector (e.g., Dyer and Nobeoka, 2000; Gunasekaran and Ngai, 2007; Cavaliere, Lombardi and Giustiniano, 2015; Soto-Acosta, Popa and Palacios-Marques, 2017), service sector (e.g., Mearns and du Toit, 2008; Shaw and Williams, 2009; Birasnav, 2014), not-for-profit sector (e.g., Huck, Al and Rathi 2011; Bloice and Burnett, 2016; Rathi, Given and Forcier, 2016; Ragsdell, 2016) and sports (e.g., Singh and Hu, 2008; Razaghi et al., 2013; Schenk et al., 2015).

Academics and practitioners profess the importance of context in outlining a successful KM strategy (Hansen, Nohria and Tierney, 1999; Alavi and Leidner, 2001; Greiner, Böhmann and Krcmar, 2007; Dalkir 2013; Geisler and Wickramasinghe, 2015). It has been stated that there is no "one size fits all plan" for knowledge management in organisations (Hylton, 2002; Franken and Braganza, 2006; Levantakis, Helms and Spruit, 2008). Different organisations have different knowledge management needs and thus require solutions rooted in their specific context (Edwards, Shaw and Collier, 2005). Authors further emphasise the adoption of an integrated approach to knowledge management implementation for the success and sustainability of knowledge management initiatives, facilitated by an interaction between organisational context and culture, strategic objectives, human and social factors and technology infrastructure (du Plessis, 2007; Jashapara, 2011; Akhavan and Pezeshkan, 2014).

It emerges that due to this lack of a standard framework for knowledge management implementation, managers and organisations often face the dilemma of how to implement knowledge management initiatives successfully (Earl, 2001; Becerra-Fernandez and Sabherwal, 2014). The academic literature on knowledge management also highlights that despite the promise of strategic advantage, attempts at introducing KM initiatives in organisations can sometimes be unsuccessful (Hylton, 2002; Levantakis, Helms and Spruit, 2008; Valmohammadi and Ghassemi, 2016). It is reasoned that often organisations implement KM strategies without first understanding what knowledge they need and how to manage it (Stewart, 2002; Serrat, 2017). Knowledge audits are thus presented as a critical first step in designing an

organisation's knowledge management strategy and implementation by understanding the context and the specific organisational needs (Liebowitz 2000; Burnett, Illingworth and Webster, 2004; Latif, Drus and Shariff, 2016).

Subsequently, the literature on knowledge audits has grown in recent years, with studies based in different contexts and sectors (e.g., Lauer and Tanniru, 2001; Cheung et al., 2007; Burnett, Williams and Illingworth, 2013; Ragsdell et al., 2014). Much like the multiple perspectives in the general KM literature and the lack of a standard framework for KM implementation, there is no universally accepted framework for knowledge audits (Latif, Drus and Shariff, 2016). Burnett, Illingworth and Webster (2004) discuss the need to align knowledge audit tools and techniques to the context under investigation.

From a review of the literature in this research, it is clear that the organisational context plays a critical role in defining and informing KM practice (Hansen, Nohria and Tierney, 1999; Merono-Cerdan, Lopez-Nicolas and Sabater-Sanchez, 2007). The theoretical knowledge management literature suggests that an iterative relationship exists between the organisational context, knowledge management strategy and its implementation, highlighting the need for a consistent and iterative approach to KM practice. That is, to facilitate a truly integrated approach to KM implementation, consistency and interaction between an organisation's context and strategic objectives, knowledge management perspectives, knowledge management strategy and knowledge management implementation is imperative. Knowledge audits as a critical first step in the design of a knowledge management strategy can help mediate this relationship by iteratively reviewing the organisational context and simultaneously informing knowledge management implementation. However, a review of the knowledge audit literature highlighted a predominantly systematic and periodical approach to evaluation of the context conducted by external auditors (Xiao, Wang and Peng, 2010; Latif, Drus and Shariff, 2016). This research questioned the impact of this approach in successfully facilitating systemic and integrated KM practice.

To address the research gap between the conceptual understanding and the practice of knowledge audits, this research designed a knowledge management review methodology drawing from the action research approach to iteratively assess the

context, inform knowledge management practice and apply actions in the case study organisation. The methodology emphasised an iterative and systemic approach to inquiry, facilitated by the embeddedness of the researcher in the context actively collaborating and participating in the organisation (Reason and Bradbury, 2008; Burns, 2007, 2014a; Coghlan and Brannick, 2014; Kemmis, McTaggart and Nixon, 2015). By implementing this methodology in a high-performance sport institute, this research investigated the role of knowledge audits in facilitating systemic organisational knowledge management.

1.3 Research question, aim and objectives

The research gap identified in Section 1.2 led to the development of the following research question:

RQ. How does an iterative and systemic approach to knowledge audits enhance the sustainability, integration and success of knowledge management practice?

In order to address this research question, an action research approach was adopted, which is discussed further in Chapter 2, to simultaneously inform the theoretical understanding as well as the practice of knowledge audits. Subsequently, the following research aim guided the research process:

RA. To investigate the role of knowledge audits in informing knowledge management practice in an organisation.

To do so, the following research objectives were proposed:

RO 1. To review and critique the current literature, research and methodologies on knowledge audits

RO 2. To design a knowledge management review methodology addressing the gaps in the current literature

RO 3. To implement the knowledge management review methodology in the case study organisation and use the findings to inform their knowledge management practice

RO 4. To identify learning from the review process and assess the impact of the methodology in informing knowledge management practice

RO 5. To make theoretical, methodological and practical contributions to the existing understanding and literature on knowledge audits and knowledge management implementation

The following section introduces the case study organisation and context within which this research was based.

1.4 Research context

This research project is based in a single case study organisation, the English Institute of Sport (EIS). The EIS is the biggest provider of sport science, medicine and technology support to Olympic, Paralympic and professional sports in the UK (English Institute of Sport, 2018a). Situated within the complex system of UK high-performance sport, the EIS operates from the core value of collaboration, liaising with strategic partners including the government, sports and higher education institutes to improve sport performance in the UK (English Institute of Sport, 2018b). This is achieved by pioneering sport science knowledge, delivering innovative solutions to complex performance questions, collaborative and strategic planning of performance, and developing people engaged in the delivery of sport science and medicine support. Due to the knowledge-intensive nature of the core organisational operations, management of knowledge and the people and contexts where it resides is an intrinsic responsibility of the EIS.

In recent years, the vision and mission statement of the EIS stressed improvements in knowledge sharing and collaboration practices of the sport science and medical practitioners and creating a network of expertise across the country (English Institute of Sport, 2011, 2013). This was further corroborated by the establishment of a knowledge management function (known as Performance Knowledge) in the institute with the aim to "facilitate the sharing of knowledge and best practice across the high-performance system" (English Institute of Sport, 2013, pp.2). Since 2012, KM initiatives have been introduced across the institute to increase the knowledge capability of the EIS. The present study was initiated to progress the ongoing work of the Performance Knowledge team within the EIS.

The EIS has an established student research program wherein PhD students become embedded in the context, simultaneously researching performance questions, generating theoretical knowledge and developing practice in sport. The EIS maintains high-standards of practice and thus use this PhD program to train and develop students to become future practitioners for the institute. Consistent with this commitment to developing research and practice, the EIS expressed interest in generating theoretical and practical knowledge in applying knowledge management in the high-performance sport context, specifically to inform improvements in knowledge sharing and collaborative practices of the institute. The researcher became embedded in the research context, supported by her former training and background as a sport psychologist in high-performance sport.

The EIS can be understood better as a knowledge intensive, public sector organisation (this classification is explained further in Chapter 3). The EIS is primarily engaged in developing highly specialised and contextual knowledge and practice to facilitate competitive advantage in high-performance sport. This is reflected in its core functions of technical development of sport science knowledge, delivering sport science and medicine support for performance impact, and technological research and innovation in high-performance sport. Subsequently, knowledge in multiple forms plays a key role across the institute, embedded in various practices and processes, and embodied in the subject matter experts in the system. In addition, a key feature of the structure of the EIS is the multiple, overlapping interactions within the institute as well as with external stakeholders (the structure of the EIS is explained further in Chapter 4). These characteristics emphasise the unique context of the institute, presenting distinctive challenges to knowledge management implementation and highlighting the need to sufficiently understand the context to inform knowledge management practice. As a result, the EIS was deemed to be an excellent context to study the relationship between knowledge audits and knowledge management implementation to facilitate systemic integration of knowledge management.

1.5 Research structure

This research adopted an action research approach, emphasising an iterative approach to implementing the knowledge management audit within the research inquiry. The action research approach draws from the philosophical underpinnings of

the participatory paradigm (Reason and Bradbury, 2008), which was deemed appropriate for this research considering the embeddedness of the researcher in the context. The action research approach thus facilitated the research aim of investigating the role of knowledge audits in informing knowledge management practice, whilst simultaneously contributing to theoretical and practical knowledge of knowledge audits as well as the researcher's own learning in the field. A detailed discussion on the research methodology is presented in Chapter 2.
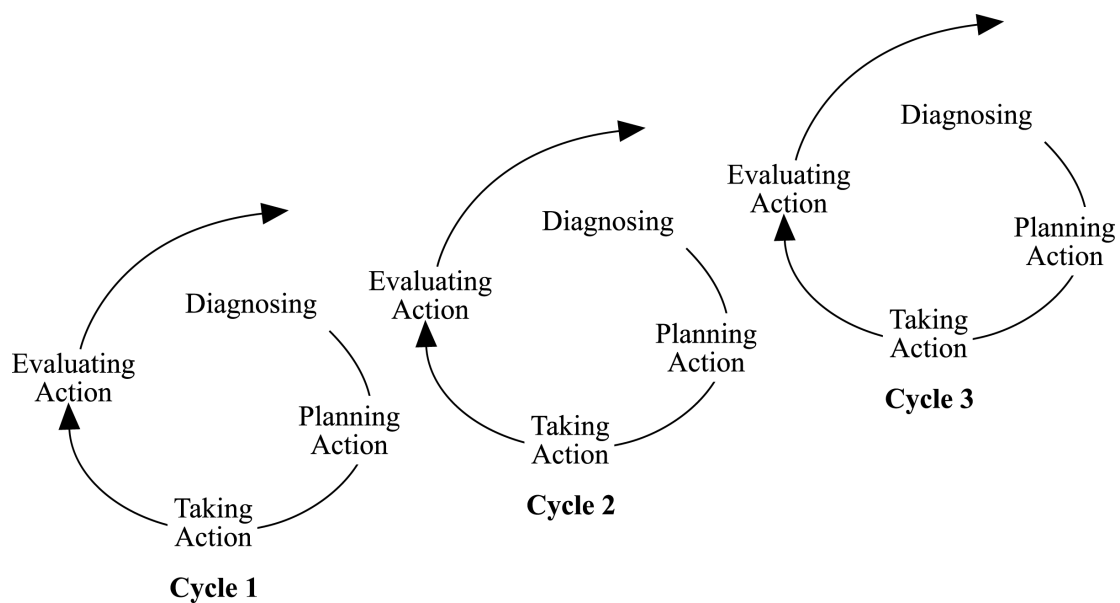
Figure 1.1 Spiral of action research cycles (Coghlan and Brannick, 2014, pp.11)

Following the characteristics of action research (Reason and Bradbury, 2008), this research was designed as an emergent and developmental process, iteratively reviewing the knowledge management literature and the organisational context, conducting the audit inquiry and implementing the subsequent actions to progressively develop an understanding of the phenomenon. This iterative approach is further reflected in the structure of the thesis (Figure 1.2). Specifically, Coghlan and Brannick's (2014) action research cycles for conducting insider action research in organisations guided the structure and design of the thesis (Figure 1.1). As a result, Chapter 2 presents an early discussion on the research methodology to guide the reader suitably through the research structure and the actions implemented in the thesis.

	• Chapter 1: Introduction • Chapter 2: Research methodology
Part 1: Preunderstanding	• Chapter 3: Knowledge management • Chapter 4: Case study organisation
Part 2: Planning action	• Chapter 5: Knowledge audits
Part 3: Taking and evaluating action	• Chapter 6: Findings • Chapter 7: Meta learning and discussion
	• Chapter 8: Conclusion
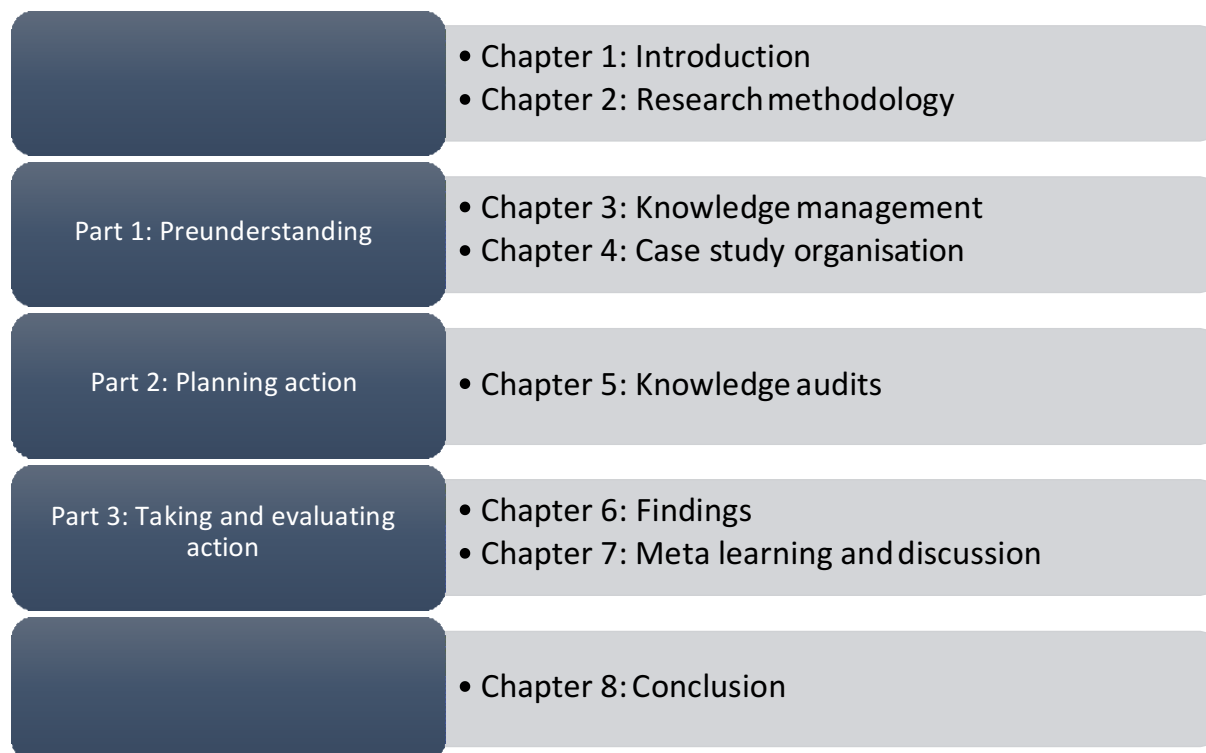
Figure 1.2: Structure of the thesis

Mirroring Coghlan and Brannick's (2014) principles of preunderstanding, the research commenced with an exploratory review of the KM literature and the context of the case study organisation to develop a preunderstanding of the research context, critical for diagnosing the problem. This preunderstanding of the research context is presented in Part 1, wherein Chapter 3 discusses the review of the knowledge management literature and Chapter 4 describes the organisational context. Subsequently, this preunderstanding was critical in defining the aim and rationale of conducting a knowledge management audit in the case study organisation (see Section 4.4, Chapter 4). Thereafter, Part 2 outlines the research design, the action planning phase of the research (see Figure 1.2), wherein Chapter 5 discusses a critical review of the knowledge audit literature. The theoretical literature on knowledge audits was iteratively reviewed with the research methodology to define the research question and inform the design of the knowledge management review methodology, also presented in Chapter 5. Finally, Part 3 presents the research findings and analysis (Figure 1.2), reflecting the taking and evaluating action phases (Figure 1.1), wherein the journey of the implementation of the knowledge management audit in the EIS is explained in Chapter 6, followed by a discussion on the researcher's meta-learning

from the action research process as well as the implication of the findings in addressing the research questions in Chapter 7. The thesis ends with Chapter 8, which presents the conclusions of the research, along with contributions to knowledge, recommendations for practice, limitations and suggestions for future research.

1.6 Research contributions

This research made original contributions to theory and practice in the field of knowledge management. These include theoretical, methodological and practical contributions.

1.6.1 Theoretical contributions

This research contributed to the theoretical literature on knowledge management by rethinking the knowledge audit process as well as contributing to the ongoing debates on the future of the KM discipline.

1. The term knowledge management review is introduced whilst rethinking the traditional systematic, snapshot and fragmented approach evident in the existing knowledge audit methodologies. This research highlighted the role of a knowledge management review in facilitating the iterative and integrated relationship between organisational context, knowledge management strategy and its implementation, critical for facilitating sustainable and ongoing improvements in knowledge management practice.

2. The emerging trends in the knowledge management discipline point to an integrated approach to practice. This research contributed to this stream of literature by emphasising the role of the knowledge management review in aligning an organisation's knowledge management strategy to its business strategy.

1.6 2 Methodological contributions

The knowledge management review methodology was accordingly designed following the principles of the participatory research paradigm and the characteristics of the action research methodology. Consequently, this research made methodological contributions to the action research literature.

1. The knowledge management review methodology adopted an interaction between three action research approaches (insider action research, systemic action research and critical participatory action research). This research contributed to the literature by demonstrating that sustainable change can be implemented by conducting a multi-level, systemic inquiry, supported by participatory inquiry and individual reflective practice.

1.6.3 Practical contributions

By adopting the action research approach, this research made contributions to the practical knowledge on knowledge audits.

1. This research presented a systemic and iterative approach to knowledge management reviews, facilitated by the embeddedness of the researcher in the context, thereby rethinking the existing knowledge audit methodologies.
2. This research proposed the knowledge management review as an integral role of a knowledge manager to design and implement knowledge management practice in participation with key stakeholders, align knowledge management strategy to the organisational functions and facilitate ongoing improvements in knowledge management practice.

1.7 Why knowledge management?

Early interest in knowledge management emerged with the rise of information and knowledge intensive work in the post-industrial society (Bell, 1973; Hislop, Bosua and Helms, 2018). Over the years, there has been a growing emphasis on the strategic importance of knowledge and its application for competitive advantage. Hislop, Bosua and Helms (2018) discussed the key assumption of the knowledge management literature, that is, knowledge is regarded as a strategic organisational asset, nature of work is evolving with rising significance of intellectual work and that effective management of organisational knowledge contributes to competitive advantage.

Positioned in a knowledge intensive, public sector, high-performance sport institute, this research operated from the position that knowledge exists in multiple forms. It may be present as technical knowledge in research papers, case studies and practice guidelines, as insights and experiences gathered from practice or as collective

intelligence in a multidisciplinary community of practice. The research acknowledged that in such a knowledge intensive context, even an organisation relatively novice to the principles and practice of knowledge management would have been engaging in activities to manage their knowledge, such as, capturing knowledge as case studies, sharing knowledge using online repositories, creating technical knowledge in research and applying knowledge in practice. Knowledge management in this space then contributes a deliberate, purposeful and strategic focus on improving individual and system capabilities to leverage knowledge and intellectual capital to improve organisational effectiveness and performance for continuous growth and competitive advantage.

The literature already suggests that due to its multidisciplinary roots, the field of knowledge management has considerable overlap with other organisational sciences such as human resource management, information systems and collaborative technologies (Baskerville, 2006; Dalkir, 2013). Acknowledging the omnipresence of knowledge in an organisation, future development in this field should consider how knowledge management can align with these areas to improve an organisation's capability to systemically leverage its knowledge and intellectual capital for continuous organisational development and competitive advantage. In this research, the KMR led to the emergence of multiple actions that had far reaching impact than a series of knowledge management solutions and processes. Specifically, the KMR informed the emergence of strategic and individualised focus on technical development of knowledge and people in different disciplines in the EIS, contributed to strategic shift towards a networked way of working and facilitated leveraging knowledge for individual and system learning in the EIS. The overall strategic direction of knowledge management evolved to improve problem solving and learning capacity and maximise the organisational capability to continuously adapt to changes in the emerging context. In conclusion, this research highlighted the propensity for knowledge management to align and integrate with other strategic organisational sciences to contribute to organisational growth and development.

1.8 Chapter summary

This chapter introduced the research, describing the research context and briefly highlighting the gaps in the literature that informed the research question and guided

the study. The following chapter presents the research methodology that informed the overall study and thesis structure and will be critical in guiding the reader through the journey of this research.

Chapter 2: Research Methodology

Chapter 2: Research Methodology

2.1   Introduction

This chapter presents the research methodology that guided this research. It begins with restating the research aim and question in Section 2.2 to help align the research methodology to the research process. Thereafter, Section 2.3 presents a discussion on the research methodology literature, along with the specific research philosophy that underpins the thesis. Section 2.4 presents the specific action research approach that was adopted, followed by the research design in Section 2.5. Section 2.6 presents the data collection and analysis methods adopted in this research. Finally, Section 2.7 draws attention to the challenges and issues in practice, ethics and quality of an action research project that were considered and encountered during the study. The purpose of this chapter is to present the methodological underpinnings of the thesis that guided the study in pursuit of answers to the research question. This chapter is purposefully placed early in the thesis in order to highlight how the research was grounded in the action research methodology, which is subsequently reflected in the thesis structure (revisited in Section 2.5).

2.2   Research aim and question

The research project was developed against the context of the ongoing debates and discussions on the identity of the discipline of knowledge management and the lack of a standard framework for knowledge management implementation. Set within the context of high-performance sport, a previously less explored context for knowledge management implementation, this research proposed to conduct a knowledge management review in the case study organisation to responsibly inform knowledge management practice. The gaps in the theoretical and methodological literature on knowledge audits led to the development of the following research question:

RQ.   How does an iterative and systemic approach to knowledge audits enhance the sustainability, integration and success of knowledge management practice?

In order to address this research question, an action research approach was adopted to simultaneously inform the theoretical understanding as well as the practice of

knowledge audits. Subsequently, the following research aim guided the research process:

RA. To investigate the role of knowledge audits in informing knowledge management practice in an organisation

To do so, the following research objectives were proposed:

RO 1. To review and critique the current literature, research and methodologies on knowledge audits

RO 2. To design a knowledge management review methodology addressing the gaps in the current literature

RO 3. To implement the knowledge management review methodology in the case study organisation and use the findings to inform their knowledge management practice

RO 4. To identify learning from the review process and assess the impact of the methodology in informing knowledge management practice

RO 5. To make theoretical and methodological contributions to the existing understanding and literature on knowledge audits and knowledge management implementation

The researcher was encouraged to become embedded in the case study organisation, which was deemed instrumental in gaining access to participants and data. Moreover, as the study progressed, it proved critical in translating the theoretical and conceptual understanding of knowledge management into actionable knowledge, thereby bridging the gap between theory and practice. The next section presents a discussion on the research philosophy that was adopted in line with the researcher's embeddedness in the context and underpinned the study.

2.3 Research philosophy

Creswell (2014) asserts that the broad approach or plan to conduct research involves a congruence between the research philosophy, research design and specific methods or procedures to conduct the study. Philosophical worldviews or paradigms define the researcher's beliefs about the world, the nature of knowledge and how they

propose to understand the phenomenon under study. These in turn guide the research design and the adoption of specific research methods for data collection and analysis (Lincoln, Lynham and Guba, 2011; Creswell, 2014).

Positivism asserts the absolute truth of knowledge that exists objectively, independent of the researcher (Lincoln and Guba, 2000). It is deterministic and reductionistic in nature, whereby the aim of research is to establish cause and effect relationships to explain outcomes based on experimentation and careful observations of objective reality (Creswell, 2014). Positivism favours quantitative research methods, with an emphasis on standards of reliability and validity. Such research aims to verify hypotheses and establish theories as generalisable facts and laws (Creswell, 2014).

Constructivism, on the other hand, questions the extent to which objective knowledge can be produced and asserts that individuals develop subjective meanings of their experiences (Lincoln and Guba, 2000). These experiences are multiple and varied, enabling the researcher to study the complexity of views. Further, individuals' meanings are formed through social interaction, within the context of historical and cultural norms. Thus, constructivist research involves developing a broad understanding of the individuals' context by studying the individual, subjective meanings they develop through personal, cultural and historical experiences. Such research is largely inductive, aimed at generating meaning out of the data collected (Creswell, 2014).

Heron and Reason (1997) critiqued the constructivism paradigm, stating that it is unclear about the relationship between the objective reality and the individuals' constructed meanings. They proposed the participatory paradigm, which posits that reality is subjective-objective, that is, it is created by the interaction between the world and the researcher's active participation with it (Heron and Reason, 1997). This worldview suggests that researchers are a part of the whole, rather than separate beings studying the reality from a distance. It stresses a collaborative form of inquiry, whereby the researchers and participants work together to define research questions, design research methods, study the world and apply the co-created findings to enable change (Reason, 1999).

Finally, the pragmatic worldview emphasises actions, applications and consequences, rather than studying the antecedent conditions and the laws of nature. Pragmatism is not limited to a particular research philosophy. Instead the researcher is free to choose from a range of methods and techniques to understand the problem. Such research thus includes both quantitative and qualitative methods and data to best answer the research question (Creswell, 2014).

The nature and setting of the study and the researcher's relationship with the context were instrumental in selecting the research paradigm. Primarily, the research was based in a real-world setting, designed to generate practical knowledge to inform the knowledge management practice at the case study organisation. The phenomenon under study involved a highly complex and unique context, not widely researched within the field of knowledge management. Moreover, the researcher became embedded in the context, embodying the dual role of researcher and consultant, and participating in the ongoing knowledge management efforts in the organisation. The purpose of the study was thus not only to facilitate academic inquiry and contributions within knowledge management implementation but also to inform knowledge management practice and enable change in the organisational context. This was consistent with the researcher's predisposition towards applied research and bridging the gap between theoretical concepts and practice in the real world.

Furthermore, the researcher's previous training was as a sport psychology practitioner, whereby she practised from a belief of empowering individuals to understand their strengths and limitations, address the underlying issues and optimise performance in a resilient and sustainable manner. Within this role, she had sufficient experience and training in using reflective practice to critically examine her skills and experiences and continuously improve her competency as a practitioner. The research inquiry was thus designed to simultaneously facilitate academic and methodological contributions to the literature, devise practical knowledge for the case study organisation and enhance the researcher's learning and competency in the field. Considering these criteria, the participatory worldview was deemed appropriate to guide the research. The following subsection expands on the principles of the participatory paradigm that guided the research process.

2.3.1 Epistemological position

In recent years, there has been a growing emphasis on collaborative management research to create practical knowledge that is useful for organisations and rigorous for academics (Shani, Mohrman, Pasmore, Stymne, & Adler, 2008). Coghlan (2011) discussed that despite the relationship of action research with such kind of research, it remains unappreciated in the organisational and management studies. Academic research is traditionally concerned with developing theory with little emphasis on practice or actions (Brannick and Coghlan, 2007). Consequently, research conducted through the dual roles of researcher and practitioner or in collaboration with the organisation is instantly assumed as problematic due to nonconformity to standards of intellectual rigour and personal stake or emotional investment of the researcher (Alvesson, 2003; Coghlan and Brannick 2014). Tekin and Kotaman (2013) argue that like any other research methodology, action research should be discussed epistemologically to improve its applicability and rigour.

In social science research, many research paradigms and worldviews exist discussing the ontological and epistemological basis of research methodologies. One such distinction is visible in the four research paradigms, positivism, postpositivism, critical theory and constructivism presented by Lincoln and Guba (1994). Heron and Reason (1997) extended on these frameworks to present the participatory paradigm, discussed previously in Section 2.3, which forms the philosophical basis for much action research literature (Reason and Bradbury, 2008). Johnson and Duberley (2000) further assert that in contemporary research, three main research paradigms prevail, namely positivism, hermeneutic tradition (also referred to as interpretivist, constructivist, phenomenology and relativist approach), and critical realism (Table 2.1).

Brannick and Coghlan (2007) align action research to Johnson and Duberley's (2000) conceptualisation of critical realism that operates from the belief that ontology and epistemology are separate, that is, the real world is separate from the observed world. Specifically, action research approach assumes an objectivist ontology and subjectivist epistemology, whereby reality has an independent existence but knowledge about the reality is constructed out of our experiences and perspectives on what can be observed (Poonamallee, 2009). Action research in turn is research in

action and as such aims at taking action as well as generating theory about action (Reason and Bradbury, 2008). Specifically, action research makes no distinction between theory and action and between theoretical and practical knowledge (Brannick and Coghlan, 2007). Further, action research assumes epistemic reflexivity focused at analysing and challenging the researcher's assumptions about how knowledge is generated in the study (Johnson and Duberley, 2000).

Table 2.1 Research paradigms (Adapted from Coghlan and Brannick, 2005; Brannick and Coghlan, 2007)

Philosophical foundations	Positivism	Hermeneutic and postmodernism	Critical realism and action research
Ontology	Objectivist	Subjectivist	Objectivist
Epistemology	Objectivist	Subjectivist	Subjectivist
Theory	Generalisable	Particular	Particular
Reflexivity	Methodological	Hyper	Epistemic
Role of researcher	Distanced from data	Close to data	Close to data

Coghlan (2011) adheres action research to practical knowing. Specifically, action research is interested in knowledge that is contextual, particular and practical. He further explains that such knowledge is different from context to context and thus, rather than emphasising generalisability, action research posits that study of practice requires an understanding of the surrounding context and meaning and assumptions that individuals make about their world. As contexts are seldom identical, practical knowing requires reflections and judgements, making modifications and deciding to act. Theory generation in action research thus proceeds through a cyclical process of action and reflection (Coghlan and Brannick, 2014). Finally, Coghlan (2011) argues that traditional organisational research adopts a positivist tradition, emphasising the expertise of an isolated few and thus has little use in practice. Action research instead emphasises a transdisciplinary, situational and reflexive research process that assumes knowledge generation as a collaborative activity aimed at developing

capabilities within an organisation to improve their practice (Gibbons et al., 1994). It is against these philosophical assumptions that this research is based. Specifically, the research emphasised a collaborative form of inquiry and learning-in-action to generate actionable knowledge about the practice of knowledge management in the dynamic context of high-performance sport.

2.3.2 The participatory paradigm and action research

The participatory paradigm posits that "our world does not consist of separate things but relationships which we co-author" (Reason and Bradbury, 2006, pp.7). Specifically, reality is co-created as individuals experience, feel and participate in the given world; the subjective and objective are interdependent (pp.8). This worldview draws from positivism, in that the given reality is objective. It further draws from constructivism, acknowledging that individuals articulate this reality in culturally framed expressions. As individuals participate in co-creating the reality, they become actors within it. The participatory paradigm thus stresses the researcher's active participation in the phenomenon or the context they are studying.

The participatory paradigm further introduces the concept of extended epistemology, which emphasises knowing as a process that arises out of the researcher's participation in the context, rather than on knowledge as a noun. The nature of knowing, within the participatory paradigm, goes beyond theoretical or academic knowledge; instead the emphasis is on co-creating meaning facilitated by the participation of the researcher and the participants in the context (Reason and Bradbury, 2006). Heron and Reason (1997), for instance, argued that reality is articulated in four interdependent ways – experiential, propositional, presentational and practical. Experiential knowing is gained by encounter with the world, through perception, empathy and resonance. Propositional knowing is knowledge about the world gained through ideas and theories. Presentational knowing is the manifestation of experiential knowing in the form of imagery, movement, poetry and stories. Practical knowing is the knowledge of how to perform an action or practice, evident in the form of skills and competence. The participatory paradigm asserts that learning will be richer and more meaningful when the four forms of knowing are in congruence and descriptive knowledge about the world translates into action to enhance it. Specifically, it implies that research should lead to reflective action that is grounded in the extended

epistemology. This is achieved as the researcher progresses through the four forms of knowing in a cyclical manner (Heron and Reason, 1997). They stated:

> "… people collaborate to define the questions they wish to explore and the methodology for that exploration (propositional knowing); together or separately they apply this methodology in the world of their practice (practical knowing); which leads to new forms of encounter with their world (experiential knowing); and they find ways to represent this experience in significant patterns (presentational knowing) which feeds into a revised propositional understanding of the originating questions." (Heron and Reason, 1997, pp.281)

Another key characteristic of the participatory paradigm is the democratic and collaborative form of inquiry, which asserts that people have the right to participate in the research about them and have a claim on the knowledge that is so generated. The participatory paradigm thus aims to generate practical knowledge and action as well as empower the participants and improve their capability to use this knowledge (Reason and Bradbury, 2006).

The participatory paradigm emphasises critical subjectivity rather than striving towards objectivity. Specifically, it posits that as the researcher experiences or perceives the phenomenon, they are also participating with it, thereby changing it (Heron and Reason, 1997). The participatory paradigm thus acknowledges the role of the researcher's perspective and bias in generating knowledge through self-reflexive awareness and stresses careful articulation of such perspectives (Reason, 1994). This consciousness of knowing further involves shared meaning and experiences between the researcher and the participants, thereby moving towards critical intersubjectivity. As a result, the participatory paradigm underpins collaborative and participative forms of inquiry such a co-operative inquiry, action inquiry and participatory action research (Reason, 1994).

The characteristics of the participatory paradigm mirror those of action research, thereby providing the philosophical underpinnings for it. Reason and Bradbury (2008, pp.4) offered a definition of action research, stating:

Action research is a participatory process concerned with developing practical knowing in the pursuit of worthwhile human purposes, grounded in a participatory worldview. It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and the community.

Coghlan and Brannick (2014) specifically advocated from Shani and Pasmore's (1985, pp.439) definition of action research, which is rooted in research inquiry in the organisational context:

Action research can be defined as an emergent inquiry process in which applied behavioural science knowledge is integrated with existing organizational knowledge and applied to solve real organizational problems. It is simultaneously concerned with bringing about change in organizations, in developing self-help competencies in organizational members and adding to scientific knowledge. Finally, it is an evolving process that is undertaken in a spirit of collaboration and co-inquiry.

The primary purpose of action research is to generate practical knowledge that is useful to people, thereby bridging the gap between theory and action (Reason and Bradbury, 2006). Specifically, action research asserts that theoretical knowledge on its own is insufficient to create change and must be linked to practice to improve social situations (Gustavsen, 2006). Action research is practice-based, striving for a balance between action and research, as well as the dual role of practitioner and researcher (McNiff and Whitehead, 2010). As a form of research, action research involves creating knowledge in practice and taking purposeful action to test its validity, aimed at improving practice. The knowledge thus generated is about the process that led to improvements in practice; the 'how' and the 'why', rather than the 'what'. Thus, it involves developing a critical perspective on the situation, questioning the motives and establishing the reasons for the actions, rather than simply solving problems (McNiff and Whitehead, 2010).

This is accomplished by an emphasis on reflexive and dialectical critique and higher-

order questioning. Dialectical critique involves challenging the underlying assumptions of practice by asking higher-order questions, that is, "why is the situation as it is, and what might one need to do to change it, or change the way one thinks about it" (McNiff and Whitehead, 2010, pp.22). Action research assumes that reality is constructed by the participants over time and thus higher-order questioning may highlight implicit issues that have considerable impact on understanding and improving the situation (McNiff and Whitehead, 2010). Such an approach, grounded in sound reasoning to gradually improve practice rather than trial and error, would be instrumental in creating sustainable change in practice.

Reason and Bradbury (2008) assert action research is emancipatory, in that it provides a mechanism for creating knowledge, thereby empowering the participants to improve their world. Consequently, a wider purpose of action research is to contribute to human flourishing and well-being. Drawing from humanistic approaches to learning that emphasise self-actualisation, action research developed into a form of organisational practice whereby the researcher facilitates reflective inquiry in organisations, enabling individuals to reflect on and improve their practice (Reason and Bradbury, 2006). The emphasis here is on improving practice by improving learning (McNiff and Whitehead, 2010). Thus, the aim of action research is not just to create knowledge but to facilitate transformation of attitudes and practice (Borda, 2006). Subsequently, action research is emergent, that is, the process evolves over time as the participants develop forms of inquiry and reflection (Reason and Bradbury, 2008).

Moreover, action research adopts the philosophical underpinnings of the participatory paradigm, that objective knowledge is difficult to attain because the researcher is a part of the world they are studying and that reality is co-created by the researcher and the participants attributing meaning to their world. Participation entails that the action researcher actively participates with the members of the system being studied and that the research inquiry is grounded in the perspectives of those concerned and not imposed by the external researchers (Reason and Bradbury, 2008). Further, participation implies combining multiple types of knowledge, including that of the researcher/s, the subjects and multiple dissenting views to create a shared understanding of the context (Ragsdell, 2009). Specifically, the researcher begins the process by contributing research knowledge. This is then reshaped by the participants

to allow them to make sense of their world (Altrichter et al., 2002). Action research thus advocates democracy, as the participants have shared ownership of the theoretical and practical knowledge so produced. In addition, it further empowers them to enhance their capabilities of transforming their practice and context (Reason and Bradbury, 2008).

Kurt Lewin, a critical figure in introducing action research, promoted it as a tool for participatory learning and action that was more successful in creating behaviour change whilst advancing science than traditional research methods (Pasmore, 2006). Coch and French (1948) historically used participatory methods to reduce resistance to change among employees. The participatory and democratic characteristics of action research could then be critical in improving practice in the organisational setting in a progressive and sustained manner. Specifically, inclusion of the employees as participants in the research process and dialogue would be useful in highlighting the complex insights into the context as they are the experts of their world. Furthermore, a collaborative approach towards learning and improving practice would be instrumental in increasing engagement from the employees, contributing towards the successful implementation and sustainability of the subsequent improvements.

Consolidating the discussion and effectively highlighting the values, features and purpose of action research, Reason (2006, pp.188) stated:

> … the purpose of inquiry is not primarily to describe or interpret our world, to contribute to the fund of knowledge in a field, to deconstruct taken-for-granted realities, or even to develop emancipatory theory, but rather to forge a more direct link between intellectual knowledge and moment-to-moment personal to social action so that inquiry contributes directly to the flourishing of human persons, their communities, and the ecosystems of which they are part.

Specifically, drawing from the principles of the participatory paradigm, the following characteristics of action research guided the research inquiry (see also Figure 2.1):

1. An emphasis on participatory inquiry, facilitated by the researcher's embeddedness and participation in the case study organisation to develop a

holistic understanding of the context.

2. An emphasis on collaborative inquiry with the participants from the case study organisation aimed at empowering them to improve their own practice.

3. An emphasis on extended epistemology to foster deeper learning in the context, that is, generating practical knowledge that helps align theory with practice.

4. An emphasis on reflexive and dialectical critique to challenge underlying assumptions and develop practice based on sound reasoning.

5. An emphasis on emergent inquiry that develops over time as the researcher and participants collectively learn.
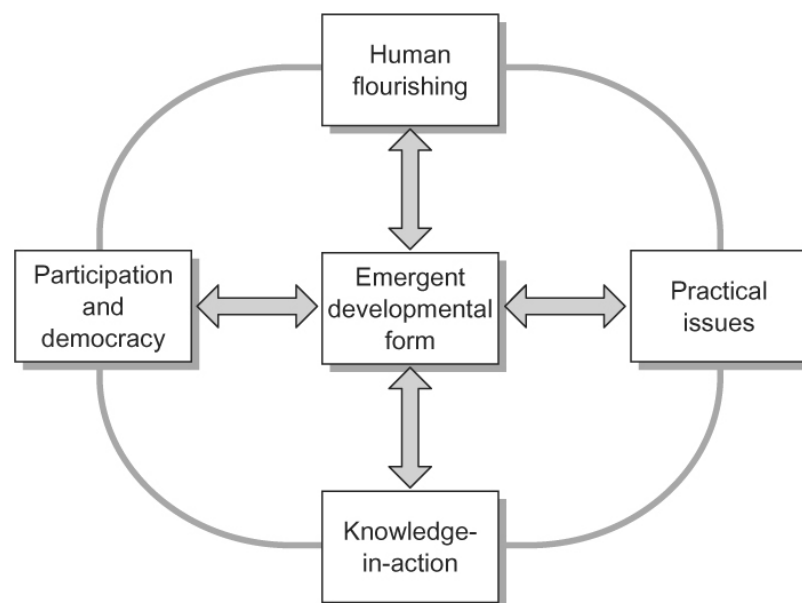
Figure 2.1: Characteristics of action research (Reason and Bradbury, 2006, pp.2)

These characteristics framed the research to contribute new forms of understanding about the role of knowledge audits in informing knowledge management practice as well as practical knowledge on the topic, thereby bringing together theory and actions to foster practical outcomes. The following subsection presents a discussion on the suitability of the action research approach for this research.

2.3.3 Rationale for selecting action research

The aim of this research was to investigate the role of knowledge audits in informing knowledge management practice in a sustainable and integrated manner. Further, this

research was based in a high-performance sport institute where the researcher became embedded as an employee. Following the principles of the participatory paradigm, the action research approach was adopted to guide the research process. The research was thus instrumental in generating practical knowledge for the organisation, by using the audit to inform their knowledge management practice. Specifically, a knowledge audit was conducted to understand the high-performance sport context and highlight the organisation's specific knowledge management needs. The researcher's embeddedness and participation in the organisation were especially emphasised to develop a deeper understanding of the context, maximise the organisation's engagement with knowledge management efforts and improve knowledge management practice in an integrated and sustainable manner.

Kane, Ragsdell and Oppenheim (2006) stressed the need to align the appropriate research methodology to the specific perspective on knowledge management adopted as well as the researcher's philosophical preconceptions. Further, this methodological stance should be consistent throughout the research, subsequently informing the research design and methods for data collection and analysis. This researcher operates from the philosophical beliefs that reality is co-created by people interacting and collaborating with each other in a given context, and that the overall purpose of research should be to generate theoretical and practical knowledge that enables change in the real world, thereby bridging the gap between research and practice. Moreover, in an organisational context, knowledge management practitioners are less concerned with the philosophical debates on theoretical principles and abstract concepts, and more focused on the practical applications of these concepts to create impact. Ottoson (2003) argued that management science generates theories and knowledge but has limited success rate in the applied world. Action research, on the other hand, emphasises solving practical problems whilst generating academic knowledge (Baskerville and Myers, 2004) and was thus deemed suitable for this research.

Ragsdell (2009) observed that within knowledge management research the focus has gradually shifted from a functionalist perspective to a more interpretive perspective, mirroring the growing emphasis on tacit knowledge and the role of human and social factors in knowledge management. This researcher believes that the dichotomy

between the practice-based or objectivist is too simplistic. Instead, a more holistic approach towards the design and implementation of knowledge management initiatives that encompasses a complex interplay of knowledge resources, knowledge management processes, infrastructure, people, organisational objectives and culture is necessary for the sustainability of knowledge management efforts. Xu et al., (2008) argue that traditional research methods may not be suited for research based in complexity. For example, positivism, with its deterministic and reductionistic tendencies, emphasises experimentation and control to establish cause and effect relationships. This in turn manipulates and distorts reality by distancing the researcher from it (Gaventa and Cornwall, 2006). Action research, as a framework that integrates several research methods, allows sufficient flexibility to appreciate and understand complexity (Xu et al., 2008).

Thus, following an action research approach, this research was structured as an emergent study, whereby inquiry, action and reflection progressed in a cyclical manner. This was aimed at progressively enhancing learning and simultaneously transforming knowledge management practice in the case study organisation. Section 2.4 outlines the specific action research approach selected to guide this study.

2.4   Action research approach

The term action research has been used to refer to a research approach, rather than a specific methodology, constituting certain methods and techniques (Reason and Bradbury, 2006). Consequently, various approaches to and types of action research have emerged in the literature, each consisting of a set of practices that draw from a range of research methodologies, qualitative and quantitative, informed by an interplay between the action researcher's ideas and the context (Reason and Bradbury, 2006; Kemmis, 2008). Reason (2006) advocates the need for the action researcher to be explicit and transparent in choosing a specific approach for conducting action research, adding to the quality of the research process. For this study, a broader commitment and orientation to action research was adopted to facilitate sustainable change across a complex system dynamic, enabled by the integration of three separate action research approaches. This section introduces the three action research approaches that were adopted within this research. Section 2.5 in turn highlights how the characteristics of each of the approaches were operationalised in the research design.

The implementation of the knowledge management audit in this research primarily emphasised Burns' (2014a, 2015) conceptualisation of systemic action research developed in the context of studying and facilitating sustainable change in complex system dynamics. Systemic action research (SAR) draws from the overarching principles of action research and is suited for studying complex settings characterised by interconnectedness of multiple issues and non-linear causality. Specifically, change in complex systems cannot be easily attributed to a specific action or intervention (Burns, 2015). Burns (2014a) described systems as the dynamic interconnections between individuals, processes and the context. Change in systems is thus emergent and iterative, that is, change in one part of the system causes simultaneous change in all other parts of the system, which leads to new outcomes, and so on. He further claimed that in order to facilitate sustainable change, actions and interventions should consider this complexity and change the underlying systems dynamic. Thus, the aim for action research in complex systems is to facilitate systemic solutions and not problem solutions by challenging underlying assumptions. Subsequently, SAR incorporates multiple parallel inquiries involving individuals and groups with different perspective. Further, inquiry within SAR is an emergent process where membership of the research group evolves as relevant to the study, allowing new perspectives and viewpoints to be included. The emphasis is on understanding the multiple perspectives and overlapping issues to foster a holistic view of the system and challenging the status quo to facilitate sustainable change (Burns, 2014a).

Burns (2014a, pp.4) described inquiry within the wider action research approach on a spectrum that ranges from individuals reflecting on their own practice, groups and communities engaging in participatory action research to system wide learning. He stressed that SAR builds on other approaches to action research, hailing individual reflective practice and group inquiry as effective tools within SAR. As a result, for this research, Coghlan and Brannick's (2014) description of insider action research for reflective practice in the organisational setting and Kemmis and colleagues' (Kemmis and McTaggart, 2000; Kemmis, McTaggat and Nixon, 2015) work on critical participatory action research were also called upon.

Coghlan and Brannick (2014) drew from the traditional action research approach (Lewin, 1946) to present insider action research (IAR) for the organisational context.

They described the purpose of action research as contributing to the generation of scientific knowledge and practical solutions as well as fostering learning from the actions. Action research thus proceeds in a cyclical manner, consciously and deliberately. The emphasis of this approach is on the creation of a collaborative relationship between the researcher and the client to solve an organisational problem and generate new knowledge. Coghlan and Brannick (2014) assert that action research begins with an understanding of the context and the significance of the project as well as developing collaborative relationships with individuals who have ownership of the project in the organisation (Pre-step: Context and purpose). Furthermore, action research requires the researcher's preunderstanding of the organisational environment and the theoretical underpinnings of operating phenomenon. This is the knowledge that the researcher contributes to the project. This is followed by a diagnosis of the issues operating in the context for the basis of action planning (Diagnosing). These may change in further iterations of the cycle and thus require careful recording showing the evidence and rationale for the new diagnosis. Based on the diagnosis, action or a series of actions are planned (Planning action) and implemented (Taking action). Thereafter, the actions are evaluated to assess the correctness of the diagnosis as well as the action and to feed into the next iteration of diagnosis and planning (Evaluating action) thus continuing the cycle of action and reflection (Figure 2.2).
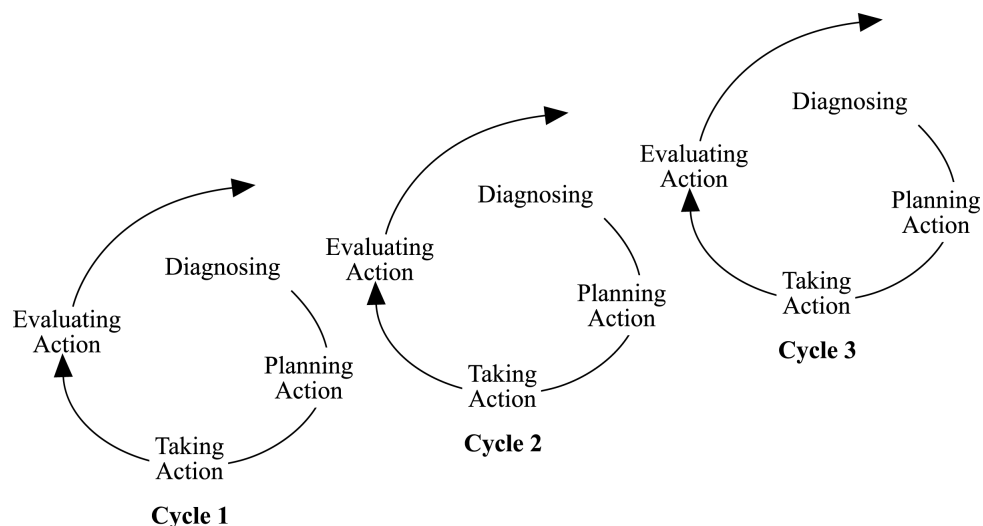
Figure 2.2: Spiral of action research cycles (Coghlan and Brannick, 2014, pp.11)
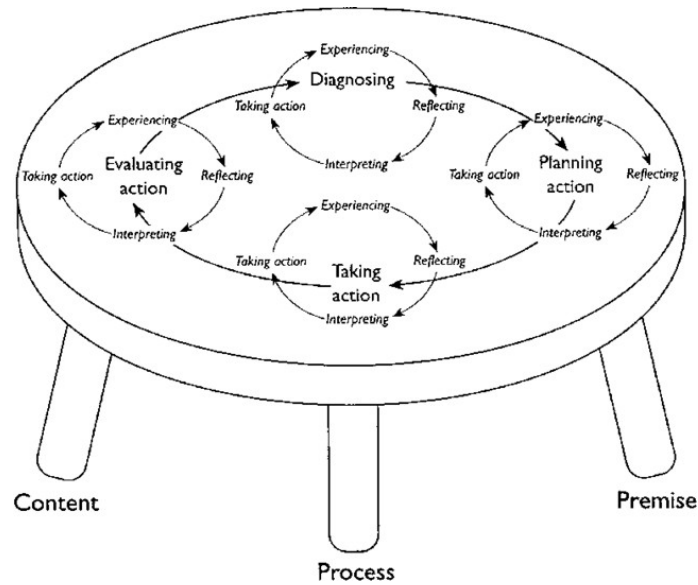
Figure 2.3: Meta cycle of learning (Coghlan and Brannick, 2014, pp. 15)

Coghlan and Brannick (2014) further suggest that action research projects often have two action research cycles operating simultaneously (Figure 2.3). Specifically, as the researcher engages in the core action research cycle aimed at addressing organisational issues, they must also reflect on the research project through the cycles of action and reflection. This involves assessing how each step is being conducted and how it shapes the subsequent step. They termed this the meta cycle of inquiry, that is, learning about learning. The meta cycle and core action research cycle are interlinked but not identical and can together demonstrate the quality of the research project. As the action research progresses to identify actions to address organisational problems, the meta cycle is instrumental in developing the researcher's awareness and skills in evidence based practice.

Critical participatory action research (CPAR), emphasising the participation of the research participants in the research, promotes collective, self-reflective inquiry to improve learning and practice, aimed at transforming individuals and organisations (Kemmis, McTaggart and Nixon, 2015). CPAR operates from a reflexive-dialectic view of practice, reflecting the mutuality between the individual/social and the objective/subjective (Kemmis and McTaggart, 2000). Specifically, practice is carried out by individuals and is socially constructed, evolving historically within the organisational context. Similarly, it has objectively defined characteristics as well as

subjective interpretations. Thus, as the objective conditions for practice are changed, they will be interpreted subjectively, affecting the way people enact the practice, thereby changing the context further and so on. CPAR further encourages critical self-reflection, which involves participants critiquing the links between the given social structures, their practice and perspectives and how they cause consequences. This is facilitated by creating a communicative space where the participants collectively strive for intersubjectivity and mutual understanding of practice and the context (Kemmis, McTaggart and Nixon, 2015).

Kemmis and McTaggart (2000) discussed that a reflexive approach is appropriate for research adopting this reflexive perspective on practice. They discussed the implementation of participatory action research through self-reflexive cycles of "planning a change, acting and observing the processes and consequences of change, reflecting on these processes and consequences, and the replanning, acting and observing, reflecting and so on" (Kemmis and McTaggart, 2000, pp.595). CPAR engages the research participants in examining their knowledge and surrounding and how that shapes their practice. Through the cycle of critical action and self-reflection, it aims to help participants improve their learning and practice.

The following section highlights how the three approaches to action research were integrated in the research design.

2.5   Research design

This research aimed at investigating the role of knowledge audits in aligning an organisation's knowledge management practice to their specific context whilst maximising the sustainability, integration and success of knowledge management initiatives. Subsequently, the research was based in a real-world organisation. As such, the research was designed to simultaneously contribute to the academic literature on knowledge audits, provide practical insights on implementing knowledge audits, enhance the researcher's learning in the field and inform organisational practice in the case study organisation such that they implement sustainable knowledge management initiatives.

This thesis consists of two parallel and overlapping structures, to simultaneously

inform theory and practice. First, the research design was guided primarily by Coghlan and Brannicks' (2014) insider action research approach, aimed to generate scientific and practical knowledge in practice. Second, the knowledge audit methodology, designed to address the specific gaps in the literature, was guided by Burns' (2007, 2014a, 2015) systemic action research approach, aimed to incorporate a systemic approach to knowledge audit for sustainable change in practice. Further, characteristics of Kemmis, McTaggart and Nixon (2015) critical participatory action research were incorporated to influence the participants' learning to improve practice. This integration of the three approaches mirrored the holistic perspective on knowledge management and the systemic view of knowledge audits to simultaneously improve learning and practice across the system. The following sections highlight the specific characteristics of the three action research approaches that were incorporated in this research.

2.5.1 Insider action research

Coghlan and Brannick's (2014) IAR, with its emphasis on generation of scientific knowledge, practical solutions for the organisation and development of the researcher's learning, guided the research design. The following characteristics were specifically incorporated:

1. Action research cycles (see Figure 2.2): The research was designed as an emergent process, facilitated by multiple iterations of the action research cycle. Specifically, the research process evolved and emerged as the researcher iteratively analysed and applied the theoretical literature on knowledge management in the EIS. Subsequently, reflective practice was stressed whereby every action that emerged was supported with sufficient reflection and critique. This was aimed at highlighting the process that led to improvements in practice, rather than simply providing problem solutions. The action research cycles that emerged are discussed further in Chapter 6.

2. Preunderstanding: The research process commenced with the researcher's preliminary understanding of the theoretical and conceptual literature on knowledge management as well as the high-performance sport context of the EIS. The preunderstanding is presented in Part 1, Chapters 3 and 4.

3. Collaborative relationship: A key feature of the IAR is that the research is conducted in collaboration with the individuals responsible for the project in the organisation. In this research, a collaborative relationship with the Knowledge Manager was stressed whereby the researcher and the Knowledge Manager collectively reflected on the applications of knowledge management literature in the EIS, facilitated by the audit findings. This was aimed at developing a shared understanding of knowledge management practice and incorporating the knowledge audit in the Knowledge Manager's role.

4. Meta cycle of inquiry: In addition to the action research cycles, a simultaneous cycle of inquiry was incorporated whereby the researcher reflected on the research process to develop her learning in the field.

Overall, the principles of IAR guided the research process to align theory with practice by facilitating generation of academic knowledge for the knowledge management discipline integrated with practical knowledge for the EIS, whilst enhancing the researcher's learning. A commitment towards emergent practice facilitated by the cycles of action and reflection was especially emphasised within the collaborative relationship with the Knowledge Manager. This was aimed at embedding the knowledge audit as a strategic and ongoing responsibility of the Knowledge Manager to continuously improve knowledge management practice.

The IAR's action research cycle (Coghlan and Brannick, 2014; Figure 2.2) especially guided the overall research structure (Figure 2.4). Specifically, the IAR's principle of preunderstanding is emulated in Part 1, wherein the researcher developed an understanding of the context and the importance of the project, as well as the theoretical underpinnings of the knowledge management literature. Part 1 consists of Chapter 3, which presents an exploratory review of the wider knowledge management literature, followed by Chapter 4, which presents an introduction to the unique context of the EIS. Following this, Part 2 reflects the Planning action phase of the cycle, wherein the researcher critically reviewed the knowledge audit literature to identify gaps in the theoretical and methodological underpinnings of knowledge audits and designed the knowledge management review methodology that was implemented at

the EIS. The Taking and Evaluating action phases of the action research cycle are mirrored in Part 3, which presents the story of the implementation of the knowledge management review (Chapter 6) as well as the analysis of findings and a critical discussion on the contributions of the research to the theoretical, methodological and practical literature (Chapter 7).

	• Chapter 1: Introduction • Chapter 2: Research methodology
Part 1: Preunderstanding	• Chapter 3: Knowledge management • Chapter 4: Case study organisation
Part 2: Planning action	• Chapter 5: Knowledge audits
Part 3: Taking and evaluating action	• Chapter 6: Findings • Chapter 7: Meta learning and discussion
	• Chapter 8: Conclusion
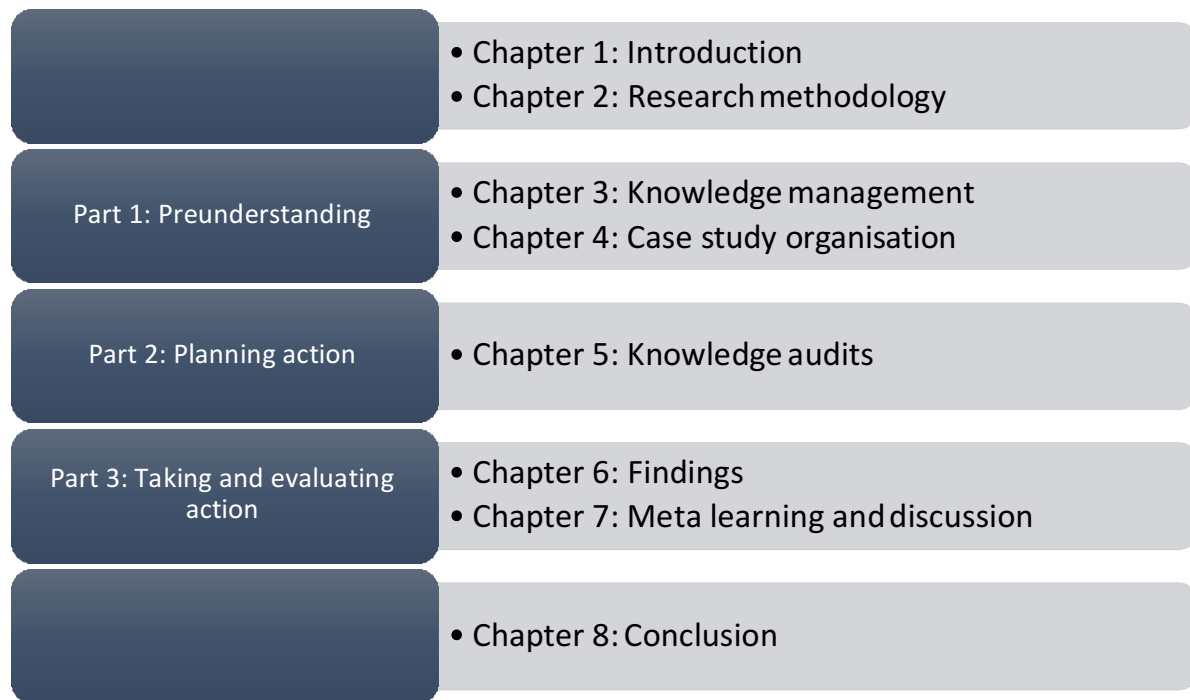
Figure 2.4: Structure of the thesis

2.5.2 Systemic action research

This research investigated the role of knowledge audits in facilitating knowledge management practice that is sustainable and integrated into the context for continuous competitive advantage. It adopted a holistic and integrated perspective on knowledge management that emphasises a complex interplay of knowledge resources, knowledge management processes, technology, organisational strategy and context. This complexity is mirrored in the high-performance sport context of the English Institute of Sport, characterised by a complex organisational structure and interdependence of roles, functions and teams across the system. Further, sustainability was operationalised as successful implementation of knowledge management practice that is embedded and integrated into the working culture of the organisation, adopts a long-term strategic focus to provide continuous competitive

advantage and is resilient against the dynamic organisational context. The existing systematic, objective and snapshot evaluation of the organisation facilitated by the existing knowledge audit methodologies was deemed insufficient in a context characterised by complex system dynamics (for the literature review on knowledge audits, see Chapter 5).

Burns (2007, 2014a, 2014b, 2015) discusses that complex system dynamics are characterised by complexity, multilinear causality and interrelatedness of issues. Further, in such contexts change cannot be easily attributed to a simple, linear solution and that causes of problems may often be explained by unrelated and invisible dynamics. He argues that micro change in a complex system can lead to macro impact and so a systemic view of the context will help identify connections that may have been missed in traditional, linear forms of inquiry. Creating sustainable change in such contexts thus requires a systemic understanding of how issues are interrelated and an emphasis on changing the underlying system dynamics rather than just the factors that have a direct impact on the problem (Burns, 2014a). As a result, to address the critique of the systematic evaluation evident in the existing knowledge audit methodologies (see Chapter 5), principles of systemic action research were incorporated to design this knowledge management review methodology.

Systemic understanding of issues: A specific emphasis of this research was to develop a whole system view of the high-performance sport context by considering multiple factors from across the system that influence knowledge management practice. Further, higher-order questioning was employed to critically highlight the underlying assumptions of practice and interrelatedness of issues. For example, questions like 'What are the barriers to knowledge sharing?' and 'How can we improve knowledge sharing?' were supplemented with questions like 'Why is this barrier important?' and 'Why is there a need to improve knowledge sharing?' were explicitly asked.

1. Systemic solutions: The review was positioned to facilitate systemic solutions in the context that align with and consider multiple factors across the system and become integrated into the working routine of the organisation, rather than design independent solutions and knowledge management techniques.

2. Multiple lines of inquiry: To enable a systemic understanding of the phenomenon, multiple lines of inquiry were included. Specifically, data was collected from across the organisational structure, including teams and functions that were not previously linked to the ongoing knowledge management efforts in the organisation. This was aimed at highlighting multiple, often implicit factors across the system that can potentially hinder or enable knowledge management practice.

3. Resonance: The principle of resonance has been prioritised over representativeness in SAR (Burns, 2014a). It enables identification of issues that are of significance across the system and that have a high possibility to create change. The review focused at identifying themes that resonated with the participants across the multiple lines of inquiry, thereby creating an understanding of the deeper issues in the context for knowledge management practice. Specifically, rather than using a consistent interview schedule, themes identified in one interview formed the basis for the subsequent interview, which allowed for an emergent view of the system.

4. Emergent learning and actions: SAR is presented as an alternative to the dominant theories of organisational decision making, whereby planning and thinking lead to action, that is, every action, conversation and inquiry within the organisational context results in changes across the system (Burns, 2007). This review was implemented as an iterative process, which enabled learning, actions and changes to emerge as the inquiry proceeded. The review thus designed as a dynamic and emergent process, which evolved in response to the changing reality of the context.

The knowledge management review methodology thus incorporated a commitment to systemic understanding of issues and systemic solutions in the context by embodying these characteristics of SAR. This was aimed at providing the review with a strategic and long-term focus by facilitating sustainability and integration of knowledge management practice, thereby directly addressing the research question.

2.5.3 Critical participatory action research

Operating from an integrated and multidimensional perspective on knowledge management, this research acknowledged the role of people in contributing to the sustainability and success of knowledge management practice of an organisation. As such, the participatory approach to inquiry was especially emphasised in data collection in the knowledge management review. Specifically, the methodology adopted a reflexive-dialectic view of practice, that is, practice will evolve as the objective changes in the context interact iteratively with the subjective interpretation of these changes. Principles of CPAR were thus incorporated to influence the participants' learning to improve their practice, aligned to the emergent learning and actions from the review (Kemmis and McTaggart 2000; Kemmis, McTaggart and Nixon, 2015).

1. Participatory inquiry: Drawing from CPAR's premise that practice is collectively constructed, this research emphasised participation of EIS employees in the inquiry to understand individual and collective perspectives on knowledge management practice. This was aimed at making changes in an informed manner by including multiples perspectives and maximising the participants' engagement with the subsequent actions.

2. Critical self-reflective practice: Operating from the reflexive-dialectic view of practice, CPAR posits that transforming practice involves making objective changes in the context as well as changing the individual perspectives on practice (Kemmis, McTaggart and Nixon, 2015). As a result, within the participatory form of inquiry, participants were encouraged to critically reflect on their own practice and how it interacts with the context. This self-reflection proceeded iteratively with the implementation of emergent actions from the review. In this way, changes in context and changes in the participants' learning and practice proceeded simultaneously.

3. Communicative space: CPAR's emphasis on critical intersubjectivity and shared understanding of practice is achieved through communicative action in communicative space (Kemmis, McTaggart and Nixon, 2015). Specifically, within the review inquiry, the researcher created a safe space for the

participants to communicate their individual subjectivity or perspective on practice in an attempt to reach a shared understanding and agreement on knowledge management, issues in practice and how change can be implemented. Thus, the review inquiry proceeded in a collaborative and participatory manner highlighting the multiple and collective perspectives across the organisation, rather than imposing the researcher's external influence.

A commitment to participatory and collaborative form of inquiry, following the principles of CPAR, was aimed at empowering the people in the organisation to improve their knowledge management practice. The skill of critical self-reflection was emphasised to enable participants to improve knowledge management practice in an ongoing, self-initiated manner, highlighting the strategic and iterative nature of the review process. Finally, the desire for critical intersubjectivity was aimed at facilitating sustainable change, by simultaneously transforming the practice and the contexts wherein practice evolves.

2.5.4 Summary

In conclusion, this research aligned with a broader commitment and orientation to the action research approach. From the family of action research approaches, SAR, IAR and CPAR were incorporated in the research design. Characteristics of each of the three approaches were integrated to generate learning and knowledge about practice of knowledge audits and facilitate sustainable change across a complex system dynamic. This integration mirrored the integrated perspective on knowledge management as well as the complexity and interconnectedness of factors in the high-performance sport context. Specifically, IAR aimed to facilitate the emergent design the research process to iteratively align theoretical understanding and practice of knowledge management, generate practical knowledge for the EIS based on sound reasoning and develop the researcher's learning in the field. SAR aimed to create systemic understanding of the context to highlight and assess underlying assumptions of practice and facilitate systemic solutions. Finally, CPAR aimed to improve practice by simultaneously changing the context and the participants' learning.

These principles of the three action research approaches were incorporated into the

design of the knowledge management review methodology that was implemented in the case study organisation in order to address the research gaps and research question identified in this research. A detailed description of the research gap as well as the knowledge management review methodology is presented in Chapter 5. The following section presents a discussion on the data collection and analysis methods used in this research.

2.6   Research methods

This section presents a discussion on the methods adopted in this research to collect and analyse the data.

2.6.1   Unit of analysis

The purpose of this research was to investigate the role of knowledge audits in informing knowledge management implementation. To do so, a knowledge management review (KMR) methodology was proposed addressing the research gaps. This methodology was implemented within the case study organisation, the EIS, wherein the EIS served as a vehicle to accomplish the research aim and address the research questions. As a result, the EIS became the bounded system and the context within which the phenomenon of knowledge management implementation was studied (Stake, 1995; Creswell, 2013).

The original remit of Performance Knowledge in the EIS was the Science and Technical Development team, which subsequently became the initial focus of inquiry within the KMR. However, to facilitate a system wide view of the EIS, membership of the research inquiry was also expansive and flexible. Specifically, employees at the senior management level from across the organisational functions were included in the inquiry, constituting a 100% sampling from this level. In addition, a number of informal and ethnographic conversations were conducted in the EIS facilitated by the researcher's embeddedness and participation in the context. The approach to sampling for these interactions was purposeful, intended to select individuals who could provide in-depth and systemic understanding of the context (Patton, 2002). In addition, the Knowledge Manager suggested participants for inquiry who could offer rich insight into the phenomenon under investigation, akin to judgement sampling (Patton, 2002). Additionally, upon becoming embedded, the researcher participated

widely in the EIS, attempting to interact with as many people as possible to explore the context (Fetterman, 2009). Finally, situated as an employee in the EIS, the researcher followed opportunistic sampling (Miles and Huberman, 1994) where conversations and participation in the EIS events were conducted as and when the opportunity arose.

A detailed list of the participants of inquiry is presented in Chapter 6 within the respective cycles of action research and phases of KMR implementation.

2.6.2 Data collection

Aligned to the participatory paradigm, and following an emphasis on the researcher's embeddedness in the context, collection of rich data was possible in the form participatory observations, reflections and field notes, formal interviews and informal conversations in the case study organisation. As discussed previously, the action research methodology does not refer to an exact procedure or method for collecting data. Instead, it is an orientation to participatory form of inquiry, consisting of multiple qualitative and quantitative methods for data collection and analysis to facilitate triangulation and develop a rich understanding of the phenomenon under study (Reason and Bradbury, 2008; Craig, 2009b; Bergold and Thomas, 2012). Triangulation is a critical process in action research studies wherein data from multiple sources and multiple perspectives is included to test the validity of the findings (Craig, 2009b; McNiff and Whitehead, 2010).

The researcher operated from Glaser's (2001, pp.145) belief that "all is data". Specifically, all opportunities for inquiry and observations that furthered the researcher's systemic understanding of the context were included as data in this research. As highlighted in Section 2.6.1, the remit of Performance Knowledge activities in the EIS was in the Science and Technical Development function in the organisational structure. Accordingly, the data collection within the review inquiry focused on the needs and objectives of this function. However, to develop a systemic understanding of the underlying issues in the practice of knowledge management in high-performance, participatory inquiry in the form of observations, conversations and document analysis were also conducted in the wider EIS context.

The following sections describe the research methods that were incorporated in this research to conduct the knowledge management review.

2.6.2.1　Interviews and focus groups

Interviews and focus groups are often used in action research studies to elicit the research participants' lived experiences in the context (McNiff and Whitehead, 2010). Further, interviews provide an opportunity for the participants to explore and reflect on these experiences (Stringer, 2013). As a result, in action research, interviews are often informal discussions (Stringer, 2013; McNiff and Whitehead, 2010). Within the KMR inquiry, unstructured interviews and focus groups were used to develop a systemic and emergent understanding of the context of high-performance sport. Specifically, the interviews were conducted with a general area of interest, such as the participants' understanding of knowledge management, specific needs from knowledge management principles and their perspectives on an ideal scenario for knowledge management practice for gap analysis. However, the conversations therein developed as the researcher and the participants collaboratively reflected on knowledge management practice for the EIS context. CPAR's principles of communicative space was especially emphasised, empowering and enabling interviewees to share their experiences and perspectives, and critically reflect on them to subsequently inform their own learning in practice. Further, principles of SAR were incorporated to identify and question the underlying assumptions of knowledge management practice. Thus, interviews were used in the KMR not just as a means of data collection but also an opportunity to collaboratively reflect on and challenge assumptions of practice and collectively inform the learning of the researcher as well as the EIS employees.

A list of the total number of interviews and focus groups conducted during the KMR implementation is presented in Chapter 6 within the respective action research cycle.

2.6.2.2　Document analysis

Robson (2011) discusses that content analysis of documents is another popular method of data collection in applied, real world research. Krippendorff (2004, pp.18) defines it as a "research technique for making replicable and valid inferences from texts to the contexts of their use". This definition highlights the relationship between the content and the context of the documents (Robson, 2011). Specifically, within the

KMR, content analysis of documents such as EIS annual reports and other material such as weekly staff communications, EIS and stakeholder websites and marketing communications and videos were included to identify the strategic purpose and objective of Performance Knowledge and how it aligns to the wider context of the EIS. Further, the expansive analysis was instrumental in developing a systemic understanding of the wider UK high-performance system and the EIS's strategic position and stakeholder relationships therein.

A list of documents included in the analysis is presented in Chapter 6 within the respective action research cycle.

2.6.2.3   Participant observations

Stringer (2013) discusses that observations in action research are participatory and ethnographic, enabling the researcher to develop an insider understanding of the context. Further, such observations provide opportunities to conduct further conversations and discussions with the research participants to extend the researcher's understanding as well as test the researcher's assumptions and accuracy of his or her observations. In this research, the researcher became embedded in the EIS as an employee, which provided a key opportunity to develop an insider understanding of the context and the lived experiences of engaging with Performance Knowledge activities. Further, through engaging and interacting in the context as an employee, the researcher could develop an emergent understanding of the dynamic context of the UK high-performance system and the inherent constant changes.

A list of the informal conversations that arose within the participant observations is included in Chapter 6.

2.6.2.4   Reflective journals

Stringer (2013) further advises that such observations should immediately be recorded in journals as field notes. McNiff and Whitehead (2010) also discuss that these recordings act as documentary data that can be revisited and reflected on during the research. Throughout this research, the researcher maintained extensive reflective journals in which all observations, analyses, reflections and questions were carefully noted. These journals were critical in keeping a record of all events and actions in the

EIS as well as assessing how the researcher's understanding of the context and knowledge management practice have progressively transformed (McNiff, 2016). Further, the journal entries were included in the documentary content analysis to facilitate triangulation and test the researcher's assumptions.

Excerpts from the reflective journals are included in Chapter 6, interspersed with the actions and reflections in the implementation of KMR to guide the reader through the action research journey and the subsequent impact for the EIS as well as the researcher's learning.

2.6.3 Data analysis

Following the emergent and iterative nature of action research inquiry, data in this research was analysed throughout to develop an emergent understanding of the research phenomenon, to identify further lines of inquiry and to inform actions in the context (Craig, 2009b). This section presents a discussion on the methods incorporated in this research to organise, analyse and interpret the data and the research findings.

2.6.3.1   Organising data

Craig (2009b) warns that action research projects that include qualitative methods run the risk of accumulating large quantities of data that can become unmanageable. She thus highlights the importance of organising raw data in to a format that can be analysed. In this research, data was collected from multiple sources and in multiple formats, as highlighted in the previous section. Specifically, the interviews and focus groups were audio recorded and transcribed verbatim into Microsoft Word documents. Further, all field notes and reflective journals, first hand-recorded in diaries, were also transcribed into Microsoft Word documents, to ensure consistency of format. Finally, documents included for content analysis were also transferred and stored in Microsoft Word document format. The multiple data sets were then uploaded onto NVivo, to help the researcher to organise and identify insights from multiple data sources.

2.6.3.2   Analysing data

Craig (2009b) discusses that there are different approaches to qualitative data analysis in action research. Primarily, she describes Glaser and Strauss's (1967)

grounded theory as a key process of conducting in-depth analysis in the action research study to develop theory out of the research phenomenon and activities. Following the grounded theory approach, the multiple data sets were subjected to open coding on NVivo, wherein the documents and raw data were repeatedly reviewed to identify themes. These themes were subsequently arranged into broader categories. Using the constant comparative approach (see Craig, 2009b; Creswell, 2013), codes across all data sets, that is, interview transcripts, documents, reflective journals and field notes, were compared and combined under the same categories. This helped in testing the resonance of themes across the multiple data sets to develop a holistic understanding of knowledge management practice in the high-performance system. These themes are presented in Chapter 6 within the respective action research cycles.

Craig (2009b) further discusses the descriptive reality approach, wherein the multiple data sets are interpreted in an integrated manner to ensure triangulation and present a vivid descriptive narrative of the situations and the actions that took place. Similarly, the multiple data sets in this research were reviewed and analysed in an iterative manner to develop a systemic appreciation of the complexity of the high-performance sport context as well as present the narrative of the implementation of the KMR, as presented in Chapter 6. The narrative is critical in highlighting and explaining the process that led to the actions and impact for the EIS.

2.6.3.3   Interpreting data

McNiff and Whitehead (2010) discuss that in action research, analysis and interpretation are two different processes. Analysis involves identifying patterns to describe the data and the actions, whilst interpretation involves ascribing meaning to those actions. In this research, the data analysis was instrumental in understanding the current perceptions and practice of knowledge management in the EIS. Interpretation of the emergent themes was helpful in giving meaning to these perceptions and making judgments regarding knowledge management practice as well as subsequent actions for Performance Knowledge. Thus, analysis and interpretation of data progressed continuously and iteratively during the KMR inquiry, within the collaborative relationship with the Knowledge Manager, to continuously inform actions from the research findings. A more descriptive discussion on how the inquiry and actions progressed within the KMR is presented in Chapter 5 with the

description of the KMR methodology.

2.6.3.4 Meta learning

A final approach to analysing and interpreting the findings in this research aligns with IAR's principle of meta cycle of inquiry. Specifically, as discussed previously in Section 2.4, Coghlan and Brannick (2014) stress that in an action research project, two forms of inquires, that is, the core action research cycle and the meta cycle of inquiry, progress simultaneously and interlinked with each other. The meta cycle of inquiry is instrumental in demonstrating the quality of the research project and developing the researcher's awareness and learning. In this research, the researcher reflected on the implementation of the KMR at the EIS to highlight critical themes in the practice of knowledge audits and knowledge management reviews aligned to the research question. This meta-learning is presented in Chapter 7, as a supplement to a traditional research discussion, to highlight the researcher's learning regarding the knowledge management review discussed in the context of the theoretical literature and implications for practice.

2.6.4 Summary

This section presented a discussion on the various data collection and analysis methods that were incorporated in the research to conduct the KMR, develop a systemic understanding of the context and phenomenon and subsequently inform practical actions as well as learning in the context. The following section presents a discussion on key challenges to the quality and ethical considerations in conducting action research.

2.7 Quality, ethics and challenges in action research

The action research approach varies from traditional positivistic or interpretivistic approach to inquiry, in that it emphasises the active participation of the researcher and their perspectives in the research process. This poses certain challenges in conducting action research that must be considered when addressing the issues of quality and rigour of the research process. This section draws attention to key challenges in the practice of action research that were duly considered in this research. First, the issue of quality of an action research project is explored, followed by a discussion on the principles of reflective practice and reflexivity. Thereafter, specific

challenges that are encountered in research in an organisational context are highlighted. Finally, ethical considerations in the action research approach are addressed. The purpose of this section is to demonstrate how issues and challenges in an action research process were dealt with in this research.

2.7.1 Quality of the action research project

The quality of action research is judged on criteria different from those for positivist or naturalist research. Action research as an emergent process is conducted in the present and the researcher is constantly reflecting and making choices to shape actions. Reason (2006) discussed that in order to show rigour and quality of the action research, the researcher must consciously make the choices and be transparent about them to self, to the co-participants and to the wider audience of the research.

Herr and Anderson (2014) presented a list of criteria against which the validity of the action research can be judged. Outcome validity refers to the extent to which the research resulted in actions that led to the resolution of the problems under study. Process validity refers to the extent to which the research methodology facilitates ongoing learning of the individuals and the system. Democratic validity refers to the extent to which the research is conducted in collaboration and participation with the individuals in the system. Catalyctic validity refers to the degree to which the research facilitates new ways of knowing the reality in order to transform it. Finally, dialogic validity refers to the quality of the research, informed by peer review.

Further, Bradbury-Huang (2010, pp.102) outlined the criteria that academic journals use to assess the quality of action research projects.

- Articulation of objectives: The extent to which authors explicitly address the objectives they believe relevant to their work and the choices they have made in meeting those.
- Partnership and participation: The extent to and means by which the project reflects or enacts participative values and concern for the relational component of research.
- Contribution to action research theory/practice: The extent to which the project builds on (creates explicit links with) or contributes to a wider body of practice

knowledge and or theory that contributes to the action research literature.

- Methods and process: The extent to which the action research methods and process are articulated and clarified.

- Actionability: The extent to which the project provides new ideas that guide action in response to need.

- Reflexivity: The extent to which the authors explicitly locate themselves as change agents.

- Significance: The extent to which the insights in the manuscript are significant in content and process, having meaning and relevance beyond their immediate context in support of the flourishing of persons, communities and the wider ecology.

Coghlan and Brannick (2014) discussed that within the organisational context, a good action research project must describe the story or journey of the research process in a factual and neutral manner, supported with evidence and articulate how the researcher made sense of the story. This involves being explicit and transparent about describing the various iterations of the action research cycle, explaining how the assumptions and interpretations were tested and challenged and including multiple perspectives. Additionally, they discussed that a good action research project should be grounded in theory, that is, it should demonstrate how the outcomes are challenged or supported by the current literature in the field.

These criteria were used to guide and present the narrative of the knowledge management review at the EIS. Bradbury-Huang's (2010) criteria were explicitly used to assess the quality of the research project. Operationalisation of the criteria is discussed in greater detail in Chapter 6, along with the narrative of the action research process and findings from the knowledge management review.

2.7.2 Reflective practice

Reflective practice is regarded as a critical skill for conducting action research (Bradbury, 2015). It is defined as a process of revisiting situations, events and problems and examining one's own experiences, actions and learning to promote further understanding (Craig, 2009a). According to Taylor, Rudolph and Foldy (2015,

pp.733), reflective practice consists of understanding the social construction of reality, recognising one's contribution to the construction and taking deliberate steps to reshape the construction of reality. This constitutes the iterative cycle of action-reflection, that is reflecting on action in order to inform further action. Reflections enable the researcher to examine practice and determine what strategies and techniques are working, what changes are needed and what actions can be taken to facilitate change (Craig, 2009a). Reflective practice promotes learning from experience to improve the skills and professional growth of the researcher, facilitate problem solving within the context of the research to enable improvements and lead to transformations in the context through a series of developmental stages (Craig, 2009a; Coghlan and Brannick, 2014).

Coghlan and Brannick (2014) discuss that within reflective practice, the researcher should systematically examine and challenge their implicit biases and cognitive distortions that may distort reality and affect the researcher's action. One way of doing this is by using journal entries, which includes recording the events and the researcher's reflections on the same. Journal entries are instrumental in keeping a systematic record of events and actions, understanding how the researcher's interpretations have progressively transformed and analysing the data and actions analytically (McNiff, 2016). As a result, a reflective journal was maintained throughout the research, drawing explicitly from the researcher's own skills and previous experiences in using reflective practice. These reflections are suitably presented interspersed with the narrative of the review in Chapter 6. Specifically, Schön's (1983) seminal work on reflective practice was used to reflect-in-action whilst participating in the context and reflect-on-action to assess the actions, outcomes and the researcher's own interpretations.

2.7.3 Reflexivity

Patton (2002) presented reflexivity as a critical theme in conducting research with people that seeks subjective interpretations of the reality, with the philosophical underpinning that complete objectivity is impossible to attain. Specifically, reflexivity refers to the self-awareness of one's own voice and perspective in shaping knowledge (Gouldner, 1970; Robertson, 2006). It involves critically reflecting on one's own actions, background, values, perceptions and perspectives to understand our influence in

constructing reality (Patton, 2002). Reflexivity aims to enhance the rigour of research by presenting an impartial account and critically examining researcher bias and subjectivity rather than ignoring it (Herr and Anderson, 2014). Within this research, the researcher critically reflected on her own background, actions and assumptions through reflective practice. In addition, a critical dialogue was initiated within the supervision team and within the collaborative relationship with the Knowledge Manager to regularly challenge assumptions of practice.

Within action research, reflexivity involves being critically aware of and inquiring into the process and iterations of action and reflection (Coghlan and Brannick, 2014). Action research follows the premise that research outcomes are facilitated by the researcher and participants collaboratively participating in action research cycles, challenging their assumptions and reflecting in practice to inform further actions. Thus, reflexivity here can be defined as being explicit and critical about the process that led to the outcomes rather than just reporting the outcomes (Robertson, 2006). Within this research, reflexivity was demonstrated by explicitly stating the process and rationale that influenced actions and outcomes during the review, informed by the researcher's assumptions and reflections and the participants' perspectives.

2.7.4 Challenges of organisational research and role duality

To foster a holistic and systemic understanding of the complexity of the high-performance system, the researcher's embeddedness and participation in the context were emphasised. However, the disadvantage associated with this insider research approach is the difficulty in navigating between the researcher-practitioner role duality and being objective to critique and assess the research. Coghlan and Brannick (2014) assert the crucial role of reflexivity in critically reflecting on and questioning one's own assumptions and experiences. This can be supported by an external facilitator who offers objectivity to help the researcher make sense of their experiences. In this research, this support was sought from the academic supervisors in challenging and understanding the researcher's experiences and assumptions about practice in the high-performance context. Conversely, the Knowledge Manager facilitated critical reflections on the researcher's assumptions and perspectives on knowledge management concepts.

Coghlan and Brannick (2014) further discussed how navigating between the dual role of researcher and practitioner can be overwhelming and confusing as both roles pose different demands and responsibilities. Reflexivity here incorporates being self-aware of one's own responses to the conflicting demands and learning to deal with them, as well as critically and objectively reporting the findings of the inquiry. In this research, the researcher participated in the EIS as a staff member. The role consisted of enacting the actions informed by the research with limited additional managerial responsibilities. This resulted in low role confusion and ambiguity. Yet, the researcher maintained reflective practice, reflecting-in-action and on-action as the research progressed and seeking evidence to support or refute her assumptions and perspectives.

Another issue in conducting organisational research is regarding the access to data (Coghlan and Brannick, 2014). It is possible that despite being situated in context, the researcher may not have access to all levels of the organisation. Furthermore, despite having access to the internal functioning and perspectives of the organisations, an insider researcher still has only a partial view of the reality. Thus, reflexivity here involves being transparent about these perspectives and being open to seeking further evidence to support or disprove them. Coghlan and Brannick (2014) suggest negotiating and assessing the access prior to commencing the research. In this research, the researcher was aware that although she had access to the entire organisational structure in terms of data collection, the access was limited to a specific team in the EIS in terms of implementing actions. This was suitably reflected on and explicitly discussed in the review process.

2.7.5 Ethical considerations

Brydon-Miller (2008) discussed the ethical issues to consider in confluence with the principles of action research. Specifically, she stated that it is important for the action researcher to uphold the values of respect for others, democracy, social change and a commitment to action. Respect for others, in traditional research, asserts voluntary participation. Within action research, this extends to democracy and inclusion of participants in contributing knowledge and actively shaping policies and procedures. Further, issues of beneficence and justice are highlighted to ensure that action research addresses concerns that are relevant to the participants, and not imposed

by the researcher, conducted in participation with them. Brydon-Miller (2008) recommends starting the research process with strong self-awareness of the researcher's core values and how they shape the interactions. This will help respond to ethical challenges in a manner consistent with the values as well as provide an opportunity to examine and reassess these values.

Within an organisational setting, insider research poses a significant ethical challenge of reporting findings from the action research, which may contain commercially and personally confidential or potentially embarrassing information (Coghlan and Brannick, 2014). Anonymity in reporting findings has been stressed, along with removing details that could lead to identification of the organisation or the individuals involved. This issue was reflected on early whilst designing the research and navigating access. Specifically, explicit permission and informed consent was sought from the legal representatives of the EIS to discuss the cultural and contextual details of the Institute. It was further agreed that the name of the organisation would be disclosed, without revealing the identities of the individuals involved in the research. In addition, written informed consent was sought from all employees who participated in the data collection and inquiry in the form of interviews, focus groups as well as ethnographic observations. Finally, issues of disclosing potentially confidential findings were regularly reflected on collaboratively with the Knowledge Manager.

Coghlan and Brannick (2014) further discussed the political issues inherent in conducting action research in an organisation, in gaining access, using data and publishing findings. For example, the findings may have political implications in terms of revealing weaknesses of certain individuals, causing them to feel threatened. Role duality can further add to this conflict. Action research thus demands critically examining all perspectives, a sense of courage from the researcher and skills in carefully intervening in the organisation's politics through negotiating, justifying and influencing the opposition (Coghlan and Brannick, 2014). These situations were encountered by the researcher whilst conducting the review and were explicitly discussed in reflective practice.

McNiff and Whitehead (2010) outlined ethical principles to follow whilst conducting action research. These involve requesting permission for participation from the

organisation and negotiating access with the necessary people. The documentation supplied to the participants should consist of an informed consent, inviting them to participate in the research as co-researchers and not subjects. Further, confidentiality, anonymity and voluntary participation should be emphasised to protect the participants' right. Finally, they recommend the action researcher to practice good professional and academic conduct, demonstrating integrity and good faith.

Before commencing this research, the necessary clearance was gained from the Loughborough University ethics committee as well as permission to access data and contact participants was sought from the EIS. The participants were given information sheets and informed consent forms, highlighting the purpose of the study, their role as participants, confidentiality and voluntary participation (Appendix 1). Good faith and research integrity were upheld whilst discussing the findings and reflections with the Knowledge Manager. Principles of action research were followed by emphasising the EIS employees' participation as co-researchers and maintaining reflexivity and reflective practice throughout.

2.8   Chapter summary

This chapter presented a discussion on the research philosophy, approach and design that guided the research processes. Additionally, the knowledge management review methodology was described, that was designed to address the gaps in the existing knowledge audit literature. Thereafter, the research methods were presented that were incorporated in the KMR in order to answer the research question. Finally, issues of challenges, quality and ethics in conducting action research were highlighted that were duly considered and addressed in this research. The research methodology presented here was instrumental in guiding the implementation of the knowledge management review. The narrative and findings of the review are presented in Chapter 6, along with a discussion on the implications of the findings in Chapter 7.

Part 1: Preunderstanding

Chapter 3: Knowledge Management

Chapter 4: Case Study Organisation

Chapter 3: Knowledge Management

Chapter 3: Knowledge management

3.1 Introduction

This chapter provides an introduction into the literature on knowledge management, relevant for setting the context and informing the researcher's preunderstanding, following Coghlan and Brannick's (2014) principles of insider action research. First, the chapter reviews the ongoing debates and discussions on the identity of the discipline of knowledge management as well as the future directions of the field (Section 3.2). Second, issues and dynamics of knowledge sharing are discussed, highlighting the role of context and social and human factors (Section 3.3). Finally, in Section 3.4, the case study organisation is introduced, clearly identifying the multiple sectors wherein it is situated, with a discussion on relevant knowledge management literature and issues in each of these sectors (i.e., knowledge intensive firms, public sector organisations, sport). The purpose of this chapter was to develop a preunderstanding of the discipline of knowledge management, to provide an introduction and understanding of the key issues, debates and research directions in the field that were critical in setting the theoretical context for this research.

3.2 Introduction to knowledge management

The last few decades have seen an exponential rise in the interest in the topic of knowledge management, both in organisations and in academia (Barley, Treem and Kuhn, 2018). In his prophetic work, Drucker (1993) deemed knowledge, knowledge workers and their productivity as the most valuable assets of organisations in the 21st century. Knowledge management as a field in organisational practices emerged as organisations placed greater emphasis on leveraging their knowledge to attain competitive advantage (Davenport and Prusak, 1998; Szulanski, 1996). To provide strategic competitive advantage, knowledge management involves leveraging an organisation's knowledge, expertise and intellectual assets to improve organisational performance and capability, innovation and quality of products and services (Wiig, 1993; Wiig, 1999; Alvesson and Karreman, 2001; Hislop, 2013).

Yet, there remains an ongoing debate in the literature and in practice regarding the precise nature of how organisational knowledge is managed. Swan et al. (1999, p.264) defined knowledge management, 'very broadly', as "encompassing any processes

and practices concerned with the creation, acquisition, capture, sharing and use of knowledge, skills and expertise whether these are explicitly labelled as 'knowledge management' or not". In their respective reviews of the knowledge management literature, Heisig (2009), Inkenin (2016) and Barley, Treem and Kuhn (2018) note that processes in the management of organisational knowledge are multiplex, reflected in the research in the field. Specifically, research has explored topics such as human-oriented factors (Riege, 2005; Tsoukas, 2009; Borzillo and Kaminska-Labbé, 2011), use of ICTs (Wasko and Faraj, 2005; Kamhawi, 2012; Inkinen, Kianto and Vanhala, 2015), knowledge management processes such as codification, acquisition and sharing (Nonaka and Takeuchi, 1995; Andreeva and Kianto, 2012; Kianto, et al., 2014) and alignment with organisational practices, HRM and management support (Lee, et al., 2008; Donate and Canales, 2012). Bayat (2016, pp.169) states that ultimately, knowledge management is concerned with "getting the right knowledge to the right person at the right time". In doing so, knowledge management could thus refer to the "deliberate effort of managing an organisation's knowledge directly through the use of ICTs and knowledge repositories, or indirectly, through managing the social processes in the organisation to facilitate knowledge sharing" (Hislop, 2013, p.56).

Much of the debate on the nature of knowledge management activities is due to the differing perspectives on the definition of knowledge and their implications for how it is managed. Primarily, there are two main perspectives on knowledge management; the objectivist and the practice-based perspectives (Hislop, 2013) each of which has a different view of knowledge and the key focus of knowledge management efforts. The objectivist perspective, also referred to as the 'epistemology of possession' (Cook and Brown, 1999), conceptualises knowledge as a strategic resource that can be extracted, stored and imitated to create competitive advantage (Gherardi, 2000; Alvesson and Karreman, 2001). Key assumptions of the perspective stipulate that knowledge is an intellectual entity that individuals possess but which exists independently of individual subjectivity. Such knowledge is thus objective and can be codified in the form of documents, diagrams and standard operating procedures (Hislop, 2013).

An alternative perspective, the practice-based perspective, labelled as 'epistemology of practice' (Cook and Brown, 1999), assumes that knowledge is created through

social interactions in the context of practice and social situations (Gherardi, 2001; Orlikowski, 2002). Such knowledge thus becomes embedded in processes and embodied in individuals (Corradi, Gherardi and Verzelloni, 2010). This perspective assumes that knowledge is not codifiable but inseparable from people and practice (Orlikowski, 2002). Thus, the focus of knowledge management is to manage the individuals and processes, enabling the creation and transfer of knowledge as people interact and work together (McDermott, 1999). In fact, proponents of this perspective often use the term 'knowing', inextricably linking the processes of knowing and doing, rather than regarding knowledge as something that people possess (Blackler, 1995; Newell, et al., 2009). Thus, knowledge is constantly being applied and created in all activity. Further, all knowledge work, such as creation, acquisition, sharing and application, is linked to some form of activity, rather than existing independently of it (Hislop, 2013).

Academic papers on knowledge management often start with an effort to clarify the definition of knowledge, making this debate perpetual. Barley, Treem and Kuhn (2018) note that different definitions of knowledge and knowledge management in the literature has reflected in different directions of research in the field and its practical implications. The way in which knowledge is defined has implications for how it is managed in organisations. In their seminal paper, Hansen, Nohria and Tierney (1999) stated that the decision regarding the definition of knowledge and the specific perspective adopted is not random but strategically aligned to the business operations and objectives of the organisation. Organisations that derive competitive advantage from investing once in knowledge as an asset and reusing it repeatedly for growing the business tend to operate from the objectivist perspective. The corresponding strategy to managing knowledge has been termed as the codification strategy (Hansen, Nohria and Tierney, 1999). The focus of the codification strategy is on extracting knowledge from people, codifying it and storing it in sophisticated repositories. This strategy relies on information technology and knowledge management systems to store and share codified knowledge. This approach is instrumental for facilitating search, retrieval and reuse of knowledge, without contacting the person who developed the knowledge. Organisations operating from this perspective rely on the 'economics of reuse' and save time and communication costs by reusing codified knowledge (Hansen, Nohria and Tierney, 1999).

On the other hand, organisations that rely on tacit knowledge and individual expertise to solve complex problems and develop innovative, customised solutions, mirror the practice-based perspective and adopt a personalisation strategy (Hansen, Nohria and Tierney, 1999). The personalisation strategy assumes that the sharing of tacit knowledge and esoteric expertise is time consuming, costly and generally challenging to accomplish. Instead, such knowledge can be shared and transformed in interpersonal interactions. The focus is thus on encouraging dialogue between individuals to foster deeper insights in order to enhance organisational performance and capability (Hansen, Nohria and Tierney, 1999). Further, information technology is used to facilitate communication between individuals and sharing of tacit knowledge, rather than storing it.

Bhatt (2001) argued that a dichotomy of codification and personalisation strategies is too simplistic and instead suggested a more holistic view of knowledge management. Specifically, he discussed that knowledge is created in the context of technology, individuals and processes within the organisational context. This knowledge is difficult to extract or imitate because it is specific to the unique context of the organisation. The focus of knowledge management efforts is then to create a knowledge culture that enables the interaction between technology, people and processes to share and leverage knowledge for organisational objectives. Wiig (1999), whilst discussing the future scope of knowledge management, asserted that successful knowledge management efforts would predominantly be people-centric and enable interaction, collaboration and networking amongst individuals for effective knowledge transfer. Further, knowledge management processes would be comprehensive and become embedded in the regular activities of the organisation. Finally, factors such as organisational culture and individual motivation and behaviours would be emphasised to create trust and enable knowledge sharing.

Ragsdell (2003) disussed that at the early stages of evolution of a discipline, functionalist approaches are highlighted to define objective and tangible issues, predominantly with an emphasis on technological solutions. As the discipline evolves, a greater emphasis is placed on 'softer' issues, highlighting the role of social and human challenges in practice. Similarly, the discipline of knowledge management has undergone considerable evolution, in line with the developments in concepts, practice

and technology, which has been categorised under three generations (Grant and Grant, 2008; Tzortzaki and Mihiotis, 2014). The first generation of knowledge management emphasised the capture, documentation and transfer of knowledge to the knowledge workers at the right time with minimal efforts, supported with a set of knowledge management tools, techniques, and technologies (Snowden, 2002; McElroy, 2003). McElroy (2003) termed this supply-side knowledge management whereby knowledge already exists in the organisation and the role of knowledge management is to supply this knowledge to the knowledge workers.

Heralded by the seminal work of Nonaka and Takeuchi (1995), the second generation of knowledge management placed greater emphasis on knowledge processes and collaborative spaces that enable knowledge creation and sharing. McElroy (2003) called this a demand-sided approach to knowledge management indicating that the role of knowledge management is to facilitate the creation and sharing of knowledge in response to the demand for it, facilitated by a set of frameworks, models and practices. Snowden (2002) critiques that in the second generation, knowledge management practices borrowed from principles of scientific management, focused at managing knowledge as a thing. This resulted in development of best practice principles, guidelines and frameworks to impose structure and mechanisation in the management of knowledge.

Subsequently, Snowden (2002) argued that much of the focus of early knowledge management efforts was on managing knowledge as content, whether through extracting and codifying knowledge resources or through managing knowledge management processes and practices. This points to the debate on the paradoxical nature of knowledge management prevalent in the literature (Tsoukas, 1996; Alvesson and Karreman, 2001; Schultze and Stabell, 2004; Aidemark, 2009). Specifically, management of knowledge entails that knowledge is a thing that can be separated from the individual or the context, yet knowledge is said to manifest in multiple ways (Alvesson and Karreman, 2001). For example, Blackler (1995) presented the images of knowledge as embrained, embodied, embedded, encultured and encoded. As a result, attempts to manage knowledge as a thing or content involve converting it to information, thereby ignoring the context it arises from. Snowden (2002) thus argued that in the third generation, the discipline will embrace the paradox and focus on

managing knowledge as a thing as well as a flow. Specifically, he discussed that knowledge management efforts in the third generation will focus on creating and managing shared contexts that empower and enable organisations to manage their own knowledge. Further, Tzortzaki and Mihiotis (2014, pp.21) predicted that in the third generation, the focus will be on organisational networking and collaboration, where technology and processes will be used not only to communicate and share knowledge but to help knowledge workers network.

Barley, Treem and Kuhn (2018) highlighted that the field of knowledge management emerged and evolved to facilitate greater integration of expert and distinct knowledge into the organisational activities to facilitate competitive advantage. This exists in the form of capturing, storing and integrating knowledge resources to organisational practices, as well as facilitating interactions within organisations to integrate disparate knowledge. They discussed that much of the knowledge management literature has viewed knowledge as a commodity, emphasising management of systems, tools, processes and contexts that facilitate transfer of knowledge from one context for application in another. They offered suggestions for future directions in the field, to adopt a more dynamic view of knowledge management in organisational contexts. Specifically, adopting an organisational change perspective, they urged practitioners and researchers to consider how knowledge management resources, tools and processes change over time in line with changes in the organisational context in order to continuously provide value. Further, they presented a network view of knowledge management where they discussed that organisational knowledge does not exist as a static resource in individuals and processes but exists in the form of collective knowledge distributed across people, documents, technologies and processes and multiple types of relationships between them.

Similarly, Swart, Bowman and Howard (2018) recently discussed that knowledge is relational and contextual. Specifically, an organisation's knowledge assets exist in the form of human, social and organisational capital that are collectively constructed and combine to generate value. They noted that the knowledge management literature tends to adopt a fragmented and linear view on knowledge assets as individual components. They instead suggested a move towards an aggregate view to assess how knowledge assets network and interact to deliver competitive advantage. This

further resonates with the need for a holistic and systemic approach to knowledge management practice that considers how knowledge management processes are interconnected across the organisational context, rather than adopting a reductionist view on managing knowledge resources or social interactions as mutually exclusive.

The literature reviewed in this section is from prominent knowledge management authors, instrumental in highlighting the key topics in the debates and discussions. The literature highlighted multiple definitions, approaches and perspectives on knowledge management, indicating the importance of context for aligning, designing and implementing knowledge management efforts. The next section discusses the issues in knowledge sharing and the role of social and human factors.

3.3 Factors influencing the dynamics of knowledge sharing

Knowledge sharing is regarded as central to knowledge management efforts and has been understood as behaviours through which individuals provide others with access to their knowledge, insights and experiences (Riege, 2005; Hansen and Avital, 2005). It is widely accepted that better sharing of knowledge across an organisation can facilitate innovation and collaboration, enhance problem solving capabilities and organisational learning thus overall improving organisational performance and competitive advantage (Nahapiet and Ghoshal, 1998; Alavi and Leidner, 2001; Paroutis and Saleh, 2009; Ozlati, 2015). Yet, there are various factors involved that have implications for the process and occurrence of knowledge sharing and moderate its effectiveness in improving organisational performance (Hansen, Mors and Lovas, 2005; Haas and Hansen, 2007).

Primarily, the nature of knowledge itself will determine how it will be shared. The most common distinctions are made between explicit and tacit knowledge (Hislop, 2013). Explicit knowledge has been described as formal, objective knowledge or 'know-what' that exists in the form of documents, best practice guidelines and manuals. It includes theoretical and academic knowledge that can be gained through education (Smith, 2001). Explicit knowledge is relatively easy to extract, articulate and codify (Kogut and Zander, 1992). Sharing of such knowledge involves extracting and codifying it, and storing it in sophisticated databases or repositories (Smith, 2001). Within organisations, this requires investment in information technology to facilitate the

storage, search and retrieval of knowledge (Hansen, Nohria and Tierney, 1999). Thus, explicit knowledge is relatively easier and less time consuming to share and can be reused to solve similar, straightforward problems. A key feature of this type of sharing is the assumption that knowledge exists independent of the individual and thus does not require interaction between the person who developed the knowledge and the person who seeks it (Haas and Hansen, 2007).

Tacit knowledge on the other hand is described as highly subjective, practice-based knowledge or 'know-how' that is acquired through personal experience (Smith, 2001). Tacit knowledge is harder to articulate and transfer (Kogut and Zander, 1992; Roberts 2000; Barley, Treem and Kuhn, 2018). Knowledge management authors refer to Polanyi's (1967) description of tacit knowledge, which implies that individuals know more than they can tell. Such knowledge is embodied in human skills; that is, individuals perform tasks without explicitly thinking about them. Moreover, it is socially constructed through the individual's experiences and thus becomes embedded in social contexts (Lundvall and Johnson, 1994). Due to the embodied and embedded nature of tacit knowledge, it can be argued that true sharing is difficult to achieve due to differences in contexts and individual experiences and insights. Furthermore, because of this difficulty in articulating tacit knowledge, it is often shared in the form of stories, metaphors and analogies (Stewart, 1997). Transfer and sharing of tacit knowledge thus involves co-presence and interaction between individuals (Haas and Hansen, 2007). The corresponding knowledge management efforts focus on creating opportunities for individuals to interact through networking, videoconferencing, storytelling, mentoring and observing (Smith, 2001). The role of technology is to enable the search for others with the desired knowledge and to facilitate conversations (Smith, 2001). Sharing of tacit knowledge is time consuming and often costly but is instrumental in solving complex problems and facilitating innovation and creativity.

The selection of appropriate knowledge sharing processes will be determined by the type of knowledge to be shared. However, there are other factors that can pose as barriers in the knowledge sharing process. Across the study and practice of knowledge management, human, social and cultural factors are gaining significance (Hislop, Bosua and Helms, 2018). Whatever the nature of knowledge, people play a key role in creating, capturing, sharing and applying it. Organisational knowledge is

predominantly tacit, that is embedded and embodied, and thus human factors play a key role in the success of knowledge management efforts (Nonaka and Konno, 1998; Bollinger and Smith, 2001). As a result, it is imperative to understand the human motivation behind knowledge sharing behaviours (Paroutis and Saleh, 2009).

Primarily, individuals are more likely to share knowledge when they perceive there to be potential benefits attached, for example, when sharing is perceived to be intrinsically rewarding and is seen as improving team or organisational performance (see Hislop, Bosua and Helms, 2018). Ozlati (2015) discussed how sharing behaviours are linked to intrinsic motivation. Individuals will engage in knowledge sharing behaviour when they perceive it as enhancing their status as experts and feel valued for their knowledge and contributions (Kim and Mauborgne 1998; Han, Chiang and Chang, 2010). Further, individuals who regard sharing as important and value helping others will feel motivated to share (Paroutis and Saleh, 2009; Razmerita, Kirchner and Nielsen, 2016). On the other hand, individuals are less likely to share when they associate sharing with loss of power or status as experts and job insecurity (Serenko and Bontis, 2016). This is pronounced in organisations that place an emphasis on extracting knowledge from employees and codifying it to store in repositories and databases. Further, the fear of criticism and concerns around revealing limitations in their knowledge can also curb sharing behaviours (Ardichvili, Page and Wentling, 2003). Additionally, employee commitment affects knowledge sharing behaviours in multiple ways. Within knowledge intensive and professional services firms, Swart, et al., (2014) discuss that employees who are committed to the organisation and its objectives, have an affective attachment to their team and are emotionally attached to their profession and career progression, are more like to engage in knowledge sharing. Thus, emotions play a key role in mediating knowledge sharing.

At the organisational level, several factors related to the job role, structure and culture of the organisation can pose as barriers to knowledge sharing. A significant barrier is lack of time (O'Dell and Grayson, 1998). Knowledge sharing requires time for disseminating knowledge to others through personal interaction or by converting it from tacit to explicit (Grant, 1996). Without a clear sense of benefit or recognition for sharing, individuals may focus on tasks perceived as more beneficial to them in the

moment (see Riege, 2005). Further, Ozlati (2015) showed that when individuals experience autonomy in their job role, they are more likely to share than when such behaviours are externally regulated and enforced. In terms of the organisational context, a culture that values sharing and clearly communicates its benefits, recognises and rewards sharing behaviours and supports sharing practices, will facilitate knowledge sharing. Such organisations tend to have knowledge management efforts integrated into their strategy and provide sufficient opportunities and infrastructure for sharing to take place (see Riege, 2005). Cavaliere and Lombardi (2015) studied the link between organisational structure and knowledge sharing behaviours. Specifically, larger organisational networks make it difficult to meet others and build relationships, thus inhibiting social interaction and knowledge sharing. Further, organisations that value innovation as well as teamwork and community culture positively influence knowledge sharing behaviours.

Within teams, sharing behaviours also tend to be crucially shaped by social factors. Primarily, trust plays a key role in shaping attitudes to knowledge sharing, that is, the more a person trusts someone else, the more willing they would be to share with them (see Hislop, Bosua and Helms, 2018). This includes trusting that the knowledge will not be misused as well as trust in the accuracy of knowledge and credibility of the source (Riege, 2005; Paroutis and Saleh, 2009). In addition to trust, a sense of reciprocity and a belief that others will also share their knowledge tend to facilitate knowledge sharing behaviours (Chang and Chuang, 2011). Furthermore, positive interpersonal relationships, sense of belonging and identity with the group and shared values, language and background can facilitate the formation of trust, positively influencing knowledge sharing behaviours (Usoro et al., 2007; Chang and Chuang, 2011; Rosendaal & Bijlsma-Frankema, 2015). On the other hand, conflicts in teams in the form of differences in values, interests, personality and communication styles, and task conflict affect knowledge sharing. Chen, Zhang and Vogel (2011) noted that whereas conflict in personalities can hinder knowledge sharing by distracting people from work, task conflict can have a positive impact on knowledge sharing by facilitating dialogue.

The use of ICTs is also prevalent across organisations due to the significant benefits of reducing time in collecting, collating, storing and disseminating information and

enabling communication across geographical distances (Roberts, 2000; Chen and Hung, 2010; Kamhawi, 2012). However, with its use come challenges that can hinder knowledge sharing behaviours. Riege (2005) outlined key technology-related barriers to sharing; namely limited integration of technology with organisational processes, a reluctance by people to use IT systems due to a lack of familiarity or training, lack of compatibility between various IT systems and a mismatch between IT systems and individuals' requirements. Although ICTs are useful for sharing codified knowledge, they can be inadequate in capturing tacit and complex knowledge (Roberts, 2000). Barley, Treem and Kuhn (2018) noted that in recent years, with the rise in social media technologies, ICTs have gained significance in making knowledge visible and connect individuals in organisations, thereby facilitating sharing of tacit knowledge.

Although not an exhaustive list, the various barriers and enablers of knowledge sharing behaviour discussed here highlight the complexity and challenges in implementing knowledge management efforts in any organisation. Knowledge management initiatives are not simply objective, process or technology based solutions but require careful consideration of the mediating role of social and human factors. Furthermore, knowledge sharing in itself is not a determinant of organisational performance. Maurer, Bartsch and Ebers (2011) discussed that the relationship is moderated by the organisation's absorptive capacity and capability in searching, assimilating, accessing and applying the knowledge. Absorptive capacity refers to the extent to which the new knowledge can become assimilated into the existing knowledge of individuals or teams. Further, once the knowledge is shared, organisational performance will be determined by the organisation's ability to use and apply it to produce desired effects. Thus, the process and practice of knowledge sharing should be considered against a more holistic view of knowledge management in the organisation linked to other key knowledge processes.

Overall, the literature highlighted various factors in the organisation context and culture that can act as enablers and hindrances in the knowledge sharing process. The following sections consider the multiple ways in which the case study organisation can be conceptualised, with implications for the practice of knowledge management.

3.4 Context of the case study organisation

Section 1.4 of Chapter 1 introduced the case study organisation, the English Institute of Sport (EIS). The EIS can be identified as a knowledge-intensive firm, a public-sector organisation and a sport organisation. The following sub-sections present a brief discussion on the literature on knowledge management within each of these sectors as well as the rationale for describing the EIS in such terms.

3.4.1 Knowledge management in knowledge intensive firms

With the growing importance of knowledge as a significant source of competitive advantage and the shift towards an emphasis on intellectual work, the literature on knowledge-intensive firms (KIF) has grown (Hislop, 2013). However, there remains ambiguity around an agreed upon definition of the term. Within the literature, KIFs have been widely defined as firms where highly qualified and educated employees form a majority of the workforce and engage in intellectual work to produce sophisticated knowledge or knowledge-based products and services (Sveiby and Riesling, 1986; Starbuck, 1992; Alvesson, 2001). Thus, knowledge appears to be the most important input as well as output. Although KIFs were initially likened to professional services firms, it has been argued that KIFs have broader characteristics and deal with knowledge distinctive to the organisation rather than the homogeneous knowledge of professionals (Morris and Empson, 1998; Alvesson, 2001). Starbuck (1992) further stated that KIFs predominantly deal with esoteric expertise rather than knowledge that is widely shared and placed value on theoretical knowledge gained from extensive formal education. Such knowledge is used to solve complex and non-standardised problems using creativity and innovation (Alvesson, 1995; Robertson and Swan, 2003). Finally, Swart and Kinnie (2003) discuss that knowledge in knowledge intensive firms is present in the form of human and social capital, as knowledge and skills of employees as well as the relationships between them. As a result, knowledge sharing between employees is critical for organisational performance.

A detailed debate on the definition of KIFs is beyond the scope of this thesis. Nonetheless, considering the various conceptualisations of KIFs put forward and ambiguities surrounding the definitions of knowledge and knowledge work, it can be deduced that overall, KIFs are characterised by a strong reliance on knowledge and

intellectual capital as the most important input and output of the firm. This intellectual capital exists in the form of theoretical knowledge of the employees as well as skills and expertise gained from experience and practice. Further, the knowledge is used to produce innovative, customised products and services rather than dealing with standardised problems. Thus, it appears that KIFs are dealing with knowledge in multiple forms, whether theoretical, tacit, contextual or skill based. Furthermore, since knowledge is the most critical element, it becomes omnipresent, existent with employees as well as within teams and networks, and in the overall organisation in the form of culture, processes and best practice guidelines. This complexity suggests that a holistic view of knowledge management is imperative, which links knowledge processes to the strategic business objectives, whilst developing a knowledge culture and leveraging people management principles to manage the knowledge workers. In essence, such a focus would successfully identify the different forms of knowledge operating at different levels and in different processes in the organisation, understand the specific needs thereof and design efforts aligned to those needs.

The EIS can be understood as a knowledge-intensive firm because of the significant role of knowledge across its various operations and strategic objectives, that is, development of knowledge, practice and practitioners in delivering support for improving sport performance. At the EIS, the practitioners and their specialised knowledge and expertise are the most valuable resource, engaged in providing bespoke services to sports and answering complex performance questions.

3.4.2   Knowledge management in the public sector

Public sector organisations (PSO) have been described as knowledge intensive, especially considering the significance of knowledge and human resources in producing intangible outcomes (Massaro, Dumay and Garlatti, 2015). Pee and Kankanhalli (2016) discussed that knowledge plays a central role in public services and decision making. Internally, PSOs manage knowledge and expertise as well as the human resources to produce predominantly intangible outputs, such as knowledge-based services and public policies. Wiig (2002) stated that much of the knowledge within public sector organisations is socially constructed and tacit in nature. Thus, knowledge management can play a critical role in enhancing public sector effectiveness, considering the knowledge intensive nature of public sector tasks and

services (Pee and Kankanhalli, 2016).

Yet, public sector organisations present a unique context for knowledge management, with a distinct set of challenges from those of the private sector (Amayah, 2013; Garlatti et al., 2015). Primarily, PSOs have different objectives from the private sector; rather than being driven by profit margins and market competition, PSOs are aimed at service delivery and information provision for the good of the society (Riege and Lindsay, 2006). As a result, PSOs often enjoy certain monopoly and low competitive pressures (Garlatti et al., 2015). Additionally, PSOs are often subjected to external pressures for responsibility, accountability and responsiveness as compared to the private sector (Jain and Jeppesen, 2013).

Further, PSOs are characterised by their stakeholder relationships. Consequently, the focus of knowledge management is centred around managing relationships and collaboration with multiple stakeholders, which can often be difficult due to the diverse backgrounds, interests, time constraints and cultural differences (Riege and Linsday, 2006). Moreover, the public sector, much like the private sector, is increasingly influenced by competition, performance standards, customer focus, flexibility and emphasis on results (De Angelis, 2013). Massaro, Dumay and Garlatti (2015) stress that accordingly, the public sector has its own knowledge management research agenda and should not import knowledge management practices from the private sector.

It thus appears that the public sector operates within a distinctive context as compared to the private sector. PSOs can be classed as knowledge-intensive due to their strong dependence on knowledge and human resources to produce knowledge-based outputs. Furthermore, they appear to be governed by intangible influences in their context, most importantly the insights, needs and knowledge of their stakeholders. Pee and Kankanhalli (2016) discussed that a specific challenge for knowledge management in PSOs emerges in the form of downsizing of the workforce and the subsequent need for knowledge retention and more efficiently leveraging organisational knowledge. As a result, PSOs have complex and unique needs with regards to knowledge management as they attempt to balance managing external relationships and facilitate knowledge management internally whilst being experts in

their field.

The EIS is recognised as a public sector organisation as the wholly owned subsidiary and the sport science, medicine and technology arm of UK Sport. UK Sport is classified as a non-departmental public body under the Department of Culture, Media and Sport and is subject to government funding decisions (Department of Culture, Media and Sport, 2015). The EIS in turn is grant funded by UK Sport. As a result, the EIS is governed by the overall policy and funding decisions by UK Sport and accountable to it. These external forces have an impact on the functioning and decision making abilities of the EIS.

The EIS manages several strategic stakeholder relationships in the UK high-performance towards its core organisational objective of supporting improvements in athlete and sport performance. Operating within external funding pressures, it is increasingly under the demand of managing a highly dynamic workforce and maximising its efficiency in improving sport performance faster than other countries. Thus, parallels with the public sector highlights the unique context of the EIS, highlighting the need to critically assess the factors before designing knowledge management practice.

3.4.3 Knowledge management in high-performance sport

In recent years, the literature on knowledge management has been increasingly utilised in high-performance sport. Sport organisations are primarily involved in the development and promotion of sports (Gomez, Opazo and Marti, 2008). Gomez, Opazo and Marti (2008) classified sport organisations into three categories; sport governing bodies, sport event organisations and sport providing entities. Sport governing bodies focus on administering and regulating sports, and their development from the grassroots to the elite level. Sport event organisations are involved in organising and producing a competition system for elite sports. Finally, sport providing entities provide sport facilities at the local or community level (Gomez, Opazo and Marti, 2008). A fourth category of sport organisations also exists, namely a high-performance sport institute. The EIS is such an institute. Sport institutes are instrumental in providing athletes, grassroots through to elite, with access to sport science expertise, medical facilities and sport-specific training facilities. In the sport

science literature, authors have discussed the role of sport institutes in developing performance strategies and providing training facilities (Bagnell and Kolb, 2009), creating a learning culture (Lee and Price, 2016) and facilitating skill acquisition (Steel et al., 2013). Sport institutes are progressively becoming an integral part of the national sport system and strategy in developing high performing athletes.

A majority of the academic papers on knowledge management in sport have focused primarily on sport event organisations. Significant application of knowledge management in high-performance sport has been in the management of major sport events, predominantly the Olympic Games. The Olympic Games Knowledge Management (OGKM) is the most extensively developed knowledge management program within the high-performance sport sector, aimed at facilitating knowledge transfer between the various organising committees of the Olympic Games (OCOG) (OGKM Program, 2014). Consequently, a series of papers have been published in the literature outlining the several knowledge management processes and efforts undertaken by the OGKM and various OCOG since the program's inception in 2000 (e.g., Halbwirth and Toohey, 2001; Singh and Hu, 2008; Beesley and Chalip 2011; Muller and Stewart 2014). Concepts such as knowledge transfer, proximity and learning, and information infrastructure have been researched to facilitate the transfer of relevant knowledge from one OCOG to another for the successful organisation of the Olympic Games.

A second stream of literature focuses on the sport governing bodies and sport teams, with the focus split between the business processes of sport organisations and the development of sport performance. Within the former, researchers have stressed the value and application of knowledge management to improve the business performance of sport teams and provide competitive advantage (e.g., Doloriert and Whitworth, 2011; Scholl and Carlson 2012; Razaghi et al., 2013; Rosca, 2014). For example, Doloriert and Whitworth (2011) explored the application of knowledge management principles in enhancing the success of business operations of professional football clubs. Scholl and Carlson (2012) presented a framework to systematically analyse web-based information on professional football teams and the impact on fan engagement, marketing decisions and other commercial benefits. Positioned from a sport management point of view, the studies focused on the

business operations of the sport teams rather than specialised sport science knowledge or the technical aspects of sport performance.

With regards to development of sport performance, a handful of studies have been conducted on performance related knowledge, whereby individual concepts in knowledge management have been explored, predominantly in sport pedagogy and athlete training (e.g., Galipeau and Trudel, 2006; Culver and Trudel, 2008; Pazzaglia, Flynn and Sonpar, 2012). Specifically, Cairo and Botinelli (2010) proposed the application of Nonaka and Takeuchi's (1995) model of knowledge creation and the flow of explicit, tacit and strategic knowledge amongst players in a football team to improve the overall performance of the team. Further, Schumaker, Solieman and Chen (2010) linked data mining and performance analysis techniques for leveraging data on athlete performance. Erhadt, Martin-Rios and Harkins (2014) discussed the conversion of tacit and strategic performance related knowledge by coaches into explicit knowledge, which is easier to share with the athletes. These studies thus indicated a focus on individual knowledge management concepts with a direct application for the coach-athlete relationship.

A final category of literature deals with the transfer and dissemination of sport science research knowledge to the applied performance context. More and more individual athletes, sport teams and national governing bodies are employing the services of sport science and medicine practitioners in response to the increasing pace and competitiveness in elite performance (Kennedy and Kennedy, 2016). Davison and Williams (2009) discussed the growing role of sport science in athlete preparation for Olympic competition. There is now an increased focus on the fitness, strength training, nutrition, recovery and psychological well-being of players as sport science becomes embedded in the high-performance training environment. As a result, there has been a surge in sport science research, mostly in universities and dedicated sport institutes (Williams and Kendall, 2007a).

This has further implications for dissemination and transfer of research knowledge from the sport scientist to the coach. Williams and Kendall (2007b) showed that sport science researchers, coaches and athletes tended to engage in informal networking opportunities to transfer sport specific knowledge. On the other hand, Hills and

Maitland (2014) highlighted the benefits of academics situated in sport organisations in facilitating the transfer of research knowledge into applied settings. Reade, Rogers and Hall (2008) indicated that although coaches value the knowledge inputs from sport science research, there can be often be a gap between the knowledge needed by the coaches and the ongoing sport science research. William and Kendall (2007b) and Reade, Rogers and Hall (2008) concluded that further efforts are needed towards increasing visibility of relevant sport science knowledge and encouraging knowledge seeking and disseminating behaviours between the coaches and sport science practitioners. Furthermore, within a high-performance context, a number of practitioners from different disciplines often work together to collectively and holistically improve sport performance. Reid, Stewart and Thorne (2004) stressed that a culture of collaboration and cooperation is needed for the successful operation of such multidisciplinary teams. As a result, there appears to be a scope for the application of knowledge management principles in high-performance sport to manage the expert sport science knowledge for improving sport performance. Yet, there is limited research in the field addressing this scope or the subsequent gap in the literature.

As the research and practice of sport science develops, there is an emergent need for dedicated systems and efforts for managing such expert sport knowledge. The research cited here indicates growing application of individual knowledge management principles in leveraging sport science knowledge to improve performance. However, this research is fragmented and far apart. Further, what is lacking is a more explicit discussion around strategic knowledge management efforts in sport organisations, aligned to their organisational strategic objectives. Within sport, there are multiple stakeholders each with their unique knowledge inputs, roles and impact on sport performance, ranging from athletes, coaches, policymakers, researchers and sport science practitioners. Thus, an integrated and inclusive approach to knowledge management within sport organisations is needed that defines and leverages each of the stakeholders' role in efficiently creating, sharing and applying strategic sport science knowledge to improve performance impact.

In the applied context, an overview of international sport governing bodies, national sport organisations and sport institutes revealed that there is an increase in the practice of knowledge management in high-performance sport. For example, the

Amateur Swimming Association recently commissioned a research project to apply knowledge management to reduce knowledge loss and realise information assets in the organisation (Onojeharho, 2015). Sport New Zealand (2014) published the Knowledge Management Field Guide to support their national sport organisations in adopting knowledge management in their strategic efforts. The Australian Sports Commission consists of the Clearinghouse for Sport that operates as an information services provider for sport related information and knowledge (Australian Institute of Sport, 2016). Finally, Sport England recently advertised for the post of Strategic Lead Knowledge Management (Edusei-Mensah, 2015). Therefore, there appears to be an increasing inclination towards application of knowledge management in sport organisations. This suggests a need to conduct further research to develop knowledge management within the specific context of high-performance sport as a scientifically credible field and improve understanding and quality of practice.

The EIS is a sport organisation, specifically a high-performance sport institute, engaged in developing the provision and service of sport science, medicine and technology support across multiple sports. The core organisational functions of the EIS include identifying knowledge needs in high-performance sport, developing new research to address such emerging questions and applying the knowledge in training and competition contexts to improve sport performance. The case study presents a unique opportunity to study knowledge management principles in a high-performance sport context.

3.4.4 Summary

Linking together insights from the previous sections, the EIS can be understood as operating within multiple contextual determinants that will have various implications for knowledge management practice. A more detailed discussion on the EIS's position and stakeholder relationships in the UK high-performance system is presented in Chapter 4. In recent years, the EIS's strategic objectives have emphasised improved collaboration and knowledge sharing amongst the sport science and medical practitioners and the creation of a network of expertise across the country (English Institute of Sport, 2011, 2013). As a KIF, a key challenge for knowledge management at the EIS is to effectively share the highly tacit and context specific knowledge of the practitioners, across a geographically dispersed network. As a PSO, the EIS is

operating under external pressures and influences, whilst manging stakeholder relationships with multiple and overlapping strategic partners across the UK high-performance sport system. Finally, as a sport organisation, the EIS is dedicated towards developing knowledge and practice to support improvements in sport performance. Thus, the EIS presents a unique context for a knowledge management research, whereby a careful consideration of the contextual factors was deemed critical in order to inform organisational knowledge management.

3.5 Chapter summary

This chapter presented a brief introduction into the literature on knowledge management. The purpose of the review was exploratory, to develop a preunderstanding and to familiarise the researcher with the ongoing discussions and debates on the current issues and future direction of the field. The review highlighted the complex interplay between the organisational context, definition of knowledge and principles of knowledge management. Specifically, it emerged that there is a lack of a standard definition or approach for knowledge management practice. Instead, the specific organisational context will define the organisation's knowledge strategy. Further, various factors in the operating context will moderate the implementation of knowledge management processes. Finally, the review highlighted the ongoing debate on the future direction of the discipline with implications for practice.

The review highlighted the need to contextualise the design and implementation of knowledge management practice. Simultaneously, the researcher became embedded in the case study organisation to become familiar with the context of high-performance sport. A key opportunity for data collection with regards to understanding the sport context is discussed in the next chapter. The researcher iteratively analysed and reflected on the literature as well as the findings from this data collection opportunity, which were critical in defining the research question for this research. The following chapter (Chapter 4) outlines the preliminary analysis of the sport context and the subsequent rationale for designing the research aim and objectives.

Chapter 4: Case Study Organisation

Chapter 4: Case study organisation

4.1 Introduction

This chapter presents an introduction into the high-performance sport context where this research was based. Facilitated by the researcher's embeddedness in the English Institute of Sport (EIS), participation in and access to the context for data collection purposes was possible from the beginning of the research project. During the initial exploratory phase, the researcher spent time and effort in familiarising herself with the context whilst simultaneously reviewing the relevant academic literature on knowledge management. In December 2015, within the first three months of commencing the research, an opportunity arose for the researcher to participate in and observe a workshop with the EIS staff to explore the challenges to knowledge sharing as part of the ongoing Performance Knowledge efforts in the institute. Following Coghlan and Brannick's (2014) action research cycle for organisational research, this exploratory phase was critical in developing the researcher's preunderstanding of the context.

First, Section 4.2 presents an analysis on the context based on the researcher's participation, discussions, observations and reflections during the preunderstanding phase in the EIS (October 2015 – December 2015). Thereafter, Section 4.3 outlines the workshop that the researcher participated in with the EIS staff, along with the analysis of the data and a discussion of findings that emerged from the workshop. The analysis and reflection on the findings were critical in informing the next action in the research as well as at the EIS. Fundamentally, they formed the evidence base and rationale for conducting a knowledge management review, explicitly discussed in Section 4.4. The purpose of this chapter is to highlight the researcher's preliminary understanding, gained from an iterative review of the literature as well as the context, that were instrumental in defining the context, scope and focus of the research.

4.2 Preunderstanding of the English Institute of Sport

Section 1.4 of Chapter 1 introduced the organisational context, structure and core objectives of the English Institute of Sport (EIS). The EIS can be explained as a complex system situated within the hierarchy of the UK high-performance system. Ladyman, Lambert and Wiesner (2013, pp.57) defined a complex system as "an ensemble of many elements which are interacting in a disordered way, resulting in

robust organisation and memory." Specifically, a complex system consists of multiple interacting elements that are similar in nature and directly dependent on each other. These elements interact in nonlinear and disordered ways, that is, a linear cause and effect relationship is difficult to establish and the interactions evolve historically. Such systems cannot be reduced to individual elements or interactions because they are "intimately intertwined" (Snowden, 2002, pp.105). Further, complex systems can also be hierarchical when systems consist of subsystems each with their own systems, elements and interactions (Ladyman, Lambert and Wiesner, 2013).

The UK high-performance system is one such hierarchical complex system with multiple interacting and interconnected systems, dependent on each other for developing and promoting high-performance sport in the country. Further, the EIS is a complex system, interacting and collaborating with other organisations and sports within the UK high-performance system. The EIS in turn consists of multiple teams that are intertwined and dependent on each other to collectively develop sport science practitioners and their knowledge and expertise to maximise performance impact in sports. The following sections introduce the structures of the UK high-performance system as well as the EIS to illustrate the systemic complexity of the context.

4.2.1 UK high-performance system

The UK high-performance system, within which the EIS is located, predominantly consists of UK Sport, British Olympic Association, British Paralympic Association, home country sport institutes (English Institute of Sport, Sport Scotland Institute of Sport, Sport Institute of Northern Ireland and Sport Wales) and multiple national governing bodies (NGBs) for all Olympic, Paralympic and professional sports (UK Sport, 2018a; UK Sport, 2018b). UK Sport is a government organisation responsible for investing in infrastructure, resources and talent to develop elite sport in the UK. It provides resources and funding to NGBs as well as the home country sport institutes to develop the sports (UK Sport, 2018c). The role of British Olympic Association and British Paralympic Association is to promote Olympic and Paralympic sport in the UK, and select, prepare and lead Team GB and Paralympics GB at the Olympic and Paralympic games, respectively (British Olympic Association, 2018; British Paralympic Association, 2018). Finally, each NGB is responsible for developing their sport and athletes.

As the science and technology arm of UK Sport, the EIS is responsible for developing and delivering sport science, medicine and technology support to the NGBs to achieve their respective performance and medal targets that are set in collaboration between UK Sport, EIS and the NGBs. The EIS further collaborates with the BOA and BPA to prepare and support the Olympic and Paralympic athletes and practitioners during their times at the Games venues. For example, considering the heat and humidity levels at Tokyo, the EIS, BOA and BPA are currently collaborating on heat acclimatisation and athlete health projects to prepare sports and practitioners for the weather during the next Olympic and Paralympic Games.
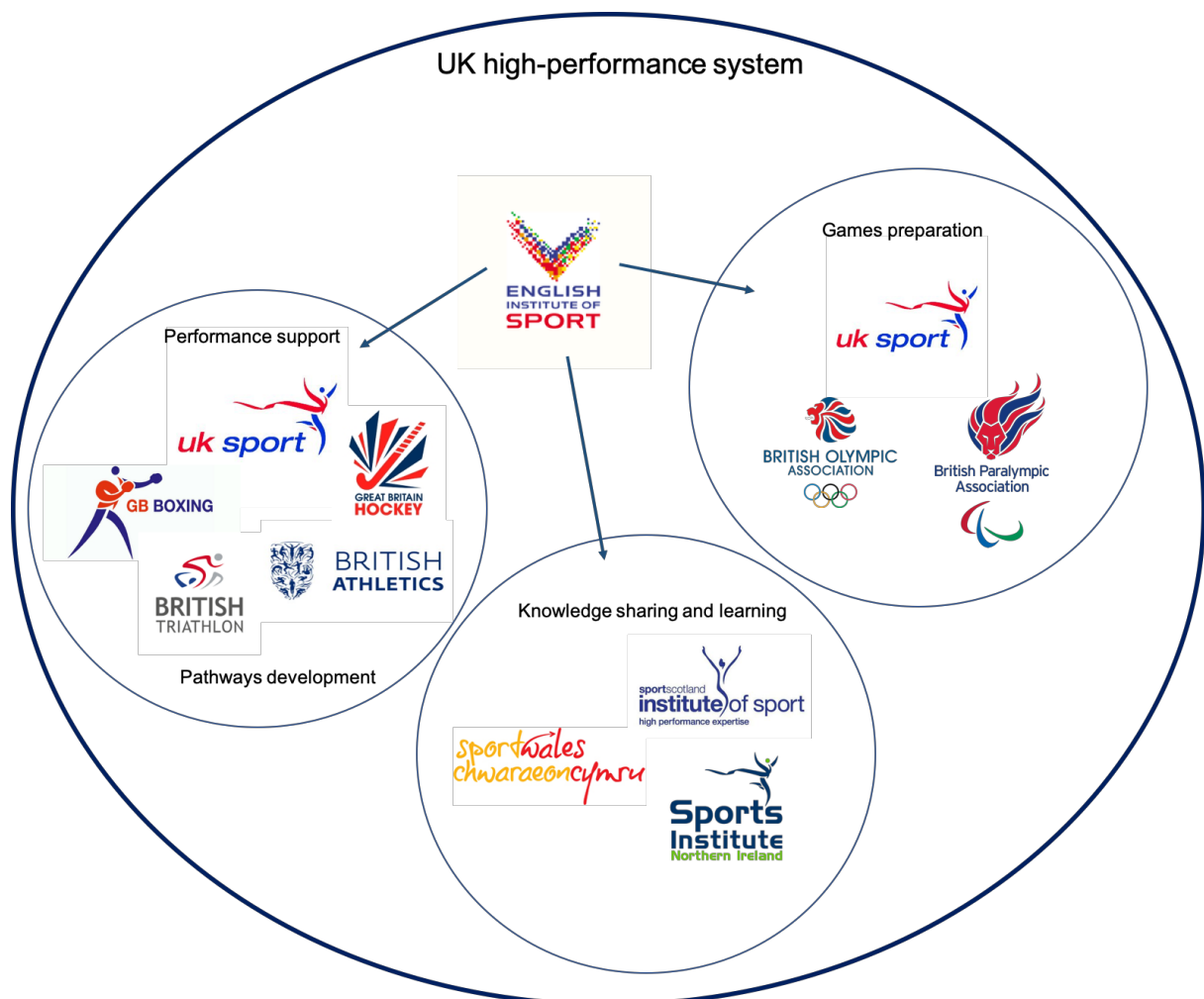
Figure 4.1: Overview of the EIS's interactions with strategic partners in the UK high-performance system

Additionally, the EIS collaborates with the NGBs and UK Sport to develop a pathways

program to identify and attract young talent in sports at the foundations level and develop them through to the World Class Program (UK Sport, 2018d). Finally, the four home country sport institutes, including the EIS, collaborate and share knowledge to facilitate learning between sports to collectively develop and support performance of Team GB. A visual representation of these interactions is presented in Figure 4.1. The figure represents an overview of the EIS's interactions within the UK high-performance system. It does not depict an exhaustive list of all interactions and collaborations between all organisations in the system.

The following section presents a discussion on how the internal functions and departments in the EIS facilitate the delivery of Performance support depicted in Figure 4.1. The delivery of performance support is a core objective of the EIS. Further, the Performance Knowledge function was primarily introduced to improve knowledge sharing and collaboration to facilitate the delivery of performance support.

4.2.2 EIS organisational structure

The EIS receives funding from UK Sport, to attain its key organisational objective of helping NGBs to "improve the performance of their athletes by delivering services which enable them to optimise training programmes, maximise performance in competition and improve health and wellbeing" (English Institute of Sport, 2018a). To support this delivery, the EIS organisational structure consists of the technical, performance related functions and non-technical, support functions (Figure 4.2). The technical functions consist of the workforce that is sport-faced, comprising various interactions and collaborative relationships within the high-performance system to deliver performance support to NGBs. The non-technical functions consist of the HR, Finance and Business Operations, and Communications and Marketing teams that provide logistical, legal and administrative support within the institute.
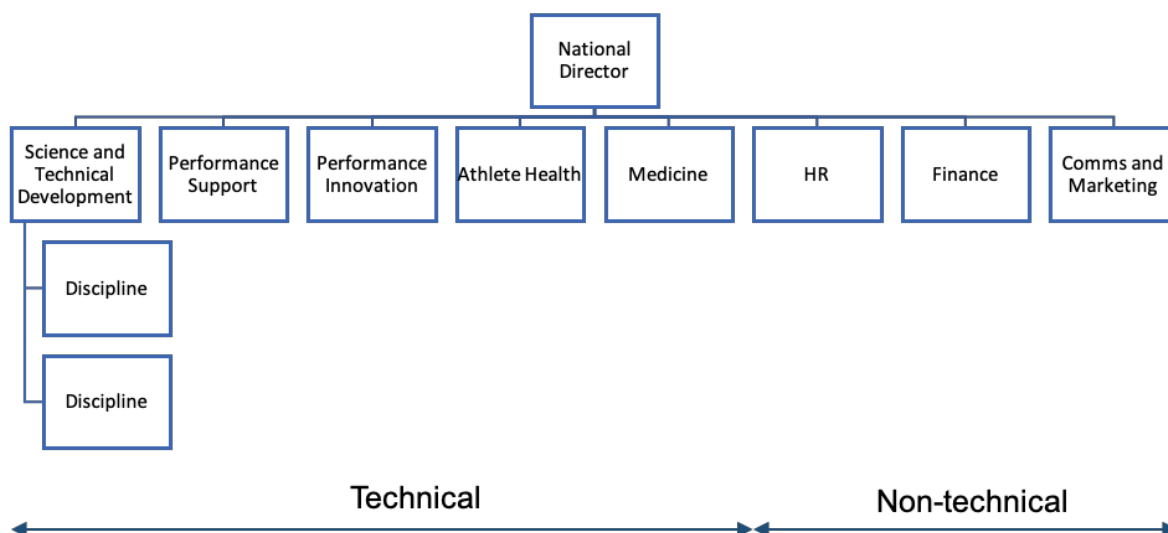
Figure 4.2: Organisational structure of the EIS

Of the EIS's various technical functions, the Science and Technical Development is the largest, responsible for pioneering sport science knowledge, developing practitioners and mentoring and supporting them to deliver support to sports. Here technical development or technical knowledge refers to the expert sport science knowledge that the practitioners develop, share and apply in their roles at the institute and in the sports. The technical development team is responsible for developing this expert knowledge as well as training and mentoring practitioners in the application of this knowledge in NGBs to help them improve sport performance. The Science and Technical Development function is further divided into eight sport science disciplines (Figure 4.3), each of which is responsible for development and dissemination of their respective sport science knowledge. They are 1) strength and conditioning, 2) performance nutrition, 3) physiology, 4) performance psychology, 5) performance analysis, 6) performance lifestyle, 7) biomechanics, and 8) physiotherapy and soft tissue therapy. In addition, a multidisciplinary team consisting of practitioners from each discipline works exclusively with Paralympic sports, with a specific set of expertise. Finally, the Performance Knowledge role resides within the Science and Technical Development function and is responsible for leading the application of knowledge management principles, processes and solutions in the institute.
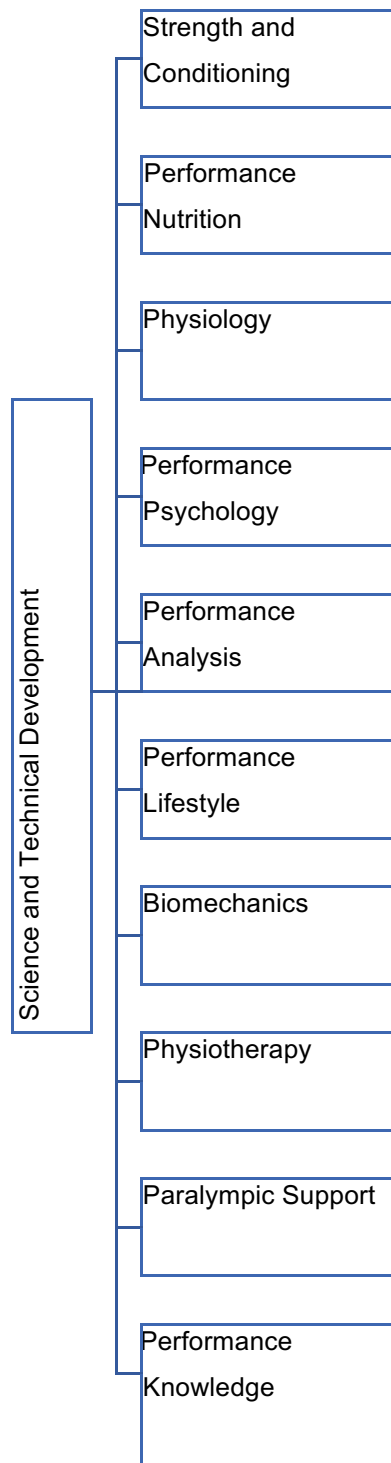
Figure 4.3: Disciplines in the Science and Technical Development function

Of the other functions within the EIS, the delivery of sport science support and services to NGBs is designed by the Performance Support function, wherein the EIS collaborates with the NGBs to design the performance support strategy aligned to the NGBs' performance targets, which are set between the NGBs and UK Sport.

Further, the Performance Innovation function is responsible for developing research, innovation and technology to address complex performance questions raised in the high-performance system. The Medical Services team is responsible for delivering medical support and consultancy to athletes, and the Athlete Health team is engaged in injury and illness surveillance and analysis to inform athlete health strategies and reduce loss of training and performance time.

Table 4.1 List of EIS sites

Centralised Sites	Decentralised Sites with EIS Staff
Gateshead International Stadium, Gateshead	GB Short Track Speed Skating, Nottingham
EIS Sheffield	SportCity, Manchester
Manchester Institute of Health and Performance, Manchester	British Judo Centre of Excellence, Walsall
Lilleshall National Sport Centre, Newport	Lee Valley White Water Centre, London
Alexander Stadium, Birmingham	London Aquatics Centre, London
Holme Pierrepont National Water Sports Centre, Nottingham	Redgrave Pinsent Rowing Lake, Caversham
Loughborough University, Loughborough	RYA Hamble and Weymouth, Weymouth
University of Bath, Bath	Leeds Triathlon Centre, Leeds
Bisham Abbey National Sport Centre, Marlow	
Institute of Sport and Exercise Health, London	

4.2.3 EIS practitioners

The delivery of performance support is carried out by the EIS practitioners, who are sport scientists based in the disciplines depicted in Figure 4.3. The practitioners join the EIS after completing their formal education and theoretical training in their respective disciplines. Within the Science and Technical Development function, the practitioners' knowledge and training is further developed to facilitate the delivery of the highest quality of performance support to NGBs. Further, practitioners in their

disciplines help pioneer and develop new knowledge to address emerging demands and challenges in high-performance sport and sustain competitive advantage over other nations. The practitioners are contracted out to work in NGBs to deliver performance support and to continuously improve sport and athlete performance. In return for the performance support, the NGBs provide funding to the EIS.

Table 4.2 Sports that access EIS services

Archery and Para Archery	Gymnastics	Speed skating
Athletics and Para Athletics	Hockey	Swimming and Para Swimming
Bobsleigh and Skeleton	Judo	Squash
Boccia	Netball	Taekwondo
Boxing	Modern Pentathlon	Shooting and Para Shooting
Canoeing and Para Canoeing	Para Dressage	Triathlon and Para Triathlon
Cycling and Para Cycling	Para Snowsports	Weightlifting
Cricket	Powerlifting	Wheelchair Basketball
Para Table Tennis	Rowing and Para Rowing	Wheelchair Fencing
Diving	Rugby	Wheelchair Tennis
Equestrian	Sailing	Women's Football

4.2.4 EIS sites and centres

The EIS is geographically dispersed with delivery of performance support operating from 10 centres across the country (English Institute of Sport, 2018c). This dispersion enables accessibility of high-quality support to athletes living across the country. The sites are operated with strategic partners including higher education institutes as well as local authorities. Various NGBs in the UK high-performance access EIS services as well as training and performance facilitates at these sites. Some NGBs are centralised at the EIS sites, while others are based at decentralised training facilities. The EIS practitioners and employees are each based at one of the EIS sites but travel constantly across sites as well as the decentralised training facilities to deliver performance support to NGBs. Table 4.1 presents a list of the EIS's centralised as well as key decentralised sites, from where EIS practitioners deliver performance

support to various sports. Table 4.2 lists the sports that access EIS services in varying capacities.

4.2.5 Structural complexity

Maylor and Turner (2017) identify distinct forms of complexity in projects. In delivering performance support, the EIS display characteristics of structural complexity, which occurs with increasing number of people involved, number of interdependencies, number of specialist disciplines/knowledge involved and variety of work being performance.
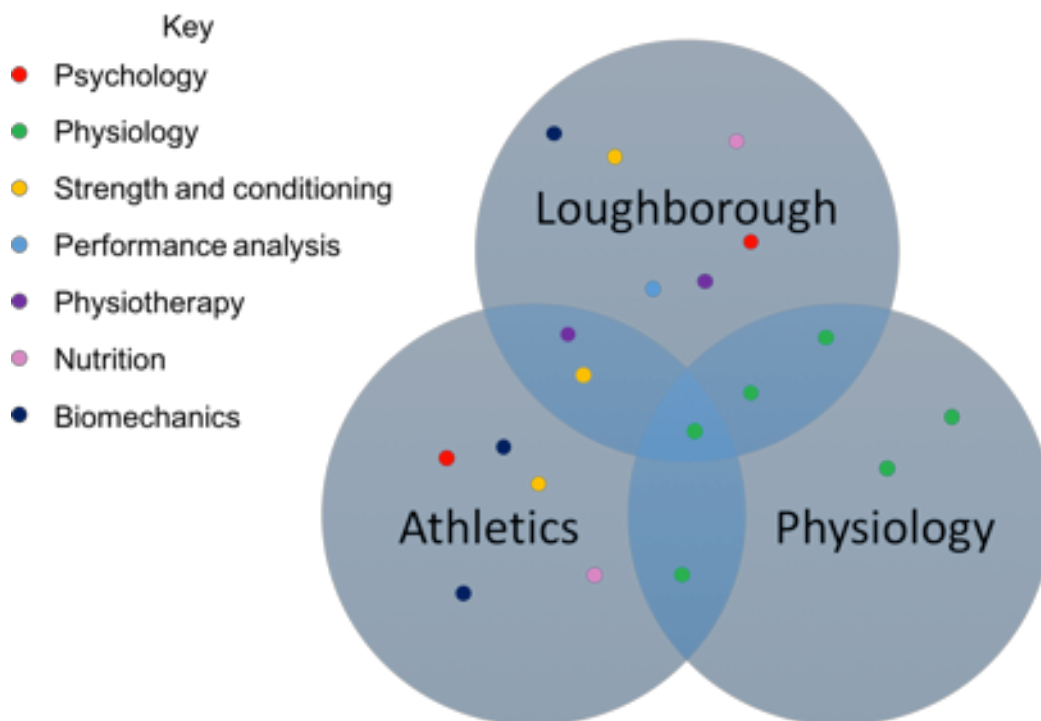
Figure 4.4: Example of overlapping communities of practice in the EIS

As discussed in Section 4.2.2, the EIS's core operation of delivery of performance support to the NGBs is accomplished predominantly by the Science and Technical Development and Performance Support functions. In the Science and Technical Development function, each discipline is led by a Head of Service who are responsible for development of knowledge and practitioners in their respective disciplines. In contrast, the Performance Support function consists of the Heads of Performance Support who each work with an NGB to design and deliver the performance support

strategy. The Heads of Performance Support are responsible for managing and monitoring a multidisciplinary team of practitioners in the delivery of the performance support strategy within the NGBs.

In the formal organisational chart, the practitioners sit in the Science and Technical Development team, where they are trained, mentored and developed by the Heads of Service. These practitioners are then line managed by the Heads of Performance Support to deliver support to the NGBs. Thus, practitioners operate in multiple teams across the structure. This facilitates a flow of knowledge within and between the EIS functions. Specifically, practitioners collaborate and develop knowledge within their respective disciplines in the Science and Technical Development function (such as Performance Nutrition, Physiology, or Performance Lifestyle; see Figure 4.3). They collaborate in multidisciplinary teams, collaborating with practitioners from other disciplines, when seconded by their Heads of Performance Support (their formal line manager) to the specific NGBs, where they apply this knowledge and deliver support to the NGBs. Practitioners are also encouraged to share knowledge, in the form of experiences, reflections and insights from delivery in NGBs, back into their respective sport science disciplines to collectively increase discipline learning. Finally, the delivery of support in the NGBs helps highlight need for creation of new knowledge in the disciplines.

For example, emerging trends in high-performance sport may indicate the need for research on female athletes. Practitioners in the Performance Nutrition and Physiology disciplines (within the Science and Technical Development function) will then develop research and knowledge on nutritional needs and physiological changes, respectively, in menstruating athletes. Then, a Performance Nutrition practitioner and a Physiology practitioner seconded by their performance support function to work within UK Athletics (an NGB) will collaborate to develop meal plans for training camps for athletes. These practitioners will subsequently be encouraged to share their insights from working on a meal plan with an anaemic athlete, back into their discipline, thereby contributing to the overall learning of the Performance Nutrition and Physiology disciplines, respectively.

Moreover, each EIS site houses practitioners and employees from different disciplines,

sports and departments. This physical proximity enables practitioners from different disciplines and sports to interact and share knowledge with each other. Thus, multiple opportunities of collaboration are present within the disciplines, within the sports and within different EIS sites. An example of the resultant interconnectedness is depicted in Figure 4.4. Here the green dot in the centre of the Venn diagram represents an EIS Physiology practitioner (linked to the Physiology discipline within the Science and Technical Development function) who works in Athletics (a secondment to this NGB organised by their Head of Performance Support) and is based at the Loughborough site. As a result, she is a part of different, overlapping teams across the network. Specifically, she is collaborating within the physiology discipline as well as within the athletics team and has opportunities to interact with other staff members based at the Loughborough site. Thus, the flow of knowledge through this practitioner is going in several directions, within and across the boundaries of different teams in the organisational structure, as well as externally into the sport.

4.2.6 Performance Knowledge

Section 1.4 of Chapter 1 introduced the Performance Knowledge function, which is responsible for facilitating the sharing of knowledge and best practice across the EIS and high-performance system. The Performance Knowledge function is led by the Head of Performance Knowledge, referred to from now on as the Knowledge Manager, and resides within the Science and Technical Development function. Consequently, the remit of Performance Knowledge activities and initiatives was primarily limited within this function in the organisational structure. Accordingly, this research initially focused at informing knowledge sharing and collaboration practices within the disciplines in the Science and Development function.

Subsequent discussions with the Knowledge Manager revealed that the aim of the Performance Knowledge function was to increase sharing of knowledge, experiences and insights between practitioners based in different NGBs to facilitate learning and improve the efficiency of decision making by the practitioners. The rationale was that certain performance issues are faced by multiple sports and thus sharing between these sports can improve the speed of delivery and quality of support. Furthermore, the Knowledge Manager aimed to improve collaboration between disciplines and encourage the practitioners to draw from knowledge from different disciplines to

develop multidisciplinary support for sports. Finally, the Performance Knowledge function was expected to create a legacy of the knowledge and expertise developed and delivered in the EIS to safeguard against the risk of losing this knowledge due to the high staff turnover as well as movement of employees within the structure. In line with these aims, two predominant Performance Knowledge initiatives were visible during the exploratory phase:

- Online knowledge management system where EIS practitioners can share resources, connect with other practitioners and employees and ask questions to access knowledge from across the institute.
- Publicity efforts to travel between EIS sites, engage with the practitioners and employees and raise visibility and awareness of the Performance Knowledge function in the EIS.

4.2.7 Reflections and summary

Critical reflections on these preliminary observations highlighted that knowledge, along with the people who possessed and embodied this knowledge, is the most strategic resource for the core objectives of the EIS. Further, knowledge in the EIS exists in multiple forms; practitioners' knowledge consists of the technical and theoretical knowledge amassed from academic training in their respective disciplines, their tacit and complex experiences gained from their delivery in sports and their interpersonal skills in delivering and applying this knowledge in the sports. Moreover, the structural complexity and interconnectedness of Science and Technical Development and Performance Support functions adds to the complexity of the flow of knowledge in the EIS highlighting that the multiple teams within the EIS along with the NGBs in the external periphery are intimately intertwined. It was thus deduced that considering the complex flow of knowledge within the EIS and with other strategic partners in the high-performance system, specifically the NGBs, the limited remit of the Performance Knowledge function may not be conducive to successfully inform and deliver knowledge management practice.

4.3 Insights from the Performance Knowledge workshop

Within the exploratory phase, following the participatory characteristic of action

research (Reason and Bradbury, 2008), the researcher participated in the ongoing events and activities in the EIS to develop a holistic understanding of the complexity and culture of the sport context. In December 2015, the EIS hosted its annual National Conference that enables all EIS staff to congregate at one place once a year, providing an opportunity to interact with each other and share insights from practice, case studies and research from their respective sports and sport science disciplines. As part of the ongoing Performance Knowledge efforts at the EIS, the Knowledge Manager conducted a workshop at the National Conference with the EIS staff to explore solutions for improving collaboration in the Institute. The purpose of the workshop was to initiate a dialogue on the staff's experiences of perceived challenges for collaboration and knowledge sharing, and brainstorm practical solutions to overcome them. The Knowledge Manager aimed to extract ideas and solutions that could be further developed and implemented in the institute to improve knowledge sharing. The activity was thus predominantly solution focused, aimed at designing practical solutions based on the insights and suggestions offered by the EIS staff.

4.3.1 Workshop structure

The workshop was designed and conducted by the Knowledge Manager. Being embedded in the Performance Knowledge team, the researcher participated in the workshop to assist in facilitating the discussions with the participants. The workshop was voluntarily attended by 48 members of the EIS staff from different departments, sites and sports. Participants included members of the senior management team, business operations team, sport science practitioners as well as external partners and stakeholders attending the conference. This heterogeneous demographic was instrumental in providing a diverse insight into the EIS context and the range of challenges experienced by staff. Prior to commencing the workshop, written and verbal informed consent was obtained from the participants (Appendix 2). They were informed that the session would be recorded and that the data would be incorporated into this research project to improve their experience of collaboration within the institute.

The participants were divided into seven groups of 6-7 members each and asked to discuss incidents where they had experienced failures in collaboration. They were then asked to pick one incident and discuss within their groups the specific details of

the experience, namely its severity, frequency with which others had experienced similar situations, people involved, specific barriers to collaboration, and the individual's response. The participants then brainstormed possible solutions to improve similar experiences in the future. Discussions from each group were fed back to the room, summarising the various challenges and possible solutions for improving collaboration in the EIS. The entire session was audio and video recorded. In addition, the participants listed the personal experiences, details of the example picked and the possible solutions on flipcharts. The video recordings and the flipcharts were transcribed to be analysed for emergent themes. This data was organised into perceived challenges to collaboration and proposed solutions along with the frequency with which each was mentioned during the forum. These were then characterized under higher order themes based on the nature of the challenges and the solutions, respectively. Tables 4.3 and 4.4 depict a summary of the themes that emerged from the discussions at the workshop.

4.3.2 Discussion of findings

4.3.2.1 Perceived challenges to collaboration

Table 4.3 depicts the challenges to collaboration as experienced and discussed by the participants at the workshop, arranged under the higher-order themes of organisational factors, team structure and interpersonal relationships. Within organisational factors, the participants discussed that the EIS's staff's frequent travel with sports (F=3), domestic and overseas, posed a significant barrier to effective communication and collaboration. Other challenges such as lack of time (F=2), geographical dispersion of staff (F=1) and perceived limited pay (F=1) were also discussed; together, these widely define the organisational context within which the EIS staff operate. These challenges have also been cited in the knowledge management literature (O'Dell and Grayson, 1996; Riege, 2005). Cavaliere, Lombardi and Giustiniano (2015) discussed that large and widespread organisational structure hinder social interaction, thereby affecting knowledge sharing behaviours.

With regards to the team structure, different, and often opposing, expectations from sport and the EIS (F=4) was reported as a significant challenge to effective collaboration. Specifically, it emerged that often there can be differences in priorities and expectations between the sports and the EIS. Whilst the sports may push for a

singular focus on performance improvement, thereby encouraging practitioners to spend maximum time and effort with the athletes, the EIS encourages practitioners to engage in opportunities for professional development. This places conflicting demands on the time and effort of practitioners based in both cultures.

Table 4.3: Perceived challenges to collaboration

First order theme	Second order themes	Frequency (F)
Team structure	Different priorities	4
	Sport versus EIS expectations	4
	Limited understanding of roles and responsibilities	3
	Isolated teams	2
Interpersonal relationships	Insufficient social relationships	4
	Different styles of working	4
	Emotional intelligence	4
Organisational factors	Frequent travel	3
	Lack of time	2
	Geographical dispersion	1
	Limited pay	1

Note: Frequency (F) refers to the number of groups out of a total of seven that reported the challenges.

Further, participants cited different individual priorities (F=4) as another significant challenge, whereby they discussed that collaboration suffers in teams that are heterogeneous, consisting of individuals with different responsibilities, objectives and priorities. For example, one of the groups discussed a situation where the multidisciplinary practitioner team was unable to increase athlete engagement with an injury prevention program. Due to different responsibilities and objectives, the program was not being systematically reinforced by everyone in the coaching and performance support team. Chen, Zhang and Vogel (2011) noted that task conflict can facilitate knowledge sharing by forcing a dialogue between the team members. However, the participants discussed that the issue becomes magnified when there is limited understanding and awareness of others' roles and responsibilities (F=3) making it

difficult to communicate effectively. This also adds to the complexity inherent in the context, specifically socio-political complexity, which is characterised by divergence of people involved and conflicting goals and priorities of stakeholders (Maylor and Turner, 2017). Finally, the participants revealed that in certain teams, practitioners often work in isolated locations with limited access to the entire network, which results in formation of knowledge silos and hinders collaboration (F=2).

Within interpersonal relationships, social factors in knowledge sharing and collaboration were highlighted (Chang and Chuang, 2011; Rosendaal and Bijlsma-Frankema, 2015). Specifically, insufficient social relationships (F=4) and different styles of working (F=4) were the most frequently cited challenges. It emerged that due to frequent travel, geographical dispersion and time constraints, often there are limited opportunities for social and informal interaction amongst team members that can hinder the formation of a sense of belonging, trust and positive relationships that are beneficial in facilitating knowledge sharing (Chang and Chuang, 2011). Furthermore, differences in styles of communication and working also appear to hinder knowledge sharing and collaboration, supporting Chen, Zhang and Vogel's (2011) findings. Additionally, the participants discussed that low emotional intelligence in communicating and working with peers could also pose a challenge to collaboration (F=4). Low emotional intelligence was defined as a lack of empathy in relating to others, limited awareness of others' emotional state and a lack of respect for others' time and needs.

4.3.2.2   Proposed solutions for improving collaboration

Table 4.4 depicts the solutions that were suggested by the workshop participants to overcome the challenges discussed arranged under the high-order themes of team structure, interpersonal relationships, communication and culture of sharing. Figures 4.5 and 4.6 in turn depict examples of visual representation of solutions by the workshop participants. Within team structure, all groups expressed a need for clarity on agreed objectives of the team (F=7), roles and responsibilities of the individual members (F=7) and individual differences in working styles (F=6) to improve the efficiency of collaboration.

Table 4.4: Proposed solutions for improving collaboration

First order theme	Second order themes	Frequency (F)
Team structure	Clarity of roles and responsibilities	7
	Agreed aims and objectives	7
	Improved understanding of different working styles	6
	Clarify EIS versus sport expectations	2
Interpersonal relationships	Informal and social interactions	7
	Build trust	5
	Improve emotional intelligence	4
Communication	Clarity of channels and means of communication	6
	Regular interaction	5
	Use of ICT	4
	Facilitated communication	2
Culture of sharing	Encourage engagement	2
	Encourage questions	2
	Incentives	1

Note: Frequency (F) refers to the number of groups out of a total of seven that reported the solutions.

Within interpersonal relationships, suggestions were made around providing opportunities for social interaction (F=7) and building trust (F=5) to cultivate positive relationships amongst team members as well as to enhance the EIS staff's emotional intelligence (F=4) skills to facilitate more effective communication and collaboration. Furthermore, various recommendations to improve the efficiency of communication across the network, including regular opportunities for interaction (F=5) as well as the use of ICT to overcome barriers of time and distance (F=4). The participants also highlighted the need to clarify the channels of communications used (F=6). It appears that the practitioners have access to multiple modes and platforms for communication and knowledge sharing, which often leads to confusion regarding the best option to use.

Finally, recommendations were made regarding the creation of a team environment that encourages questions (F=2) and knowledge sharing (F=2). The range of solutions suggested aimed at creating enabling conditions, such as improved team dynamics, role clarity and a culture of sharing, to facilitate effective collaboration in the institute, rather than the exclusive use of technological infrastructure and quick-fix solutions.
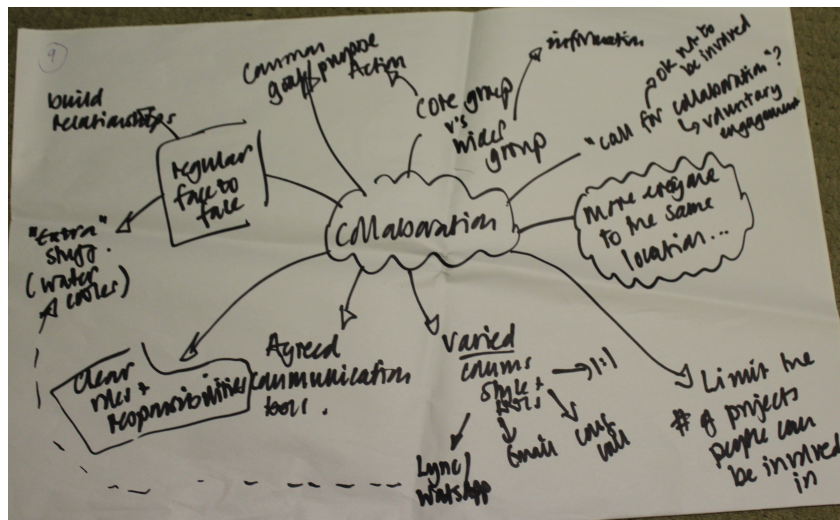
Figure 4.5: Example 1 of brainstorming solutions

For the Knowledge Manager, the purpose of the workshop was to identify solutions for improving collaboration informed by the EIS employees' experiences, suggestions and recommendations. For the researcher, the aim of data collection at the workshop was exploratory, to understand the context and the range of challenges experienced, rather than to generalise the findings to the entire sport context. The workshop proved critical in revealing the breadth of challenges to collaboration specific to the EIS's context as well as an insight into their needs and priorities with regards to possible solutions for improving collaboration. The discussion around the employees' experiences further highlighted the complexity of the structure and context of the EIS; it emerged that multiple overlapping, interconnected and heterogeneous teams exist across the network. This complexity is not easily observable by an external, independent bystander and yet can pose a significant barrier to effective knowledge sharing and collaboration in the system.
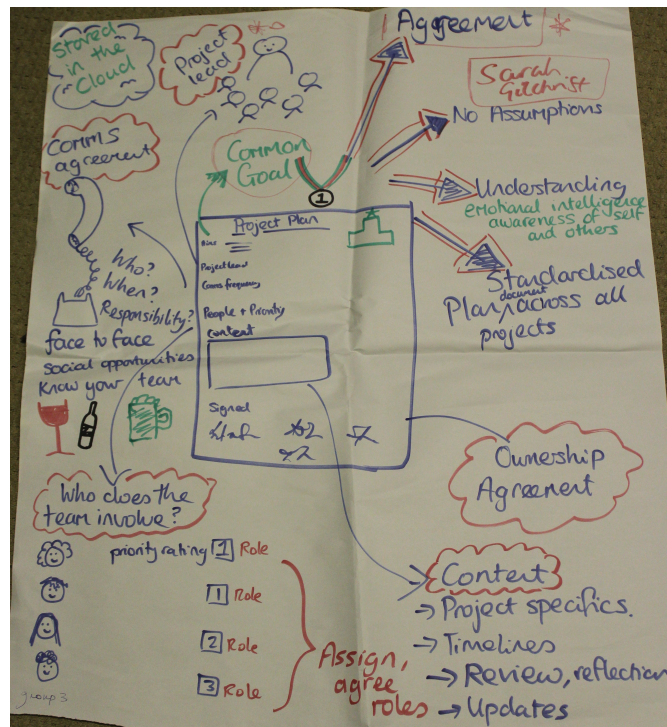
Figure 4.6: Example 2 of brainstorming solutions

4.4 Analysis and reflections

The researcher's embeddedness in the EIS during the initial months of the research was critical in developing a preunderstanding of the context and the complexity of the wider high-performance system. The workshop at the National Conference in turn provided a deeper insight into the specific challenges to knowledge sharing and collaboration. For example, prior to the workshop, challenges of time constraint and geographical dispersion were perceived to be the key barriers to knowledge sharing and collaboration. However, discussions at the workshop further asserted that the EIS is a complex system of multiple overlapping and interconnected teams, each with its different responsibilities and own remits but also dependant on each other to fulfil their role towards the mission and core objectives of the Institute. Furthermore, rather than being an independent organisation, the EIS is situated in a complex system of organisations within the UK high-performance system and collaborates with them to develop sports in the UK.

Moreover, the workshop posed a series of questions for the researcher to critically assess. First, the researcher questioned the implications of this complexity for the design and implementation of knowledge management initiatives. Becerra-Fernandez

and Sabherwal (2014) discussed that various factors such as task characteristics, type of knowledge and organisational and environmental characteristics will influence the knowledge management practices. For example, task interdependence, that is, the extent to which a team's success is dependent on the efforts of others, necessitates interaction and collaboration between teams and the dynamic flow of knowledge within and between teams. Consequently, considering the overlapping team structure and need for a dynamic flow of knowledge, the researcher questioned the remit, scope and strategic focus of knowledge management practices for the EIS.

Further, the literature highlighted that the nature of knowledge sharing processes will be determined by the type of knowledge to be shared (Hansen, Nohria and Tierney, 1999; Haas and Hansen, 2007; Hislop, 2013). Preliminary understanding of the context emphasised the strategic role of knowledge in the organisational functions, prevalence of multiple types of knowledge in the system and different needs of each of the overlapping teams. Thus, it became imperative to specify the nature and type of knowledge of critical significance for competitive advantage that would in turn inform the appropriate knowledge management practices to be adopted. Additionally, further reflections from the exploratory phase suggested that the terms knowledge sharing and collaboration were often used together as well as interchangeably. The Knowledge Manager commented:

> Collaboration is a grand name, it's more about communication – getting in touch with people. For me it's about helping practitioners with their performance questions. For the EIS, it's about their partnership with the sports.

Knowledge sharing has been defined as activities or behaviours through which knowledge, experiences, insights and skills are exchanged between individuals (Riege, 2005; Hansen and Avital, 2005). Collaboration is defined as a situation where individuals work in conjunction with each other (Vangen and Huxham, 2006). Knowledge sharing is then a prerequisite for collaboration. A distinction between the two can be made within the EIS context. It emerged that the initial focus of Performance Knowledge initiatives was predominantly to improve communication and knowledge dissemination across the network to support problem solving and decision making efforts by the practitioners. However, the workshop highlighted that the

participants regarded collaborative practice and knowledge sharing for working together as instrumental for creating performance impact. Considering how the strategic functions and operations are structured in the EIS as well as their core value of collaboration, the researcher deduced that the two terms, knowledge sharing and collaboration, will have different meaning, purposes and value for the institute. The researcher thus questioned the strategic need for knowledge management for the context, which will help define the specific knowledge management initiatives implemented. For example, making a strategic distinction between using ICTs and knowledge repositories to facilitate knowledge transfer, or nurturing communities of practice to facilitate multidisciplinary team work.

The review of the knowledge management literature (see Chapter 3) highlighted the significance of context in informing the design and implementation of knowledge management practice (Hansen, Nohria and Tierney, 1999; Hislop, 2013; Becerra-Fernandez and Sabherwal, 2014). Further, the literature on dynamics of knowledge sharing emphasised multiple social and human factors that can hinder or enable sharing behaviours (Riege, 2005; Hislop, Bosua and Helms, 2018). Preunderstanding of the EIS context, gained from the initial exploratory phase, highlighted a limited understanding of the various contextual, social and human factors operating in the context. The researcher thus proposed to further assess multiple factors in the sport context and study the complex organisational structure of the EIS in order to the responsibly inform knowledge management practice.

The academic literature on knowledge management highlighted that despite the promise of strategic advantage, attempts at introducing knowledge management initiatives in organisations have often been unsuccessful (Hylton, 2002; Massingham, 2014; Valmohammadi and Ghassemi, 2016). Stewart (2002) reasoned that often organisations implement knowledge management strategies without first understanding what knowledge they need and how to manage it. It has been stipulated that the first step towards a successful knowledge management strategy is understanding the organisation's context and needs, the knowledge that currently exists and where it is needed, and the internal and external relationships of the organisation (Liebowitz, 1999; Henzcel, 2001; Bloice and Burnett, 2016; Latif, Drus and Shariff, 2016). Rubenstein-Montano et al. (2001) stressed that the specific

knowledge management technologies, tasks and tools should be built around the existing culture and strategic objectives of the organisation. A knowledge audit is a suitable starting point towards this end. Gourova, Antonova and Todorova (2009) suggested that conducting a knowledge audit can help assess an organisation's readiness for implementing a knowledge management strategy along with establishing key knowledge management goals and tools. In fact, knowledge audits are deemed as the first "critical" stage of implementing a knowledge management strategy in organisations (Liebowitz, 1999; Burnett, Illingworth and Webster, 2004; Xiao, Wang and Peng, 2010; Latif, Drus and Shariff, 2016). Burnett, Illingworth and Webster (2004) discussed that knowledge audits can help identify specific changes or improvements that can be made in an organisation's culture, business processes and technological infrastructure to leverage its knowledge for competitive advantage.

Overall, the literature review and preunderstanding from the exploratory phase highlighted the need to understand and align knowledge management practice to the organisational context. The researcher thus proposed to conduct a knowledge audit to assess its role in informing knowledge management practice aligned to the strategic and contextual needs of the case study organisation.

4.4 Chapter summary

This chapter discussed the researcher's preunderstanding of the context, gained by preliminary observations, discussions and participation in the case study organisation, following Coghlan and Brannick's (2014) principles of insider action research. This preunderstanding and the introduction to the knowledge management literature (Chapter 3) formed the exploratory phase of the research, critical in defining the research context. It emerged that multiple debates, discussions and contradictions exist in the knowledge management literature, and thus, organisational context plays a significant role in informing and aligning knowledge management practice. Further, various factors operating in the organisational context can hinder or enable knowledge management practices. As a result, knowledge audits are considered a critical first stage in designing and implementing knowledge management initiatives in an organisation. Chapter 5 presents a more critical review of the literature on knowledge audits that highlighted the research gaps instrumental in defining the research aim and questions.

Part 2: Planning Action

Chapter 5: Knowledge Audits

Chapter 5: Knowledge Audits

Chapter 5: Knowledge audits

5.1 Introduction

This chapter presents a critical review of the literature on the implementation of knowledge management in organisations, with a specific emphasis on knowledge audits. Section 5.2 introduces the topic of knowledge management implementation, followed by a review of the literature on knowledge audits in Section 5.3. Thereafter, Section 5.4 discusses intellectual capital accounts in comparison to a knowledge audit. Finally, Section 5.5 outlines the research gap that was identified and addressed in this research. The purpose of this chapter is to critically review the theoretical and methodological considerations in the existing knowledge audit literature, specifically exploring the role of knowledge audits in informing knowledge management practice.

5.2 Implementing knowledge management in organisations

Chapter 3 presented a preunderstanding of the knowledge management literature along with the relevant perspectives and challenges in the field. The literature highlighted that the specific perspective on knowledge management adopted will be informed by the definition and form of knowledge as well as the wider context of the organisation, thereby highlighting the lack of a standard framework for implementing a knowledge management strategy. An organisation's ability to efficiently manage its intellectual capital has been proposed as a significant source of strategic advantage. However, despite the promise of strategic advantage, attempts at introducing knowledge management initiatives in organisations can sometimes be unsuccessful (Hylton, 2002; Roth, 2003; Massingham, 2014; Valmohammadi and Ghassemi, 2016). Over two decades ago, when the field of knowledge management was emerging, seminal works highlighted that managers faced the dilemma of how to introduce knowledge management practice in organisations considering the lack of a coherent and practical framework for knowledge management implementation (Wiig, 1993; Earl, 2001). It appears that the multiple debates, frameworks and perspectives on knowledge and knowledge management in the academic literature, although useful for educational awareness, provide little guidance on how to introduce and implement knowledge management initiatives in an organisation. More recently, authors are still conducting research to enhance our understanding on factors that facilitate successful implementation of organisational knowledge management (Lin 2011; Becerra-

Fernandez and Sabherwal, 2014; Anand et al., 2015; Valmohammadi and Ghassemi, 2016).
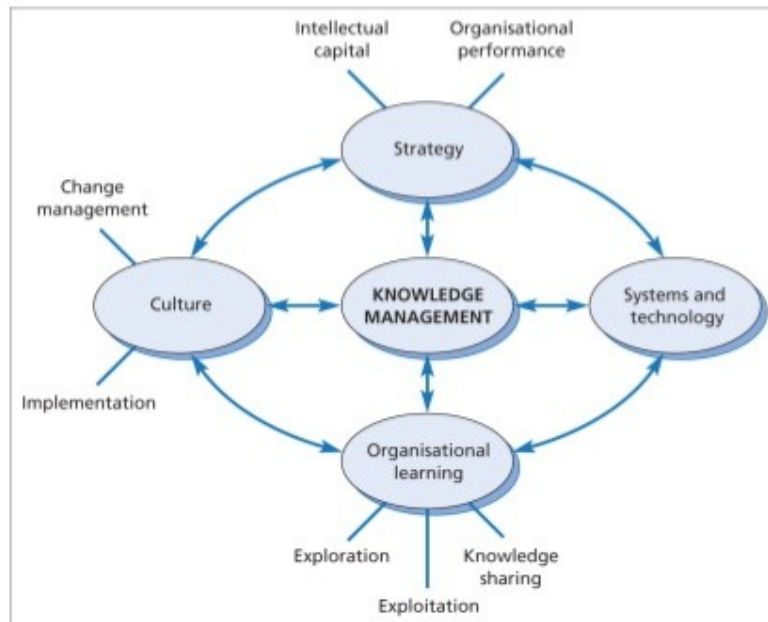
Figure 5.1: Dimensions of knowledge management (Jashapara, 2011, pp. 14)

As an emergent field, knowledge management drew from multiple disciplines such as information systems, human resource management, organisational science, cognitive science and collaborative technologies (Baskerville, 2006; Dalkir, 2013). Jashapara (2011) critiqued that considering these interdisciplinary linkages as well as multiple definitions of knowledge and knowledge management, an integrated perspective is warranted for the successful implementation of knowledge management. He presented the key dimensions of knowledge management, reflecting the integrated perspective (Figure 5.1). Specifically, the strategic purpose of knowledge management is to improve organisational performance and competitive advantage. This is achieved by the human dimension of organisational learning by developing and sharing knowledge, and supported by technologies and systems. Finally, he emphasised the organisational culture and change management techniques as critical for the success of knowledge management tools and processes. Jashapara discussed that an integrated approach to the implementation of knowledge management would involve developing a knowledge management strategy aligned to the organisational strategy and objectives and incorporated into multiple functions and departments in

the organisations. For example, considering the role of the human dimension, technologies and systems, the knowledge management strategy should be integrated into the human resources and information systems strategies of the organisation.

Further emphasising the need for an integrated approach, Dufour and Steane (2007) presented a review of the literature, highlighting four predominant categories of approaches to knowledge management implementation as an explanation of problems that may manifest therein:

1. The classical approach: This approach adopts a unitarist view of knowledge management implementation, that is, knowledge management can be passed as a directive and controlled by leadership. Success and failures are judged by whether or not the desired outcomes were achieved. The focus here is on the decisions rather than the implementation itself. The authors discussed that the classical approach fails to bridge the gap between knowledge management formulation and implementation or acknowledge the mediating role of organisational politics and cultural factors. The approach presents an ideal state of knowledge management rather than the reality.

2. The contingency approach: Within the contingency approach, the emphasis is placed on contextual factors such as the context, technology and characteristic of knowledge, which determine and define the knowledge management implementation process. Further, the focus is on systematic alignment of the knowledge management strategy to the organisational strategy. The authors discussed that this approach still fails to consider the human and motivational factors that can influence process.

3. The behavioural approach: This approach, in addition to a consideration for structure, context and technology, acknowledges individual and organisational factors that may resist implementation. For example, Knowledge Champions are appointed to communicate the change across the organisation. Further, an emphasis is placed on culture change that rewards sharing and thus increases buy-in for knowledge management

implementation. Failure in implementation then results from lack of commitment from employees. However, this approach does not consider the impact of political factors, power and conflict of interests on the knowledge management strategy.

4. The political approach: The political approach acknowledges the impact of power and influence on the successful implementation of the knowledge management strategy. It assumes that multiple interests exist in organisations and successful knowledge management implementation would involve bargaining and compromise between the parties involved. Further, the approach treats knowledge management implementation as a long-term process, which involves a right balance of political and cultural conditions and wider economic, social and competitive forces. Essentially, the approach acknowledges that knowledge management implementation is a dynamic process.

The authors present these categories of approaches in a chronological order, which implies evolution towards greater sophistication in thinking and practice in the field of knowledge management. Further, the existence of multiple approaches appears to mirror the diversity in perspectives, concepts and understanding in the general knowledge management literature. This may be due to the wide range of disciplines that knowledge management draws from as well as the variety of contexts under study (see Dufour and Steane, 2007). Moreover, the authors argue that the multiple approaches can coexist concurrently, implying that a range of analytical, structural, behavioural and political issues exist in the knowledge management implementation process (pp. 76). Considering these observations, it becomes important to incorporate a greater appreciation of and integration between the organisational context, the content of the knowledge management strategy and initiatives as well as the process of knowledge management implementation, thus moving towards a more holistic and integrated approach. Dufour and Steane (2007) argued that such a holistic approach will contribute to the sustainability of knowledge management implementation overall.

Another key driver for the successful implementation of knowledge management is the organisational culture (du Plessis, 2007). Du Plessis stressed that the

implementation of knowledge management should involve creating a culture that values and encourages sharing, innovation and teamwork, facilitated by leadership, incentives and changes in the organisational structure and environment. Consequently, sustainable culture change is a long-term process, supported by effective change management initiatives and by integrating knowledge management as a way of working in the organisation. Similarly, Jashapara (2011) asserted that adopting an integrated and incremental approach that adopts multiple interventions to create culture change is more likely to be successful than implementing a single solution. In doing so, the role of leadership, human resource interventions such as training and development, trust, employee participation and commitment and organisational politics have been highlighted. These works highlight the need for knowledge management initiatives to be integrated across and reinforced consistently by multiple strategies and functions in the organisation to create sustainable change with regards to the implementation of knowledge management.

Authors, more recently, also echoed the need for an integrated approach to knowledge management implementation, emphasising that successful knowledge management implementation involves an interaction between the organisational context, knowledge management strategy and processes, technological support, management support, social interactions and employee motivation (Lin, 2011; Akhavan and Pezeshkan, 2014; Wang and Wang, 2016; Al-Hakim and Hassan, 2016). Equally important to the critical success factors, barriers or factors for failure of knowledge management implementation have also been discussed. For example, Akhavan and Pazeshkan (2014) discussed that an overreliance on technology, lack of motivation and lack of compatibility between the employees' current tasks and new knowledge management systems developed are all barriers to successful knowledge management implementation. Similarly, Storey and Barnett (2000) discuss that successful knowledge management implementation requires consideration and commitment to address cultural and systemic barriers in an organisation. Karabag (2010) asserts that considering the mediating role of these critical success and failure factors, successful knowledge management implementation requires a practical plan for implementation and careful consideration of multiple factors. It can be deduced that this practical plan takes the form of a knowledge management strategy, instrumental in systematically implementing knowledge management in organisations.

A knowledge management strategy has been defined as a framework defining the strategic objectives and focus of knowledge management initiatives, processes and tools, linked to the organisation's business strategy, in order to leverage its knowledge resources to improve organisational effectiveness and performance (Zack, 1999; Dalkir, 2013). Du Plessis (2007) emphasised that an integrated knowledge management strategy is critical for the success and sustainability of knowledge management initiatives. Such a strategy should be aligned to the organisational context and business strategy, acknowledge enablers and challenges in the context, include a range of integrated knowledge management projects that address organisational needs and be holistic, that is comprising of multiple factors such as culture, technology, human resource practices, infrastructure and knowledge management metrics. Further, she discussed that knowledge management would garner greater engagement if it is seen to create value and impact, and is supported and communicated by the top management. Additionally, provisions should be in place to measure the performance and impact of knowledge management initiatives linked to the overall performance and efficiency of the organisation.

According to Dalkir (2013), a good knowledge management strategy would consist of the organisation's business strategy and objectives, a description of the knowledge based issues, an inventory of knowledge resources and an analysis of recommendations regarding knowledge management tools and processes that can be undertaken to achieve the organisation's objectives. Development of a knowledge management strategy aligned to the organisation's business strategy involves conducting a gap analysis between the organisation's current state and the desired business objectives and identifying the knowledge resources, systems and processes that are needed to achieve those objectives (Zack, 1999; Dalkir, 2013; Perez-Soltero et al., 2015). The overall focus of this approach is the strategic alignment of the knowledge management strategy to the business strategy of the organisation. Additionally, it involves developing metrics to monitor the progress towards the objectives and consequences for the organisation's performance (Dalkir, 2005; Jashapara, 2011).

Drawing from the literature on knowledge management implementation, it thus emerges that the organisation's context and business strategy, knowledge

management strategy and processes, culture and various factors such as management support, technological infrastructure, employee motivation and social interaction are all critical considerations for successful knowledge management implementation. The literature reviewed in Chapter 3 highlighted the role of context in defining the knowledge management strategy and informing knowledge management practice. Specifically, the literature suggests that an organisation's context and business strategy will help determine the relevant framework and perspective of knowledge management (Hansen, Nohria and Tierney, 1999; Greiner, Böhmann and Krcmar, 2007). This in turn will help in making the choice of specific tools and activities to be adopted (Merono-Cerdan, Lopez-Nicolas and Sabater-Sanchez, 2007). For example, a manufacturing firm that relies on the reuse of knowledge to maximise profit and save time and costs, is likely to adopt the objectivist perspective and a codification strategy (Hansen, Nohria and Tierney, 1999). The relevant knowledge management tools and initiatives will then include decision support systems, knowledge repositories and shared database. On the other hand, knowledge-intensive firms that are engaged in solving complex, bespoke problems and rely on expert knowledge are more likely to follow the personalisation strategy (Hansen, Nohria and Tierney 1999). The corresponding tools and initiatives will include mentoring, communities of practice, Yellow Pages and discussion forums. Moreover, du Plessis (2007) and Dalkir (2013) stressed the need to align an organisation's knowledge management strategy to their business strategy to facilitate the achievement of competitive advantage. The knowledge management strategy in turn will guide the implementation of organisational knowledge management practice.

Further, discussions in this section highlighted that various enablers and barriers in the organisational context and culture play a critical role in mediating the success of knowledge management implementation. As a result, an integrated approach to knowledge management implementation is recommended that includes multiple dimensions and factors in the organisational context, such as technology, processes, social and human factors and the organisational culture (e.g., du Plessis, 2007; Jashapara, 2011; Akhavan and Pezeshkan, 2014). Finally, Valmohammadi and Ghassemi (2016) discuss the need to remove any barriers before and during knowledge management implementation to maximise the success of organisational knowledge management. This suggests that knowledge management implementation

within the organisational context should be reviewed continuously to address any barriers that may impede the success of organisational knowledge management.

To develop a successful knowledge management strategy and inform knowledge management implementation, authors profess the critical role of knowledge audits (Liebowitz, 2000; Dalkir, 2005; Burnett, Williams and Illingworth, 2013). Knowledge audits have been emphasised as a critical first step in knowledge management implementation by conducting a gap analysis between an organisation's current knowledge health and capabilities and the desired state to achieve organisational objectives. They are instrumental in understanding the organisational context and identifying specific changes or improvements that can be made in an organisation's culture, business processes and technological infrastructure to leverage its knowledge for competitive advantage (Burnett, Illingworth and Webster, 2004). It thus emerges that as a critical first step in knowledge management implementation, knowledge audits should adopt a holistic approach, including an assessment of the organisational context and the mediating factors, informing the design of the knowledge management strategy and facilitating knowledge management implementation. Drawing from this critical lens, the following section presents a review of the existing knowledge audit literature and methodologies. A specific purpose of this section is to critique the knowledge audit literature to the extent to which it addresses the organisational context, knowledge management strategy and knowledge management implementation, individually and in an integrated manner.

5.3 Knowledge audits

A literature search was conducted using the terms 'knowledge audit', 'knowledge management audit', 'knowledge audit methodology', 'knowledge audit processes' and 'knowledge audit tools'. The studies included here consist of those with a description of the process or methodology adopted for conducting the audit. Each subsection presents a critical review of the literature (see Tables 5.1 - 5.6) along the dimensions of purpose, context, scope, research approach and outcome. These dimensions were identified as aligned to the research questions, instrumental in reviewing the extent to which the existing knowledge audit literature addresses the integration between organisational context, research approach, knowledge management strategy and implementation, and the role of the knowledge manager.

Table 5.1 Definitions and purpose of knowledge audits

Authors	Definition	Purpose
Debenham and Clark (1994)	Knowledge audit is a well-defined, highly technical, structured report containing an overall high level description of a restricted section of an organisation's knowledge resource.	To assess knowledge resources to inform the organisation's knowledge processing capacity
Liebowitz et al (2000)	Knowledge audit is a tool that assesses the potential stores of knowledge. It is the first part of any KM strategy.	To conduct gap analysis between existing knowledge resources and future needs
Lauer and Tanniru (2001)	An a priori analysis of knowledge processes and the degree to which they address the knowledge goals of both the organisation and the knowledge worker.	To inform design of KM systems
Burnett et al (2004)	A successful knowledge audit provides an overview of the strength and weaknesses of the organization; it offers a scientific analysis of the organization's potential for competitive advantage; and it uncovers the benchmarks of successful knowledge management within an organization.	To establish knowledge sharing culture and improve KM processes
Schwikkard and du Toit (2004)	The audit consists of a process of identifying the knowledge that leadership considers critical to the success of the business and then studying the target audience to ensure that any gaps or overlaps in knowledge types have been identified.	To identify knowledge requirements and inform KM strategy
Choy et al (2004)	Knowledge audits are critical to design a proper roadmap for implementing KM strategy.	To assess organisation's readiness for KM.
Biloslavo and Trnavcevic (2007)	A KM audit is an organisation-wide assessment, the aim of which is to assess all areas of KM processes.	To quantify KM effectiveness
Cheung et al (2007)	Knowledge audit involves a complete analysis and investigation of the company in terms of what knowledge exists in the company, where it is, who owns it and how it is created.	To systematically inform the KM strategy
Perez-Soltero et al (2007)	Knowledge audits consist of the identification of knowledge needs and focus on the development of a knowledge inventory	To design KA methodology to inform the KM strategy
Levantakis et al (2008)	Knowledge audit can be defined as an assessment that incorporates all the effective processes associated with the exploration of human knowledge within a business unit or an organization.	To present a meta-methodology of knowledge audit
Mearns and du Toit (2008)	Knowledge audit is a KM tool to map the organisational knowledge	To inform indigenous knowledge conservation and how it is shared and stored

Wu and Li (2008)	Knowledge audit is a KM activity which investigates and analyses organisational knowledge state and mechanisms, reports the knoweldge gap of organisation according to the knowledge need of organisation.	To design a knowledge audit methodology
Huck et al (2011)	A knowledge audit is a tool for creating a map of an organization's knowledge needs and assets.	To understand and inform KM and knowledge sharing in volunteer sector
Burnett et al (2013)	Same as Burnett et al (2004)	To inform the existing KM strategy
Ragsdell et al (2014)	Knowledge audits can surface initiatives to improve the knowledge management processes of an organisation and, in turn, improve efficiency and effectiveness.	To identify strategic knowledge and gaps, and to understand culture to make recommendations for KM strategy
Roy et al (2014)	Analysis of knowledge needs and requirements to inform KM strategy and tools.	To inform KM strategy, design tools and solutions.
Yip et al (2015)	A knowledge audit is a systematic and scientific examination and evaluation of explicit and implicit knowledge resources in a company, including what knowledge exists, where it is, how it is being created and who owns it.	To implement knowledge audit aligned to the organisational needs

5.3.1 Definitions and purpose

Knowledge audits are critical in planning and aligning knowledge management implementation to the organisational context and promoting the organisation's knowledge management performance (Xiao, Wang and Peng, 2010). An overview of the literature highlighted multiple views, methodologies and approaches in the implementation of knowledge audits. Different authors have defined knowledge audits in different ways, which reflects in the subsequent implementation of the audit (Table 5.1). For example, Cheung et al. (2007, pp.141) defined knowledge audit as a "complete analysis and investigation of the company in terms of what knowledge exists in the company, where it is, who owns it and how it is created", indicating a focus on assessing and evaluating knowledge resources. Burnett, Illingworth and Webster (2004) adopted the Delphi Group's (1999) definition which states that "a successful knowledge audit accomplishes several things. It provides an overview of the strength and weaknesses of the organization; it offers a scientific analysis of the organization's potential for competitive advantage; and it uncovers the benchmarks of successful

knowledge management within an organization", suggesting a more broader inclusion of organisational factors. Biloslavo and Trnavcevic (2007, pp.278) referred to the audit as "an organisation-wide assessment, the aim of which is to assess all areas of knowledge management processes", thereby indicating a more holistic view of the process.

The literature thus appears to contain multiple definitions. Yet, all knowledge audits are conducted with a similar purpose, to assess an organisation's current knowledge health and make recommendations for knowledge management strategy to increase their knowledge capability and effectiveness. In their review of the knowledge audit literature, Latif, Drus and Shariff (2016) also highlighted that authors unanimously emphasise the role of the audit as a preliminary step to commence implementation of a knowledge management strategy. It thus emerges that a knowledge audit is widely regarded as a critical tool or process, implemented as the first step in designing an organisation's knowledge management strategy to inform knowledge management practice.

5.3.2 Organisational context and knowledge management perspective

Knowledge audits have been conducted in various contexts, ranging from the business sector (Choy, Lee and Cheung, 2004; Perez-Soltero et al., 2015) and knowledge intensive firms (Lauer and Tanniru, 2001; Biloslavo and Trnavcevic, 2007) to public sector organisations (Roy et al., 2014) and the voluntary sector (Huck, Al and Rathi, 2011). A few studies have also been conducted in the sport sector, specifically auditing the first aid knowledge of football professionals (Cunningham, 2002; Castro, 2010). In Chapter 3, the general discussions on the different perspectives and frameworks to knowledge management highlighted that the choice of a knowledge management perspective and strategy is aligned to the organisational context and objectives. The studies reviewed here indicate limited attempts to explicitly link the theoretical underpinnings of knowledge management to the design and implementation of knowledge audits, specifically aligned to the context under study (Table 5.2).

Table 5.2 Organisational context and KM perspective in knowledge audit studies

Authors	Organisational context/sector	KM perspective/approach
Debenham and Clark (1994)	Research institute	Objectivist perspective
Liebowitz et al (2000)	Small service provision firm	Not explicitly stated
Lauer and Tanniru (2001)	Higher education institute	To inform design of KM systems
Burnett et al (2004)	Tax department of multi-national oil production company	Practice-based approach
Schwikkard and du Toit (2004)	Service based, multi-national organisation	Drawing from Liebowitz et al 2000 and Nonaka and Takeuchi's (1995) SECI Model
Choy et al (2004)	Engineering department of an airlines	Not explicitly stated
Biloslavo and Trnavcevic (2007)	Higher education institute	Practice-based approach
Cheung et al (2007)	Transportation company	Not explicitly stated
Perez-Soltero et al (2007)	Conceptual paper to design a knowledge audit methodology	Practice-based approach
Levantakis et al (2008)	Meta-methodology	Not explicitly stated
Mearns and du Toit (2008)	Tourism	Practice-based approach
Wu and Li (2008)	Conceptual paper to design a knowledge audit methodology	Integrated approach to KM implementation
Huck et al (2011)	Volunteer sector	Practice-based approach
Burnett et al (2013)	Energy sector	Practice-based approach
Ragsdell et al (2014)	Energy sector	Not explicitly stated
Roy et al (2014)	Government department	Integrated approach to KM implementation
Yip et al (2015)	Transportation and public utility organisation	Aligning knowledge audit to business processes

Burnett, Williams and Illingworth's (2013) case study indicates that the framework or perspective of knowledge management suitable for the context was not determined prior to the audit but developed upon reflections on the findings and the current knowledge management state of the organisation. In a few studies, the specific knowledge management perspective adopted can be deduced from the approach to knowledge audit implementation (e.g., Burnett, Illingworth and Webster, 2004; Mearns

and du Toit, 2008). It became apparent that in most studies, there is limited critical discussion on the how the audit methodology was designed and its suitability for the context under investigation.

Table 5.3 Scope of knowledge audit studies

Authors	Scope
Debenham and Clark (1994)	Knowledge resources
Liebowitz et al (2000)	Knowledge resources, human and social factors
Lauer and Tanniru (2001)	Organisational objectives and goals, knowledge processes, cultural factors
Burnett et al (2004)	Knowledge resources and KM processes
Schwikkard and du Toit (2004)	KM requirements including critical success factors in KM implementation
Choy et al (2004)	Culture and readiness for KM, knowledge resources
Biloslavo and Trnavcevic (2007)	Effectiveness of KM processes
Cheung et al (2007)	Knowledge resources, organisational context
Perez-Soltero et al (2007)	Organisation's core process and objectives, organisational context and culture, knowledge resources
Levantakis et al (2008)	Meta-methodology
Mearns and du Toit (2008)	Knowledge resources, organisational objectives
Wu and Li (2008)	Knowledge resources
Huck et al (2011)	Knowledge resources, human and social factors, organisational context
Burnett et al (2013)	Knowledge resources, KM processes, organisational context
Ragsdell et al (2014)	Knowledge resources and flow, organisational culture
Roy et al (2014)	Organisational objectives, organisational core processes, knowledge resources, organisational culture
Yip et al (2015)	Knowledge resources and stakeholders

A recent study by Yip, Lee and Tsui (2015) made this discussion explicit, specifically highlighting the link between needs of the organisational context to the design of the knowledge audit. They showed that in structured business processes, where steps, inputs and outputs can be objectively listed, direct elicitation methods such as interviews, questionnaires and focus groups can be implemented to obtain understanding of knowledge resources. On the other hand, in unstructured business processes, there is an emphasis on insights and lived experiences, elicited in the form

of stories and narratives. The role of the auditor here extends beyond listing knowledge resources to highlighting interactions between tasks, stakeholders and knowledge.

It emerges that for audit findings to be actionable, the audit implementation must be aligned to the organisational context, thus eliciting a true understanding of the needs of the organisation. This will further help align the subsequent plan and strategy for knowledge management implementation to the organisational context.

5.3.3 Scope

Early research in knowledge audits began with a focus on identifying and managing an organisation's knowledge resources, mirroring information audits. Henczel (2000, pp.211) defined an information audit as:

> A process that will effectively determine the current information environment by identifying what information is required to meet the needs of the organisation. It establishes what information is currently supplied, and allows matching of the two to identify gaps, inconsistencies and duplications. The process will also facilitate the mapping of information flows throughout the organisation and between the organisation and its external environment to enable the identification of bottlenecks and inefficiencies.

Henczel (2000) argued that an information audit can be considered as a predecessor to the knowledge management strategy. The information audit approach can be instrumental in identifying the existing knowledge resources, where they are being created and by whom. This can prove critical in effective management of the knowledge resources and processes. This emphasis on evaluating knowledge resources before designing knowledge management practice remains a central theme across knowledge audit literature even today (e.g., Huck, Al and Rathi, 2011; Burnett, Williams and Illingworth, 2013; Roy et al., 2014). As evidenced from Table 5.3, almost all studies reviewed here include an assessment of the knowledge resources in the organisation, with the use of tools such as knowledge mapping and knowledge inventories. The studies that appear to follow a practice based approach to knowledge management also include an assessment of knowledge management processes and

human and social factors in the context for effective management of knowledge resources (e.g., Biloslavo and Trnavcevic, 2007; Huck, Al and Rathi, 2011; Burnett, Williams and Illingworth, 2013).

Further, authors have explicitly identified organisational objectives and aligned the subsequent inquiry in the audit process to the core processes of the organisation (e.g., Perez-Soltero et al., 2007; 2015; Cheung et al., 2007; Levantakis, Helms and Spruit, 2008; Roy et al., 2014). Perez-Soltero et al. (2007) indicated that audit methodologies must specify where to initiate the audit by identifying the core business processes of the organisation. This is instrumental in aligning the knowledge management strategy to the organisational objectives and can also prevent the audit from being perceived as cumbersome and lengthy by limiting the scope.

With regards to an integrated approach to knowledge management implementation, Lauer and Tanniru (2001) used the term knowledge management audit to refer to their approach aimed at understanding and assessing knowledge processes and how well they support and address the organisation's knowledge goals. The methodology stressed the links between the socio-technical context of an organisation, the knowledge processes and the knowledge goals of the organisation. The methodology was implemented at an educational institute and was instrumental in articulating their knowledge goals as well as making technological recommendations to facilitate knowledge development, use, sharing and retention. Further, Wu and Li (2008) presented a conceptual model, emphasising an integrative approach for conducting knowledge audits. The focus of their methodology is on an organisation's knowledge capital, consisting of knowledge resources, people and external expertise. The integrative approach is represented by a team of auditors with different specialisations from across the organisation, such as organisational strategy experts, data analysis experts, human resource experts, finance experts and intellectual property experts facilitating a multifaceted assessment of the knowledge capital.

A review of the scope of the existing knowledge audit literature (Table 5.3) thus indicated that authors have generally stressed assessment of knowledge resources along with factors and processes that assist the management of these resources. This is in line with the second generation of knowledge management where the emphasis

is on managing knowledge as content (Snowden, 2002; McElroy, 2003). With the knowledge management discipline moving towards the next generation where the emphasis is on managing and creating contexts where organisations can manage their own knowledge, knowledge audits must represent a similar move towards assessing the interaction of contextual factors.

Table 5.4 Research approach and role of the researcher

Authors	Research approach	Role of the researcher
Debenham and Clark (1994)	Systematic, scientific approach mirroring a financial audit; snapshot evaluation	Highly skilled knowledge engineer
Liebowitz et al (2000)	Systematic and snapshot evaluation, qualitative and quantitative data collection	External consultant
Lauer and Tanniru (2001)	Snapshot evaluation	Researchers, collaborating with employees
Burnett et al (2004)	Systematic and facilitative approach; participation of organisation in analysing findings	Researcher and facilitator
Schwikkard and du Toit (2004)	Grounded theory approach; participation of organisation in designing solutions	Researcher and facilitator
Choy et al (2004)	Systematic evaluation	Researcher and consultant
Biloslavo and Trnavcevic (2007)	Quantitative evaluation	Researcher and consultant
Cheung et al (2007)	Snapshot evaluation; systematic evaluation of multiple factors	Researcher and consultant
Perez-Soltero et al (2007)	Conceptual paper	Researcher
Levantakis et al (2008)	Meta-analysis	Researcher
Mearns and du Toit (2008)	Systematic and holistic evaluation	Researcher and consultant
Wu and Li (2008)	Conceptual paper	Researcher
Huck et al (2011)	Snapshot and holistic evaluation	Researcher and consultant
Burnett et al (2013)	Action research approach	Researcher and consultant
Ragsdell et al (2014)	Iterative and periodical	Consultant
Roy et al (2014)	Action research approach	Researcher and facilitator

| Yip et al (2015) | Constructivist approach; active participation of organisations | Researcher and facilitator |

5.3.4 Research approach and role of the researcher

Aligned to the scope, it emerged that knowledge audits have generally assessed and evaluated various factors systematically and independently (e.g., Cheung et al., 2007; Huck, Al and Rathi, 2011; Perez-Soltero et al., 2015; Burnett, Williams and Illingworth, 2013). In their review of the existing knowledge audit literature, Xiao, Wang and Peng (2010) indicated that authors predominantly regard knowledge audits as a systematic and scientific evaluation of an organisation's knowledge health, resources and needs. It is reasoned that although such a systematic assessment of multiple factors develops a holistic view of the context, it is insufficient in understanding the complexity of the interaction between these factors to iteratively develop knowledge management practice. Further, any outcomes that emerge may address each factor individually and would not be suitably positioned to become integrated into the organisational context.

Similarly, most audits are conducted by external researchers, engaged to present a snapshot assessment of the organisation at a given time (see Table 5.4). The term 'audit' denotes independent evaluation by an external inspector (Mertins et al., 2003) and indicates a strong inclination towards the traditional definition of the term audit from the financial sector. PwC (2018) described an audit as an examination of an organisation conducted by an objective, external auditor following legal and financial standards, within a defined timeframe. The purpose of such an audit is to conduct selective testing and form opinions on the given information but not to identify all possible occurrences over an extended timeframe (PwC, 2018). Periodical assessment of the organisation at a particular point in time by an external inspector would lead to an incomplete view of the context, making this approach insufficient in a complex and dynamic context. This has further implications for the success and sustainability of the subsequent knowledge management initiatives.

More recently, knowledge audit studies appear to adopt a participatory approach (e.g., Burnett, Williams and Illingworth, 2013; Roy et al., 2014; Yip, Lee and Tsui, 2015). Burnett, Williams and Illingworth (2013) incorporated the action research approach to gain an in-depth understanding of the organisation's current knowledge environment,

context and requirements and develop an appropriate knowledge management strategy. Further, they facilitated the development of the strategy in participation with the organisation, drawing from their insights into the context. Finally, during the audit, they educated the organisation on the audit process and the specific needs and solutions for the organisation to facilitate future implementation of knowledge audit and the knowledge management strategy. Similarly, Roy et al. (2014) used the action research approach to work collaboratively with the organisation to diagnose the problem, devise possible solutions and develop a knowledge management strategy for their knowledge management practice. Moreover, within unstructured business processes, Yip, Lee and Tsui (2015) emphasised the role of the auditor as a facilitator, facilitating reflective thinking from the organisation's employees to elicit knowledge resources. The aim behind such efforts was to diminish the role of the researcher as an expert, directing the audit inquiry and the subsequent knowledge management strategy (Yip, Lee and Tsui, 2015). Further, the participatory approach was designed to enhance the organisation's ownership over the knowledge management strategy (Burnett, Williams and Illingworth, 2013).

It thus emerged that the research approach to conducting knowledge audits is evolving aligned to the developments in the theoretical understanding of the knowledge management literature. Within complex systems that are characterised by interaction of multiple factors, implementation of an integrated knowledge management strategy would necessarily involve an understanding of how such interactions impact knowledge management practice. Accordingly, knowledge audits in such contexts thus require an iterative and systemic approach. It is further questioned whether such a systemic understanding can be suitably obtained by an external researcher, tasked to assess the context at a specific point in time.

5.3.5 Outcomes and knowledge management implementation

Table 5.5 lists the outcomes that emerged from the knowledge audit studies with regards to the recommendations for knowledge management implementation in the case study organisations. In line with the audit implementation by an external auditor, the literature emphasises the culmination of the process with an audit report enlisting the findings and recommendations for knowledge management strategy (Levantakis, Helms and Spruit, 2008). Further, following the systematic evaluation of multiple

factors, the recommendations are made in the form of multiple, individual solutions addressing these factors that can be incorporated into the knowledge management strategy (e.g., Liebowitz et al 2000; Burnett, Illingworth and Webster, 2004; Cheung et al., 2007). Additionally, in the studies that have incorporated an action research approach, the knowledge management strategy has been developed in partnership with the organisation, systematically using the audit findings to develop an implementation plan for knowledge management practice (Burnett, Williams and Illingworth, 2013; Roy et al., 2014).

Moreover, the studies that adopt an integrated approach to knowledge audit, extend this approach to the development of knowledge management solutions. For example, Huck, Al and Rathi's (2011) recommendations from a knowledge audit in the voluntary sector take into account the contextual factors such as limited resources in the development of knowledge management solutions. Further, Lauer and Tanniru (2001), adopting an integrated approach to knowledge management implementation, employed change management principles to embed knowledge processes into the day-to-day activities of the stakeholders, for example, communicating the organisational goals and objectives and engaging students towards achieving them. Overall, the methodology emphasised the links between the socio-technical context of an organisation, the knowledge processes and the knowledge goals.

Finally, knowledge audit authors unanimously highlight the need to re-audit the organisation for continuously improving knowledge management practice (e.g., Cheung et al., 2007; Levantakis, Helms and Spruit, 2008; Ragsdell et al., 2014). However, a periodical and snapshot assessment as indicated by the existing knowledge audit approaches will lead to periodical improvements at best. Further, such a process, conducted by an external auditor may become cumbersome, implicating the sustainability and thereby the impact of the audit.

Overall, it emerged that the audit outcomes focus predominantly on knowledge management solutions as part of the knowledge management strategy that are made as recommendation to the organisation. Due to the snapshot and external nature of the studies, there is limited information available on the impact and success of these solutions, and subsequently, the sustainability and integration of any knowledge

management practices implemented.

Table 5.5 Outcomes of knowledge audit research

Authors	Research approach
Debenham and Clark (1994)	Audit report consisting of executive summary of findings
Liebowitz et al (2000)	Findings and recommendations for KM strategy consisting of independent KM solutions
Lauer and Tanniru (2001)	Recommendations considering process change approach; facilitated implementation of recommendations
Burnett et al (2004)	Development of implementation plan containing independent solutions developed in collaboration with employees
Schwikkard and du Toit (2004)	Findings analysed in participation with management staff; recommendations for culture change for integrated implementation
Choy et al (2004)	Assessment of KM readiness; recommendations for KM system to grow knowledge capital
Biloslavo and Trnavcevic (2007)	Identified gaps in actual, perceived and ideal KM effectiveness
Cheung et al (2007)	Identified key knowledge resources and made recommendations for KM strategy
Perez-Soltero et al (2007)	Knowledge audit methodology
Levantakis et al (2008)	Meta-methodology of knowledge audit
Mearns and du Toit (2008)	Recommendations aligned to organisational context
Wu and Li (2008)	Audit report enlisting findings
Huck et al (2011)	Recommendations in line with the context of non-profit sector
Burnett et al (2013)	Development of KM strategy as part of the audit process
Ragsdell et al (2014)	KM recommendations aligned to organisational context
Roy et al (2014)	Multiple interacting solutions within a KM strategy
Yip et al (2015)	Recommendations and solutions designed in participation with employees

5.3.6 Summary

The review of the literature highlighted that knowledge audits are evidently a critical first step in informing the implementation of knowledge management in organisations. It emerged that there is no standard approach, framework or methodology for conducting knowledge audits. Authors appear to adopt different approaches, tools and techniques to conduct the audit. Yet, they are all conducted prior to the development

of a knowledge management strategy with the similar purpose of making recommendations for the implementation of specific knowledge management initiatives or solutions to enhance the knowledge management effectiveness of the organisation. Bloice and Burnett (2016) stated that every context is different and any recommendations for knowledge management initiatives should be made upon understanding the context. The knowledge audit is instrumental towards this aim and in doing so, will give strategic focus to the resulting knowledge management strategy.

Across the studies reviewed, the authors recommend that the audit process should commence with identifying the organisational objectives and processes of strategic importance, thereby narrowing the focus of the audit as well as the resultant recommendations to provide strategic impact (Cheung et al., 2007; Levantakis, Helms and Spruit, 2008; Perez-Soltero et al., 2015). Additionally, the authors have stressed the importance of management support in conducting the audit and implementing the knowledge management initiatives (Burnett, Williams and Illingworth, 2013; Roy et al., 2014). Within the audit inquiry, the data collection generally consists of conducting a gap analysis between the existing knowledge resources and knowledge management capability of the organisation, and the ideal state required to achieve the organisational objectives. Towards this purpose, methods such as interviews, questionnaires and focus groups are employed (Liebowitz et al., 2000; Mearns and du Toit, 2008; Huck, Al and Rathi, 2011). The final phase across most studies consists of development of an audit report, enlisting the audit findings and recommendations for knowledge management solutions and initiatives (Cheung et al., 2007; Levantakis, Helms and Spruit, 2008; Wu and Li, 2008). Mearns and du Toit (2008) stress that the recommendations so made should also be actionable to effectively bring about the desired impact on the knowledge management practice and organisational objectives (Mearns and du Toit, 2008). Moreover, Burnett, Williams and Illingworth (2013) stated that certain level of expertise in the field of knowledge management with the knowledge auditor is beneficial for making suitable recommendations for an effective knowledge management strategy. Finally, the authors have asked for re-audit to periodically assess the context and monitor the knowledge management initiatives in the organisation to facilitate continuous development (Cheung et al. 2007; Burnett, Williams and Illingworth, 2013).

The term 'audit' denotes independent evaluation by an external inspector (Mertins et al., 2003). The review highlighted that the audit process is generally described as a systematic assessment of the context, conducted at a point in time by an external consultant or auditor. Most of the studies reviewed here appear to be assessing the context systematically, in a structured manner, useful in methodically assessing multiple factors culminating in recommendations for specific knowledge management initiatives. It further emerged that the audit literature lacks an explicit discussion on the appropriate knowledge management perspective for the context, which would be critical in informing in not just the knowledge management implementation but also the research approach with which the audit would be conducted. For example, there is limited discussion of the rationale behind the design of the audit process and the adoption of specific tools and techniques. This is critical because a systematic and structured inquiry of independent factors in the context is insufficient in complex systems where different factors are interdependent on each other. Finally, the audits culminate with an audit report, making suitable recommendations for knowledge management strategy and practice, leaving its implementation at the discretion of the organisation.

The following section introduces intellectual capital accounts as a means to evaluate organisational knowledge resources and compares their purpose and scope alongside a knowledge management audit.

5.4 Intellectual capital accounts

Intellectual capital accounts (ICA) represent another way of measuring knowledge resources in an organisation. The Organisation for Economic and Co-operation and Development (OECD, 1999) defined intellectual capital as the economic value of intangible assets in an organisation, namely the organisational capital and human capital. Svieby (1997) further clarifies that intellectual capital are the intangible assets that account for the difference between the book value and the market value of an organisation. In a growing knowledge economy, the intellectual capital is a critical source of value creation in an organisation (Ricceri and Guthrie, 2009). An ICA thus involves the identification, measurement and reporting of value of organisational knowledge resources (Guthrie, Ricceri and Dumay, 2012). Rawal and Mahini (2014) discussed the case for an ICA in that traditional accounting practices fail to reflect the

value of invisible assets such as experience, relationships and reputation. It emerges that ICA are useful in helping organisations develop their strategy for managing intellectual capital to deliver competitive advantage, assess the execution of strategy and organisational performance and disclose an emphasis on intangible assets to external and internal stakeholders (Jashapara, 2011; Guthrie, Ricceri and Dumay, 2012; Rawal and Mahini, 2014).

ICAs emerged through the efforts of Leif Edvinsson in 1993 when he reported the intangible assets at Skandia AFS to supplement the annual report (Jashapara, 2011). It appears that ICAs predominantly involve financial reporting of the value of intellectual capital with a view on creation of wealth for an organisation and return on investment on its knowledge resources (Chan and Lee, 2011; Dumay, 2016). One such approach is the balanced scorecard method that involves reporting on organisational performance from the perspectives of finance, customer satisfaction, internal business process and innovation and learning (Kaplan and Norton, 1992; Jashapara, 2011). Thus, ICAs are a performance management tool specifically reporting on the cause and effect relationship between an organisation's intellectual capital and performance. ICAs are thus aligned to the core organisational strategy and objectives strategically linking intellectual capital to organisational performance.

ICAs appear to have similarities with the early knowledge audit literature that began with a focus on identifying the strategic knowledge resources and needs of an organisation. This has evolved into a move towards an emphasis on assessing and designing knowledge management processes to deliver competitive advantage. Where the ICA are used for reporting on performance of intellectual capital, knowledge audits are specifically positioned as the first step in designing knowledge management strategy, including an evaluation of the social, human and contextual factors that affect knowledge management practice. ICAs strategically link intellectual capital to the organisational strategy and performance, whereas the knowledge audit literature suggests that the practice of audits evolved as a discrete tool to inform specific knowledge management solutions with limited discussion on how they integrate into the organisational strategy or performance. Chan and Lee (2011) argue that ICAs adopt a top-down approach aimed at identifying useful knowledge resources and intangible assets that can create value for the organisation. There is limited emphasis

on the specific business processes for managing knowledge or internal knowledge needs of the organisation. Operating in a complex system dynamics, one can argue that the cause and effect relationship between intellectual capital and organisation performance is nonlinear and thus mediated by multiple interacting factors. As a result, in order to inform the management of intellectual capital and knowledge resources, an understanding of multiple systemic factors is important, which is lacking in an ICA. Similarly, Colechin and Ragsdell (2017) argue that ICAs as a tool for assessing impact of knowledge management activities, demonstrate little on how that impact can contribute to the creation of effective knowledge management tools, practice and culture.

A specific section of the literature further attempts to clarify the difference and relationship between knowledge management and intellectual capital (Wiig, 1997b; Hsu and Sabherwal, 2012; Cabrilo and Dahms, 2018). More recently Cabrilo and Dahms (2018) argued that, although critical for organisational performance, intellectual capital is a static resource that relies on management action to deliver advantage. Knowledge management on the other hand is a dynamic capability that can utilise intellectual capital aligned to organisational strategy to contribute to their performance and value. From this perspective, it is argued that ICAs are critical for measuring and disclosing an organisation's intellectual capital. However, knowledge audits are more instrumental in conducting a holistic assessment of an organisation's strategic knowledge needs and critical success factors that will contribute to the design of knowledge management activities, practice and culture to leverage intellectual capital for competitive advantage.

The next section will consider this critique in light of the questions raised in Section 5.2, analysing the role of knowledge audits in informing knowledge management implementation aligned to the organisational context, thereby identifying gaps in the literature.

5.5 Research gap

Section 5.2 presented a conceptual discussion on the relationship between organisational context, knowledge management strategy and knowledge management implementation and the role of knowledge audits therein. The review of

the general knowledge management literature (Chapter 3) highlighted that the organisational context and strategic objectives are critical in identifying the appropriate knowledge management approach and strategy to implement knowledge management practice (Hansen, Nohria and Tierney, 1999; Merono-Cerdan, Lopez-Nicolas and Sabater-Sanchez, 2007). Further, the context in which the organisation operates will define the purpose, needs and scope of knowledge management implementation (see Section 3.4 on literature on contexts, i.e., knowledge intensive firms, public sector organisation, sport). The literature on knowledge management implementation (Section 5.2 of this Chapter) indicates that an integrated approach to the implementation of the knowledge management strategy, aligned to the organisational context and strategic objectives and considering multiple contextual factors and determinants, is critical for the success of knowledge management practice.

The theoretical understanding of the knowledge management literature thus indicates that an iterative and overlapping relationship exists between the organisational context, knowledge management strategy and knowledge management implementation, highlighting the need for a consistent and iterative approach to knowledge management practice. That is, to facilitate a truly integrated approach to knowledge management implementation, consistency and interaction between an organisation's context and strategic objectives, knowledge management perspectives, knowledge management strategy and knowledge management implementation is imperative. Knowledge audits, as a critical first step in the design of knowledge management strategy, have a role to play in facilitating this relationship. However, the review presented here suggests that this relationship is not consistently addressed in the existing knowledge audit studies, thereby highlighting a gap between theory and practice of knowledge management. Specifically, the literature review highlighted that individual studies aligned the organisational context to knowledge management perspective (Huck, Al and Rathi, 2011), knowledge management perspective to audit inquiry (Perez-Soltero et al., 2015; Yip, Lee and Tsui, 2015), organisational context to knowledge management strategy (Cheung et al., 2007; Burnett, Williams and Illingworth, 2013), and knowledge management strategy to knowledge management implementation (Lauer and Tanniru 2001) however no one study depicts a consistent and integrated effort across all factors. Knowledge audits are suitably equipped to

assess the organisational context, define the strategic objectives, identify specific needs from knowledge management and develop a comprehensive plan for knowledge management strategy and its implementation. As such, they should include inquiries into each of these factors to inform knowledge management practice in a truly integrated manner.

A knowledge audit is deemed critical to maximise the success of knowledge management practice for delivering competitive advantage to an organisation. However, in addition to success, it is imperative that this advantage is sustained and is resilient against the real-world dynamic context of organisations. At their present state, knowledge audits are positioned as the first step in designing a knowledge management strategy. This is evident in the snapshot, external approach to conducting audits. However, to provide continuous and sustainable competitive advantage, it is important that the knowledge management strategy is equipped to adapt to the dynamic changes in the context. A snapshot approach to evaluating the context is deemed static, leaving the findings redundant quickly, especially in a context characterised by complex system dynamics.

Currently, knowledge audits are structured as a strategic planning activity for design knowledge management strategy implementation. Conducted periodically by an external consultant, this may appear as research or performance management exercise, rather than foster a strategic view of knowledge management practice and its impact for organisational effectiveness. In the traditional strategy management literature, there exist debates on the true nature and dependencies between strategic planning and strategic thinking (Heracleous, 1998; Toma, Marinescu, and Grădinaru, 2016). Henry Mintzberg, a prominent critic of strategic planning, provided a clear distinction between strategic planning and thinking. He deemed strategic planning an effort in analysis, conducted as a careful assessment of organisational objectives, strengths and weaknesses, resulting in a formalised plan for implementation with a degree of anticipated consequences. On the other hand, strategic thinking is about synthesis and informal learning to promote an integrated perspective on practice (Mintzberg, 1994).

He outlines certain fallacies of strategic planning, which implicate its ability to facilitate

sustainable organisational change. First, the fallacy of prediction entails that strategic planners can predict and account for dynamic changes in the context. Second, the fallacy of detachment questions the effectiveness of strategies that are produced as formalised processes facilitated by individuals who are detached from the context. Finally, the fallacy of formalisation argues that strategy making is a learning process where thinking leads to actions and actions lead to thinking. Overall, Mintzberg (1994) argues that strategic planning is not an isolated process but must be interwoven into the organisation, developed iteratively as a learning process to optimise and operationalise the existing structures.

The existing knowledge audit studies, with their emphasis on systematic and snapshot evaluation of the context, conducted by an external auditor, align with this conceptualisation of strategic planning. In order to facilitate an integrated approach to knowledge management implementation that provide sustainable and continuous competitive advantage, the role of knowledge audits should extend beyond strategic planning to adopt a strategic thinking perspective. Specifically, knowledge audits should embody a more strategic and iterative learning approach. Rather than being conducted as a first step in the design of knowledge management strategy, detached from the implementation of the plan, knowledge audits should become a key responsibility of the knowledge manager, critical in continuously and iteratively reviewing the context, informing and implementing action and improving knowledge management practice.

In conclusion, by conducting a review of the knowledge management and knowledge audit literature, certain assumptions were established regarding the role of knowledge audits in facilitating knowledge management practice in an integrated and sustainable manner to provide continuous competitive advantage to an organisation. Specifically, the existing practice of knowledge audits was questioned. This research explored the research gap outlined here by conducting a knowledge management review to test and challenge the researcher's assumptions about the role of knowledge audits.

The following section presents the conceptual lens on knowledge management strategy that was adopted in this research and guided the development of the knowledge management review.

5.5.1 School of strategy

Jashapara (2011) asserts that formulation of a knowledge management strategy requires a clear understanding of the schools of thought in strategic management. He discussed that the dominant schools of thought in the knowledge management literature are the industrial organisation tradition and the institutionalist perspective. The industrial organisation tradition assumes that external forces such as industry and market structures significantly influence an organisation's strategic actions and performance. This tradition is influenced by the design and planning model of strategy where the emphasis is on a mechanical and controlled process of carefully assessing internal and external environments, creating plans with strategic actions executing the strategy through a carefully controlled mechanism (Mintzberg, Ahlstrand and Lampel, 1998; Jashapara, 2011). Mintzberg, Ahlstrand and Lampel (1998) highlighted the limitations of this approach based on the isolation of the strategy formulation and implementation processes and overreliance on the assumption of complete knowledge and stability of the market structure and environments.

On the other hand, the institutionalist perspective emphasises strategy as a process that emerges from the manager's experiences and learning about their context and the interplay between competitive forces operating in the internal and external environments (Mintzberg, 1991; Jashapara, 2011). Aligned to the institutionalist perspective, the learning school of strategy posits that operating in a complex and dynamic environment, strategy emerges as a process of learning over time. Specifically, strategy formulation and implementation are interlinked where strategic action and retrospective sense making lead to learning and an emergent strategy (Mintzberg and Waters, 1985; Mintzberg, Ahlstrand and Lampel, 1998). The learning school further emphasises individual and collective learning. Here the role of leadership is not to preconceive deliberate strategies but facilitate strategic learning to allow emergence of novel strategies (Quaye, Osei, Sarbah and Abrokwah, 2015). Further, aligned to this perspective, Prahalad and Hamel (1990) presented the concept of core competences or capabilities, defined as an integration of multiple resources, skills and technologies that arise out of collective learning and contribute to an organisations' competitive advantage. These capabilities are dynamic and reflect an organisation's ability to integrate and adapt competences to changing

environments (Teece, Pisano and Shuen, 1997; Jashapara, 2011).

The institutionalist perspective and specifically the learning school form the conceptual lens for this research and the design of the KMR. Specifically, rather than designing the knowledge management strategy as a formal and static plan, the KMR emphasises emergent learning through actions and reflections in a complex and dynamic context. Further, the KMR especially emphasises developing a systemic view of the underlying system dynamics and multiple interactions in the internal and external contexts of the EIS, mirroring the emphasis on understanding the interplay between competitive forces in an organisation (Mintzberg, 1991). The emergent process coupled with a systemic understanding of the context enable KMR to facilitate the emergence of knowledge management practice aligned to the changing needs and learning about the dynamic context. Further, like the learning school, the KMR emphasises collective learning whereby the role of a knowledge manager is to facilitate critical reflection to influence learning and improve individual and organisational practice. Finally, aligned to the concept of core competencies and dynamic capabilities (Prahalad and Hamel, 1990; Teece, Pisano and Shuen, 1997; Jashapara, 2011), the KMR emphasised the integration of the knowledge management strategy with the core organisational strategy and subsequently the embeddedness of knowledge management activities in the organisational processes to maximise the capabilities of the EIS to maintain competitive advantage in a rapidly changing context. Overall, the purpose of the KMR is to facilitate collective learning about the context and capabilities of the EIS in order to inform the practice of knowledge management in a strategic and emergent manner.

The following section presents the knowledge management review methodology that was developed and implemented at the case study organisation, drawing from the critique of the knowledge audit literature highlighted in this chapter as well as the research methodology, the action research approach, outlined in Chapter 2.

5.6 Knowledge management review methodology
The literature on knowledge management highlights that the successful implementation of knowledge management initiatives requires an integrated perspective, guided by a knowledge management strategy aligned to the organisational strategy with the inclusion of multiple dimensions such as knowledge

resources, human factors, technology and organisational culture (Dalkir, 2005; Dufour and Steane, 2007; Jashapara, 2011). It further emerged that a systematic planning and evaluation approach of the existing knowledge audit methodologies may not be sufficient to facilitate integrated knowledge management practice in a complex and dynamic context. Consequently, a systemic approach to knowledge audit implementation, that facilitates a review of the context, design and implementation of action and improvements in knowledge management practice in a continuous and iterative manner is proposed to address this research gap.

This section presents the knowledge management review methodology that adopted a commitment to participatory form of inquiry and incorporated the principles of the three action research approaches (SAR, IAR, CPAR; see Chapter 2) to facilitate improvements in knowledge management practice at the case study organisation in an integrated and sustainable manner. Further, the existing literature on knowledge audit methodologies and the authors' recommendations for practice were used to inform the design of the methodology. The following subsections discuss the philosophical underpinnings and principles of the methodology. Finally, the specific steps that were followed to implement the methodology and conduct a review of the case study organisation are presented.

5.6.1 Philosophy of knowledge management review

In this research, the term knowledge management review (KMR) was consciously adopted to refer to a holistic approach that enables an integrated and systemic inquiry of the context by including multiple factors and dimensions of knowledge management and facilitate system-wide change in the organisation. This term was also chosen to reflect the complexity inherent in knowledge management and the interdependence of various factors and processes in the knowledge management cycle (Rubenstein-Montano et al., 2001; Jashapara, 2011). Biloslavo and Trnavcevic (2007, pp. 278) stated:

> KM audit is an organisation-wide assessment, the aim of which is to assess all areas of KM processes. This is important because (1) excelling in one area of KM is not sufficient to have effective KM and because (2) excelling in one area may well depend on excelling in another.

Mirroring Biloslavo and Trnavcevic's definition, the purpose of the KMR methodology was to facilitate integrated and sustainable improvement in knowledge management practice across the system. However, the term "audit' was consciously replaced with the term "review". Specifically, the researcher's critical reflections on the research gap highlighted an incongruence between the term "audit", which is synonymous with an objective, snapshot evaluation conducted by an external inspector and the need for a systemic and iterative process. The Cambridge Dictionary defines review as "to think or talk about something again, in order to make changes to it or to make a decision about it" (Cambridge Dictionary, 2018a). In addition, the Cambridge Dictionary of business English defines review as "the process of carefully examining a situation to find out whether changes or improvements need to be made" (Cambridge Dictionary, 2018b). These definitions imply that a review process adopts an iterative, regular nature aimed at informing change and improvements in practice. Thus, the term knowledge management review is introduced to emphasise the embeddedness of the researcher/practitioner to understand the systems dynamics of a context and inform and implement change in practice in a regular and iterative manner.

In the knowledge audit literature, knowledge audits are generally conducted as a strategic planning exercise, critical in designing a knowledge management strategy. The existing knowledge audit methodologies have been conducted as systematic and snapshot evaluations by external consultants or researchers, often isolated from the ongoing practices in the organisation (see Section 5.3 of this chapter). The impact of this approach is questioned in implementing integrated knowledge management practice in dynamic and complex contexts. As a result, this research emphasised the embeddedness of the researcher in the case study organisation to implement the KMR. This was critical in facilitating the commitment to action research and the integration of the three action research approaches outlined in this chapter.

A specific purpose of the KMR was to enable a strategic perspective of the knowledge audit process that is critical in continuously and iteratively reviewing the context, informing and implementing action and improving knowledge management practice. This was facilitated by the principles of action research, whereby the KMR was designed as an emergent process consisting of multiple iterations of the action

research cycles (Reason and Bradbury, 2006). Specifically, within the review, exploration and analysis of the organisational context, design and implementation of actions for knowledge management practice, monitoring change and reviewing practice were conducted iteratively, thus facilitating an integrated approach to knowledge management practice.

The researcher's embeddedness was further emphasised to study the interaction between multiple factors and develop an implicit and rich understanding of the wider organisational context, including factors such as management support, technological infrastructure, employee motivation and ongoing working routine. Further, the embeddedness enabled a participatory and collaborative approach to inquiry, critical in facilitating integrated and consistent improvement in learning and practice across the system, following the integration of the three action research approaches. Finally, following the principles of SAR (Burns, 2007, 2014a), the KMR was positioned to facilitate systemic solutions in the context by emphasising multilinear causality and resonance, enabled by the researcher's active participation in the context.

Thus, the KMR incorporated a commitment to action research, facilitated by the integration of the three action research approaches and embeddedness of the researcher. Aligned to these philosophical underpinnings, the following section presents the overarching principles of the KMR.

5.6.2 Principles of knowledge management review

Much like the lack of a gold-standard definition of knowledge management, the knowledge audit literature highlighted a lack of a standardised methodology for conducting audits. Burnett, Williams and Illingworth (2013) stressed that although there are existing knowledge audit tools that can be adopted, there is no standard way of conducting an audit. The KMR was shaped around the existing knowledge audit literature, adapting the recommendations, tools and techniques from the existing audit methodologies and case studies to suit the complex and dynamic context of the case study organisation as well as to address the research gap. Rather than being structured as a systematic and snapshot evaluation of the context, the KMR was structured as a series of actions and reflections to develop an emergent understanding of the context (Coghlan and Brannick, 2014). Accordingly, the structure of the KMR

allowed for sufficient flexibility such that actions within the review process evolved as the inquiry progressed, informed by reflections on the previous actions. This was critical in maintaining the relevance of the review process, aligned to the strategic needs of the case study organisation.

Knowledge audit authors in the existing literature emphasise the need to re-audit the organisation for continuously improving knowledge management practice (Cheung et al., 2007; Levantakis, Helms and Spruit, 2008, Ragsdell et al., 2014). However, in response to the snapshot and periodical re-implementation of the audit, the KMR adopted an iterative approach to analyse the highly dynamic context to facilitate ongoing improvement. Specifically, the data collection and analysis phases progressed simultaneously as "inextricably linked" rather than as distinct phases (O'Reilly, 2012, pp. 30). Srivastava and Hopwood (2009) stressed the reflexive process within the iterative approach to data analysis. Specifically, reflexive iteration allows the researcher to revisit and engage with the data to progressively develop insight and meaning. As the KMR progressed, the iterative approach helped shape the researcher's understanding of the context. Furthermore, the KMR acknowledged that due to the researcher's presence, the review would not be conducted in isolation in the organisation. The iterative approach would thus help monitor the interactions between the review, the emergent actions and changes in organisational context.

The KMR operated from the reflexive-dialectic view of practice (Kemmis and McTaggart, 2000). As a result, the KMR was conducted to develop an understanding of how the practice of knowledge management is viewed and understood within the EIS context. Specifically, the KMR was conducted without presupposing a framework of knowledge management, definitions of key terminologies as well as the challenges and barriers in the context. Instead, an attempt was made to gather data from multiple sources to understand the complex reality of the case study organisation. Further, a collaborative approach was adopted for data collection to strive for intersubjectivity and collective understanding of practice. Specifically, the data collection interviews were structured as collaborative discussions exploring the key concepts and underlying assumptions of practice and critically reflecting on them to improve learning and practice (Kemmis and McTaggart, 2000).

The KMR was thus developed as a flexible and emergent process, which facilitated an iterative and progressive understanding of knowledge management practice for the case study organisation embedded in a collaborative form of inquiry. The following section presents an elaboration on the specific implementation of the KMR, aligned to these principles of practice.

5.6.3 Implementation of knowledge management review

The structure and implementation of KMR drew from the methodological considerations highlighted in Chapter 2, to facilitate integrated and sustainable improvements in knowledge management practice at the case study organisation. A pragmatic worldview was adopted (Creswell, 2014), whereby a mixture of data collection methods and techniques were used to appreciate the complexity of the context and understand how multiple factors interact to inform knowledge management practice. To facilitate a consistent and integrated analysis of the organisational context, informing the knowledge management strategy and implementation of actions, the KMR was split into three overlapping and iterative phases: Pre-Review, Focused Review and Ongoing Review.

5.6.3.1 Pre-Review: Organisational context

The Pre-Inquiry mirrored the preunderstanding referenced in IAR by Coghlan and Brannick (2014). Specifically, the knowledge management implementation and knowledge audit literature (see Chapter 4) highlighted that an organisation's knowledge management strategy and knowledge management practice should be aligned to the wider organisational context and strategic objectives (Zack, 1999; Merono-Cerdan, Lopez-Nicolas and Sabater-Sanchez, 2007; Perez-Soltero et al., 2007; Dalkir, 2013). In Pre-review, a preliminary understanding of the context and culture of the case study organisation was developed. Data collection in this phase was facilitated by the researcher's embeddedness in the case study organisation. Specifically, the researcher participated in the daily events of the organisation and interacted informally with the employees to develop an implicit understanding of the wider context. Further, content analysis of the organisation's strategy documents was conducted to provide a deeper understanding of the vision, strategic objectives and core values of the organisation (Perez-Soltero et al., 2007; Mearns and du Toit, 2008). In their review of the existing knowledge audit methodologies, Levantakis, Helms and

Spruit (2008) highlighted that the first step in implementing a knowledge audit is to understand the context and define the scope and objectives of the audit. Similarly, the purpose of this phase was to identify the knowledge management perspective suited for the context, which in turn informed the subsequent design and implementation of data collection within the review. The action research approach highlighted in Chapter 2 emerged as a result of this preunderstanding of the complexity of the case study organisation, further demonstrating the iterative approach and emergent design inherent in this research. Finally, following the recommendations of the knowledge audit authors (Perez-Soltero et al., 2007, 2015; Levantakis, Helms and Spruit, 2008), the focus of the review was defined on to a specific business function and department in the case study organisation.

5.6.3.2 Focused Review: KM strategy

Upon identifying the approach to audit inquiry, phase Focused Review was implemented to facilitate a strategic understanding of the context. Following the recommendations for integrated perspective on knowledge management implementation (see Section 5.2 of this chapter), multiple factors in the organisational context were studied to identify specific needs and highlight challenges and enablers in the context. This phase of the review mirrors the approach followed in the existing knowledge audit methodologies, whereby the organisational context is extensively assessed using various knowledge audit tools.

Primarily, collaborative interviews and conversations with the senior manager team were conducted to understand the needs from knowledge management as well as to facilitate management buy-in. Knowledge management implementation authors have generally stressed the need for management cooperation and commitment for the success of knowledge management strategy as well the audit process (Wiig, 1998; Cheung et al., 2007). Open-ended interviews were conducted with senior managers, aimed at understanding the motivation behind introducing knowledge management in the case study organisation, their understanding and conceptualisation of knowledge management and the strategic impact of knowledge sharing and collaboration for the organisation. The interviews were aimed at clarifying the working definitions of key terminology and highlighting the nature of knowledge and framework of knowledge management most applicable to the context. Finally, CPAR's (Kemmis, McTaggart

and Nixon, 2015) principles of communicative space and critical self-reflective practice were incorporated, encouraging participants to critically reflect on knowledge management practice within the context and influence their learning to improve their own practice.

In addition to the interviews, content analysis of the ongoing communications within the organisation, participatory observations and informal interactions with the employees were conducted to provide a more implicit understanding of the context, facilitated by the embeddedness of the researcher. This data, collected from multiple sources was analysed systemically to identify how multiple, seemingly unrelated factors in the context interact to influence knowledge management practice (Burns, 2007). Further, principle of resonance (Burns, 2014a) was emphasised to identify issues that resonate across the context to inform systemic change in a sustainable manner. Accordingly, data collection was structured as an emergent process, whereby participants and events were included as the researcher developed a progressive understanding of the context. The purpose of this phase was to highlight the strategic need for knowledge management initiatives as part of the wider organisational objectives, to determine how knowledge management could contribute to improvements in organisational effectiveness and performance.

Emphasising a strategic thinking (Mintzberg, 1994) approach to knowledge management practice, that considers the ongoing business operations and knowledge management practice in the organisation, the Focused Review phase included an inquiry into the existing knowledge management strategy and initiatives. Specifically, a comprehensive interview was conducted with the Knowledge Manager on the past and current knowledge management efforts and future directions, aligned to the strategic needs of the organisation. This was aimed at conducting a gap analysis between the current knowledge management efforts and the needs of the organisationas highlighted by the review, to suitably inform future direction of knowledge management practice.

5.6.3.3   Ongoing Review: KM implementation

The Ongoing Review was implemented simultaneous to the Focused Review, to reflect the iterative approach to inquiry, action and reflection, and facilitate a strategic

thinking approach to informing knowledge management practice in an integrated manner. It also embodied the meta cycle of learning (Coghlan and Brannick, 2014), enabled by the Researcher's embeddedness in the context. First, an ongoing ethnographic inquiry was conducted parallel to the Focused Review, to develop a rich and dynamic understanding of the context (O'Reilly, 2012). Observations, informal conversations with staff, note-taking from daily tasks and events, and reflections on the organisational culture formed the core of data collection. This approach helped highlight nuances in the culture that can be perceived as possible enablers or barriers for knowledge management behaviours but may not be explicitly discussed by employees during the interviews. A simultaneous review of the academic and empirical literature on knowledge management was conducted to align the theoretical principles to practice and develop knowledge management practice rooted in evidence based reasoning.

Second, a collaborative relationship with the Knowledge Manager was established following Coghlan and Brannick's (2014) principles of IAR to collaboratively reflect on the findings from the review, develop a collective understanding of knowledge management practice for the organisation and inform subsequent actions. Specifically, the findings from the review were shared with the Knowledge Manager regularly to inform the ongoing knowledge management activities in the organisation. Further, within the collaborative relationship, educational influence was practised whereby the Knowledge Manager was encouraged to think critically about the review findings to inform subsequent knowledge management practice (McNiff and Whitehead, 2010). Finally, the researcher and the Knowledge Manager collaboratively reflected on the review findings and theoretical principles of the general knowledge management literature to simultaneously enhance their learning and develop a collective understanding of knowledge management practice for the organisation and devise actions.

Finally, facilitated by the researcher's embeddedness, actions that emerged from the review inquiry were simultaneously implemented in the organisation. Following the iterative approach, ongoing reflections were emphasised to monitor implementation of the actions and inform subsequent actions. Thus, the purpose of the Ongoing Review was to conduct an ongoing inquiry of the context, inform and implement actions and

assess the impact of those actions in an iterative manner to progressively improve knowledge management practice.

Contrary to the traditional planning and decision making approach evident in the existing knowledge audit literature that stresses the development of an audit report enlisting findings and recommendations, the KMR facilitated communication of findings and implementation and assessment of actions in a timely and relevant manner interlinked with the review inquiry. The purpose of this approach was to facilitate a strategic thinking perspective on knowledge management implementation, iteratively and continuously reviewing the context for informing knowledge management practice and implementing actions.

5.6.4 Summary

The KMR thus emphasised a comprehensive and integrated way to conduct a knowledge audit and simultaneously inform the design and implementation of knowledge management practice. The structure of the KMR allowed for sufficient flexibility and fluidity mirroring the integrated perspective of knowledge management as well as complexity inherent in the high-performance sport context of the case study organisation. The three phases of the KMR were conducted in a fluid and iterative manner whereby the researcher navigated between different phases to progressively develop a sound understanding of their knowledge management needs. The underlying assumption was that a strategic and embedded approach to knowledge audits, that facilitates iterative interaction between audit inquiry and knowledge management implementation, aligned to the organisational context and simultaneously and collectively enhances learning across the system, will be able to enhance integration, sustainability and success of knowledge management practice.

Lauer and Tanniru (2001) asserted that knowledge audit and assessment should be iterative processes to continuously improve knowledge management efforts in the organisation. This iterative approach was emphasised in the KMR. Chapter 6 will discuss the implementation of KMR at the EIS. Subsequently, Chapter 7 presents a critical analysis and discussion on the role of knowledge audits in enhancing sustainability and integration of knowledge management practice. Within this discussion, the findings are used to inform the role of a knowledge manager, thereby

promoting the knowledge audit as a strategic process in an organisation's knowledge management efforts.

5.7   Chapter summary

This chapter presented a critical review of the knowledge audit literature. The literature reviewed enabled an understanding of the existing practice of knowledge audits, critiqued against their role in designing knowledge management practice. The research gaps were identified in terms of the perceived role of knowledge audits in facilitating integrated knowledge management implementation. Consequently, revisions to the existing understanding and approach to knowledge audits were proposed, deemed critical to informing knowledge management practice in a sustainable and integrated manner. This is presented in the form of a knowledge management review methodology, incorporating the principles of action research that was implemented at the EIS. Thus, the aim of this research was to address this research gap by empirically investigating the role of knowledge audits in informing knowledge management practice in an organisation.

Part 3: Taking and Evaluating Action

Chapter 6: Findings Chapter

7: Meta Learning and Discussion

Part 3: Taking and evaluating action

This research was guided by the following research question:

RQ.   How does a systemic approach to knowledge audits enhance the sustainability, integration and success of knowledge management practice?

To address the research question, a knowledge management review (KMR) methodology was designed embodying the characteristics of action research, emphasising the embeddedness of the researcher in the context, and an emergent and iterative approach to inquiry (see Chapter 2). An integration of the principles of insider action research (IAR), systemic action research (SAR) and critical participatory action research (CPAR) guided the review inquiry. The KMR methodology was implemented at the EIS to inform its practice of knowledge management in an integrated and sustainable manner.

This part of the thesis presents a narrative of the implementation of the knowledge management review at the EIS. The narrative is presented in a first-person voice, describing and explaining my lived experiences of the action research project in relation to the context of the EIS (McNiff, 2016). Following the principles of SAR, the review was facilitated by myself, that is, I guided the "learning architecture and direction of inquiry" within the audit (Burns, 2014a, pp.13). Specifically, multiple and iterative lines of inquiry were included, with the participation of EIS employees from across the structure, to enable a deeper understanding of the whole system. Burns (2014a, pp.13) warns that this approach potentially affords too much power to the facilitator "because they are the only people in all of the inquiry arenas". To address this challenge, he recommends ensuring inclusion of system participants in the decision-making process regarding the direction of inquiry. In this research, I attempted to create a systemic view of the EIS by including multiple, interacting perspectives across the network. The review methodology was designed as an emergent process, that is, it evolved over time with regards to the focus of inquiry and inclusion of participants informed by the findings in the preceding phases and events.

As an action researcher, I consciously adopted the role of a facilitator in the EIS; I was mindful that instead of answering questions for the EIS or designing solutions for

knowledge management implementation, the purpose of the action was to inform systemic change by facilitating redefinition of the EIS's understanding and perception of Performance Knowledge (see Burns, 2007). Specifically, following the principles of CPAR, the review emphasised the creation of a communicative space where I participated with the EIS employees to generate a collective understanding of the practice of knowledge management and the underlying challenges and assumptions (Kemmis, McTaggart and Nixon, 2015). Further, SAR's principle of resonance was emphasised. Burns (2014a) gives emphasis to resonance over representativeness of findings, which allows the researcher to understand what is important across the system and thus has a high possibility to create change. Specifically, the data collection in the audit focused on identifying themes that resonated with participants across multiple lines of inquiry, thereby creating an understanding of the deeper issues in the context for knowledge management implementation. For example, rather than using a standard and structured format for interviews to capture representativeness of data, themes from each conversation formed the basis for the subsequent conversation, which allowed for an emergent view of the system. As a result, although the inquiry was directed by me, it was guided by the findings and learning generated collectively in the audit. Subsequently, this data is presented in Chapter 6 in the form of key themes that emerged from each phase of the audit. In addition, quotes from the interviews are included to demonstrate resonance.

Burns (2014) also replaces the idea of accountability in a systemic action research project with responsibility of the facilitator informed by reflective practice. In the review process, I endeavoured to raise the visibility of the whole system of the EIS as well as a systemic understanding of the practice of knowledge management across the context. In addition, the review was designed as an emergent process enabling new questions and lines of inquiry to be incorporated as the study progressed. Finally, I engaged in critical and meta-level reflective practice to make judgements about the direction of the research to respond to the multiple lines of inquiry that emerged. This was accomplished with the critique and participation of the EIS's Knowledge Manager as well as the academic supervisors. The narrative is suitably supported with my reflections regarding my positionality in the review as well as the choices I made to shape actions. According to Reason (2006), such transparency adds to the quality and rigour of an action research project. Bradbury-Huang (2010) further outlined the

criteria for assessing the quality of action research projects, discussed in Chapter 2. The narrative accordingly attempts to explicitly address each of these criteria, emphasising the participative values, reflexivity, significance and contribution to the theory and practice of action research.

Mirroring the characteristics of SAR that emphasise a systemic understanding of the multi-directional and non-linear causality, the review methodology progressed in an iterative and dynamic manner. Specifically, I navigated between observations and reflections in the context, literature review and focused inquiry in a non-linear and iterative manner. Furthermore, the different phases of the review had fluid boundaries and overlapped to allow the inquiry to emerge. This poses a challenge to presenting the story in a coherent manner. The narrative of the review methodology is thus presented in a factual and chronological manner, enlisting significant events in the process as they occurred within the inquiry. This is further interspersed with my sense-making supported with reflections and relevant literature on the topic. Specifically, the narrative includes text-boxes consisting on notes from ethnographic observations, reflections and conversations with the Knowledge Manager. The aim of this approach is to showcase how a systemic view of the EIS as well as my learning emerged through the review, facilitated by my embeddedness in the context and the action research orientation inherent in the knowledge management review methodology.

Specifically, three action research cycles are presented in Chapter 6, depicting different phases in the implementation of the knowledge management review. Each cycle has been split into the actions that were undertaken, the outcomes thereof and the learning that emerged from the actions. The division of the review implementation into separate cycles reflects Coghlan and Brannick's (2014) action research spiral. In addition, the learning from each cycle reflect the meta cycle of inquiry, that is, assessing how each cycle was conducted and its contribution to learning regarding the practice of action research and knowledge audits. Further, every section states the objectives of the cycle and illustrates principles of participation and reflexivity, following Bradbury-Huang's (2010) criteria for assessing the quality of an action research project. Informed by the principles of SAR (Burns, 2007, 2014a) multiple stakeholders and participants were included in the review to enable triangulation of data to test assumptions and resonance. Examples of quotes and comments from

collaborative conversations during the review are included in the narrative to illustrate the richness of the experience. Section 6.4 outlines the strategic actions that emerged out of the participatory inquiry to be implemented at the EIS. Thereafter, Chapter 7 presents a discussion on the meta learning that emerged from the implementation of the KMR, that is, my learning about the practice of knowledge audits to facilitate systemic and sustainable change in an organisation. This draws directly from the principles of IAR (Coghlan and Brannick, 2014) and is used in this research to supplement and support a more traditional discussion on the implication of findings and contributions to theoretical, methodological and practical knowledge.

Chapter 6: Findings

Chapter 6: Findings

6.1 Introduction

This chapter presents the three action research cycles (Sections 6.2 – 6.4) depicting the implementation of the knowledge management review at the EIS. The purpose of this chapter is to describe and explain the implementation of the KMR methodology, specifically demonstrating the action research methodology and cycles that guided the inquiry. Each cycle comprises of the action, the findings and outcomes that emerged out of the action, and the learning generated therein. The learning section at the end of each cycle reflects the meta-learning discussed by Coghlan and Brannick (2014), presenting my reflections on the action research project and how they contribute to my learning. In addition, each cycle is interspersed with text boxes consisting of my observations as a participant in the EIS, representing the Ongoing Review phase of the knowledge management review, highlighted in blue. Further, the text in the boxes highlighted in green represent collaborative relationship with the Knowledge Manager wherein the ongoing feedback and analysis on the review findings that were shared and critically reflected on collectively. A final text box presents my reflections in actions as well as reflections on action, as appropriate, following Schön's (1987) principles of reflection and learning. Specifically, reflections in action, highlighted in red, depict my critical reflections as I act in and experience the context, thereby informing my next action. Reflections on action, highlighted in purple, depict my reflections after conducting an action, critically assessing their success and significance in informing the next action. Another form of reflection cited in the text refers to the critical self-reflection by the participants that was facilitated in the communicative space within the interviews to achieve a shared understanding of the practice of knowledge management in the EIS (Kemmis, McTaggart and Nixon, 2015). Finally, each section includes a mind map that depicts a systemic picture of the multiple lines of inquiry and actions undertaken in the cycle, adapted from Burns's (2007) design principles for SAR. Thereafter, Section 6.5 outlines the actions that emerged from the review.

6.2 Action research cycle 1: Preunderstanding (October 2015 – March 2016)

The research project commenced in October 2015 with my embeddedness in the Performance Knowledge team at the EIS. The objective of the first action was to familiarise myself with the knowledge management literature and the wider context of

the EIS to develop possible research questions. The Knowledge Manager emphasised my participation in the Performance Knowledge activities as well as engagement in the EIS as an employee. As a result, participant observations and reflections began at the outset to develop an insider and implicit understanding of the context. Thus, Cycle 1 represents preunderstanding of the context (Coghlan and Brannick, 2014) that was instrumental in the design of the research question as well as the knowledge management review (see Part 1: Preunderstanding).

6.2.1 Actions

In October 2015, I was inducted into the EIS as an employee and PhD student. The EIS has an established student research program whereby PhD students are employed as part-time researchers and part-time practitioners, simultaneously researching performance questions, generating scientific knowledge and applying the knowledge in their respective sport. The EIS maintains a high standard of sport science practice, and thus, uses this PhD program to train the students to become future practitioners for the institute. This is evidenced in the following organisational objective outlined in the EIS Annual Report (2016):

> To continue investment in PhD and MSc studentships across all disciplines in order to carry out performance impacting research, as well as identifying and developing practitioners of the future.

As part of the program, the EIS conducts an annual training and networking event for its PhD students to share the research being undertaken across the network, and develop key non-technical skills relevant for their roles. In October 2015, I attended this two-day residential event, organised by the Heads of Service (HOS) team. The event, compulsory for all EIS PhD students, was attended by 22 students at various stages of their research and from different disciplines and sports in the EIS organisational structure. At the event, I had the opportunity to interact with students from other disciplines, learn about their roles and research, as well as share knowledge about my research project. One of the students there, who was also a practitioner based in athletics, commented:

> This is great for socialising and meeting other students, but I'm not sure how

constructive this is for my work. I could be spending this time trackside.

> ***Knowledge management awareness and challenges (PhD networking event in October 2015)***
>
> The event highlighted the standard of research and practitioners at the EIS. I observed that the student/practitioners are highly talented and express maturity of thought regarding their research as well as their professional development. I felt valued as an EIS employee; it became apparent that the EIS values its practitioners and spends considerable resources in developing them as future professionals in elite sport. As I shared my research with other students, I realised that it was their first encounter with Performance Knowledge; there was evidently little understanding of the role and remit of the Performance Knowledge function amongst the practitioners. I initiated a conversation on what Performance Knowledge was and how it could have an impact on their role. This interaction highlighted that EIS practitioners implicitly understand the tenets and acknowledge the value of knowledge management, particularly in their roles. Furthermore, it became apparent that practitioners spend considerable time in the sports. This emphasised two key challenges for knowledge management initiatives; primarily, the practitioners align themselves with the sport's priorities and needs more than the EIS's, posing the challenge of clash of expectations with regards to knowledge sharing between the sport and the EIS. Secondly, the practitioners experienced significant time constraints, predisposing them to limit their focus on tasks that produce direct results for the sport.

During the initial months, I was encouraged to visit all EIS sites and meet staff from different teams and sports to introduce myself and understand the organisational structure. I met several EIS employees across the network in a series of formal and informal meetings. Some of these meetings were recommended by the Knowledge Manager with individuals who were involved with or had insights to share on Performance Knowledge. Other meetings were less formal and spontaneous, initiated as I visited the EIS sites (Table 6.1). Within these meetings, I created a communicative space (Kemmis, McTaggart and Nixon, 2015) to engage the EIS employees in a dialogue regarding their role, experiences and the wider EIS context. At the same time, they asked me questions regarding the principles and practice of knowledge management and its specific application within the EIS. Thus, in a collaborative

manner, we critically reflected on the specific challenges and applications of knowledge management within their roles.

Table 6.1 List of meetings and conversations undertaken in Cycle 1

Date	Participant	Detail
October 2015	PhD students at the PhD networking event	Informal chats
October 2015	Practitioners at Loughborough EIS site	Informal chats in the office
November 2015	Practitioners at Bisham Abbey EIS site	Informal chats during lunch
November 2015	Business manager at London EIS office	Informal chat
December 2015	Performance Solutions practitioner	Informal chat in the office
January 2016	PhD Researcher at Sheffield site	Formal meeting organised by Knowledge Manager
February 2016	HR manager at Manchester EIS site	Formal meeting organised by Knowledge Manager
February 2016	Technical Lead at Manchester EIS site	Formal meeting organised by Knowledge Manager

Scope of Performance Knowledge function (October 2015)

I observed that the Performance Knowledge team resides within the Science and Technical Development function of the organisational structure, focused at implementing KM initiatives within the sport science disciplines. Yet, during my informal meetings, I attempted to interact with employees from across the structure to develop a holistic introduction to the context. During one such conversation with an employee from the Performance Pathway team, I observed that in their role, they implicitly engaged with the principles of knowledge management. Specifically, he discussed that his role involves collecting and collating knowledge on performance factors that is used to inform talent identification of young athletes and selecting them for the pathways development program. Subsequently, I concluded that the Performance Knowledge function has implications across the organisational structure, in different teams.

I shared this observation with the Knowledge Manager. Specifically, I discussed that the EIS can be characterised as a knowledge intensive form considering the strategic significance of knowledge across all organisational functions (Starbuck, 1992;

Robertson and Swan, 2003). As a result, Performance Knowledge has possible implications to generate value across the system. He responded that since Performance Knowledge is currently funded by the Science and Technical Development team, our efforts would have to focus on addressing their needs. Further, once Performance Knowledge is established within the Science and Technical Development team, it will provide a strong basis to extend the focus across the structure.

Value of knowledge management (November 2015)

In an informal meeting with a business manager, I was asked "What is the value that Performance Knowledge is generating for the EIS?" As I reflected on this conversation, I recognised that the EIS, as a public-sector organisation with limited funding, operates with the pressure of maximising efficiency in managing its resources, and thus, demonstrating the return on investment as a performance indicator on investments made within the institute. Lettieri, Borga and Savoldelli (2004) discussed the implication of knowledge management for not-for-profit organisations. Operating within funding limitations, such organisations often emphasis efficient management of all available resources, specifically knowledge, to maintain competitive advantage. Furthermore, as a high-performance sport institute, the EIS operates within an outcome and results driven context whereby all actions, solutions and projects are subjected to the need of demonstrating tangible value. I concluded that any action or KM initiative informed by the KMR would thus need to clarify its impact for the context.

Performance Knowledge versus knowledge management (December 2015)

I observed that the Knowledge Manager had created a positive perception about the concept of Performance Knowledge amongst the EIS employees. However, there appeared to be limited awareness of the purpose and impact of Performance Knowledge amongst the practitioners, which, coupled with time constraints, prevented practitioners from embracing the existing Performance Knowledge initiatives. This limited engagement was specifically related to technological solutions being implemented at the time. However, these employees were willing to have lengthy conversations about their roles, responsibilities and experiences in person. These meetings highlighted that the EIS employees value interpersonal communication

rather than using technology and online communication tools. This finding resonates with Trusson, Hislop and Doherty's (2018) research findings, which showed that employees' limited engagement with ICT based knowledge sharing systems is a result of their preference for interpersonal knowledge sharing. Secondly, there was widespread implicit appreciation for the benefits of knowledge sharing for their practice and professional development. This further resonates with Swart et al.'s (2014) assertion that individuals who have a sense of commitment to the organisation and their careers are more likely to share knowledge. It appeared that although the EIS employees acknowledged the value of knowledge management, they lacked clarity on the role of Performance Knowledge initiatives as generating that value. They perceived Performance Knowledge as a separate discipline with additional tasks they feel obligated to engage with. This asserts the need for integration of KM initiatives into the regular activities of the organisation to maximise engagement (Wiig, 1998; Jashapara, 2011).

I shared these observations with the Knowledge Manager, that there was a perceived disparity between the EIS's understanding of knowledge management and Performance Knowledge. Specifically, Performance Knowledge solutions and systems were not seen as generating the impact and value they expected from principles of knowledge management. I suggested that since the EIS already appreciates the role of knowledge management in facilitating performance impact and practitioner development, there is a need to either align Performance Knowledge solutions to this impact or be explicit about how they are facilitating the impact. The Knowledge Manager highlighted that in his role at the senior level of the organisational structure, he has spent considerable time interacting with the Senior Management Team, Heads of Service and Technical Leads on the specific purpose of Performance Knowledge, and less so with the practitioners on the ground. Consequently, as part of an upcoming initiative, he already planned to travel across the sites to communicate the purpose, function and impact of Performance Knowledge solutions to the practitioners, and enable them to ask questions and clarify concepts regarding its relevance for their roles.

Informed by this insight, I decided to avoid making a direct reference to Performance

In a parallel line of inquiry, I reviewed the key authors and critical literature on knowledge management to identify possible applications within the EIS context (Inquiry 1 in Figure 6.1). I read seminal works such as Nonaka and Takeuchi (1995), Wiig (1997a), Brown and Duguid (2001), Alvesson and Karreman (2001), Rubenstein-Montano et al. (2001), Schultz and Stabell (2004), Baskerville and Dulipovici (2006), Jashapara (2011) and Hislop (2013) to develop an understanding of the theoretical principles of knowledge management. Further, I reviewed literature on the topics of knowledge transfer, knowledge sharing and collaboration, especially using virtual communication. These included Szulanski (1996), Nahapiet and Ghoshal (1998), Hansen (1999), Riege (2005), Ma and Agarwal (2007) and Chen and Hung (2010). Finally, I reviewed the existing research on knowledge management topics in sport contexts (e.g., Halbwirth and Toohey 2001; O'Reilly and Knight, 2007; Singh and Hu, 2008; Parent, MacDonal and Goulet, 2014). I conducted an exploratory literature review to familiarise myself with the field of knowledge management and its specific application in a high-performance sport context. This review of the literature, presented in Chapter 3, was discussed with the Knowledge Manager and the academic supervisors as it informed the design of the research question and the KMR methodology.

Initial reflections on the KM literature (October 2015 – January 2016)

A review of the wider literature revealed the multiplicity of topics, perspectives, terminology, and issues in the research and practice of knowledge management and highlighted the significance of context in inform KM practice. Subsequently, I felt overwhelmed and unsure of where to begin the research, to facilitate academic contributions as well as to generate impact for the EIS. This dilemma has also been documented in the literature, experienced by practitioners when they commence the implementation of KM initiatives in an organisation (Earl, 2001; Beccara-Fernandez and Sabherwal, 2014). As a result, facilitated by my embeddedness in the EIS, I critically reflected on the literature and the context in an iterative manner to identify

opportunities for application of KM principles to foster competitive advantage for the EIS.

Schultz and Stabell (2004) presented four discourses in the knowledge management literature that demonstrate the differences in perspectives on knowledge and knowledge management in research. Specifically, based on my preliminary observations in the context, I reflected that the EIS sits within the constructivist discourse that emphasises duality and complex interconnectedness of phenomena. Mirroring the practice-based perspective on knowledge management, it further uses the metaphor of mind to describe knowledge, that is, knowledge is viewed as embedded in practice rather than an object existing separate from individuals and practice (Schultz and Stabell, 2004; Hislop 2013). As a result, the emphasis is on managing the interpersonal interactions between people to facilitate the flow of knowledge.

The literature further highlighted that the specific perspective and framework of knowledge management would be informed by core organisational strategy and functions. This in turn has implications for the design and implementation for the specific KM initiatives (Zack, 1999; Hansen, Nohria and Tierney, 1999). During the initial months, it became apparent that the EIS is knowledge intensive with knowledge playing a significant role in the organisational functions, inputs and outputs (Hislop, 2013). The EIS is essentially engaged in the creation and application of sport science, medicine and technology knowledge along with developing and training practitioners to maintain high standards of practice along these tasks. Following the characteristics of knowledge intensive firms, the EIS is engaged in developing customised knowledge and practice to solve complex performance questions or needs posed by the sports (Robertson and Swan, 2003; Hislop 2013). Such knowledge is thus context specific, integrated within the people, processes and context where it is applied. Since this knowledge cannot be easily separated from the context and replicated verbatim in another sport, codification strategies seem less applicable. Instead, I deduced that the personalisation strategy, that facilitates interpersonal communication between practitioners and enables knowledge sharing, is suited for the EIS context (Hansen, Nohria and Tierney, 1999). Subsequently, I reviewed relevant literature on knowledge

management processes and systems that promote knowledge sharing by facilitating interpersonal interaction, such as communities of practice, social capital and storytelling, etc. (e.g., Hansen, 1999; Wenger, McDermott and Snyder, 2002; Denning, 2006; Nicolini et al., 2018). This position was also informed by my preliminary observations of the context and the EIS employees' engagement with the existing Performance Knowledge initiatives. Drawing from the knowledge-intensive nature of their role, predisposition for interpersonal interaction and limited engagement with discrete KM solutions and processes, I concluded that KM initiatives in the EIS should generate value for the practitioners and become integrated into their normal working routines.

In December 2015, the Performance Knowledge team organised a workshop at the EIS National Conference, which focused on identifying the perceived challenges to collaboration and possible solutions to overcome them (Action 1 in Figure 6.1). The workshop, discussed in Chapter 4, along with the ethnographic observations during the initial months, was instrumental in developing a deeper understanding of the structural complexity of the EIS.

Structural complexity of the EIS and the decision to implement a knowledge audit (December 2015 – January 2016)

Key findings from the workshop highlighted the structural complexity of the EIS. It emerged that different teams and functions within the organisational structure overlap and are interdependent. Further, the findings from the workshop highlighted that I had a limited understanding of the challenges operating in the context, and their root cause. It became apparent that the limited amount of collaborative practices in the EIS could not be explained by simple cause and effect relationship due to the challenges of time constraints and geographical dispersion. Instead, multiple factors and elements in the context appeared to interact in non-linear ways. Due to this limited understanding, any solutions introduced could appear superficial and fail to target the underlying causes for low levels of collaboration.

Upon reflecting on the findings from the workshop (see Sections 4.2 and 4.3), I initially proposed to conduct a social network analysis (SNA) of the EIS organisational

structure, to understand the existing patterns of collaboration, communication and knowledge flow across the structure (Cross, Borgatti and Parker, 2002). SNA helps portray the formal and informal social structures in an organisation represented in the form of networks. It is used to identify stakeholders, hoarders, gatekeepers, bottlenecks and individuals at the periphery within a network and evaluate how each of these affects the flow of knowledge in the organisations (Cross, Borgatti and Parker, 2002). I reasoned that in order to inform improvements in collaboration and knowledge sharing, it was imperative to first understand how collaboration is currently structured in the EIS and to identify the opportunities to inform change. This was also informed by my training as a psychologist, whereby every consultancy and delivery of support is initiated with a needs analysis with the client, to help tailor the support to their individual needs. As I reviewed the literature on SNA and its application within knowledge management, I identified that SNAs have been used as an audit tool in the knowledge audit literature. Consequently, I reviewed the knowledge audit and KM implementation literature, which highlighted the need to align KM initiatives to the organisational context and strategic objectives to enhance their success (Zack, 1999; Hylton 2002; Stewart, 2002; Jashapara, 2011; Burnett, Williams and Illingworth, 2013). This literature in turn resonated with my inference to conduct a needs analysis of the EIS structure.

As I reflected iteratively on the KM implementation and audit literature and my observations at the National Conference, I further proposed to conduct an inquiry into the EIS context to identify the strategic objectives, KM needs and challenges and enablers in the context in order to inform improvements in Performance Knowledge efforts aligned to the needs of the EIS. Thereafter, the initial proposal to conduct an SNA evolved into a review of the EIS. I reasoned that if the need to conduct an SNA was highlighted as the review progressed, it can be incorporated as an audit tool, enabled by the flexibility afforded to the KMR methodology. Critical reflections on the National Conference workshop that informed the decision to conduct a knowledge audit are presented in Chapter 4. Subsequently, I reviewed the literature on knowledge audits and KM implementation to design the KMR. A detailed review of the literature is presented in Chapter 5 along with the subsequent design of the KMR methodology.

The proposal to implement an audit was duly discussed with the Knowledge Manager

within our collaborative relationship in January 2016. He reflected that at the initial stage of his appointment at the EIS, he too had planned to conduct a knowledge audit, specifically focused at identifying knowledge resources and expertise across the network, but was unable to do so due to time constraints. Subsequently, he supported and encouraged my proposal to conduct the audit. The Knowledge Manager reflected:

> I think it will show you the reality of the EIS. And possibly throw up some solutions that we can use.

Philosophical debates on knowledge management (January – April 2016)

The Knowledge Manager and I frequently engaged in philosophical debates on the nature of knowledge and knowledge management, and their direct implications for the EIS. We discussed the KM literature (e.g., Nonaka and Takeuchi, 1995; Wilson, 2002; Snowden, 2002; Baskerville and Dulipovici, 2006; O'Reilly and Knight, 2007; Hislop 2013) and debated topics like the differences between information and knowledge and between tacit and explicit knowledge, complexity of knowledge management, interconnectedness of functions within the EIS, relationship between the EIS and the sports, application of abstract concepts into practice and the practitioners' perceptions of Performance Knowledge. Some of this literature was suggested by the Knowledge Manager and others emerged out of my own literature review, thereby resulting in a participation of different knowledge contributed within the collaborative relationship.

Such philosophical debates provided me with an opportunity to clarify, articulate and challenge my understanding of the KM principles in relation to the EIS. Over time, we collectively developed an understanding of KM practice for the EIS. As I reflected iteratively on these debates and the literature on knowledge audit and whole systems change (see Burns, 2007; Burns 2014a) I questioned my motivation for conducting an audit in the EIS and what I aimed to achieve. I recognised that my initial purpose behind identifying barriers and enablers in the context was to design solutions that overcome these challenges to improve knowledge sharing and collaboration in the EIS, informed by the current understanding of knowledge audits (Liebowitz, 2000; Cheung et al., 2007; Burnett, Williams and Illingworth, 2013). I reasoned that such solutions could address the immediate cause or barrier in the context, but could fail to

create sustainable impact. Instead, systemic solutions that understand and address the root cause of the problem would create sustainable change (Burns, 2007). Accordingly, I altered the purpose of the audit to explore the underlying assumptions operating in the context and develop a systemic understanding of the how different factors, teams and individuals interact in the EIS. Such reflections, along with a critical review of the knowledge audit, KM implementation and action research literature, were instrumental in developing an initial proposal for conducting the audit, which was subsequently discussed with the Knowledge Manager and academic supervisors in April 2016. The discussion on the action research literature is now presented formally in Chapter 2, along with the critical review of the knowledge audit literature and the KMR methodology in Chapter 5.

6.2.2 Outcomes

Cycle 1 thus contributed to my introduction into the context and the knowledge management literature in an iterative manner. As I observed the context and reflected in practice (Schön, 1987; Coghlan and Brannick, 2014), I narrowed the focus of the literature review onto topics that appeared relevant for the EIS needs. I reflected that at the outset, mirroring the outcome driven context of high-performance sport, I perceived the purpose of the research project to be the design and implementation of solutions to improve knowledge sharing and collaboration in the EIS. This resulted in an emphasis on identifying opportunities for application of knowledge management principles to address needs in the EIS context, informed by the existing knowledge management literature. As I reflected on the EIS context and the field of knowledge management in an iterative manner, I began appreciating the complexity of the system.

Subsequently, the KMR was designed to enable a whole systems view of the EIS and to understand how multiple factors in the context interact to create an impact on the practice of knowledge management. Further, I reflected on the question I was asked regarding the value of Performance Knowledge activities and subsequently attempted to identify the strategic impact of Performance Knowledge for the EIS. Thus, the direction of inquiry evolved into the review methodology, informed by my participation in the context and the knowledge management literature (Burns, 2014a).

> ***Current Performance Knowledge initiatives (October 2015 – March 2016)***
>
> Simultaneously, I observed that a series of Performance Knowledge efforts were being implemented in the EIS. Primarily, the Knowledge Manager was engaged in introducing and training the practitioners on using an online tool, Tallyfox, for asking questions and sharing knowledge resources, aimed to facilitated knowledge sharing and collaboration within and between disciplines. The tool had recently been introduced (early 2015) and currently only two disciplines were trained to use it. The Knowledge Manager planned to implement it across all other disciplines in the following months. In addition, he was developing an online resource for documenting and sharing travel related information from training and competition venues across the world, developed in response to a need identified from conversations with the practitioners. The purpose of these solutions was to address individual needs that emerged in the context and develop solutions that would create immediate impact, whilst raising the visibility of Performance Knowledge in the EIS.
>
> In March 2016, I was invited to share anonymous feedback on the current Performance Knowledge initiatives with the SMT. Drawing from my observations and reflections, I shared that Performance Knowledge efforts appeared to have multiple foci, consisting of multiple solutions across the organisation. The Performance Knowledge strategy appeared to adopt a fragmented and functionalist approach to KM implementation (Swan and Scarbrough, 2001), which was in opposition to the interlinked and overlapping needs of the organisational structure.

6.2.3 Learning

The mind map depicted in Figure 6.1 presents a systemic mapping of the actions (Burns, 2007), inquiries and issues from Cycle 1 discussed in Section 6.2, reflecting the iterative process that led to the emergence of the core question in the review inquiry, specifically, "why knowledge management?" I developed this mind map whilst analysing the review retrospectively to make sense of the process and multiple inquiries and actions that emerged therein.
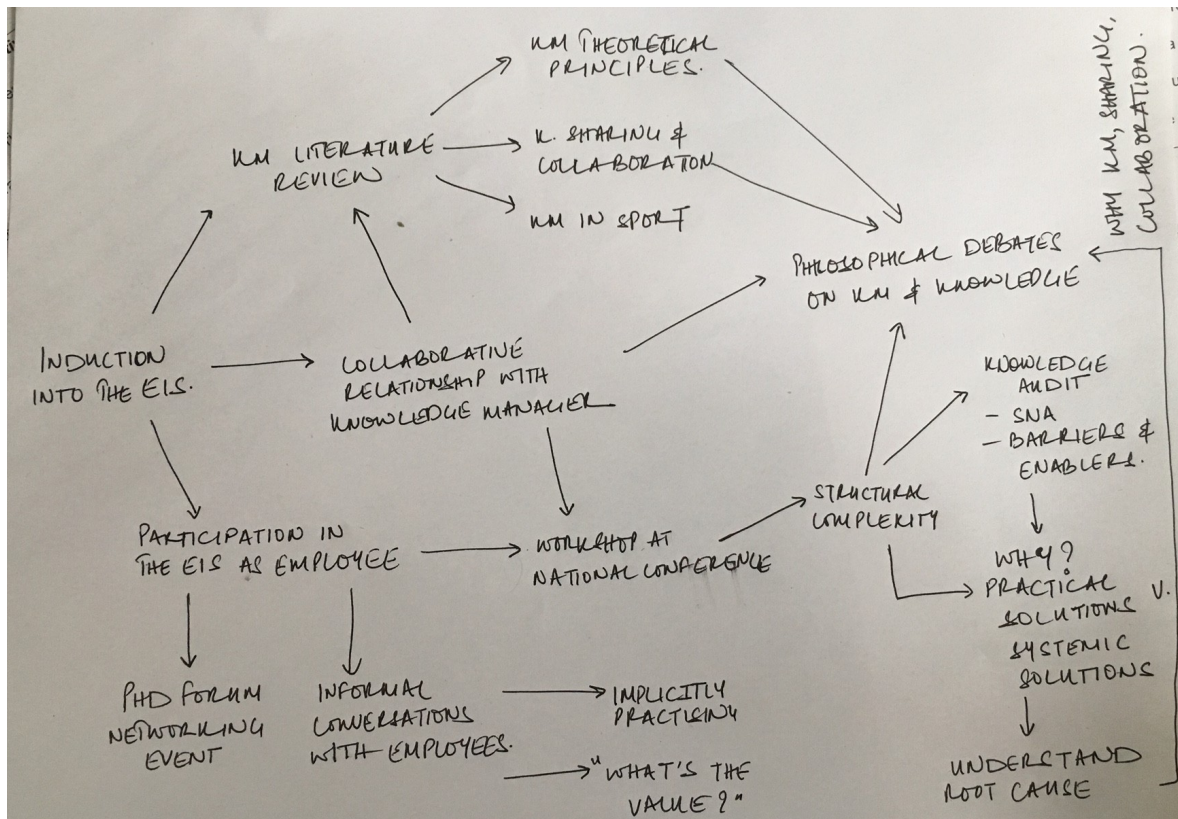
Figure 6.1: Systemic mapping of Cycle 1

Overall, the observations and reflections from this phase contributed to the preunderstanding of the context, which is critical in initiating an action research project in an organisation (Coughlan and Brannick, 2014). Reflecting retrospectively on the process, I recognised the significance of my embeddedness in the context. Specifically, observations, such as maturity of the employees, predisposition for interpersonal communication and the EIS's emphasis on practitioner development, would have been missed in a traditional interpretivist research using interviews. By submersing myself in the context and participating with other EIS employees, I could appreciate the implicit cultural nuances and complexity of the context (Xu et al., 2008).

The various meetings across the network helped to familiarise myself with the employees' roles and the structure of the EIS. The dialogic discussions facilitated a collective reflection on the principles of knowledge management. As I studied the EIS context and the knowledge management literature in an iterative manner, these meetings provided me with an opportunity to reflect on and progressively develop my understanding of the principles of knowledge management, integrated with the specific

needs of the EIS. Thus, I structured the interviews in the subsequent phases of the review to enable participants to voice their opinions, suggestions and feedbacks in order to design knowledge management initiatives in an informed manner and with a sense of ownership.

Table 6.2 depicts the thematic analysis of findings, observations and reflections from action research cycle 1. Figure 6.2 depicts systemic mapping of action research cycle 1 incorporating the actions (green) and higher-order themes (blue) depicted in Table 6.2. The figure specifically depicts the actions that were taken (green), the findings thereof (blue), my reflections (purple) that were subsequently shared with the Knowledge Manager and the resultant actions, leading into action research cycle 2.

Table 6.2 Thematic analysis of action research cycle 1: Preunderstanding

Action	First order theme	Second order theme	Quote/observation
Observations and conversations	Organisational values	High quality of practitioners	Observed the range and topics of research presented at the PhD Student Forum (October 2015 - Observation)
		Focus on practitioner development	*To continue investment in PhD and MSc studentships to carry out performance impacting research and identifying and developing practitioners of the future* (EIS Annual Report, 2015)
		Knowledge intensive	Core organisational activities focused on developing sport science knowledge and practice (observation)
	Implementation challenges	Dispersed system	*EIS employees operate out of 10 sites across the country and frequently travel overseas with sports (observation)*
		Perceived lack of time	*This is great for socialising, but how productive this is for my work? I could be spending this time trackside* (EIS Practitioner/PhD Student 1)
	Implementation opportunities	Preference for interpersonal communication	Had a conversation with practitioners for over an hour who otherwise complained of lack of time for using technology solutions

			(observation)
		Implicitly engaging with KM principles	Performance Pathways practitioners discussed using knowledge management practices in their department (observation)
		Interested in principles of knowledge management	*What is the value of Performance Knowledge/knowledge management? How do you contribute to 'what it takes to win' and overall impact for the system*? (EIS Business Manager)
	Feedback on Performance Knowledge	Limited engagement with technology solutions	*I have seen Tallyfox. I don't necessarily understand how to use it. It looks a bit dry doesn't it?* (EIS Practitioner)
		Limited understanding of Performance Knowledge remit	*So what does Performance Knowledge actually mean? What do you do?* (EIS Practitioner/PhD Student 2)
		Multiple solutions introduced	Observed multiple solutions, for example, Tallyfox, travel map, roadshow, expertise matrix (observation)
KM literature review	KM implementation	Multiple possible applications Stories, communities of practice	
	KM framework	Metaphor of mind (Schultz and Stabell, 2004)	Knowledge exists as embedded in practice (observation)
		Personalisation strategy (Hansen et al. 1999(	To facilitate sharing of tacit and implicit knowledge and aligned to preference for interpersonal communication in the context (observation)
	KM in sport	Emphasis on sport event management, business/marketing of sport organisations Fragmented research in sport Limited research on	

		organisational sciences in sport organisations	
Performance Knowledge workshop (December 2015	Reflections	Complex structure	*The structure is immensely complicated and always changing. Our practitioners sit in so many different teams* (EIS HR Manager)
		EIS versus sport expectations	EIS emphasise CPD whilst sport may want 100% presence with athletes (observation)
		Additional challenges affecting collaboration	Focus on challenges of time and dispersion may be too simplistic (observation)
	Additional questions for clarity	What is the value of KM for the EIS?	Multiple scenarios of collaboration discussed at the workshop. Where is the impact? (observation)
		Knowledge sharing versus collaboration	Emergent differentiation between conceptualisation of sharing and collaboration in the context. What is the focus for Performance Knowledge? (observation)
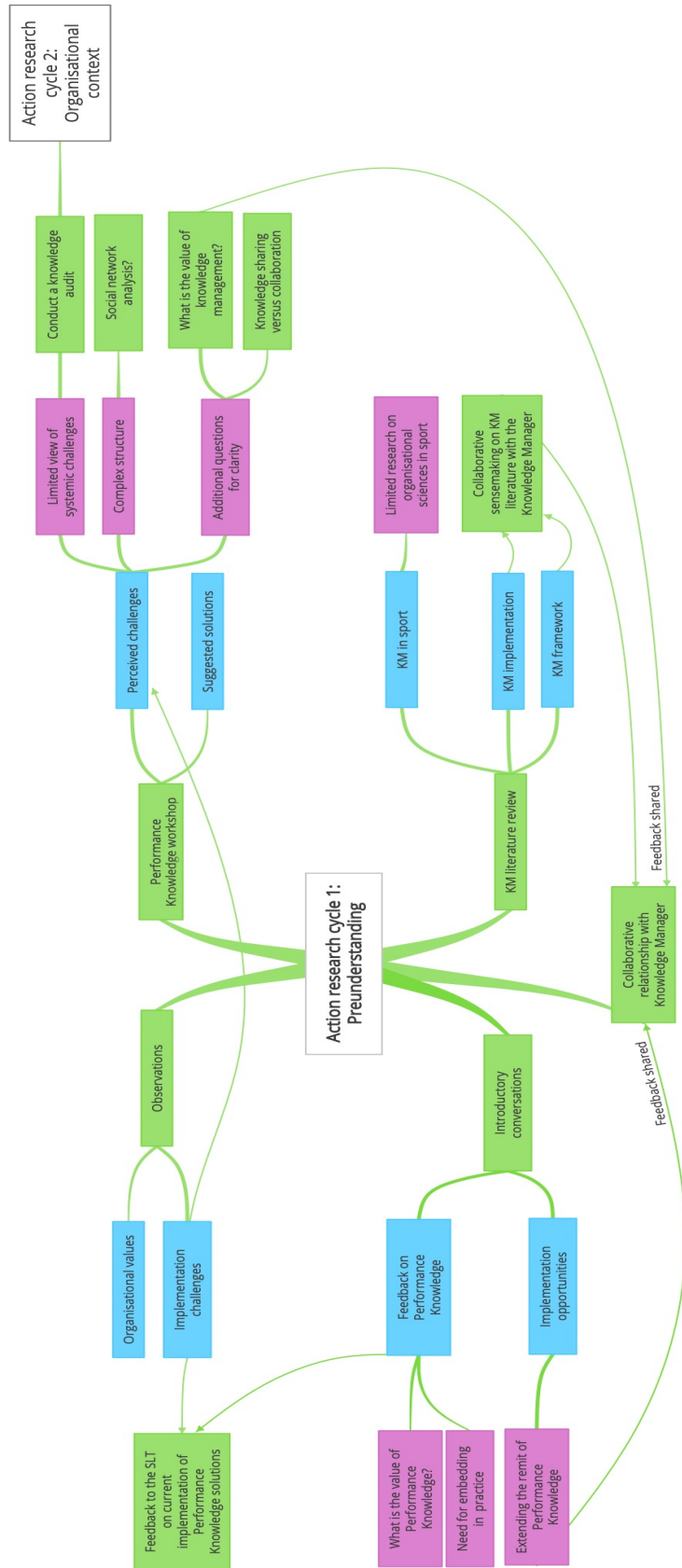
Figure 6.2: Thematic analysis of Cycle 1 (actions in green, themes of findings in blue, reflections in purple)

6.3 Action research cycle 2: Organisational context (May 2016 – December 2016)

Upon defining the research questions and the methodological considerations for KMR, phase Focused Review was implemented at the EIS. The objective of this phase was to develop a view of the whole system of the EIS's context to understand the system dynamics. Figure 6.3 depicts the multiple lines of inquiry that were undertaken and resulted in multiple actions. These actions and lines of inquiry are detailed in the following sections.
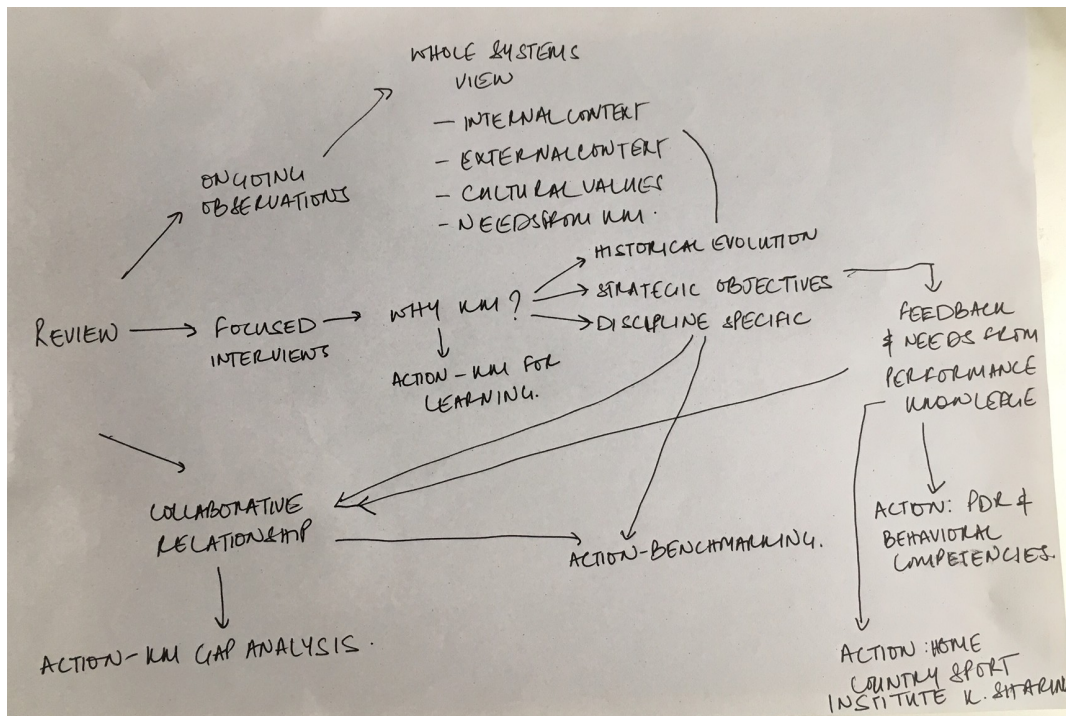
Figure 6.3: Systemic mapping of Cycle 2

6.3.1 Actions

In Cycle 2, I explored the complexity of the structure and context to highlight the organisational values, functions and objectives and explore how different factors in the context interact with each other. The aim of data collection in this phase was to answer the question "Why knowledge management?" (see Inquiry 1 in Figure 6.3), that is, to understand the EIS's motivation behind introducing knowledge management and the specific value it could generate. Specifically, questions like "Why was Performance Knowledge set up?" and "What according to you would be its most significant strategic impact?" were asked. Additionally, I attempted to test my assumptions about the appropriate knowledge management framework for the EIS context (Section 6.2.1).

Subsequently, I asked the participants questions like "What do you understand by knowledge and knowledge management?" and "What is the most strategic knowledge for the EIS's organisational objectives?" to clarify the working definitions of key terminology and uncover the underlying assumptions regarding knowledge management operating in the context following the principles of systemic action research (Burns, 2014a). Informed by the knowledge management implementation literature, this approach was aimed at aligning knowledge management practice to the organisational strategy and core functions of the EIS.

Table 6.3 List of interviews and documents included in Cycle 2

Date	Participant	Detail
January 2016	EIS Annual reports 2011-2016	Document analysis
February 2016	SMT member (SMT3)	Interview
March 2016	Former EIS employee (Ex-EIS1)	Interview
June 2016	SMT member (SMT1)	Interview
June 2016	HOS member (HOS1)	Interview
July 2016	SMT member (SMT4)	Interview
July 2016	HOS member (HOS8)	Interview
August 2016	SMT member (SMT2)	Interview
August 2016	HOS member (HOS6)	Interview
September 2016	SMT member (SMT6)	Interview
September 2016	HOS member (HOS3)	Interview
September 2016	SMT member (SMT5)	Interview
September 2016	HOS member (HOS8)	Interview
October 2016	HOS member (HOS2)	Interview
October 2016	Head of Performance Support (HOPS1)	Interview
October 2016	Head of Performance Support (HOPS2)	Interview
October 2016	HOS member (HOS4)	Interview
October 2016	HOS member (HOS5)	Interview
January – March 2017	EIS staff communications (emails, newsletters, EIS website, conference calls)	Document analysis
February 2017	Practitioners	Interviews

To seek answers to these questions, the Knowledge Manager suggested speaking to former and current employees, who were involved in the decision to introduce knowledge management in the EIS. In addition, I interviewed the Senior Management

Team (SMT) to understand the overall strategic focus of the EIS, the interdependence of the organisational teams and the applicability of knowledge management principles for each. Finally, a document analysis of the EIS's Annual Report (2011-2016) and regular staff communications (emails, newsletters, staff conference calls, EIS website) was conducted to understand the strategic objectives of the institute, identify the wider contextual factors and assess the EIS's relationship with key stakeholders.

Table 6.3 depicts the details of the interviews and documents included for data in this phase of the context. The population for the interviews in this phase was the senior managerial level with a 100% response rate. In addition, two interviews with Heads of Performance Support were recommended by the Knowledge Manager to include their insights on Performance Knowledge. Data from the interviews, document analysis and my own observations will be used to support and illustrate the thematically structured findings, which are presented in the following section. Section 6.3.2 describes the findings from the data collection in this phase, following by an analysis of the findings in Section 6.3.3 in light of the existing knowledge management literature.

Design of the interviews (May 2016)

Operating from my role as a facilitator of critical self-reflections and systemic change, the interviews were designed to be unstructured and open-ended, encouraging the participants to engage in a dialogue to develop a collective and iterative understanding of knowledge management in their practice. This approach mirrored one of the EIS's core values, that of collaboration (EIS Annual Report, 2011). As part of my participatory observations, I observed that the EIS operated in a dynamic context with structural and procedural changes being implemented constantly. Before implementing any new change, opinions and feedback from across the network were sought to give the employees a sense of participation and ownership over the change. For example, in 2016 a new organisational structure was proposed, which was implemented following assessment and feedback gathered from employees in a number of voluntary staff working groups. Similarly, I designed the interviews to enable participants to voice their opinions, suggestions and feedback to design KM initiatives in an informed manner and with a sense of ownership.

During this series of interviews, I reflected that in addition to the overall EIS needs, each discipline had its unique needs and challenges with regards to KM implementation. As a result, data collection was extended to conduct a further eight interviews with the Heads of Service (HOS) to identify the function, strategic objectives and needs from knowledge management for each discipline. The interviews with the Heads of Service were conducted with a similar format and purpose. To adapt to their role, I asked additional questions such as "How can knowledge management generate value for your discipline?" and "What would an ideal knowledge management capability look like within the discipline?" In addition, ongoing ethnographic observations and informal meetings across the network were continued throughout this phase.

6.3.2 Findings

The findings from the focused review inquiry were instrumental in developing a rich, systemic appreciation for the complexity of the EIS context. Specifically, it highlighted themes in the EIS's internal and external contexts that helped understand why knowledge management is a strategic need for the EIS, the critical challenges in its implementation and why these challenges are important for the context, and subsequently, for the design of knowledge management initiatives. The findings are presented here under key themes that resonated with the interview participants. The key themes of External context, Challenges in the internal context, EIS cultural values, Feedback on Performance Knowledge and Desired characteristics of Performance Knowledge efforts were critical in creating a whole systems view of the EIS (Figure 6.2) and highlight various factors in the EIS context that can have implications for the design and implementation of knowledge management initiatives.

6.3.2.1　External context

External context refers to the wider UK high-performance system within which the EIS is situated, referring to the dynamic and competitive context of high-performance sport and the EIS's relationship with UK Sport and sport governing bodies (also see Chapter 4 for a preunderstanding of the structure and external context of the EIS). Specifically, the EIS is a complex system residing within the hierarchy of a wider UK high-performance system. Consequently, UK Sport and sport National Governing Bodies

are amongst the EIS's key stakeholders. As a public-sector organisation, the EIS is grant funded by UK Sport and is subject to funding and policy decisions from them. Additionally, being positioned within and intertwined with other sport organisations in the UK high-performance system, the EIS is exposed to the dynamic changes in the wider sport context. The EIS Annual Reports (2011-2016) as well as participatory observations in the context revealed that the EIS operates from the values of "collaboration, innovation and excellence" to constantly remain relevant by responding to the demands of the external context in an inclusive and collaborative manner. This results in the dynamism of the internal context. Specifically, the EIS organisational structure is constantly undergoing change to maintain a strategic position in the UK high-performance system. For example, this was reflected in the introduction of the Performance Solutions department and the Performance Knowledge function in 2013, and later, the Performance Innovation and Athlete Health departments in 2017 in response to the needs identified in the high-performance system.

The EIS is predominantly engaged in the development and delivery of sport science, medicine and technology to sports. The interviews, reflections from document analysis of the annual reports as well as discussions during the Performance Knowledge workshop (see Chapter 4) unanimously stressed that every function in the EIS is driven by performance impact for sports, that is improving athlete and sport performance for medal success. In doing so, the different teams in the organisational structure have strategic relationships with the sports with different remits, all aimed at maximising performance impact and medal success for sports. This is effectively demonstrated in the EIS's mission statement (English Institute of Sport, 2018a):

Improving sport performance through science, medicine and technology.

The EIS receives funding from sports for the practitioners who provide this strategic and technical support. Operating in a highly competitive, results-driven culture of elite sport, the sports then expect the practitioners to spend the maximum time with their athletes. As a result, the practitioners become steeped into the culture of the sport and identify predominantly with their sport. For example, an EIS practitioner working with swimming may identify themselves more as a swimming practitioner than an EIS practitioner. The interviews revealed that certain sports fail to acknowledge the role of

collaboration and collective knowledge in practitioner development and enhancing innovation and quality of service provision and thus resist opportunities for practitioners to engage in knowledge sharing with the wider EIS network. This supported my reflections from the Performance Knowledge workshop. HOS6, whilst discussing the clash of expectations between EIS and sports, commented:

> So, whilst the practitioner might want to do it, and the technical lead might support it, the sport might say I'm not paying you to go to that thing. I'm paying you to be with my athletes. I think that's another challenge that we will continue to face, which is a cultural thing.

Furthermore, within the UK high-performance system, the sports compete with each other for funding from UK Sport, which is determined by their performance success. As a result, the sports are driven predominantly by medal success and less by a culture of knowledge sharing within the overall UK high-performance system, contributing to further clash of priorities with the EIS. Faced with this conflict of cultures, practitioners appear to align with the demands of the sport and show limited engagement with knowledge sharing efforts in the EIS, unless directly benefitting their roles in the sports. This finding resonated with my observations from the PhD research networking event I attended in Cycle 1 (see Section 6.2.1). Further, it is illustrated in the following comment by HOS1:

> From a practitioner point of view, clearly, they're immersed in the sport, with the number of hours that they work. I always think that they identify with the sport first, discipline second and institute third.

Dynamic context of the EIS (March-October 2016)

During this action research cycle, the EIS was preoccupied with preparations for the Olympic and Paralympic Games 2016. Specifically, throughout the year, the practitioners were busy with training and holding camps, the Games themselves, and thereafter, debrief of experiences and learning. During this time, I observed that activities within the EIS were subdued and the institute in general was not receptive to any new ideas being implemented. I further identified that the EIS operates in 4-year

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cycles from one Olympic Games to the next, indicating that this preoccupation with the Games was a constant in the EIS context. Furthermore, after the Games, a number of practitioners left the institute, for various reasons. I recognised that this turnover of staff was common at the end of every 4-year cycle. With regards to Performance Knowledge, I reflected that implementation of the existing Performance Knowledge processes necessarily requires promoting and communicating the impact of the processes as well as training practitioners to use the systems and tools. Considering the consistency of such changes, it is imperative that the Performance Knowledge initiatives are sustainable in this dynamic context. I inferred that Performance Knowledge should be stressed as a cultural constant, rather than a standalone function or process that practitioners engage with. I concluded that if knowledge management was promoted as a culture or a value, and embedded in the daily working routine of the institute, it would be easier to sustain despite staff turnover.

6.3.2.2   Challenges in the internal context

The EIS's internal context refers to the strategic objectives, organisational structure and functions and various challenges operating in the context. The EIS is "the country's largest provider of sport science, medicine and technology" (EIS Annual Report, 2016). The interviews revealed that the EIS's core objectives towards this mission are the development of technical sport science knowledge, practitioner development and service provision to sports. Linked to the core values of collaboration, excellence and innovation (EIS Annual Report, 2015), the EIS is constantly striving to innovate and create new knowledge for the development of its practitioners and the network, to have maximum performance impact for the sports they work with. Within the organisational structure, the Science and Technical Development team is engaged in developing new knowledge and expertise as well as supporting and mentoring practitioners to apply this knowledge in sport (English Institute of Sport, 2018b). On the other hand, the Performance Solutions team collaborates with the sports to develop strategic plans for the delivery of sport science support, whilst managing a multidisciplinary team of practitioners for service delivery (English Institute of Sport, 2018b). Overall, all key functions in the EIS are positioned to have direct and indirect performance impact for sports.

The importance of the two organisational functions (technical development of knowledge and practitioners and delivery of performance support; for a detailed discussion, see Chapter 4) highlights that the EIS network of expertise extends beyond the boundaries of the institute into the sports. This results in the challenges of structural complexity, size and geographical dispersion. Specifically, the practitioners operate in multiple, overlapping teams and communities of practice across the network. This was effectively reflected in the following comment by Ex-EIS1, a former employee who was involved in the introduction of the Performance Knowledge function in the EIS, highlighting the original strategic advantage that it was expected to generate:

> You've got so many team structures, the regional or the site-specific teams, the sport specific teams, and then your disciplines. The discipline looks after your technical development. The sports team is where you apply it. Your site team is probably where your operational efficiency comes to play. But also, that's where you can do some really nice multi-disciplinary work. But then also you're a part of this bigger institute as well as being a part of the national governing body. I think we were very aware at the time that we're trying to pull practitioners into so many different teams, we've actually got to change this dynamic so that for the practitioners it's really visible, the benefit they're getting by being part of that discipline team and the wider national institute team. Almost as if the knowledge is just flowing out to them rather than them have to go and search through this fairly complicated (SharePoint) system. Let's make sure we're doing a better job of what we call knowledge sharing in the network.

The structural complexity of the EIS, specifically, the position of an EIS practitioner across multiple, overlapping teams, is depicted in the Venn diagram in Figure 6.4. Here, the circles denote different teams that the practitioners operate in, namely the institute, discipline, site and sport.
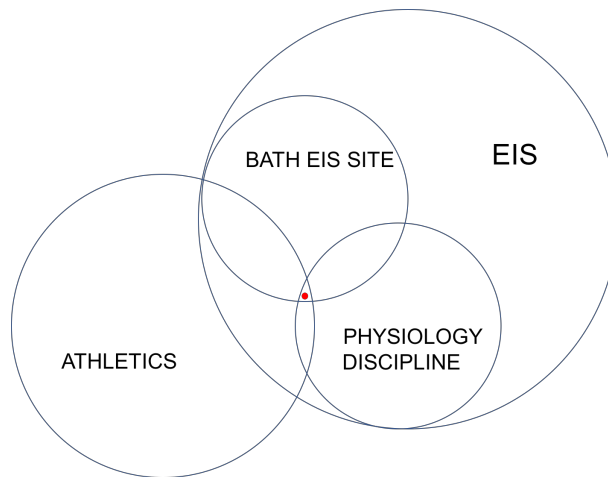
Figure 6.4: Example of a practitioner's membership of multiple, overlapping teams (red dot refers to the practitioner)

Other structural challenges included the size of the institute and geographical dispersion of practitioners. The EIS practitioners are based at 8 high-performance centres or EIS sites and seven partner sites across the UK, in addition to decentralised sports that are not based at an EIS site. Further, practitioners spend a considerable amount of time travelling with sports. Consequently, they are likely to have limited awareness and visibility of knowledge in the wider network, resulting in the creation of silos and duplication of work. HOS4 highlight this challenge in the following comment:

> Yes, I think one of the difficulties we have is the spread of practitioners. So, in our discipline we only have a small team of practitioners and they're spread. So, we don't have any site where there is more than one practitioner. They're quite isolated.

Another key challenge for the EIS's engagement with knowledge management initiatives emerged as time constraints, compounded by perceptions of limited pay. Specifically, due to their busy schedules, frequent travel with sports, perceived low pay and working in a result-driven context, practitioners were less likely to engage in processes that appeared to be additional tasks and require training. HOS3, highlighting the challenges in the daily working routines of the practitioners, commented:

> These people are working 16-19 hours a day regularly and spending a lot of

time away from home, they are under pressure a lot of the times and then we're saying right you need to give back (share knowledge). That's difficult because they give a lot already.

6.3.2.3   EIS cultural values

EIS's core value of collaboration is reflected in its strategic partnerships with sports and other entities in the UK high-performance system to facilitate performance impact. It also manifests in the EIS's culture of collaborative practice. Practitioners within the disciplines are encouraged to engage with each other and share knowledge, case studies and experiences. This is evidenced by the discipline structure and processes whereby the discipline teams (practitioners, technical leads and HOS) meet regularly to share stories and case studies of practice, collaborate to solve performance questions and discuss application of new research knowledge. This understanding was developed by my conversations with the Knowledge Manager regarding the discipline structures, as well as with the practitioners on their daily working routines. Further, the EIS promotes multidisciplinary practice and research for creating performance impact, which was also reflected in the case studies and research presented at the EIS National Conference. HOS1 commented on the importance of collaborative practice in the EIS:

> When I have seen the strategy of the institute going forward, capturing knowledge, sharing, solving, collaboration, these are words that really kind of sit across a lot of the different plans of the institute. I think that kind of shows how key it can be.

HOS7's further comment highlighted the EIS's cultural value of collaboration:

> It's always been a collaborative work where developing people, creating opportunities for people to learn, share and engage with one another has always been central.

The interviews revealed that knowledge sharing is considered good practice in the EIS. It appears that the EIS practitioners willingly engage with each other to seek knowledge and support, driven by their motivation to develop their knowledge and

create greater impact in their sports. This is demonstrated in HOS8's comment on the enablers in the EIS context for knowledge management implementation:

> I think there is the culture of learning … people are passionate for high performance sport and they want to learn and they want to develop.

Another key cultural enabler for knowledge management is the staff's attitude in the EIS. The EIS practitioners show significant passion for their work in the sports, willingness to learn and collaborative behaviours to help each other grow. This is evidenced in SMT1's quote on the strengths on the EIS:

> People are selfless as opposed to selfish. People are 100% committed to the sports they work with or the tasks that they perform. People are prepared to look over their shoulders to help people progress even if there isn't a gain for themselves. People are in the institute for the right reason. To benefit the institute but more importantly take the institute forward and the sports that they work with.

Thus, knowledge sharing as a concept is already valued and accepted by the practitioners. Moreover, the senior managers strive to make the practitioners feel valued and connected to the overall vision of the EIS, and are dedicated to creating an environment where practitioners feel safe and encouraged to share their knowledge and experiences. This is evidenced in the following quote by SMT1:

> The big thing is the phrase "what it takes to win" at the moment, which is how we define how to achieve winning performance in sports. Now it's a very snappy phrase. But it means a multitude of things. So, if you're working in the EIS and you work in finance, you might think "what it takes to win" doesn't apply to you. But it does. So, if you're the person who is responsible for expenses, what it takes to win for you means sending around those expenses as quickly as possible so that when practitioners travel, they haven't got to worry about money because I'm owed that money by the organisation. It's knowing that within 2 weeks it will be back in your pocket. So, the individual doesn't have to worry about finance in that regard. They can go to work and they can

concentrate 100% on that. That's what "what it takes to win" means. So, it doesn't matter where you are positioned in the organisation. But it's a really important thing.

Thus, the EIS's culture of collaborative practice, open communication, respect and inclusion is conducive for integrating knowledge management processes and principles into the daily working routines of the practitioners. Overall, this drive for excellence indicates that the EIS is open and willing to engage in innovative changes, processes and systems that facilitate collective growth, professional development and learning.

Individual needs of the disciplines (November 2016)

I shared this insight with the Knowledge Manager, that each discipline has its own way of working and specific needs from knowledge management efforts. Subsequently, Performance Knowledge initiatives would need to recognise these individual differences. Moreover, since the disciplines are already engaging with knowledge management principles implicitly, Performance Knowledge initiatives should align with the existing efforts to provide the additional advantage. I proposed that the next phase of the review could focus on exploring the existing processes, roles and responsibilities in the disciplines to identify how Performance Knowledge could support and facilitate these further.

Finally, interviews with the HOS team revealed that due to the knowledge intensive nature of their role, the disciplines already engage with several knowledge processes. Some of these take place implicitly, for example, mentoring and supervision by the technical leads, sharing reflections and case studies, and multidisciplinary practice in sports. Others have been formalized in recent years to meet the needs of the disciplines. For example, physiotherapy has developed a learning management system giving practitioners access to key journals, knowledge resources and training documents. It appears these were initiated and exist independent of Performance Knowledge efforts. This suggests an implicit understanding and appreciation of the value of knowledge management.

6.3.2.4   Feedback on Performance Knowledge

Due to the open-ended nature of interviews, the participants volunteered their feedback on the existing Performance Knowledge focus, solutions and tools, which proved instrumental in informing the subsequent Performance Knowledge focus, efforts and purpose.

Considering the context and needs of the institute, Performance Knowledge was introduced in 2013 with the recognition that, at the time, the emphasis was predominantly on measuring and reporting pure scientific knowledge and limited sharing of applied knowledge and stories of practice within the institute. The EIS expends considerable resources in developing new knowledge as well as non-technical skills of the practitioners. In addition, practitioners are constantly creating knowledge in the form of insights, experiences and learning from their applied practice in sports. Thus, the EIS identified the need to capture, store, aggregate and disseminate this knowledge to facilitate learning and people development, and maximise competitive advantage. This is evidenced in the following quotes by the participants highlighting the need from Performance Knowledge for the EIS.

> I always knew we were a big organisation that has a lot of knowledge contained within individuals, within the organisation. The challenge was always how do you make that knowledge accessible to others because if we can't do that, we're not really unlocking the true potential of the institute (harnessing the existing knowledge – HOS7)

> So, review, capture, enhance and disseminate knowledge that's in the system, really make it spread because if we put ourselves in the shoes of the sports, they are paying a fairly significant cost to hire a scientist or medical practitioner to the institute. It is absolutely imperative that we make the knowledge spread to show the value of it (knowledge capability of the EIS – Ex-EIS1)

> It's a case of being able to capture some of those experiences and those insights from the ground. And to be able to then deploy that information and perhaps coach somebody else to be able to realise a similar insight. And so, there's a degree of managing that information where it might need to be filed in

the right place. Or that it's highlighted to someone who's got an interest in that area. And we're actively sharing the information to where it's needed most (knowledge sharing – HOS5)

The challenge was how do we capture the knowledge and practice that can be documented. But most of it is the tacit knowledge that the practitioners have and I think that's a very difficult job to do (capturing tacit knowledge – SMT2)

We need retention of knowledge because there is inevitably going to be a turnover of staff (knowledge retention – SMT5)

And if we took a particular aspect, they can go to that and they can say look I need to learn more about this, how can I learn more? And as they learn more, that is also captured and placed there. So, all the time we're building this bank of knowledge that is easily accessible (accessibility of knowledge – SMT1)

Further, Performance Knowledge was expected to overcome the challenges of size and dispersion of the network by connecting practitioners across the institute. As identified previously, the dispersed network often results in the creation of silos, duplication of work and inability to locate and access the required knowledge within the institute. Thus, Performance Knowledge was established to raise visibility and disseminate the knowledge that exists within the EIS and harness it to "unlock the potential" of the institute.

The interviews further highlighted that a significant role of Performance Knowledge would be to strengthen and demonstrate the impact of the EIS's network of expertise. The participants acknowledged that the strength of the institute lies in its network of talented practitioners and high quality of sport science knowledge and delivery, evidenced in the following quote by SMT2:

There's been a real need to be clear about what we offer and then it becomes more than just a recruitment agency. And therefore, it's about holding and retaining and growing knowledge in the wider sense.

Discussions in the interviews highlighted that often the external perception is that the EIS is responsible for only recruiting, contracting and managing practitioners to work in sports and often the sports question the value of investing in an EIS practitioner. The SMT thus discussed how Performance Knowledge could play a critical role in demonstrating the value of the network to key stakeholders. Specifically, by improving collaboration across the network, Performance Knowledge could demonstrate to sports that when they invest in one practitioner, they gain access to the knowledge and expertise of the entire network. In fact, I observed that the phrase, "350 heads together are better than one", was used frequently within these interviews and across the EIS.

In addition to demonstrating impact to the sports, the participants discussed how better management of knowledge and expertise could have significant performance impact. This is reflected in the following quote by HOS3:

> Intuitively I would say it would increase and enhance the rigour of what they do because having three people on something will slightly be more rigorous than you just working on it alone.

It was discussed how collaborative practice that engages practitioners from different disciplines could lead to performance solutions and interventions that are innovative and bespoke to the needs of the sports, demonstrating the impact of improving the EIS's knowledge capability. HOS7 discussed:

> Probably even bigger than that would be there's a problem that neither of us have dealt with before but I've got some knowledge about one half of it and he's got some knowledge about something else. So, if we put it together it becomes something additive or that multiplies, bigger than that.

A critical line of inquiry within the interviews was aimed at clarifying the working definitions of key terms such as collaboration and knowledge, to identify the knowledge management framework suited for the context as well as specific needs from knowledge management initiatives. Within the interviews, the participants described collaboration as working with each other to improve their learning and solve

complex performance questions to maximise performance impact. For example, HOS4 discussed:

> Performance Knowledge is about putting the best collaborative structure in place. So, large or even small groups of people can come together, share problems, collaborate, can get solutions back and contribute so they can give and take in a really efficient and simple and sort collaborative way.

Further inquiries revealed that such collaboration could exist in multiple forms across the network, specifically, within disciplines, between disciplines, within sports and between sports. Interviews with the HOS team revealed that collaborative practice is currently present within the disciplines and within the sport. A significant need and impact of knowledge management initiatives would be to facilitate collaboration across the high-performance system and promote knowledge sharing between disciplines and between sports. HOS6 commented, highlighting the potential impact of Performance Knowledge:

> I would say between disciplines and between sports is probably the biggest impact. So, you may have individuals from different disciplines and different sports but there's commonalities between something that someone is doing in cycling for example and athletics, and that knowledge is kind of, not specific to a sport or a discipline, but that understanding of a common problem and trying to share that across.

In addition to collaboration, the interviews helped clarify the working definitions of knowledge for the institute. It emerged that knowledge in the EIS takes the form of technical knowledge, soft skills knowledge and applied knowledge, highlighted in the following quote by Ex-EIS1:

> So, we need to both have that technical, objective, theoretical knowledge that is very very simple to put to paper, e.g. best practice guidelines. But it's also the tacit knowledge and the understanding of how you apply your discipline, how you apply your technical expertise to athletes to make a difference. And finally, there is the softer skills, the knowledge of communication, interpretation,

influencing, managing relationships, working with coaches, all those key things are really, really important in the high-performance world.

Due to the knowledge-intensive nature of the functions, the HOS indicated that the disciplines have already established processes for managing and sharing technical knowledge internally. Applied knowledge on the other hand was deemed as an important focus for future Performance Knowledge efforts. This was demonstrated in the following quote by HOS7:

> I can't think of any practitioner who's ever left or has been asked to leave the organisation because he didn't have enough technical knowledge. Umm I don't even think that case ever exists. But I can think of a number of people who have left or have been asked to leave because they couldn't apply themselves in the environment or they didn't have the capability to manage themselves and be flexible in the management of themselves with certain cultures or sports or athletes.

The interviewees further acknowledged that applied knowledge and soft skills knowledge is tacit and implicit by nature and thus difficult to capture and share, indicating their maturity in understanding the principles and challenges of knowledge management. This is evidenced in the following quote by HOS2, highlighting the role of tacit, applied knowledge in efficiency of support and practitioner development.

> Knowledge is everywhere but why someone did something and how they went about it is much more powerful than the actual methodology that they used. And that doesn't get captured at all. And I don't know if we ever will be able to capture that. That's the bit for me which I think is totally lacking in our organisation.

6.3.2.5   Desired characteristics of Performance Knowledge efforts

Within the communicative space created in the interviews, the participants felt comfortable to provide feedback on the existing Performance Knowledge activities and solutions. Primarily, it emerged that overall there was widespread acceptance and acknowledgement of the need for knowledge management efforts. However, there

was limited engagement with Performance Knowledge activities, an observation also made during Cycle 1 whilst interacting with EIS employees across the network. It emerged that the practitioners were generally unaware of the remit of Performance Knowledge activities and the specific needs they were attempting to address. Further, the interviews revealed that the Performance Knowledge efforts were perceived as mandated from the senior management and as an additional task or demand on the practitioners time, resulting in limited engagement. Additionally, the position of the Performance Knowledge function in the organisational structure, within the Science and Technical Development team along with the other sport science disciplines, appeared to create confusion regarding the nature of efforts. Specifically, HOS1 commented:

> Performance Knowledge is this thing that's here and people don't really know what it's doing. It's not integrated in the part of the system. It seems to be a stand-alone thing, another discipline, at the moment that's just adding on to …

Subsequently, this presented an opportunity to conduct a further inquiry into suggestions regarding the direction and characteristics of future Performance Knowledge efforts in the EIS. Primarily, the interview participants highlighted the need to create a culture that promotes and supports collaboration and knowledge sharing across the network, making it easier for practitioners to engage rather than being mandated from the senior management. Such a culture would be characterised by open communication, role modelling behaviours by leaders, recognition for sharing knowledge, trust, support from managers and encouragement for asking questions and seeking knowledge. These factors were also highlighted by Intezari, Taskin and Pauleen (2017) as elements in the organisational knowledge culture that is deemed critical in the success of knowledge management practices and processes in an organisation. Further, the participants discussed that Performance Knowledge efforts should be integrated into the daily work routines of the practitioners, rather than appear as additional tasks to fulfill. Such efforts would be simple to engage with, require minimal effort to learn and save the practitioners time. This is evidenced in the following quotes:

> I think you'll probably know that it's working if it's just everyday language around

the institute. So, if it's Tallyfox, people are talking about it, doing it, engaging with it. Umm if it's sharing case studies, people are talking about it and doing it. So, I think you'd see it in the language and the conversations that go on. It becomes normal. And it would mean positively rather than oh god I have to do that. It has to be a positive thing. Also, I think it would save time. I think it would be more efficient, people will have that time for other stuff as well. And maybe the whole thing being more like one institute … rather than pockets in disciplines or sites, potentially (embedded in practice – HOS2)

Like anything, if it doesn't come from you directly then you've got no need to engage as much rather than being mandated (not mandated – HOS5)

And trying to do that in a really simple and effective way. I keep saying the word simple but it's got to be, moving forward, whatever it is, it has got to be really simple. Because people won't engage with it unless it is (simple and efficient – HOS4)

I think there's a little bit of leading by example that I am conscious that I should be doing that (role modelling behaviours – SMT2)

It's really easy to put your heads down, in their own little bubble, working on what they need to work on with their sport and that's absolutely fine. And it's probably right that they are doing that. But every now and again they need to lift their heads and see what's going on around and across the discipline. Across the network, in other disciplines as well. So, our role in the technical lead team would be to start off with encouraging them to do that. And kind of letting them know or getting them to see the benefits of doing that (encouragement – HOS3)

These observations were also made during the Performance Knowledge workshop at the National Conference, where participants stressed the need for a culture that facilitates interpersonal interaction to support collaboration.

Finally, the participants highlighted the need for Performance Knowledge to address

the individual needs of the disciplines and sports, as well as promote its value to the practitioners and sports in order to create an overarching culture of engaging with knowledge management. HOS6 commented:

> So, I guess it will be helpful if you guys are able to see somehow engrained in them or show them why it's useful, just reinforce why it's useful. And how it can be something that's easy to do and generally becomes part of their everyday practice. Because right now it'll be a bit of a culture shift.

6.3.3 Outcomes

The interviews in the Focused Review phase were critical in initiating a dialogue as well as reflective thinking across the senior managerial level about knowledge management practice in the EIS. The data collection highlighted multiple factors and themes that interact to impact the success of knowledge management practice in the organisation. Each interview and the conversation therein highlighted new themes, which formed a basis for the next interview. In this way, I progressively developed an in-depth understanding of the context. Using the analogy of a jigsaw puzzle, I was able to piece together different themes and findings into a whole system view of the EIS. Key themes reflecting non-linear and multidirectional causality regarding the challenges in the context are presented in this subsection. These themes facilitated additional lines of inquiry and actions in the EIS and were critical in informing my own practice and learning. The themes have been aligned to the knowledge management implementation and knowledge audit literature, reflecting the critical success factors it identifies (see Chapter 5, Section 5.2).

6.3.3.1   Knowledge management framework

Primarily, the interviews supported my initial assumptions regarding the knowledge management framework and strategy appropriate for the knowledge-intensive context (Cycle 1, Section 6.1.1). It emerged that the EIS expected Performance Knowledge efforts to improve the sharing of applied and soft skills knowledge that is embedded in the context and mostly tacit and implicit. Further, this resonated with the practitioners' preference to share knowledge in interpersonal interactions. Following the recommendations made in the knowledge management implementation literature, this finding informed the adoption of an appropriate knowledge management framework

aligned to organisational objectives and strategy of the EIS (Zack, 1999; Greiner, Böhmann and Krcmar, 2007; Dalkir, 2013). Specifically, the personalisation strategy of knowledge management (Hansen, Nohria and Tierney, 1999) was deemed suitable to facilitate interpersonal interaction and opportunities for practitioners to collaborate. Consequently, this informed the next action, whereby I assessed the existing Performance Knowledge activities and solutions in the EIS on whether they addressed these needs of the context (see Cycle 3, Section 6.4).

6.3.3.2 Organisational remit of Performance Knowledge

The findings highlighted the complexity of the EIS structure, specifically, the intricately linked relationships between multiple functions and departments in the EIS with the sports. This supported my preunderstanding of the context (see Chapter 4), that the EIS is a complex system within the hierarchy of the UK high-performance system. I observed that the EIS functions and organisational teams are inextricably linked and interdependent to create overall performance impact in sports. There is considerable overlap between teams and communities of practice across discipline and sport boundaries, which contributes to the flow of knowledge across the network. Subsequently, I reflected on and questioned the remit of the Performance Knowledge team being limited to the sport science discipline. This point was discussed with SMT2, the Director of Science and Technical Development:

> I don't think you can separate out the sports and the disciplines necessarily. If the institute shut down, then all the nutritionists will go and work as a nutritionist. They're not going to work as an athletics person. Or a swimming person. And equally the sports that you're embedded in create a part of your identity. It is critical I think from a professional standpoint that we encourage disciplinary depth. And we have high quality people in that area. But breakthroughs happen in the sport, they tend to, where the multidisciplinary team is working with a particular problem and they're forging ahead through the particular solution. I think there's real strength in us having the massive network that we have, that's in some way connected.

As a result, I questioned the underlying system dynamics of knowledge management practice in the EIS organisational structure (Burns, 2014a). Specifically, I reflected that

considering the overlapping nature of the different organisational functions, the flow of knowledge appears to be inter-functional, that is, between the organisational departments of Science and Technical Development and Performance Solutions. Furthermore, considering the EIS's intricate strategic partnership with the sports and the strategic objective of facilitating performance impact, it emerged that knowledge flows across the organisational boundaries, into the sports. On the other hand, the existing Performance Knowledge efforts were focused within the disciplines in the Science and Technical Development department on capturing and disseminating practitioner knowledge. It thus emerged that the existing Performance Knowledge efforts adopted a siloed focus onto one department in the organisational structure. This suggested an incongruence with the needs of the organisational context and subsequently emphasised the need for a systemic view of knowledge management practice (Flood, 1990; Rubenstein-Montano et al., 2001; Burns, 2007). This conclusion was resonated in HOPS1's comment:

> Practitioners operate in different teams (Figure 6.5) – discipline, sport, site and then the wider institute team. The challenge is that currently, Performance Knowledge tools are EIS specific, more so within the discipline.

Further, HOPS2 stated, highlighting the need for a systemic view of knowledge management practice:

> It makes me sad that some people still see us (EIS) as a recruitment agency for the sports. The system is set up as sport versus the EIS. Whereas, we should be seen as a strategic resource in the high-performance system. We are actively involved in developing the practitioners as they work in sports. So, I think seeing Performance Knowledge as capturing and storing knowledge is a very limited view. There is the whole other side of knowledge, the tacit bit, the experiences, practitioners' skills, etc. that gets missed.
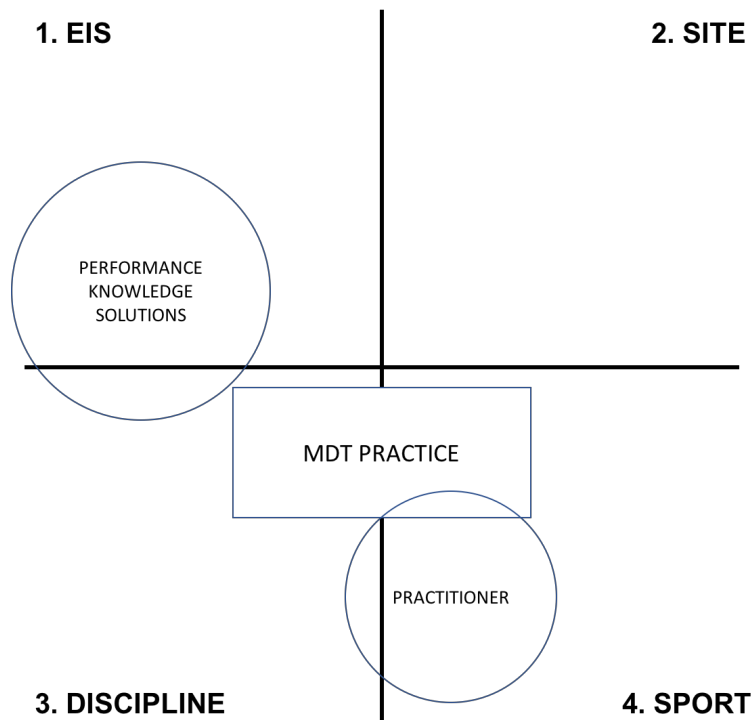
Figure 6.5: Matrix of the different teams that EIS practitioners operate in (MDT = multidisciplinary teams)

I thus identified the system wide collaboration across high-performance sport in the UK as a strategic value that the EIS is looking to generate. This further posed a strategic opportunity for Performance Knowledge to align with this value for the EIS, by facilitating knowledge sharing and collaboration across the system, between the EIS and the sports and enhancing the knowledge capability of the entire UK high-performance system. This finding points to the Political Approach in the implementation of knowledge management in organisations (Dufour and Steane, 2007; Section 5.2 of Chapter 5), which stressed that knowledge management implementation is a dynamic process, taking into consideration the wider political, social and economic structures and forces. Subsequently, I decided to conduct a further inquiry into the existing and future strategy directions of Performance Knowledge with the Knowledge Manager to explore the scope and possibility of extending the knowledge management efforts across the system.

6.3.3.3   Key terminology – knowledge and collaboration

The knowledge audit literature emphasises the need to align knowledge management practice to the strategic objectives and core business processes of the organisation

(Perez-Soltero et al., 2007; Yip, Lee and Tsui, 2015). Aligned to this recommendation, the KMR endeavoured to clarify working definitions of key terminology to identify the strategic significance of collaboration and knowledge sharing for the EIS. The findings highlighted that knowledge exists in three predominant forms, aligned to the EIS's strategic objectives of performance impact and practitioner development, namely technical knowledge, applied knowledge and soft-skills knowledge. It further emerged that the disciplines were implicitly engaging in a range of knowledge management efforts to facilitate the creation, capture, storage and sharing of all three forms of knowledge internally. This function is supported by the Technical Leads within each discipline, who are responsible for developing knowledge, mentoring and coaching practitioners and supporting their practice in the sports. HOS8 described the role of Technical Leads as:

> The first role of a Technical Lead would be teaching. You don't have the knowledge, I'm going to give you that knowledge and this is what it looks like. And that might be teaching, it might be signposting someone to get the information from. I think when you're a younger practitioner, the second area of technical leadership would be mentorship. And that would be more around, so you've got this knowledge but you've got no experience. But I have got some experience and together we can help bring those two things together and help your development. And then there is a third area, this coaching type and I think that tends to be the technical leadership interaction with the more senior practitioners. And that's one of either assuming you have the resourcefulness to answer the problem that you're faced with and I'm just going to help with getting your head around where you actually going to go with it. And that includes technical and non-technical problems. It also might include signposting knowledge … And then of course the final part, Technical Leads are the ones that go and do the research and trying to push the barriers and bring that knowledge back into the three areas. For me Technical Lead is the conduit in a discipline of developing new knowledge, aggregating internal knowledge, understanding the main problems, and then getting that somehow to the practitioner, either create a system whereby the practitioners know where they need to go to get that knowledge or by hook or by crook find some way to access it.

Heads of Performance Support perform similar functions with the sports, being focused on line managing a multidisciplinary team of practitioners as they provide sport science support aligned to the strategic needs of the sports. Consequently, I reflected that the Technical Leads and Heads of Performance Support are positioned as key conduits of knowledge, having an overview of the knowledge in the sports and disciplines. Thus, their roles can be optimised to connect the EIS and sports networks and facilitate collaboration between disciplines and sports. This reflection informed additional action to optimise the EIS's network of knowledge, discussed further in Section 6.5.
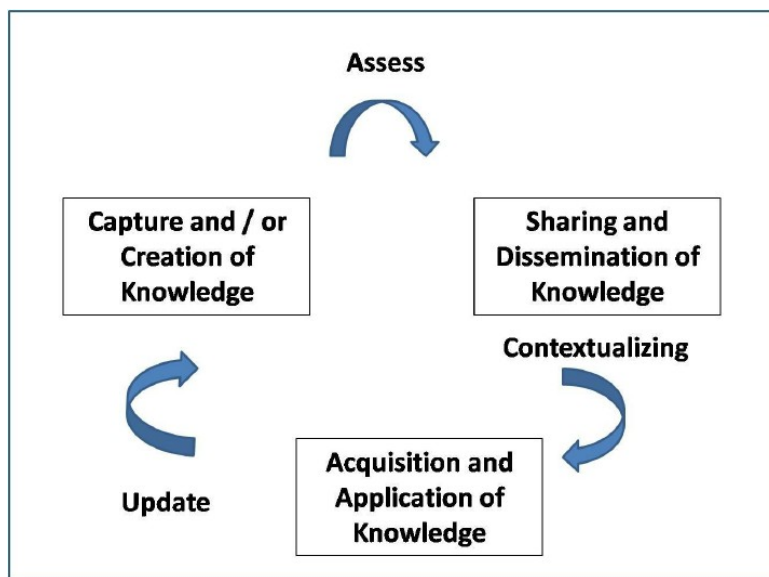
Figure 6.6 Integrated KM Cycle (Dalkir, 2005, pp.43)

Dalkir (2013) presented an integrated knowledge management cycle consisting of three major stages of knowledge capture and creation, knowledge sharing and dissemination, and knowledge acquisition and application (Figure 6.6). He discussed that knowledge flows through these stages in the cycle in order to create competitive advantage in the organisation. Specifically, new knowledge is created or acquired and assessed for its impact for the organisation, which is then shared and disseminated to the users who apply the knowledge in specific contexts. Application of knowledge leads to generation of new content, and so the cycle is reiterated.

Along this cycle, it emerged that knowledge creation, capture and acquisition is

currently achieved within the disciplines, where practitioners create new knowledge in the form of research, case studies and collaborative reflections and problem solving. Further, knowledge application is achieved by the multidisciplinary teams of practitioners in sports. A strategic need from Performance Knowledge is to promote knowledge sharing and dissemination, especially in cross-discipline and cross-sport teams to facilitate innovation, complex problem solving and maximum performance impact. This resonated with the findings from Cycle 2 where the participants emphasised collaboration, defined as practitioners working together in multidisciplinary teams to collectively solve problems and apply solutions to create performance impact. For example, HOS3, who was previously a Technical Lead as well as a Head of Performance Support, and thus had a more informed view of the network, stated:

> The strategic impact is across the network. I think sharing knowledge within the sport psychology discipline will make practitioners better sport psychologists. But that doesn't necessarily enhance the wider system. My belief on this is, we talk about working in multidisciplinary teams and we talk about working in interdisciplinary ways. I don't think that's done as well as it could be across the board. I think when we talk about that what we're actually talking about is we come together and we do planning and we meet regularly and we have conversations. Do we actually guide our interventions based on what's happening in S&C and what's happening in physiology? And do we actually collectively together for the athletes? I'm not sure we do.

I further discussed this point with HOPS1, who commented:

> If you look at the SECI cycle (Nonaka and Takeuchi, 1995; Model of Knowledge Conversion, Figure 6.7) I think, currently, there is too much emphasis on externalisation. We are focusing too much on capturing knowledge. And I think that's because the SMT doesn't understand what knowledge management is. I think knowledge management is all of this (Socialisation, Externalisation, Combination, and Internalisation). In the EIS, we need to also focus on the socialisation bit, which is where you can share the rich, context specific knowledge you need for complex questions.
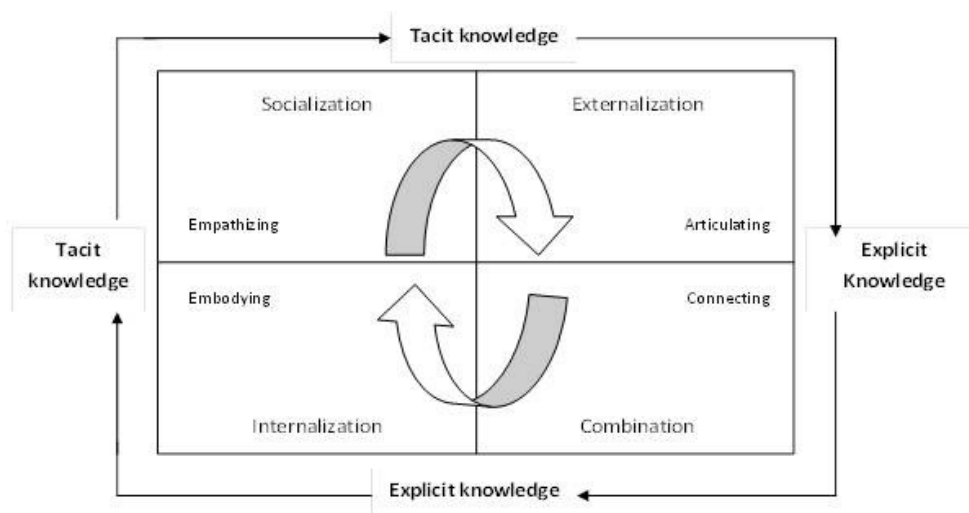
Figure 6.7 The Nonaka and Takeuchi Model of Knowledge Conversion (Nonaka and Takeuchi, 1995, pp. 62)

Furthermore, considering the contextual challenges of time constraints and predisposition of the practitioners towards interpersonal interaction, creating such a multidisciplinary practice culture would help integrate knowledge management processes in their working routines rather than appear separate obligations on their time. Subsequently, I fed back this reflection to the Knowledge Manager, emphasising the need to create enabling conditions and facilitate behavioural modifications that help increase practitioner engagement with Performance Knowledge. This recommendation was supported with literature highlighting the role of human and social factors in knowledge management practices (e.g., Hislop, 2003; Riege, 2005; Chen and Hung, 2010; Hislop, Bosua and Helms, 2018). Specifically, I discussed the need to define knowledge behaviours that are reinforced and referenced across the institute, facilitated by the managers in the form of role modelling behaviours, praise and encouragement. This recommendation was supported by SMT3, the human resource manager at the EIS:

> In terms of making it embedded in everybody's work, it's when they're having one to ones with their line managers, the knowledge part is not forgotten. It's on the agenda. It needs to be on every opportunity to be referenced. Because otherwise it will seem too specialist.

As part of our collaborative reflections on the findings from the review, the Knowledge Manager and I discussed the role of organisational culture on the practice of Performance Knowledge in the EIS. I discussed that the success of Performance Knowledge initiatives, especially the practitioners' engagement with KM systems and processes, would be influenced by the overall culture of the EIS (Intezari, Taskin and Pauleen, 2017; Figure 6.8). The Knowledge Manager, informed by his own experiences in the EIS and understanding of the KM literature discussed that he conceptualised culture as consisting of roles, processes and organisational structure. He stated:

> In terms of the structure, I have less control on that. I think the role of Performance Knowledge is to influence the KM processes in the disciplines and the knowledge roles and behaviours, whilst considering the characteristics of the EIS structure, such as movement of practitioners between sport and discipline, multidisciplinary teams within sport, geographical dispersion of practitioners, relationship with sports etc.

Consequently, this analysis had informed his ongoing action to define knowledge roles, responsibilities and behaviours of the practitioners, in collaboration with the HR team, which was proposed to be referenced consistently throughout the job design, interview and appraisal of practitioners.
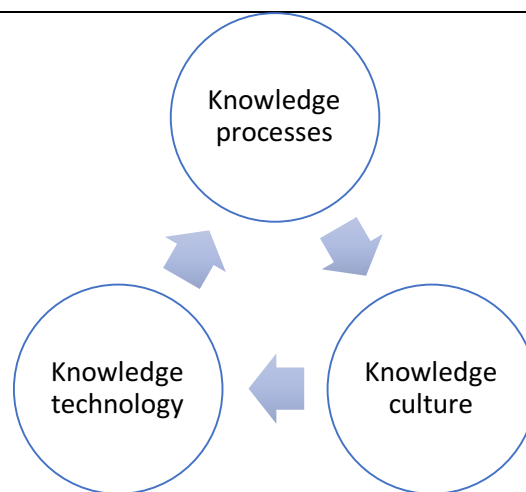
Figure 6.8 Elements of KM infrastructure and the relationships of each element

(Intezari, Taskin and Pauleen, 2017, pp. 494)

6.3.3.4 Strategic value for the EIS

The findings highlighted that the strategic need from knowledge management is to maximise performance impact by improving the flow of knowledge across the network, increasing the efficiency of sport science delivery and facilitating higher quality solutions for performance questions. In addition, by strengthening the EIS network, Performance Knowledge could create a two-fold impact for the sports and the practitioners. Within the external context (see Section 6.2.2.1), I observed that the EIS receives funding from the sports in exchange for the practitioners. The sports in turn often question their returns on investing in the EIS, rather than employing practitioners independently and often at a lesser financial commitment. In addition, the interviews highlighted resistance from certain sports in allowing their practitioners to share knowledge with the wider network. Subsequently, I concluded that the EIS network of expertise generates significant value for the sports. Specifically, SMT2 reflected:

> Sports can be really, well no I need my practitioner with me 24/7, how is going off to do CPD going to help me? But then at the same time saying, well what are we getting for our money? And it takes quite a mature sport to actually say okay we get this, buying into something bigger and we have got a part to play in this so we understand our physio won't be with us all the time. But when they're not with us, they can be part of a bigger network which is going to help us to be able to tap into expertise.

Similarly, SMT1 discussed:

> Part of the value of buying into the institute should be you're not just buying this guy, you're buying into an army of 78 physios and all their knowledge. There's massive value in that. Making sure that that's actually a genuine phenomenon rather than a nice little sound bite and a way to sell.

Subsequently, I reflected that Performance Knowledge would create significant impact by making the EIS network tangible and visible and by increasing the ease of access to the knowledge and expertise across the network. Specifically, this would help align

knowledge management efforts to the EIS's strategic stakeholder relationships as well as facilitate sport engagement with the knowledge sharing culture across the system.

On the other hand, informal conversations with the practitioners highlighted that despite the perceived low pay, they prefer working within the EIS than independently because of the access to the EIS network. However, due to the structural complexity, size and creation of silos, they often do not realise this value. Consequently, I reflected that making knowledge visible across the network would make it easier for practitioners to access the right knowledge at the right time, contributing to their professional development and performance impact.

I explicitly discussed this point regarding the value of Performance Knowledge with HOS2. We discussed that in order to increase practitioner engagement with Performance Knowledge, it should generate explicit value for them linked to their professional motivations of performance impact, practitioner development and learning. Further, he suggested that the existing Performance Knowledge efforts appeared to be favouring the EIS, with an emphasis on capturing knowledge to create a repository, and thus potentially safeguarding the institute from knowledge loss from staff turnover. This emphasis on knowledge capture and retention mirrors Ton and Huckman's (2008) finding that knowledge retention in the form of guidelines and standard operating procedures can safeguard the organisation against knowledge loss due to staff turnover. However, we discussed that, considering the knowledge intensive nature of work in the EIS, extraction of knowledge from the individual and the context would be difficult to accomplish. Further, he critically reflected upon the role of knowledge management in facilitating learning for the individual.

> Knowledge is totally individual. What I will learn and what I experience is totally contextual to me. You can learn from that but it's really difficult to capture. Also, we don't want to shortcut or fast-track people's learning because they have to go through it themselves. And as soon as you take it away from them, they lose an opportunity to develop themselves or to understand how they work within that environment. And that's the most important bit for me in Performance Knowledge. It's not the what, it's the how and the why. Knowledge is everywhere but why someone did something and how they went about it is

much more powerful than the actual methodology that they used. And that doesn't get captured at all … And about the continual capturing of that, my bit is for whose benefit is that? What is it that you really want to capture and what is it that you really want to share with the next generation? Are you trying to better the organisation or better the individual? Because that's the bit I am still struggling with. Do you better the organisation by bettering the individual? Or by going to trying to share it across with everybody, does that remove the individual? That balance … I'm not sure.

Using principles of social capital, organisational learning, collective learning and double-loop learning (Argyris and Schön, 1978; Nahapiet and Ghoshal, 1998; Baskerville and Dulipovici, 2006; Hislop, 2013; Swart and Harcup, 2013) I discussed the link between individual and organisational learning. I stated:

The literature on knowledge management is closely linked to organisational learning. So, that's one of the impact of knowledge management. Why engage in knowledge management? If you're enhancing individual learning, knowledge management practices would enable that to feed back into the organisation's learning. It's a cycle. Practitioners are constantly generating new knowledge from their experiences and developing their learning. When that learning is shared with the institute, in the form of collaboration, or group reflections, or changes in the way a practitioner delivers support, that feeds into the organisational learning. Then again, other practitioners can draw on that. So, I think it's a cycle and that flow of knowledge becomes very dynamic between the individual and the organisation. I suppose that is the strength of the network then.

This conversation resulted in an action adopted by HOS2 to maximise individual learning and practitioner development in the EIS, which is discussed in Section 6.4.

Integrated approach to KM (November 2016)
Drawing from the HOS team's feedback on the existing Performance Knowledge solutions, specifically Tallyfox, and from my observations in the context, I inferred that

the technological solutions have not gained sufficient engagement from the practitioners. I shared my inferences with the Knowledge Manager, that, primarily, such solutions do not align with the practitioners' predisposition for interpersonal interaction. I emphasised the integrated approach to KM implementation, highlighting the role of social and human factors in knowledge management (Hislop, 2013), and principles of organisational culture and change management (e.g., Alavi, Kayworth and Leidner, 2005; Kuipers et al., 2014). I discussed that technological solutions should be supported by defining the KM processes and roles and responsibilities of the people within the overarching culture and context of the institute, reflecting the integration of people, processes, technology and culture in knowledge management (Jashapara, 2011; Intezari, Taskin and Pauleen, 2017). Further, Alavi, Kayworth and Leidner (2005) discussed that organisational culture and values have implications for KM behaviours and outcomes. For example, a culture that values sharing, open communication and trust will lead to positive KM behaviours. Thus, implementation of KM tools, systems and processes should be supported with conducive cultural enablers for positive KM behaviours. Further, the adoption of KM systems and technologies, as well as specific KM outcomes will be shaped by organisational and individual values, and thus these factors should be considered in the design and implementation of KM initiatives.

Moreover, I discussed that implementation of Performance Knowledge as a cultural value is a long-term process, borrowing principles of change management in organisations (Kuipers, et al., 2014). Specifically, Kuipers et al.'s literature review highlights five factors in implementing change – context, content, process, outcome and leadership. Context refers to the internal and external environment of the organisational. Content refers to the strategies, systems, and processes that form the content of the change. Process refers to the implementation of the change and outcome refers to the experiences, behaviours and attitude involved in the change. Finally, leadership refers to style of leadership that drives the change. We discussed that in order to implement change in a robust manner in the EIS, each of these factors should be considered. Within Performance Knowledge, this would be operationalised by clarifying the strategies and processes that are to be implemented, considering the overall EIS context and defining the practitioners' knowledge behaviours, task roles

and responsibilities through which they would engage with the KM strategy. These behavioural competencies would in turn be referenced throughout the organisational journey of a practitioner, including the job description, interview, induction and PDRs (planning, development and review). Finally, implementation of change would be driven by the senior managers and supported with organisational values characterised by positive social interactions, recognition, encouragement, trust and respect.

6.3.3.4   Conclusion

Overall, a series of participatory interviews were conducted in this action research cycle, aimed at collectively reflecting on the practice of knowledge management in the EIS, and influencing the participants' learning and thereby their practice. As already identified in this section, the discussions informed actions by the participants, which will be discussed in the following sections. Further, drawing from my reflections on the context, I followed three further lines of inquiry. Firstly, I proposed to further explore the ways in which the roles of Technical Leads and Heads of Performance Support could be optimised to facilitate knowledge sharing across the network. Second, I proposed to identify the individual knowledge management needs of the disciplines to align Performance Knowledge efforts and optimise the existing processes to create value. Finally, I proposed to conduct a gap analysis with the Knowledge Manager. Specifically, I conducted a thorough assessment of the historical evolution, current strategy and future direction of Performance Knowledge against the strategic needs highlighted by the senior management to identify opportunities for improvement.

Individual KM needs of the disciplines (January 2017)

I shared these conclusions with the Knowledge Manager, specifically expressing a need to conduct a further inquiry into the strategic needs and existing KM processes in each discipline. I discussed that the findings from Cycle 2 indicate that each discipline has individual KM needs as well as individual differences in working and communication styles, informed by the type of knowledge and nature of support predominant within the discipline. For example, the psychology discipline that predominantly shares individual and context specific knowledge in interpersonal interactions, expressed a need to improve their knowledge capture capability. On the other hand, the biomechanics discipline, which is considerably smaller in size,

expressed a need to disseminate knowledge to the wider network to demonstrate their impact. The EIS is thus a complex system of systems (Ladyman, Lambert and Wiesner, 2013), whereby each discipline has their own strategic needs and objectives, aligned to the overall EIS objectives. I discussed that whilst it is imperative to define a consistent strategic purpose of Performance Knowledge, considering the complexity of the EIS system, it is also important to allow sufficient flexibility to operationalise and implement KM initiatives aligned to the individual needs of the disciplines. I used the phrase "consistency of messages, but flexibility of operation" to reinforce this focus. Thus, I proposed that the next phase of the review would focus on identifying the strategic needs from Performance Knowledge for each discipline.

Cycle 2 also highlighted that considering the knowledge intensive nature of the EIS functions, the disciplines have a series of existing knowledge related processes in place, designed themselves in response to their needs. Further, each discipline has its own structure and operations through which they mentor and coach practitioners, and share case studies and research findings to support their practitioners in delivering sport science support in sports. I proposed that in addition to identifying the strategic needs, I would explore the existing structure and processes of each discipline. I reasoned that by doing so, Performance Knowledge can identify opportunities to align with or optimise the existing processes so as to embed KM initiatives in the daily routine of the discipline and enhance their sustainability.

6.3.4 Learning

Drawing from the principles of action research, I emphasised participation and critical self-reflection within the interviews (Reason and Bradbury, 2006; Kemmis, McTaggart and Nixon, 2015). Specifically, I explicitly stated that the interviews were designed to understand their experiences, opinions and suggestions, and to collectively debate on the practice of knowledge management in the EIS. I clarified that the purpose of this approach was to highlight their needs and feedback to align knowledge management initiatives, aimed to help the EIS, rather than simply gather data for the research project. The interviews provided them with an opportunity to clarify their understanding of the principles of knowledge management, enhancing their engagement with the process and embeddedness of these principles in their practice. Furthermore, they

appreciated the participatory and collaborative nature of the discussion that focused on their needs and suggestions regarding knowledge management initiatives. This again enhanced their engagement in the review inquiry and provided them with a sense of ownership over the subsequent knowledge management initiatives. Reflecting positively on the experience, HOS2 commented:

> I really enjoyed chatting through our thoughts. You asked some really good questions that made me think. Sounds like we have similar ideas around knowledge management.

Further, following principles of systemic action research, I emphasised resonance rather than representativeness (Burns, 2014a). Specifically, each interview discussion was informed by the previous whereby I contributed new insights or asked additional questions framed by a previous conversation or understanding of the literature. As a result, I progressively developed an understanding of the complexity of the EIS context and knowledge management practice therein. In this way, I gathered insight into the challenges in the context for knowledge management implementation, interlinked and overlapping in the wider context of the EIS and the UK high-performance sport system.

As I progressed through the interviews, I reflected that my perceptions regarding a knowledge audit had evolved. In the wider knowledge audit literature, the audit findings have been used to inform individual and discrete solutions or recommendations for the knowledge management strategy aimed at addressing individual needs and alleviating barriers in the context. Operating under the outcome driven context of the EIS, I was conscious that it expected practical solutions as the output of the inquiry. I exercised considerable patience and resolve to continue asking questions to facilitate critical self-reflection for the discovery of systemic solutions, rather than providing practical solutions. Owing to the maturity of the institute in understanding the philosophical debates on knowledge management, there was considerable resonance for the need to integrate knowledge management efforts into the culture and working routine of the EIS. HOS2 discussed the ideal scenario of a successfully implemented knowledge management strategy:

> I think the evidence, that we know that it's really working is that the discipline

(Performance Knowledge) doesn't exist anymore, if I'm being totally honest. If it is innate then yes, you'd almost have the position redundant or it'll be much more of a lighter touch to it. And everyone is naturally just doing it.

I observed that our collective debates and reflections on the practice of knowledge management influenced some of their learning, resulting in embedding the principles in their practice and initiating actions within their teams. I reflected that such actions, initiated and owned by them, would help enhance the sustainability of the knowledge management initiatives and align strategically to the needs of the context, providing maximum advantage. This highlighted the significance of the participatory approach to organisational decision making emphasised by the action research approach (Pasmore, 2006). Subsequently, my perception of the purpose of the knowledge audit evolved from a strategic planning approach to conducting an evaluation to provide practical solutions, to conducting an ongoing review of the context and knowledge management practice to facilitate systemic solutions aimed to change the way the organisation engages with knowledge management.

Table 6.4 presents the actions and thematic analysis of findings from action research cycle 2.

Table 6.4 Thematic analysis of action research cycle 2: Organisational context

Action	First order theme	Second order theme	Quote/observation
Ongoing observations and conversations (Ongoing Review)	EIS context	Dynamic and continuously changing	Multiple changes in organisational structure introduced during an Olympic cycle, for example, introduction of Performance Solutions and Performance Knowledge functions (observation, EIS Annual Report 2014)
		External forces	Majority of employees are preoccupied during Olympic and Paralympic Games and other important events, resulting in gaps in internal practice (observation)
		Complex structure	Interconnected of practice of different departments, that is, Performance Solutions and Technical Development overlap on developing knowledge and its application in sports (observations)
		Sport focused culture	Practitioners are immersed in the sport with the number of hours they spend in the sport. I think they identify with the sport first, discipline

		Culture of sharing	Core values of collaboration, innovation and excellence (EIS Annual Report 2011- 2015)
		Knowledge intensive	Disciplines implicitly engage in knowledge management activities, for example, mentoring, multidisciplinary practice, CPD, case studies (observation)
	Current Performance Knowledge practices	Limited remit	Performance Knowledge limited to one department in the EIS whilst knowledge, practice and practitioners operate in multiple teams (observation)
		Multiple, incomplete solutions	Multiple solutions introduced that get neglected in order to pursue another solution for quick wins (observation)
		Limited understanding of contextual challenges and needs	Current efforts emphasise selling new solutions rather than addressing emergent needs in the context (observation)
Interviews (Focused Review)	Why knowledge management?	Build, maintain and access high-performance network	I think the strategic impact is across the network. I think knowledge sharing within psychology will make practitioners better psychologists. But that doesn't necessarily enhance the system (HoS3)
		Practitioner development	Isn't knowledge management then about asking better questions and helping people learn? (HoS2)
		Performance impact	We need to do a better job of developing knowledge and then make sure that knowledge gets passed to the people on the ground for greater performance impact (Ex-EIS1)
		System efficiency	It's about capturing, sharing and growing knowledge to become more efficient. A lot of work sometimes is repeated or gets lost. For me it's about harnessing the power of people (HoS4)
		Richness and quality of knowledge	Everyone can't have all the answers. But all of us have something to contribute and when you combine that it just adds to the quality of the solutions that emerge (SMT6)
		Legacy	We have such a high turnover and when people leave the knowledge is lost. So how can we build a legacy? (SMT2)
		Multidisciplinary practice	It's about putting the best collaborative structure in place so people can come together, share problems, collaborate and create solutions in a really efficient and simple way (HoS5)
	External context	Clash with sport expectations	So, whilst the practitioner might want to do it (CPD and knowledge sharing), the sport might say I pay you to be with my athletes. I think

			that's a challenge we will continue to face (HoS6)
	Sport focused culture		I think EIS does more often than not attempt to make sure sports are happy (Knowledge Manager)
	Culture of sharing across system		I think the biggest impact will be from increasing collaboration between sports and between sports. So really creating those opportunities across the system (SMT2)
Internal context	Complex structure		You've got so many team structures – the regional or site specific teams, your discipline and then the sport. I think we are very aware that we are trying to pull practitioners in multiple directions (Ex-EIS1)
	Challenges of time and pay		These people are working 16-19 hours a day regularly and spending a lot of time away from home, under a lot of pressure and for not a lot of money. And then we're saying you need to give back. That's difficult because they give a lot already (HoS3)
	Siloed working		Because there are so many disciplines and teams, work often takes place in small pockets. So, you have a lot of duplication and reinventing the wheel (SMT2)
	Size and geographical dispersion		The difficulty is the spread of practitioners. They can be quite isolated (HoS4)
Cultural values and strengths	Collaboration culture		When I have seen the strategy going forward, capturing knowledge, sharing, collaboration these are key words that sit across a lot of the different plans (HoS1)
	Learning culture		I think there is a culture of learning. People are passionate for high performance sport and they want to learn and develop (HoS8)
	Positive attitude		People are selfless as opposed to selfish. They are prepared to look over their shoulders to help people progress even if there isn't a gain for themselves (SMT1)
	Feeling valued		The big thing is 'what it takes to win' at the moment. It really doesn't matter where you are positioned in the organisation, everything you do contributes to 'what it takes to win' (SMT1)
	Acknowledge the value of knowledge management		There is definitely a strategic impact. The unique thing for the EIS is we have a lot of people from different backgrounds and with different knowledge. It's like the economies of scale, rather than reinventing the problem, if they come together it will be more effective (HoS7)
Strategic needs	Facilitate learning and		I don't see KM as a process. For me it's about learning to ask the right questions. It has to be

	people development	attached to the people development strategy (HoS2)
	Build a network of expertise	Part of the value of buying into the EIS should be that you're not just buying this guy, you're buying into an army of 78 practitioners and all their knowledge. Making sure that's actually a genuine phenomenon rather than a nice little sound bite (SMT1)
	Maximise competitive advantage and performance impact	It would increase and enhance the rigour of what they do because having three people work on something will be slightly more rigorous than you working alone (HoS3)
	Emphasise on collaboration	The real impact would be collaboration, really simple and efficient, between disciplines and between sports. For examples, there might be commonalities between cycling and athletics so understanding that and sharing that across (HoS4)
	Emphasis on tacit knowledge	I can't think of anyone who's asked to leave because they didn't have enough technical knowledge. But I know some people have been asked to leave because they couldn't apply themselves in the environment (HoS7)
Feedback on Performance Knowledge implementation	Embedded in practice	I think if it was working really well, in an ideal world, you would almost not have a separate function (of Performance Knowledge) (HoS6)
	Culture of sharing and collaboration	You'll know it's working if it's just everyday language around the institute (HoS2)
	Not top-down	People will always respond well if it's done with them, not to them (HoS5)
	Simple and efficient	And do that in a simple and effective way. It's got to be, whatever it is, it has to be real simple because people won't engage with it unless it is (HoS4)
	Shaping behaviours	Our role as technical leads is to encourage them to share and role model behaviours and kind of letting them see the benefits of doing that (HoS3)

Figure 6.9 depicts systemic mapping of action research cycle 2 incorporating the actions (green) and higher-order themes (blue) depicted in Table 6.4. The figure also depicts the actions that emerged from the collaborative inquiry and sensemaking with the Knowledge Manager to be implemented in the EIS beyond the KMR and this research project (described further in Section 6.5).
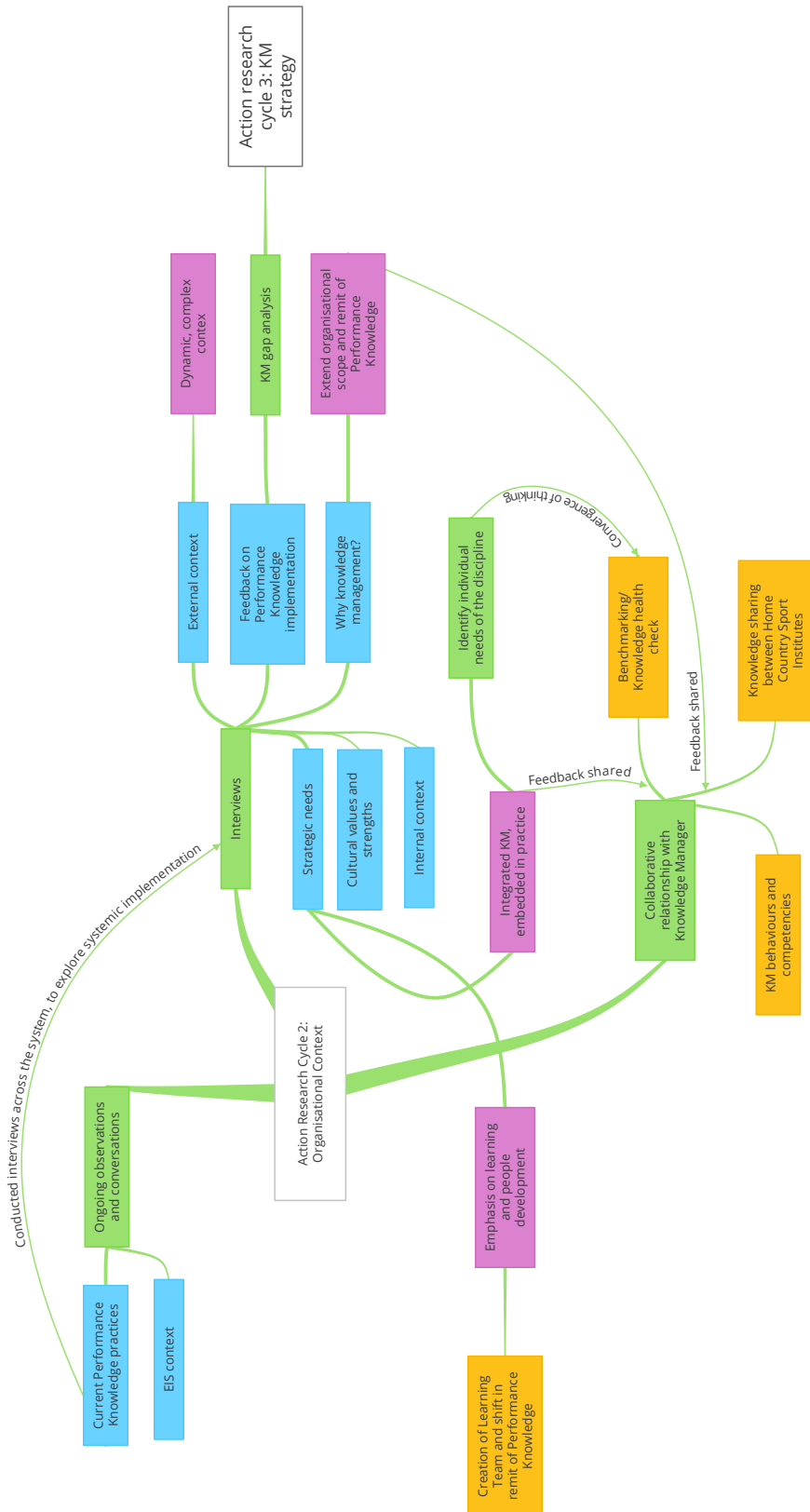
Figure 6.9: Thematic analysis of Cycle 2 (actions in green, themes of findings in blue, reflections in purple, systemic actions in yellow)

6.4 Action research cycle 3: KM strategy (January 2017 – April 2017)

6.4.1 Actions

Following the reflections from Cycle 2, I proposed to conduct a gap analysis of the Performance Knowledge strategy with regards to the strategic needs and context of the EIS. The review inquiry in Cycle 2 was conducted to identify the strategic needs and explore the wider context of the EIS. This insight proposed to facilitate strategic thinking about the future direction of the EIS's knowledge management strategy. The objective of Cycle 3 was to conduct a participatory and collaborative discussion with the Knowledge Manager on the historical evolution, present focus and future direction of Performance Knowledge as it relates to the strategic needs and complexity of the EIS. Findings and insights from Cycle 2 were considered to facilitate systemic change in knowledge management practice. Specifically, I used Burns' (2007) storyboard approach, whereby I used systemic maps to present the key resonance and issues identified in Cycle 2, and how they interact within the complex context of the EIS and the wider UK high-performance system.

6.4.2 Outcomes

6.4.2.1 Performance Knowledge: Past (September 2013 – December 2015)

The Knowledge Manager revealed that Performance Knowledge was established with the aim of practitioner development and enabling performance solutions, "informed by the collective expertise of the EIS, allowing best decisions to be made, develop people and improve performance." He discussed that an early expectation from Performance Knowledge was to capture knowledge and expertise from the practitioners and develop repositories for aiding knowledge transfer and safeguarding the institute from loss of knowledge due to high turnover of staff. As a result, early Performance Knowledge efforts had a strong technological emphasis, focused at developing systems to manage knowledge resources. However, these failed to be successful due to time constraints and lack of financial resources to develop efficient systems.

Consequently, the Knowledge Manager spent a considerable amount of time assessing the disciplines' individual needs from Performance Knowledge and specific challenges and enablers to design specific solutions. A series of solutions were introduced, such as, case studies, group reflections, capturing knowledge using

different formats and forums for knowledge sharing but these failed to become sufficiently embedded in the disciplines. The Knowledge Manager discussed that a key challenge in knowledge management implementation was the high staff turnover, due to which Performance Knowledge efforts needed to be recommunicated to the EIS staff frequently.

Finally, the Knowledge Manager assumed the responsibility of conducting a poster session annually at the EIS National Conference. The session facilitated knowledge sharing by enabling practitioners from across the disciplines and sports to present research and case studies. The poster session has been successful, receiving increasing number of posters every year and helps increase awareness of the knowledge and work taking place across the network. In addition, during the National Conference 2015, I observed that the session successfully facilitated interpersonal conversations and discussions where the conference attendees could ask questions, initiate multidisciplinary practice and share knowledge. The success of the poster session further alludes to the practitioners' preference for sharing knowledge in interpersonal interaction.

6.4.2.2   Performance Knowledge: Present (January 2016 – February 2017)

Thereafter, the Knowledge Manager discussed the ongoing plans for Performance Knowledge. Primarily, the focus was on continuing the implementation of Tallyfox across the network. Additionally, the Knowledge Manager was working in collaboration with the human resources team to integrate Performance Knowledge tasks and responsibilities into the job specifications, practitioner competency framework, induction and staff PDRs. Finally, he proposed to improve collaboration between EIS and other Home Country Sport Institutes in Scotland, Wales and Northern Ireland.

Lessons learnt from Performance Knowledge implementation (January 2017)

The Knowledge Manager discussed that the initial emphasis on technological solutions reflected the SMT's limited understanding of knowledge management and insistence on collecting and capturing knowledge. Thereafter, he spent considerable time and effort in "selling" Performance Knowledge to the practitioners and demonstrating the value it is generating to the SMT. This was reflected in the specific

Performance Knowledge solutions during this phase as well as his personality in general. I asked him what he had learned from the initial years of Performance Knowledge. He commented:

> I did a lot of work in the background, trying to develop a strategy. At the same time, trying to identify quick win solutions. I spent a lot of time telling people what I do and what it's all about. And with the disciplines identifying what they need.

He reflected that he "did too much, too soon", without sufficient manpower or resources. Moreover, he faced challenges in the form of staff turnover, which affected the implementation of Performance Knowledge solutions. He further shared that he had since received feedback from the SMT that the focus of Performance Knowledge should become more streamlined onto one or two critical solutions that create maximum impact, aligned to the strategic needs of the EIS, rather than attempting to implement multiple solutions across the system.

6.4.2.3 Performance Knowledge future – March 2017 onwards

The Knowledge Manager discussed that his perception of Performance Knowledge's remit has since evolved. Informed by the feedback from the SMT, Performance Knowledge would now narrow its focus on to one or two key processes. Further, he discussed that in the initial phase, there was a heavy emphasis on technology and knowledge capture. He now perceived his role as emphasising the development, implementation and governance of a Performance Knowledge strategy, consisting of elements of people, processes, technology, governance and internal communications. Subsequently, he identified tasks and activities within each element, indicating an integrated approach to knowledge management implementation. Further, he discussed that Performance Knowledge would focus on conducting internal benchmarking of each discipline to identify their needs and align Performance Knowledge initiatives.

Implementation of Performance Knowledge (March 2017)

The Knowledge Manager and I collectively discussed and reflected on the practice of knowledge management in the EIS. I questioned his approach to "selling" and promoting Performance Knowledge as a strategic function that can generate value for the EIS. We agreed that the EIS overall acknowledges the value of knowledge management. Yet, they perceive Performance Knowledge as an additional function that they are mandated to engage with, rather than a process that facilitates knowledge management aligned to their needs. I proposed a more integrated approach where Performance Knowledge initiatives become aligned to and facilitate the ongoing strategic functions and operations in the EIS. For example, in the proposed benchmarking activity, I suggested that the focus could be on optimising the existing processes in the disciplines using KM principle.

6.4.3 Findings

As the Knowledge Manager discussed the historical evolution and future direction of Performance Knowledge, I identified certain gaps in its focus and remit, in relation to the needs of the EIS as identified in Cycle 2. Primarily, it emerged that Performance Knowledge adopted a reductionist approach to knowledge management implementation, emphasising a series of individual and unconnected solutions. These appear to be implemented in response to the individual needs of the context and with an aim to create immediate impact and raise visibility of the Performance Knowledge function. Consequently, as a new need or opportunity for knowledge management implementation arises, new Performance Knowledge solutions are introduced, often at the cost of the previous ones. Further, I observed that the Performance Knowledge solutions lack a systemic view of the various challenges and factors operating in the context in their design and implementation, thereby affecting their success, mirroring the approach followed in the existing knowledge audit literature (Cheung et al., 2007; Burnett, Williams and Illingworth, 2013; Yip, Lee and Tsui, 2015). The existing knowledge management efforts in the EIS thus appeared to lack a strategic, long-term approach to knowledge management implementation. Resonating with Mintzberg's (1994) critique of strategic planning, I inferred that such a solution driven approach to knowledge management implementation adopts a formalised plan with a view of intended outcomes. It further fails to acknowledge the ongoing changes in the dynamic context, rendering such plans redundant during the course of the implementation.

Further, preunderstanding of the context and the focused inquiry in Cycle 2 highlighted the interconnectedness of the organisational functions. However, the Performance Knowledge remit and initiatives do not mirror this interconnectedness and complexity. The inter-functional flow of knowledge across the organisational structure and sports suggests that isolating sports from the disciplines would impact success and integration of knowledge management practice. The Knowledge Manager acknowledged the need to raise awareness and appreciation for Performance Knowledge in sports. Subsequently, he decided to extend the benchmarking activity across all partner sports of the EIS.

> ### Strategic recommendation for the EIS (January 2017)
>
> I reflected that the limited remit of Performance Knowledge in the EIS was inconsistent with the strategic needs of the context, especially considering the complexity and interconnectedness of functions. In order to facilitate change in the underlying system dynamics of knowledge management practice in the EIS (Burns, 2007, 2014a), I proposed extending the remit across the organisational structure, aligned to facilitate the ongoing organisational functions. Further, I facilitated critical, collaborative reflections with the Knowledge Manager to challenge the assumptions about future knowledge management practice aligned to the dynamic context, thereby reinforcing a critical view of practice.

Finally, I concluded that the EIS network of expertise is a missed opportunity that could potentially create maximum competitive advantage for the high-performance system. Specifically, Cycle 2 highlighted that the network of practitioners and their knowledge and expertise is the strength of the EIS, potentially generating value for the sports and the practitioners. For instance, sports employ EIS practitioners because of the potential value of the network in facilitating their professional development and applied practice in sports. Similarly, despite low pay, practitioners continue to work at the EIS because of the potential value they stand to derive from opportunities for knowledge sharing, collaboration and learning in the network. This was evidenced in the following quote from a conversation with a practitioner:

I think the reason why the sports and the practitioners buy into the EIS is

because of the network. The sports are paying for the network and they expect us to utilise it. But I feel like that we as practitioners don't make use of it enough. Whether that's because there's not the right vehicle there for us to do that or whether we're not prioritising it enough, maybe we're not utilising it enough, it's difficult to say.

I reflected that Performance Knowledge as the knowledge function of the EIS is suitably equipped to highlight and optimise this network to realise its value. Subsequently, I reintroduced the idea of the social network analysis, with a more strategic focus, to study and optimise the EIS network. This action is explained further in Section 6.5.

6.4.4 Learning

Overall, I could witness the strength of the collective and participatory nature of inquiry in this cycle. I observed that the focus and emphasis of Performance Knowledge had evolved, where the Knowledge Manager and I had started using similar language to describe its purpose and value. Facilitated by the collaborative conversations between us throughout the review process, the Knowledge Manager had started implementing some of the systemic solutions and suggestions that emerged out of the review inquiry, such as, streamlining the focus of Performance Knowledge, integrating solutions into the existing processes of the disciplines and extending its remit into sports. Thus, I concluded that the participatory approach to inquiry and critical self-reflection in the review facilitated change in the practice of Performance Knowledge simultaneous to the inquiry in an integrated and embedded manner.

The storyboard approach was instrumental in presenting the overlap and interdependence of issues in the context in a tangible manner. As I constructed the storyboards (e.g., Figure 6.8), it helped clarify my understanding of the issues. Further, the Knowledge Manager contributed with his own storyboards to illustrate his understanding of the context and the evolution of Performance Knowledge (Figure 6.9). Thus, collectively and in a tangible manner we could align our understanding of the issues and factors to be considered in the practice of knowledge management in the EIS. Primarily, the immediate focus of Performance Knowledge was defined as the design and implementation of benchmarking across sports and disciplines,

whereby I collaborated with the Knowledge Manager and contributed my insights from the review. This action is described further in Section 6.5.
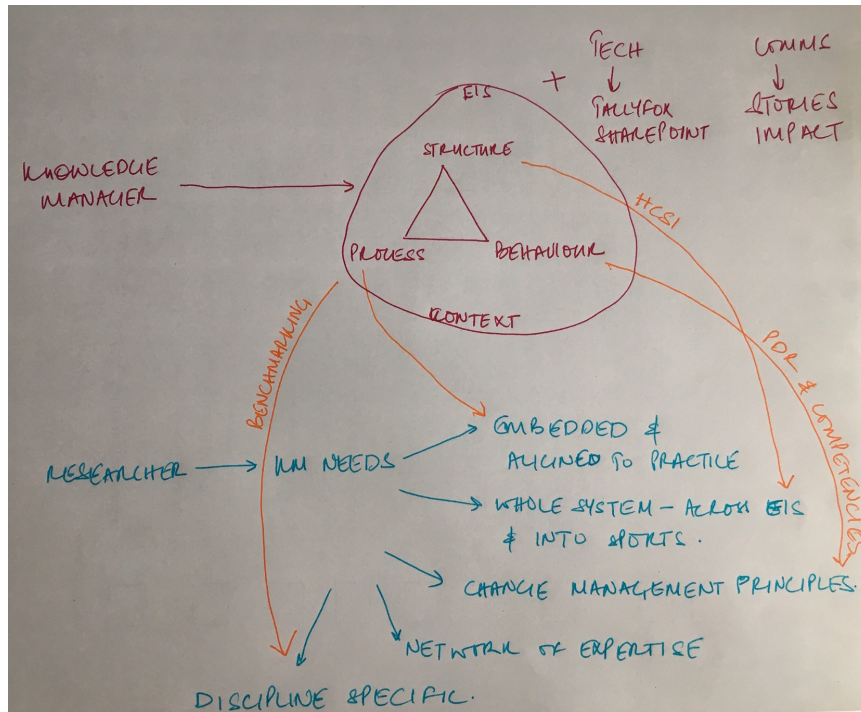
Figure 6.10: Example of storyboard to understand practice of Performance Knowledge
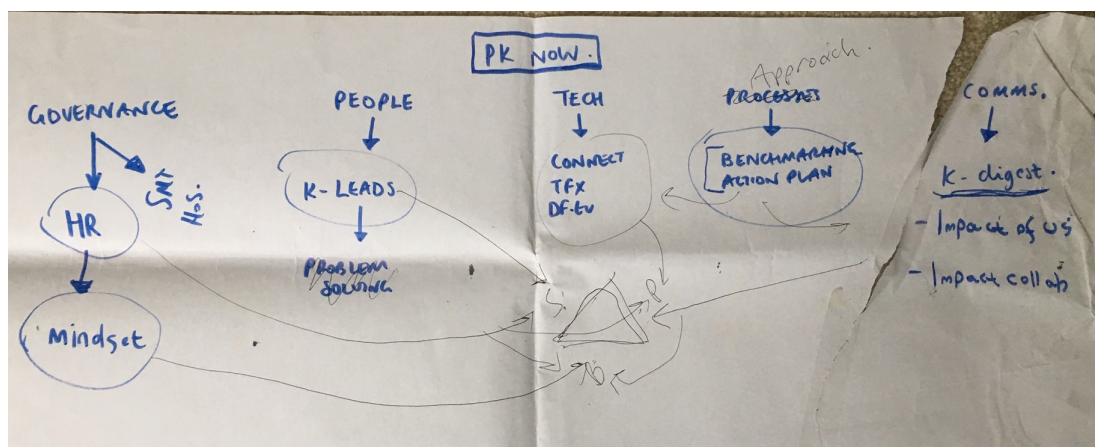
Figure 6.11: Performance Knowledge present

Table 6.5 presents the thematic analysis of findings from the gap analysis of the EIS knowledge management strategy conducted in action research cycle 3 with the

Knowledge Manager.

Table 6.5 Thematic analysis of Action research cycle 3: KM strategy

Action	First order theme	Second order theme	Quote/observation
Gap analysis with Knowledge Manager	Performance Knowledge - past	Knowledge repository and legacy	Early expectation was to capture knowledge and expertise and build repositories to help knowledge transfer. There was an acknowledgement that when people leave, they take the knowledge with them, so we wanted to prevent knowledge loss (Knowledge Manager)
		Technological solutions	Tallyfox, Microsoft SharePoint, expertise matrix (observations)
		To aid performance solutions and decision making	The aim was to support practitioner development and enable performance solutions informed by the collective expertise of the EIS, allowing best decision to be made, develop people and improve performance (Knowledge Manager)
	Performance Knowledge - present	Multiple KM activities	Tallyfox within disciplines, Knowledge Portal for sharing knowledge between Home Country Sport Institutes, PDR and knowledge competencies with HR team (observations)
	Performance Knowledge – future	Integrated approach	I see my role as development, implementation and governance of the KM strategy consisting of elements of people, processes, technology and internal comms (Knowledge Manager)
		Internal benchmarking	Here in sports we all love a bit of competition. I want to now emphasise benchmarking how each discipline is performing on KM and how we can help improve their individual performance (Knowledge Manager)
		Critical thinking	I have certainly become more critical about this. I am constantly checking in with what the SLT want. In the future, they want me to focus on doing one or two things really well (Knowledge Manager)

Figure 6.12 depicts systemic mapping of action research cycle 3 incorporating the actions (green) and higher-order themes (blue) depicted in Table 6.5. The figure also depicts the actions that emerged from the collaborative inquiry and sensemaking in the context to be implemented in the EIS beyond the KMR and this research project (described further in Section 6.5).
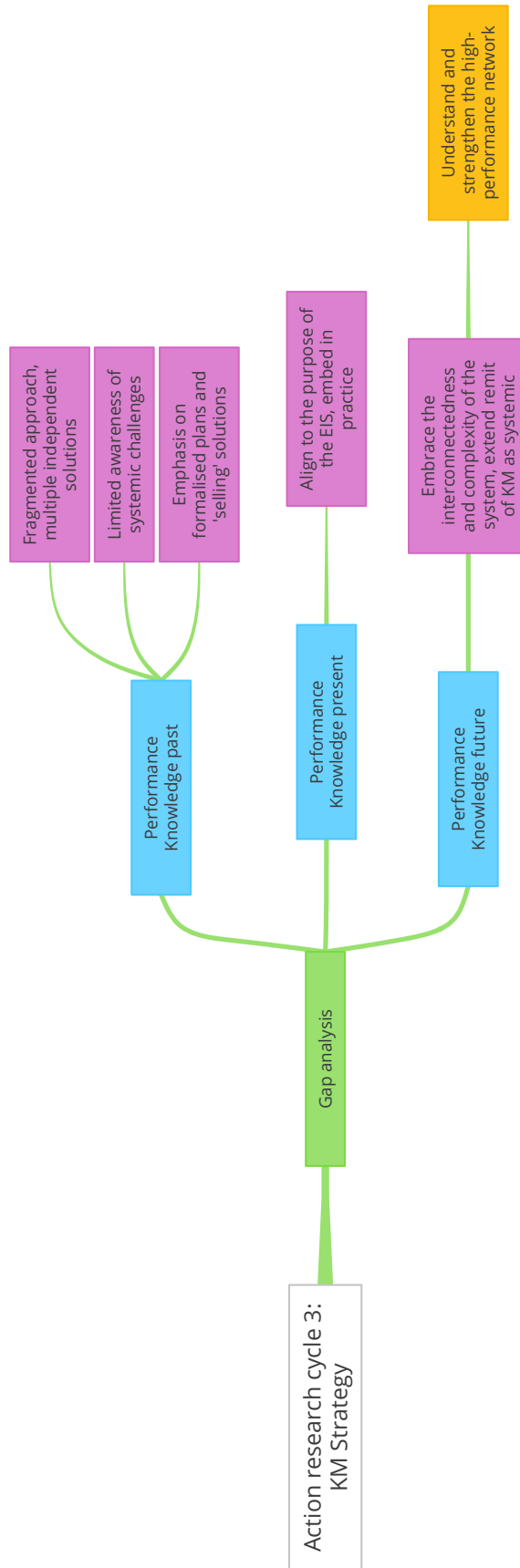
Figure 6.12: Thematic analysis of Cycle 3 (actions in green, themes of findings in

blue, reflections in purple, systemic actions in yellow)

6.5 Design and implementation of actions (March 2017 – May 2018)

This section presents three predominant actions that emerged out of the participatory and collective inquiry of the knowledge management review in the EIS, namely the benchmarking process, the social network analysis project and evolution in the remit of Performance Knowledge.

6.5.1 Benchmarking

The Knowledge Manager and I continued our collective reflections and debates on the practice of knowledge management in the EIS, whereby he contributed his experience of working within the EIS with the SMT and the HOS, and I contributed the analysis from Cycles 1-3 as well as critical insights from the knowledge management literature. In Cycle 3, the Knowledge Manager stated that the strategic focus of Performance Knowledge going forward would be to conduct benchmarking of each discipline. Benchmarking is a knowledge management metric used in the practice of knowledge management to identify best practice in the industry and transfer that to facilitate improved performance (Dalkir, 2013). Specifically, the Knowledge Manager proposed to conduct internal benchmarking to compare disciplines' performance on Performance Knowledge tasks against each other as well as with themselves over a period of time. Consistent with the competitive orientation of the sport context, the benchmarking process was designed to encourage disciplines to set targets for improvements in knowledge management practice. The Knowledge Manager discussed that this decision was informed by a complex mix of SMT's feedback, his own understanding of the context, various conversations with the EIS employees and the insights contributed by the review. In my capacity as a Performance Knowledge team member, he shared with me his proposed plans for the benchmarking process. In addition, he invited me to offer feedback and insights to inform the design of the process, thereby incorporating the findings from the review.

The Knowledge Manager proposed to conduct benchmarking of each discipline to identify their strategic needs from Performance Knowledge and design an action plan for knowledge management implementation. Specifically, he discussed that the process would focus at defining an integrated approach to knowledge management

implementation, incorporating factors such as governance, processes, technology and people (Jashapara, 2011; Intezari, Taskin and Pauleen, 2017). A specific emphasis would be on optimising the existing processes and structures to affect behavioural change in engaging with knowledge management processes.

The Knowledge Manager's proposal for the design and implementation of the benchmarking tool overlapped with my plans for subsequent inquiry in the review, specifically exploring the respective strategic needs and existing processes of the disciplines. This suggested convergence in our understanding of the direction of knowledge management practice for the EIS. As a result, I decided to merge the review inquiry within the benchmarking tool. In addition, the Knowledge Manager encouraged me to attend all benchmarking meetings.

However, whilst the Knowledge Manager intended the benchmarking process to define practical solutions and action plans for each discipline, I continued to emphasise the systemic and participatory approach to inquiry to inform change in a sustainable and embedded manner. Showing a sense of urgency to implement the benchmarking tool, the Knowledge Manager commented:

> … To be honest, I can't wait for the research process to end to be able to use the findings. I want to crack on, just get on with it. Also, we spend too long worrying about funding … This is what we need to do now. For me, this is the Performance Knowledge strategy now. There's a lot of work out there where people have described what a context is and what the needs are, but so what? I want us to actually do something with those findings and I have identified that this is the best way to proceed.

Consequently, during February – April 2017, the Knowledge Manager and I collaborated to design the benchmarking process, integrating our proposals for the inquiry. Primarily, we discussed how the benchmarking tool would mirror the review process, drawing from its principles of practice. Specifically, the benchmarking tool would be conducted in a collaborative manner with the discipline to facilitate critical reflections regarding the integration and implementation of Performance Knowledge initiatives aligned to the discipline's strategic objectives, drawing from the principles of

participatory research (Reason and Bradbury, 2006; Kemmis, McTaggart and Nixon, 2015). Further, the benchmarking tool would identify the strategic objectives of the disciplines and include an exploration of their existing roles, tasks and processes to align the Performance Knowledge initiatives, mirroring the phase Focused Review. Finally, the process would define an action plan for each discipline for knowledge management implementation.

Drawing from my learning from Cycles 2 and 3 and the principles of the KMR, I reinforced the adoption of an integrated approach to the design and implementation of the action plan, considering multiple factors in the discipline's context that could potentially impact on the success of the proposed initiatives (Dalkir, 2005; Jashapara, 2011; Liebowitz, 2016). Finally, I discussed that the benchmarking process should be conducted in an iterative and ongoing manner to constantly monitor, drive and facilitate knowledge management implementation. The benchmarking tool was thus implemented by the Knowledge Manager with every discipline in the EIS, resulting in the design of their respective action plans. The disciplines are currently implementing the action plans, facilitated by the Knowledge Manager.

> ***Role conflict: Researcher and consultant (March 2017)***
>
> The design of the benchmarking process presented significant conflict between my dual roles of researcher and consultant/employee. Specifically, drawing from the interaction of the action research approaches, the research was positioned to facilitate emergent learning and systemic solutions for ongoing improvements in knowledge management practice. This was designed directly in response to the traditional planning and decision making approach predominant in the existing knowledge audit literature. However, situated in the results driven context of high-performance sport, the benchmarking process assumed a periodical evaluation format for designing practical solutions and action plans, mirroring the existing knowledge audit methodologies. As a researcher, I stressed my role as a facilitator for influencing learning rather than designing solutions for the organisation. Following the principles of action research (Reason and Bradbury, 2006), I emphasised my role in facilitating reflexive and dialectical critique in collaborative inquiry with the Knowledge Manager, empowering him to inform his practice. Specifically, I reinforced the underlying principles of KMR for facilitating ongoing learning and improvement of practice.

However, I recognised that as a participant in the inquiry and development of subsequent action, the Knowledge Manager was the owner of this action. As a result, the design and implementation of the benchmarking process was led by the Knowledge Manager.

6.5.2 Social Network Analysis

In early 2017, the EIS employed a new Director of Performance Innovation (SMT8), leading the research and innovation function responsible for applying technology, engineering and research knowledge to facilitate performance improvements. In May 2017, I was invited to meet with him in a meeting organised by the Knowledge Manager to introduce the Performance Knowledge function. I took this opportunity to explore the role and responsibility of Performance Innovation. In the meeting, SMT8 shared his vision and plans for the Performance Innovations team. It emerged that he endeavoured to promote open access for sports to their team and expertise for solving complex performance questions and facilitating improvements in performance. Specifically, he made a reference to the EIS's network of practitioners and their expertise, citing it as the strength of the institute. He discussed that the strength of the network would be demonstrated in the form of faster learning, that is, enabling the practitioners to quickly access the knowledge they require to solve complex questions and facilitate performance improvements. This resonated with the findings from Cycle 2 and my reflections regarding the strategic impact of knowledge management implementation in the EIS. Consequently, I presented the social network analysis (SNA) as a tool to visualise the EIS network, identify the existing patterns of collaboration and flow of knowledge, and inform strategies to optimise the network (Cross, Borgatti and Parker, 2002).

SMT8 recognised the strategic impact of the SNA, linking directly to the Performance Innovation strategy going forward. Thereafter, SMT8 and I collaboratively proposed and developed the SNA project to optimise the EIS network of expertise. The purpose of the project is to understand and visualise the organisational network of the EIS to facilitate improvements in network capability and connectedness for supporting problem solving, practitioner learning and innovation. The project is currently being implemented in the EIS, aligned to the overall strategic objectives of the EIS, supported by the SMT.

The implementation of the SNA in turn acknowledges that the knowledge in the EIS is collective and exists in networks, represented by the interaction between multiple forms of knowledge embodied in a practitioner (technical, applied and soft-skills) as well as the complex interactions between knowledge of multiple teams and functions in the EIS structure to deliver performance support. Swart, Turner and Prieto-Pastor (2017) recently showed that when managing complex tasks and projects, interaction between human capital (technical knowledge) and social capital (relationships and collaborations) is important. Mirroring their findings, the SNA in the EIS will attempt to visualise the networks of expertise in the EIS as well as the patterns of communications and relationships across the system to facilitate access to the wider network and collaboration of different types of knowledge to deliver performance support.

Aligning the SNA to the strategic objectives (September 2017)

The initial proposal for understanding the context of the EIS to inform improvements in collaborative practice and knowledge sharing included conducting a social network analysis (SNA; see Cycle 1, Section 6.2.1). Mirroring the reflexive, dialectical critique of the action research process (Reason and Bradbury, 2006,) I challenged my assumptions regarding the decision of implementing the SNA. Specifically, I decided to review the initial proposal for conducting an SNA as part of the review to identify its specific purpose and significance aligned to the strategic objectives and context of the EIS. The knowledge audit literature also stresses the need to align knowledge audit tools and techniques to the organisational objectives (Burnett, Williams and Illingworth, 2013). Subsequently, when such a strategic objective was identified with SMT8, the SNA embodied a specific and strategic purpose for the EIS context. As a result, the implementation of the SNA is now directly aligned and integrated within the ongoing organisational functions in the EIS. This action thus effectively demonstrated the impact of the systemic approach to review inquiry wherein knowledge management practice is now integrated into an organisational function, facilitating a strategic objective for the EIS.

6.5.3 Change in the remit of Performance Knowledge

In Cycle 2, HOS2 had critically reflected on the perceived value of Performance

Knowledge for the EIS and the practitioners and the impact of knowledge sharing on individual and organisational learning (see Cycle 2). Specifically, he had questioned the emphasis on knowledge capture and retention:

> I think you can't hold all that information because as I said it's quite personal but knowing where to go to get it, I think that's more important than having a central database. We've never once managed to capture outside of the hard data and the hard programs and documents, etc. That's what we capture. It has no meaning anymore and I don't know why you capture that.

Citing the analogy used by Nonaka and Takeuchi (1995, pp.104-105), I discussed:

> There is an analogy used in knowledge management. This is based in a Japanese bakery where there is a master baker, let's say. When a trainee or an apprentice joins, he can pass on his recipe and the technique. He can tell them this is how you make this bread. But the new people can't get it right because they don't know the why and the story behind it. The master baker cannot pass on or share how he mastered the technique, why he has adopted certain techniques for mixing the dough, for example. For him he's learned to do it after so many years, probably after trial and error. Now it flows naturally but he had to go through that to master it. That's not easy to capture and pass on to the next person. And if we get that right, that's where the impact would be.

To which he replied:

> Yes! So, what you said there was probably a very transactional approach. Here are the ingredients, here's the recipe. Off you go! Is Performance Knowledge then not about capturing it, but getting people to ask better questions?

Consequently, we collectively discussed that this presents an opportunity to strengthen the network of expertise across the EIS, whereby the aim is to connect individuals and create contexts where they can collaborate and learn. During that conversation, I also asked him what a successful Performance Knowledge

implementation would look like for the EIS. He discussed:

> Really good question. I think the bit that would really evidence it's going well is that the discipline (Performance Knowledge) doesn't exist anymore, if I'm being totally honest. We would see the existence of disciplines almost slightly changed, the lines will be a lot more blurred. You'd just be a practitioner who works with a specialism in that area and you'd all have a common goal … So, I think it has to be linked to people development strategy. It's entirely behavioural. It's not about systems like Tallyfox and SharePoint, it's about people's behaviours. And the bit that I will come back to, when you push systems, it is no longer about the individual. The reason why we're doing it is to capture the questions somewhere else for someone else. And when you take it away from the individual … people know it's an ulterior motive. Can you help people be better at knowledge sharing or are you trying to capture that knowledge? But can it be both? I don't know.

HOS2 was currently leading on the EIS's learning and people development strategy. Thus, this discussion reflected his perceptions regarding the potential value of knowledge management for individual and organisational learning. In 2018, the remit of Performance Knowledge evolved to be included in the purview of the Learning team, to facilitate practitioner learning and development. A specific emphasis is now on affecting behavioural change with the practitioners, giving them the autonomy, choice and skills in seeking knowledge and expertise in the EIS network to support their practice and professional development. This demonstrates a significant evolution of the focus, objective and strategic value of Performance Knowledge, aligned closely with the EIS's strategic objective of people development.

6.6 Conclusion

The knowledge management review was thus implemented in the EIS to facilitate critical reflection and inform systemic change in the practice of knowledge management. The actions discussed in Section 6.4 are currently being implemented in the organisation, resulting in multiple further inquiries led by the owners of the respective actions. This demonstrates a further interaction between the systemic and participatory approaches to action research (Reason and Bradbury, 2006; Burns,

2014a; Kemmis, McTaggart and Nixon, 2015). Specifically, the emancipatory characteristic of action research aims to empower the research participants to facilitate ongoing change to improve their practice (Reason and Bradbury, 2006). In the review, this was operationalised by facilitating critical self-reflections amongst the participants to influence their learning (Kemmis, McTaggart and Nixon, 2015). Further, drawing from the principles of SAR, the inquiry process was set up as dynamic and emergent, facilitating dynamic membership and following the issues that emerge in the inquiry (Burns, 2014a). SAR asserts that when multiple stakeholders participate in the inquiry process and construction of the solutions, the ownership of these solutions is likely to reside with them, enhancing the sustainability of the solutions (Burns, 2014a). Thus, the review resulted in emergent actions, informed and owned by multiple participants from the EIS. The continuity of these actions is now being led by these owners, resulting in inquiries and actions in different directions in the context. As a result, for the purpose of the research, the review was drawn to a close at this point.

The KMR methodology, informed by the gaps in the existing knowledge management audit and implementation literatures (Zack, 1999; Liebowitz, 2000; Lauer and Tanniru, 2001; Dufour and Steane, 2007; Jashapara 2011; Dalkir, 2013; Burnett, Williams and Illingworth, 2013) was instrumental in highlighting multiple factors in the external and internal context of the EIS, critical for the successful implementation of the knowledge management initiatives. The principles of SAR (Burns, 2007, 2014a) guided the review, effectively creating a whole systems view of the EIS, identifying wider systemic enablers and barriers in the context and highlighting their multi-linear relationship with knowledge management practice. The principles of critical-participatory action research were instrumental in facilitating critical self-reflections amongst the EIS participants to influence their learning to improve their practice of knowledge management (Kemmis, McTaggart and Nixon, 2015). This approach empowered participants and facilitated ownership of actions to improve knowledge management practice in an ongoing manner in the EIS. Finally, the action research cycles and the collaborative relationship with the Knowledge Manager were instrumental in iteratively assessing knowledge management practice within the organisational context to continuously improve and inform the direction of Performance Knowledge efforts in the EIS (Coghlan and Brannick, 2014).

Overall, as evidenced through the Cycles 1-3 and in the actions thereafter, there was considerable evolution of the strategic position and focus of Performance Knowledge within the EIS organisational structure, as well as the Knowledge Manager's perceptions of Performance Knowledge. He commented:

> Two years ago, I wanted to promote Performance Knowledge and demonstrate impact. Now my focus is on thinking about it strategically, focus on the governance, structure, processes, technology and people. I have become more critical, constantly checking with the SMT that this is what we need, we are on the right track.

6.7 Chapter summary

This chapter outlined the implementation of the KMR methodology. Specifically, three distinct action research cycles were presented depicting the iterative and emergent approach to the review. Findings and outcomes from each action research cycles were discussed as they informed the subsequent action as well as my learning. Finally, the actions that emerged from the review were described as they will be implemented in the EIS to improve knowledge management practice. Chapter 7 presents a discussion on the KMR methodology, my meta learning on the action research project and the implications of the findings in informing knowledge management practice in an integrated and sustainable manner. The discussion highlights contributions to learning, theoretical literature and practice of knowledge audits.

Chapter 7: Meta Learning and Discussion

Chapter 7: Meta learning and discussion

7.1 Introduction

In this chapter, the meta-learning that emerged from the implementation of the knowledge management review (KMR) is discussed, in line with Coghlan and Brannick's (2014) principles of insider action research. Specifically, the implications and significance of the KMR implementation are discussed in terms of the researcher's professional learning, the role of KMR in informing knowledge management practice at the EIS and the general practice of knowledge audits. The implications are considered against the existing literature on knowledge management and knowledge audits to highlight contributions to the theoretical understanding and practice of knowledge audits.

Section 7.2 presents the research themes that emerged in the implementation of the KMR methodology in order to address the research gaps identified in Chapter 5, depicted as the researcher's meta learning on the action research project (Coghlan and Brannick, 2014). Thereafter, Section 7.3 presents a discussion of the implications of these themes for theory and practice of knowledge audits, methodological considerations and trends in the wider knowledge management literature.

7.2 Research themes

The wider knowledge management literature stresses the need for aligning knowledge management practice to the organisational context (see Chapter 3). Specifically, the knowledge management literature highlights a multiplicity of perspectives, definitions and terminology in the field, indicating the importance of context in selecting an appropriate knowledge management perspective and the subsequent design and implementation of knowledge management initiatives (Zack, 1999; Schultz and Stabell, 2004; Jashapara, 2011; Dalkir, 2013; Geisler and Wickramasinghe, 2015). Moreover, due to the multiple perspectives, there is an absence of a standard framework for knowledge management implementation, adding to the dilemma of how to design and implement knowledge management systems for a given context (Earl, 2001; Becerra-Fernandez and Sabherwal, 2014; Valmohammadi and Ghassemi, 2016). Authors further emphasise the adoption of an integrated approach to knowledge management implementation for the success and sustainability of knowledge management

initiatives (du Plessis, 2007; Jashapara, 2011; Akhavan and Pezeshkan, 2014). Knowledge audits are thus emphasised as the critical first step in knowledge management implementation, instrumental for the successful implementation of a knowledge management strategy by highlighting the organisation's context and needs and providing a means for aligning the knowledge management initiatives to the culture and strategic objectives of the organisation to realise their knowledge capability (Liebowitz et al., 2000; Stewart, 2002; Latif, Drus and Shariff, 2016).

Chapter 5 highlighted the research gap that emerged in a critical review of the existing knowledge audit literature with regards to facilitating knowledge management implementation aligned to the organisational context (Section 5.5). Specifically, the theoretical and practical understanding of the knowledge management implementation literature suggests an iterative and multilinear relationship between the organisational context, knowledge management strategy and knowledge management implementation, for example, an organisation's knowledge management strategy will be aligned to its context and strategic objectives and is critical in guiding knowledge management implementation. In turn, multiple factors in the organisational context will influence the success of knowledge management implementation. It was thus argued that knowledge audits, as a critical process in the design of a knowledge management strategy, must become aligned with and facilitate this iterative relationship. The critical review of the existing knowledge audit literature, however, highlighted a predominantly systematic and reductionist approach facilitating an objective evaluation of the context to maximise the success of subsequent knowledge management initiatives (Xiao, Wang and Peng, 2010). To address this research gap, the KMR methodology was designed aligned to the following research question:

RQ. How does an iterative and systemic approach to knowledge audits enhance the sustainability, integration and success of knowledge management practice?

The following section explains the interpretation of sustainability of knowledge management adopted in this research, followed by an analysis of the guiding principles of the KMR and its implementation in informing improvements in the EIS's knowledge management practice in a sustainable manner.

7.2.1 Sustainability of knowledge management

In this research, sustainability of knowledge management was operationalised as:

- Knowledge management practice that adopts a long-term strategic focus to provide continuous competitive advantage
- Knowledge management practice that is successfully embedded and integrated into the working culture of the EIS
- Knowledge management practice that is resilient against the dynamic context of high-performance sport

In the early stages of their evolution, knowledge audits gained significance in the knowledge management discipline due to their role in facilitating successful knowledge management practice by understanding the needs of the context (Hylton, 2002; Stewart, 2002). Similarly, as evident in the reflections from the preunderstanding of the EIS (Section 4.4, Chapter 4), the KMR was initially proposed to identify the challenges, enablers and barriers in the context to design knowledge management solutions in an informed manner to enhance their success in facilitating improvements in knowledge management practice. However, a subsequent iterative review of the knowledge management and knowledge audit literature highlighted that knowledge management implementation is a complex and integrated process. Specifically, knowledge management authors stress an integrated approach to knowledge management implementation that constitutes multiple factors such as internal and external organisational context, strategic objectives, culture, technology, human and social factors, infrastructure and knowledge management metrics (Dufour and Steane, 2007; Jashapara, 2011; Akhavan and Pezeshkan, 2014).

Further, the literature highlights the multidisciplinary roots of the discipline of knowledge management in information systems, human resource management, organisational science, cognitive science, and collaborative technologies (Baskerville and Dulipovici, 2006; Dalkir, 2013; Geisler and Wickramasinghe, 2015). Jashapara (2011) critiqued that considering these interdisciplinary linkages, an integrated perspective is warranted for the successful implementation of knowledge management that facilitates the embeddedness of knowledge management initiatives

in multiple departments and functions in the organisation. Similarly, Omotayo (2015) discussed that an organisation's knowledge management strategy should be linked to the organisational objectives.

The existing knowledge audit studies appear to inform the design of knowledge management initiatives that consider the organisational context and strategic objectives, and yet are structured as individual solutions implemented independent of the ongoing business functions (e.g., Liebowitz et al., 2000; Burnett, Illingworth and Webster, 2004; Cheung et al., 2007). The participatory interviews within the KMR also emphasised the need for integrated knowledge management solutions (see Section 6.3.2.5, Chapter 6). Specifically, the interviews highlighted that knowledge management initiatives that are perceived as standalone, additional tasks mandated by the senior managers hinder employee engagement. Instead, the participants stressed the need for initiatives that become embedded in the daily working routine of the organisation, facilitating the ongoing business functions. This approach makes it easier to engage with knowledge management initiatives whilst effectively highlighting their purpose and value for the individual and organisational performance.

This emphasis on integration of knowledge management strategy with the organisational strategy is also mirrored in a recent study by Dayan, Heisig and Matos (2017). Based on an extensive study with 200 knowledge management experts, they emphasised the role of knowledge management in the formulation and implementation of the organisational strategy. They argue that this approach is critical for the organisational effectiveness as well as successful implementation of knowledge management. Similarly, the KMR operated from a premise that knowledge management initiatives that are integrated and embedded in the ongoing business operations will enhance organisational engagement with and strategic value of knowledge management, thereby sustaining their success for competitive advantage.

In addition to an integrated approach to knowledge management implementation, engagement of top managers and collaboration with users have also been cited as critical enablers for successful knowledge management (Anantatmula and Kanungo, 2007). Specifically, Anantatmula and Kanungo stressed that top managers' active participation in knowledge management efforts will enhance their strategic focus and

success. Further, Lin and Hwang (2014) discussed that relevance of knowledge management initiatives, participation and buy-in from employees and a user focused approach are critical to sustain knowledge management success. Burnett, Williams and Illingworth (2013) adopted the action research approach in their knowledge audit, wherein the knowledge management strategy was developed in collaboration with the organisation. This argument is also resonated in the findings from Cycle 2 (Section 6.3.2.5, Chapter 4), whereby the participants used the phrase "new changes should be implemented with them (EIS employees), not to them" (SMT6) to stress the need to acknowledge the employees' individual needs and perceptions in the design of subsequent knowledge management initiatives. Thus, the KMR further acknowledged active participation of the senior managers and employees in enhancing engagement with knowledge management efforts, thereby increasing their sustainability and success.

The literature on knowledge management stresses the strategic role of a knowledge management strategy in facilitating competitive advantage (Hislop, 2013). In this research, it was argued that in order to sustain this competitive advantage, the knowledge management initiatives should also be sustainable, adapting to the organisational context and facilitating ongoing improvements in knowledge management practice. This resonates with Barley, Treem and Kuhn's (2018) suggestions for future research in the field to consider how knowledge management processes change over time in line with changes in the organisational context in order to continuously provide value. The existing knowledge audit studies emphasise the iterative assessment of the context in the form of re-audit to periodically improve knowledge management practice (Lauer and Tanniru, 2001; Levantakis, Helms and Spruit, 2008; Ragsdell et al., 2014). However, it emerged that the existing knowledge audit methodologies are structured as systematic evaluation of the context at a period in time, culminating in the design of knowledge management solutions and actions plans. It was argued that such an approach would enable periodical improvements at best. The KMR inquiry also highlighted the dynamic nature of the wider high-performance sport context, which in turn resulted in constant changes in the internal EIS context (see Section 6.3.2.1, Chapter 6). Against such a dynamic context, periodical evaluation and planning of a knowledge management strategy would soon become redundant. Thus, following Mintzberg's (1994) description of strategic thinking

(see Section 5.5, Chapter 5), the KMR adopted an iterative action and learning approach to sustain the relevance and success of knowledge management initiatives.

Overall, by iteratively critiquing the knowledge management implementation and knowledge audit literature, the concept of successful knowledge management practice was expanded to include an emphasis on sustainability of knowledge management. The KMR was thus conducted to facilitate an integrated view of knowledge management implementation, embeddedness of knowledge management initiatives in the context and a strategic view of knowledge management practice. The following sections analyse the principles of the KMR that facilitated such an inquiry to inform the EIS's knowledge management practice in a sustainable manner (for a discussion on these principles see Section 5.5, Chapter 5). Specifically, the implementation of the KMR methodology is analysed against the following themes:

1. Iterative approach to design and implementation of knowledge audits
2. Systemic and strategic approach to facilitate ongoing and continuous improvements in knowledge management practice
3. Embeddedness of the researcher/consultant in the organisation

7.2.2 Iterative approach to inquiry

The research gap identified in Chapter 5 highlighted the iterative relationship between the organisational context, knowledge management perspective, knowledge management strategy and knowledge management implementation. Subsequently, the KMR was designed to aid this relationship by including an iterative inquiry into each and facilitating consistency across this life cycle of knowledge management implementation.

A critical review of the knowledge audit literature highlighted that, much like the plurality of definitions and perspectives in the general knowledge management literature, there is no standard framework or approach to conducting a knowledge audit. The aim of a knowledge audit is to understand the organisational context, yet it is important that the context informs the design of the inquiry process so as to effectively generate a comprehensive understanding of the phenomenon. Burnett, Illingworth and Webster (2004) acknowledged that the specific audit tools and techniques

implemented should be adapted to the needs of the context of the organisation in study. In a recent knowledge audit study, Yip, Lee and Tsui (2015) also showed that the audit inquiry process should be adapted to the nature of business operations to be studied. Further, Kane, Ragsdell and Oppenheim (2006) stressed the need to align the research methodology to the specific knowledge management framework or perspective adopted. This suggests that the organisational context will help identify the appropriate knowledge management perspective, which in turn will have implications for the design of the audit inquiry process critical in studying the organisational context.

Within the KMR, a preunderstanding of the wider knowledge management literature and the case study context (Coghlan and Brannick, 2014; see Part 1 of the thesis structure; also see Cycle 1, Chapter 6) was critical in developing this iterative understanding of the knowledge management perspective suitably aligned to study the EIS context. Specifically, it emerged that the EIS is a complex system, situated within the hierarchy of the UK high-performance sport system, consisting of multiple overlapping and interrelated teams across the system, against the dynamic context of competitive sport (Ladyman, Lambert and Wiesner, 2013). Mirroring this complexity within the EIS context, the integrated approach to knowledge management that emphasises interrelationship between the organisational culture and context, knowledge management strategy, technology, infrastructure and human and social factors was deemed appropriate (du Plessis, 2007; Jashapara, 2011; Dalkir, 2013). Subsequently, aligned to this complexity, the action research approach guided the review (Reason and Bradbury, 2006). Action research, as a framework that integrates several research methods, allows sufficient flexibility to appreciate and understand the complexity (Xu, Wang and Peng, 2008). Further, it facilitates participation of the researcher in the context, critical to study the complex interplay of multiple factors involved (Gaventa and Cornwall, 2006).

The iterative nature of inquiry was also reflected in the reflexive iterations between the data collection and analysis in the review. In response to the systematically structured evaluation of the context evident in the existing knowledge audit methodologies, the action research approach adopted in this research facilitated implementation of the KMR as an emergent process (Reason and Bradbury, 2006). Specifically, through

following Coghlan and Brannick's (2014) characteristics of insider action research, the KMR was conducted within multiple iterations of the action research cycles, whereby each action and reflection therein informed the subsequent action. For example, Phase: Context was primarily proposed to be conducted with the senior managers at the EIS to identify the strategic objectives and needs from knowledge management (see Section 5.5, Chapter 5). Subsequent reflections on the organisation structure and the findings from the first phase of interviews highlighted that each sport science discipline has individual strategic needs. The review process was thus adapted to include interviews with the Heads of Service to inform knowledge management practice within each discipline.

Further demonstrating the iterative nature of inquiry, data collection, analysis, literature review and feedback to the EIS proceeded were intricately linked, embodied within the phase Ongoing Review (see Section 5.5, Chapter 5). The aim of this approach was to facilitate improvements in the ongoing knowledge management practice by feeding back the findings and insights from the review in a timely and relevant manner. Within the iterative relationship highlighted in the research gap, this enabled the review to inform strategic directions for knowledge management practice aligned to the organisational context and simultaneously implement the emergent actions. Specifically, within the collaborative relationship between the Knowledge Manager and the researcher (Coghlan and Brannick, 2014), the findings from the review were collectively reviewed and analysed in light of the theoretical literature on knowledge management. For example, in Cycle 3 (Chapter 6), collective, critical review of the Performance Knowledge function highlighted inconsistencies between its remit and the strategic needs of the context, considering the interconnectedness of functions towards achievement of organisational objectives. The resultant impact for the Performance Knowledge function was the identification of the need to extend knowledge management efforts across the existing remit within the Science and Technical Development team, into sports and other strategic partners in the UK high-performance system.

Further, the iterative and longitudinal nature of the review enabled a comprehensive assessment of the changes in the dynamic context of high-performance sport, critical in adapting the inquiry and actions simultaneously. For example, the review revealed

that changes in the wider high-performance sport context are a constant feature of the EIS environment manifested in the form of staff turnover, changes in funding structure, and changes in the organisational structure and functions. The iterative approach and flexibility inherent in the review process enabled the inquiry to be adapted to these changes. Additionally, it stressed the need for knowledge management initiatives to be integrated into the core fabric of the EIS, making them resilient to the dynamic context, rather than an emphasis on knowledge management tools and processes.

The iterative approach to inquiry was thus critical in facilitating the interrelationship and consistency between factors in knowledge management implementation. Specifically, the complexity inherent in the EIS's organisational context, characterised by overlapping relationships between organisational functions, was mirrored in the future direction of the Performance Knowledge strategy and subsequently implemented by extending its remit across the organisational structure.

7.2.3 Systemic approach to inquiry

The preunderstanding of the context identified the EIS as a complex system (see Chapter 4) aligned to which the action research approach was adopted to facilitate an integrated perspective on knowledge management implementation. To further facilitate sustainability of knowledge management, a systemic approach to the review was adopted. Burns (2007, 2014a, 2014b, 2015) discussed that in complex system dynamics, change cannot be easily attributed to a simple, linear solution. Instead change is emergent, unpredictable and interrelated, that is, change in one part of the system may have impact in another. Furthermore, he stressed that according to the complexity theory, the causes of problems may often be explained by unrelated and invisible dynamics. He discussed that micro change in a complex system can lead to macro impact, and so a systemic view of the context will help identify connections that may have been missed in traditional, linear forms of inquiry. Finally, he categorised systems as dynamic, that is, they are constantly changing. Creating sustainable change in such contexts thus requires a systemic understanding of how issues are interrelated and an emphasis on changing the underlying system dynamics rather than just the factors that have a direct impact on the problem (Burns, 2014a). Burns (2014a, pp.16) stated:

> Sustainable change is dependent on system realignment not only problem solving; secondly that participation flows not only from a deep belief that people who are stakeholders should be involved, but that stakeholders right across the system (often with very diverse perspectives) have to be involved in order to get sustainable solutions to entrenched problems.

Following the principles of SAR, the KMR included multiple parallel and intersecting lines of inquiry across the organisational structure to highlight different perspectives and realities and present a systemic understanding of the high-performance sport context of the EIS. The multiple factors and dimensions cited in the knowledge management implementation literature as critical for the successful implementation of knowledge management were assessed and considered systemically, as they interacted to create an integrated practice of knowledge management within the EIS context (Dufour and Steane, 2007; Du Plessis, 2007; Jashapara, 2011; Dalkir, 2013; Geisler and Wickramasinghe, 2015). This is in contrast to the existing audit methodologies where multiple factors or issues that are directly relevant to knowledge management implementation are identified and addressed individually. Consistent with the perspective on complex system dynamics, the systemic approach was instrumental in highlighting how seemingly unrelated and distant issues in the wider high-performance sport context impact on the practice of knowledge management. For example, the theme of External context revealed that within the UK high-performance system, sports can often compete with each other for funding – a decision that is dependent on medal success. As a result, practitioners operate under a results-driven culture in sports, resulting in emphasis on activities that have direct impact for athletic performance, often at the expense of knowledge sharing and collaboration efforts within the EIS. Thus, a systemic understanding of the wider high-performance system revealed how multiple issues interact to pose a challenge for knowledge management implementation.

The existing knowledge audit studies evaluated the organisational context to identify challenges and barriers in the successful implementation of knowledge management practice. This research reasoned that such challenges and barriers in the context may be symptoms of an underlying root cause and, thus, problem solutions can appear superficial for symptom alleviation. Instead, the KMR aimed at generating a view of

the whole system of the EIS within the wider UK high-performance system. The systemic approach to inquiry thus aimed to challenge the underlying system dynamics of knowledge management practice as it aligns to the high-performance sport context, specifically, the EIS's intricate relationship with its external context and the interdependence of teams, departments and functions within the EIS as well as within the high-performance sport system. The purpose behind this approach was to facilitate systemic solutions that are sustainable and effective in the context, rather than problem solutions implemented towards preconceived outcomes (Burns, 2014a). Coghlan and Brannick (2014) also acknowledged that when dealing with problems attributed by complexity, their resolution requires transformational change facilitated by challenging the organisation's views and assumptions of practice.

Following this systemic inquiry, it emerged that the existing practice of Performance Knowledge was incongruent with this complexity, especially the need for cross-functional collaboration within the EIS and externally with sports. The existing Performance Knowledge efforts appeared to focus instead on individual and isolated initiatives in the EIS. Consistent with the complexity in the high-performance sport context, the SAR approach to the KMR acknowledged that improvements in the practice of knowledge management cannot be attributed to a simple solution or intervention. Instead, there emerged a need to adopt a system-wide view of knowledge management practice such that it becomes aligned with and facilitates the ongoing organisational functions. Further, it was acknowledged that knowledge management implementation would necessarily be a developmental and adaptive process, continuously responding and adapting to the changes in the context. One such change in the system was identified as a strategic emphasis in the EIS towards system learning and development. Critical self-reflections by the individuals responsible for this change facilitated a shift in the perceptions of knowledge management practice in the EIS. Subsequently, Performance Knowledge become integrated within the learning and development function, thereby embodying a strategic role in the EIS.

A systemic approach to inquiry was aligned to the perceived complexity and interconnectedness of components internal and external to the EIS. By challenging the underlying assumptions of the perceived strategic purpose and mode of operation of the existing knowledge management practice in the EIS, the KMR, following this

systemic approach, facilitated systemic solutions, shifting the perception of knowledge management practice in the context. By becoming integrated with the ongoing organisational functions in the context, knowledge management practice adopted a strategic role in the EIS to contribute to its continuous competitive advantage.

7.2.4 Embeddedness of the researcher

A specific critique of the existing knowledge audit methodologies was the emphasis on a systematic and snapshot approach to inquiry, conducted by external consultants or researchers, objectively evaluating the context. Such an objective approach aligns with financial audits whereby an independent auditor objectively evaluates the truth and fairness of an organisation's financial statements (PwC, 2018). Indeed, Debenham and Clark (1994) modelled their early knowledge audit on financial audits. Further, Mertins et al. (2003) stressed that an independent consultant is instrumental in providing a comprehensive assessment of the organisation. This mirrors the positivistic research paradigm, which assumes that knowledge exists objectively, independent of the researcher, and emphasises cause and effect relationships to explain outcomes based on careful study of the objective reality (Creswell, 2007). The positivistic approach to inquiry draws strengths from being transparent, less affected by researcher bias, and thus seemingly more trustworthy (Creswell, 2014). Further, the positivistic research inquiry tends to follow well-defined structures, emphasising generalisability of theories and facts (Creswell, 2014). This is instantly problematic against the multiplicity of perspectives and frameworks in knowledge management and the specific emphasis on context-driven knowledge management implementation. Specifically, if the purpose of knowledge audits is to initiate knowledge management implementation, this should involve an exploratory study of the organisation, emphasising its unique context, characteristics and strategic needs from knowledge management.

This research operated from the participatory research paradigm (Reason and Bradbury, 2006), which was deemed appropriate considering the researcher's embeddedness in the EIS as an employee. The participatory paradigm posits that reality is subjective-objective, created by the interaction between the context and the researcher's participation in it (Heron and Reason, 1997). Specifically, the KMR emphasised the researcher's participation with the EIS employees in the review,

whereby EIS employees' contributed their knowledge and expertise of the EIS context and the researcher contributed the theoretical understanding of the knowledge management literature to facilitate improvements in the practice of knowledge management in a collaborative and informed manner.

The researcher's embeddedness in the context was critical to facilitate an iterative and systemic approach to inquiry discussed in Sections 7.2.2 and 7.2.3. Specifically, participation in the context was successful in enabling multiple lines of inquiry in an emergent manner to develop a systemic view of knowledge management practice within high-performance sport. Further, the researcher's embeddedness in the EIS facilitated the collaborative relationship with the Knowledge Manager, critical for facilitating changes in the ongoing practice of Performance Knowledge through multiple iterations of action and reflection. Finally, the researcher's presence in the context was critical in identifying upcoming trends and changes in the strategic directions in the EIS, which enabled integration of knowledge management initiatives with the organisational functions.

A significant example of the impact of the researcher's embeddedness in the context was the identification of the social network analysis's (SNA) strategic implementation for reassessing the mode of delivery of performance support in the EIS (see Section 6.5.2, Chapter 6). Through interacting in the context outside of the immediate remit of Performance Knowledge, facilitated by the emergent design of the KMR, the researcher could identify this unique opportunity for knowledge management implementation aligned to facilitate strategic objectives in the context. This opportunity may not have been identified in a more structured and systematic approach to the audit towards assessing linear relationships between contextual factors.

In addition to facilitating the review, the embeddedness of the researcher facilitated a participatory and collaborative form of inquiry following the characteristics of action research (Reason and Bradbury, 2006). The participatory paradigm posits that people have the right to participate in research about them and thus also have a claim on the knowledge so created, highlighting the democratic and emancipatory characteristics of the participatory paradigm (Reason and Bradbury, 2006). Moreover, action research has historical roots in research by Kurt Lewin and John Collier who showed

that participatory approach to decision making results in change that is more informed and effective (Pasmore, 2006). Following the characteristics of critical participatory action research, the researcher created a communicative space within each interview in the review, encouraging participants to critically reflect on the emergence of knowledge management practice in the context and its implications for their own practice (Kemmis, McTaggart and Nixon, 2015), thereby influencing their learning and enabling them to improve their engagement with Performance Knowledge. This led to the emergence of critical intersubjectivity, that is, a shared understanding of the strategic purpose and approach to Performance Knowledge efforts within the EIS. Specifically, there was significant resonance amongst the participants that Performance Knowledge implementation should emphasise integration in the EIS working routine and culture, rather than push new tools and processes. Through iterative cycles of action and reflection within the collaborative relationship with the Knowledge Manager, this insight was in turn critical in shaping the subsequent delivery of Performance Knowledge efforts. Thus, in an iterative way, the embeddedness of the researcher in the context influenced the learning of the Knowledge Manager as well as the EIS employees, thereby facilitating improvements in knowledge management practice simultaneously across the system.

7.2.5 Summary

The KMR was designed addressing the research gaps to inform knowledge management practice in a sustainable manner. Sustainability of knowledge management was defined as knowledge management practice that adopts a strategic focus, becomes integrated in practice and is resilient against the dynamic organisational context. To do so, the KMR adopted an iterative and systemic approach to inquiry, facilitated by the embeddedness of the researcher in the context. The iterative approach led to integrated knowledge management implementation facilitated by iterative interaction between the organisational context, knowledge management perspective and strategic view on knowledge management implementation. The systemic approach to inquiry challenged the underlying assumptions of knowledge management practice in the context, critical in shifting the perceptions regarding the focus and approach to Performance Knowledge efforts. Finally, the researcher's embeddedness in the context facilitated critical self-reflections by the participants, empowering them to improve their own practice and engagement with Performance

Knowledge. An iterative interaction between these three approaches led to the emergence of strategic actions for Performance Knowledge that adopted a system-wide focus and became integrated in the ongoing organisational functions to facilitate strategic objectives, thereby embodying a strategic focus in the context.

7.3 Discussion

This section presents a discussion on the research themes identified in Section 7.3, outlining the implications for the literature and practice of knowledge audits and the role of a knowledge manager. The discussion is presented addressing the gaps identified in this research, contextualised against the existing literature in the field as well as drawing new insights to inform future directions in the knowledge management literature. First, Section 7.3.1 focuses on the redesign of the knowledge audit process. Section 7.3.2 outlines the implications of the research methodology adopted in this research, specifically the interaction between three action research approaches. Section 7.3.3 positions this research in the ongoing discussions in the literature regarding the future of the knowledge management discipline. Finally, Section 7.3.4 discusses the systemic approach to the KMR to draw parallels with applications of systems thinking in knowledge management.

7.3.1 Rethinking the knowledge audit

This research was aimed to assess the role of knowledge audits in informing knowledge management implementation in an organisation, specifically positioned to increase the sustainability, integration and success of knowledge management practice. The research gap was identified between the perceived need for an integrated approach to knowledge management implementation and the methodological considerations in the current knowledge audit literature (see Chapter 5). Specifically, the wider knowledge management literature highlighted an iterative relationship between the organisational context, knowledge management strategy and its implementation. In the knowledge audit literature, knowledge audits have been stressed as a critical first step in knowledge management implementation (Liebowitz, 2000; Burnett, Williams and Illingworth, 2013; Latif, Drus and Shariff, 2016). However, the current knowledge audit methodologies primarily adopt a systematic, scientific and snapshot approach to evaluating an organisation's context and knowledge management need in order to make recommendations for knowledge management

solutions and strategies. This research questioned this approach to an audit inquiry in sufficiently facilitating the iterative relationship between the organisational context, knowledge management strategy and its implementation. Instead, the KMR was designed and implemented adopting an iterative and systemic approach to inquiry, aided by the embeddedness of the researcher in the context, to facilitate integration and sustainability of knowledge management practice.

The design and purpose of the KMR drew from Mintzberg's (1994) critique of strategic planning, described as the fallacy of prediction, fallacy of detachment and fallacy of formalisation (Section 5.5, Chapter 5). Instead, the KMR was designed to facilitate strategic thinking about knowledge management practice and its implementation. This was accomplished by adopting the iterative and systemic approach to the review discussed in Section 7.2. Specifically, in response to the fallacy of prediction, the KMR shirked the traditional systematic and methodical approach to knowledge audits, to adopt an iterative and flexible approach that was critical for the inquiry to adapt to the dynamic and constant changes in the context. Aligned to this, the KMR facilitated systemic solutions rather than recommend practical solutions with preconceived outcomes. In response to the fallacy of detachment, the embeddedness of the researcher in the context was critical for the implementation of the KMR, instrumental in facilitating a strategic view of knowledge management implementation, integrated in the organisational context. Finally, in response to the fallacy of formalisation, the KMR was designed as an emergent and developmental process, specifically drawing from the action research approach (Reason and Bradbury 2008), where action and learning progressed iteratively to continuously inform and improve knowledge management practice. Overall, the KMR was so designed to facilitate a review of an organisation's knowledge management practice and needs, where the inquiry process is embedded in the context to inform actions that emerge organically and are aligned to the current organisational objectives. Within the EIS context, the KMR was instrumental in facilitating a systemic change in the perceptions and purpose of knowledge management practice and aligning Performance Knowledge efforts to the ongoing EIS functions to facilitate strategic objectives.

The design of the KMR was in turn informed by the participatory research paradigm, specifically drawing from the SAR, CPAR and IAR. Mirroring Mintzberg's (1994)

critique of strategic planning, Burns (2007) presented SAR as an alternative to the dominant theories of organisational decision making, whereby planning leads to action. This is especially relevant in complex system dynamics, such as the EIS, that are characterised by unpredictability (Burns, 2007). Burns argued that due to this unpredictability, intentional interventions will lead to unexpected outcomes. In the existing knowledge audit literature, the data collection and inquiry were conducted in a systematic and structured way with a view of the intended outcome in the form of specific practical solutions to an improve an aspect of knowledge management. Burns (2007) argued that for complex problems, that are defined by multilinear causality and interrelatedness of issues, change cannot be attributed to individual interventions. Instead, in contexts characterised by complexity, systemic change that attempts to shift the underlying system dynamics will be more sustainable. This approach to framing the inquiry and informing systemic solutions become a key feature of the KMR, wherein the emphasis of inquiry was to understand the underlying system dynamics that contribute to the emergence of knowledge management practice in the context. The impact for the EIS context was the change in the systemic perception of the potential and purpose of knowledge management principles and practice for competitive advantage in the high-performance sport system.

To understand and challenge the underlying assumptions of practice, the KMR aligned with the principles of triple loop learning. Flood and Romm (2018, pp.3) presented a conceptualisation of triple loop learning, expressed as 'learning how to learn', in line with systemic thinking, as facilitating better choices and decision making in an organisation. They discussed that single loop learning is non-reflexive and involves setting ends or outcomes, and devising best means to those ends. They further presented three types of single loop learning, an integration between which contributes to overall awareness or triple loop learning. The three types of learning involve three questions 'Are we doing things right?' or 'How should we do it?', 'Are we doing the right things?' or 'What should we do?', and 'Why should we do it?'. They argued that triple loop learning involves an integration of these three types of learning, that is looping between three questions to cultivate a reflexive consciousness (Flood and Romm, 2018). This looping helps make more informed decisions responsibly by recognising the existing interdependences in the system, considering multiple discourses and offering alternatives (Flood and Romm, 1996).

Subsequently, through asking 'why' questions, the KMR deliberately questioned the purpose, value and impact of knowledge management practice for the EIS context to responsibly inform actions that generate competitive advantage in the context. That is, in addition to assessing how the existing knowledge management processes are being implemented and incorporating multiple feedback loops to devise better processes to achieve the organisational objectives, the review assessed and questioned the underlying assumptions operating in the system and explored new alternatives to the purpose and focus of knowledge management practice, aimed at bridging the gap between its potential and the current level. This fostered transformative change in the practice of knowledge management aligned to the cultural and social forces in the context, thereby enhancing the sustainability of the efforts. Specifically, the impact of this approach was the redesign of the overall purpose of the Performance Knowledge function in the EIS, to promote practitioner and system learning in high-performance sport. Thus, rather than planning solutions and recommendations for a knowledge management strategy, the KMR promoted synthesis between inquiry, learning, actions and change, and thus, a synthesis between the knowledge management strategy and its implementation.

This is also mirrored in the wider knowledge management frameworks literature. For example, Rubenstein-Montano et al. (2001) recommended the adoption of a hybrid knowledge management implementation framework that describes and prescribes implementation. They classified prescriptive frameworks as those that prescribe knowledge tasks and procedures, without sufficient explanation on how these should be implemented. On the other hand, descriptive frameworks highlight factors in the context that impact on the success or failure of knowledge management initiatives. They argued that hybrid frameworks, that highlight knowledge management activities and initiatives whilst considering other factors in the context, such as culture and people, will foster a holistic approach to knowledge management implementation. The KMR incorporated such a holistic approach, whereby the iterative and systemic approaches to the review interacted to assess factors in the wider context of the EIS, whilst simultaneously informing actions that duly consider the impact of these factors on knowledge management practice.

In addition, Heisig (2009, 2015) placed emphasis on organisations to become adaptive systems, whereby they continuously adapt and change in response to the changes in the system to improve efficiency and practice. Similarly, Barley, Treem and Kuhn (2018) highlighted the need for future research in knowledge management to study how knowledge management processes change aligned to the changes in the organisational context to remain relevant. This further supports the KMR's emphasis on strategic thinking, where the organisation is able to iteratively and continuously improve knowledge management practice. Specifically, Burns (2014b, 2015) promoted SAR as a way of facilitating change in dynamic contexts where change is constantly taking place. Subsequently, drawing from SAR, the KMR acknowledged that considering the interrelatedness of issues, changes that emerge in the context may impact on the inquiry and the actions that emerge, and vice versa. Rather than adopting a structured format, the methodology was characterised by flexibility in data collection methods, fluidity in progressing through the phases of the methodology and my embeddedness in the context. Overall, this contributed to the implementation of the methodology in an ongoing manner that iteratively facilitated an inquiry of the context, emergence and implementation of actions, and monitoring change that occurs as a result of the inquiry and actions. Additionally, the continuous review, learning and improvements in practice aligns to the need for re-auditing an organisation regularly, expressed by the existing knowledge audit authors (Cheung et al., 2007; Latif, Drus and Shariff, 2016).

Burns (2007, 2014a) further argued that when implementing change in complex system dynamics, every action, conversation and inquiry within the organisational context results in changes across the system. Actions and change here are articulated as changes in the system as well as changes in the way people act within the system. The KMR was designed on the premise of the participatory research paradigm that reality is co-created as the researcher and the participants interact in a given context (Reason and Bradbury, 2006; Kemmis, McTaggart and Nixon, 2015). Facilitated by the researcher's embeddedness in the EIS, the KMR became an emergent process, contributing to the emergence of learning, actions and changes as the researcher participated in the context. First, following SAR, the review facilitated systemic solutions in the EIS context. Embedded within the action research cycles following IAR (Coghlan and Brannick, 2014), the review resulted in actions and learnings to emerge

supported by the collaborative relationship between the researcher and the Knowledge Manager. Finally, participation in the context was also aimed at influencing the reflections and learnings of the employees, drawing from CPAR (Kemmis, McTaggart and Nixon, 2015), to empower them to improve their practice and engagement with knowledge management. These three forms of inquiry progressed iteratively, thereby simultaneously facilitating transformations in knowledge management practice, the Knowledge Manager's strategic focus and the employees' own engagement with knowledge management efforts. This interaction between the action research approaches is discussed further in Section 7.4.2. Overall, this approach was critical to simultaneously inform and implement actions for knowledge management practice, rather than a more traditional emphasis on strategy planning seen in existing knowledge audit studies.

The research gap that was highlighted in Chapter 5 suggested an incongruence with the theoretical understanding of knowledge management practice and the role of knowledge audits. Specifically, this research was designed to reassess the role of knowledge audits in facilitating the iterative relationship between an organisation's context and strategic objectives, the knowledge management framework, the knowledge management strategy and its implementation. The design of the KMR acknowledged the need for an integrated approach to knowledge management implementation aligned to the complex system dynamics of the high-performance sport context of the EIS. Further, the systemic nature of inquiry facilitated a critical understanding of the underlying system dynamics of the context and the emergence of knowledge management practice therein. Finally, the iterative approach to the review was instrumental in simultaneously informing, implementing and integrating knowledge management practice aligned to the strategic objectives of the EIS.

The interaction between knowledge audit, knowledge management strategy and its implementation was also alluded to in a recent study by Drus, Shariff and Othman (2017), evident in their conceptual model (Figure 7.1). Specifically, they provided support for this research's critique of the existing knowledge audit methodologies making limited reference to the knowledge management strategy and its implementation. Subsequently, they proposed a knowledge audit framework (Figure 7.2), which begins with Phase 0 for aligning the audit inquiry to the current

organisational environment, leading into Phase 1 or the pre-knowledge audit phase where a sound understanding of the internal and external context of the organisation and the business strategy is developed. In Phase 2, the audit inquiry is conducted to assess the knowledge environment and needs of the organisation. This evaluation then informs the design of the knowledge strategy, enlisting knowledge tools and techniques to improve the existing knowledge conditions of the organisation. Finally, in Phase 3 the knowledge strategy is implemented and reviewed. Their conceptual model and the relationships therein (Figure 7.1) are highlighted when considering the implications of implementing their knowledge audit framework in a context where knowledge management implementation is already existent. Specifically, they discuss the existing knowledge management implementation in the organisation will inform the aim and purpose of the audit inquiry and in turn will be affected by the knowledge management strategy that emerges thereafter. This research built on this relationship by emphasising the need for an audit inquiry, learnings and actions to progress iteratively to continuously inform and improve knowledge management practice.
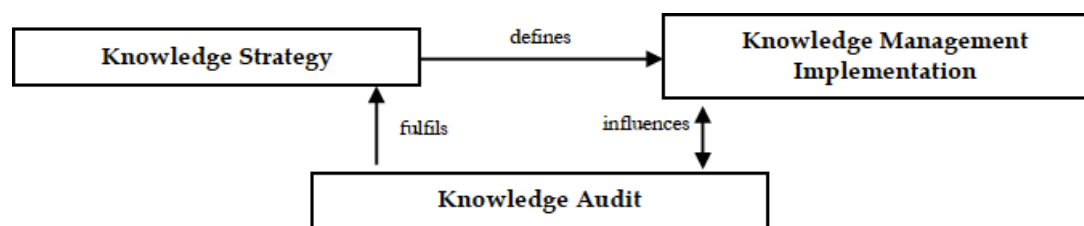
Figure 7.1 Concept map for interdependencies for knowledge management implementation, knowledge audit and knowledge strategy (Drus, Shariff and Othman, pp. 106)

7.3.2 Combining three action research approaches

The aim of this research was to investigate the role of knowledge audits in facilitating integrated and sustainable knowledge management practice. Subsequently, an iterative and systemic approach to practice was incorporated, discussed previously in Section 7.2. This was facilitated by the embeddedness and participation of the researcher in the context, specifically operating from an action research approach (Reason and Bradbury, 2008). As highlighted in Chapter 2, various approaches to action research have been discussed in the literature, informed by an interplay

between the researcher's ideas and the context (Reason and Bradbury, 2006). In this research, the action research approach that was adopted included an interaction between Burns' (2007, 2014a, 2015) conceptualisation of systemic action research (SAR), Coghlan and Brannick's (2014) description of insider action research (IAR) and principles of Kemmis, McTaggart and Nixon's (2015) critical participatory action research (CPAR).
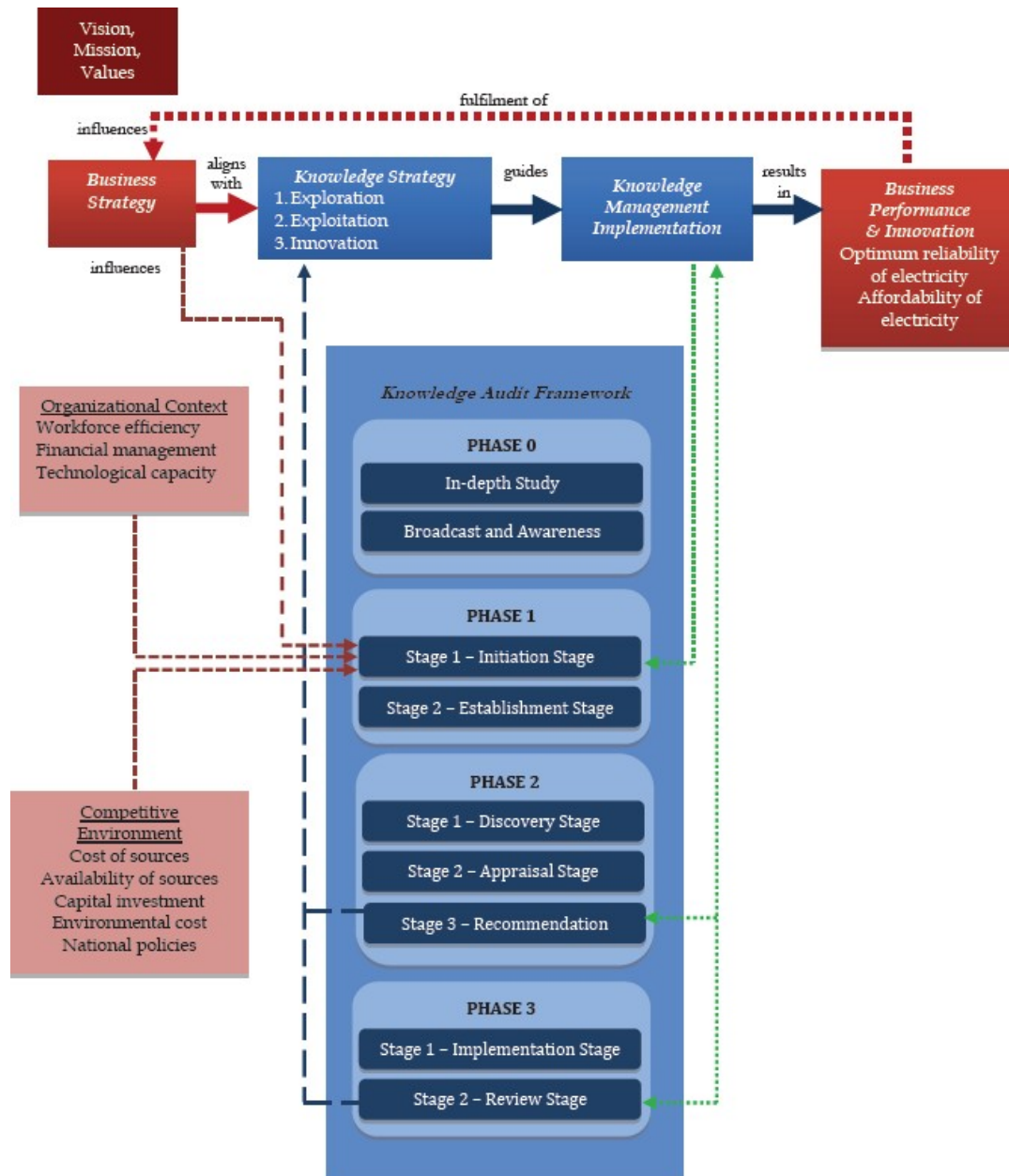
Figure 7.2 Proposed KA framework (Drus, Shariff and Othman, 2017, pp.115)

In Section 7.2, it was highlighted that a systemic approach to inquiry was deemed

suitable for facilitating sustainability of knowledge management. Within this research, the review enabled a system wide view of the context, resulting in actions that in turn are situated to impact change across the system. As a result, the KMR explicitly drew from an interaction between the three action research approaches. Burns (2014a) argued that the learning processes within the action research approach exist on a spectrum ranging from individual and group to whole systems. To facilitate systemic and sustainable change, the inquiry process stands to benefit from inclusion of individual and group-level inquiries. Within the EIS context, this approach was instrumental in simultaneously influencing the learnings of the researcher, the Knowledge Manager and the participants, resulting in actions that reflected systemic change in the perceptions of knowledge management practice in high-performance sport.

Specifically, aligned to the characteristics of the participatory paradigm and drawing from SAR (Burns, 2007, 2014a), the review included multiple, overlapping inquiries across the structure to highlight different perspectives as well as enable EIS employees' involvement in the decision-making process. In doing so, each line of inquiry built on the previous to identify issues that resonate across the system. This was instrumental in generating a systemic view of the wider high-performance system, to understand how complex interactions between factors in the wider high-performance sport context inform and sustain the existing practice of knowledge management in the EIS. In addition to highlighting the system dynamics, the review drew from principles of CPAR to influence participants' learning and facilitate change in the system in a collaborative and informed manner. Within the review, a communicative space was created, encouraging participants to critically reflect on their knowledge, experiences and context and how they shape their practice, thereby influencing their learning and enabling them to improve their practice (Kemmis, McTaggart and Nixon, 2015).

SAR assumes that systems and practice therein are emergent, that is, change in one factor or interaction of factors leads to change in relationships and interactions across the system, (Burns, 2014a). Thus, change occurs in an iterative manner, where the outcomes interact with other factors leading to new outcomes, and so on. Burns (2007) further stresses that change in complex systems occurs simultaneous to

conversations and actions, rather than as a result of actions and planning. Every conversation or action leads to emergent understanding, which in turn results in new actions in real time. This argument draws parallels with the reflexive-dialectic view of practice stressed by CPAR (Kemmis, McTaggart and Nixon, 2015). Specifically, practice is emergent and socially constructed within the context with the interaction between objective characteristics and their subjective interpretations. As objective conditions for action change, they create new subjective interpretations, affecting the way people enact practice, thereby changing the context further and so on. Within the KMR, the interaction between SAR and CPAR provided a basis for creating sustainable change in an emergent manner, rather than as a result of systematic planning. That is, as the participants and the researcher engaged in collaborative discussions to create a systemic understanding of the context, it simultaneously enabled the participants to critically assess their context and practice, which in turn created immediate actions and changes in the practice in real time. Thus, by integrating SAR and CPAR, the review facilitated change in the system dynamics, enabling sustainable change in the practice of knowledge management that was informed by the participants whilst simultaneously enhancing their capacity to reflect on the change, adapt, inform and implement subsequent change, and so on.

In addition to CPAR, the methodology drew from IAR, which has been presented as a way of researching one's own organisation to solve real organisational problems (Coghlan and Brannick, 2014). CPAR was instrumental in generating practical knowledge regarding knowledge management practice in the high-performance sport context. Following the principles of IAR, two simultaneous action and reflection cycles were incorporated into the review methodology. Primarily, the traditional spiral of action research cycle was enacted in the review, whereby the data collected from each line of inquiry were evaluated to plan subsequent action and inquiry, and so on (see Chapter 6). Here, the collaborative relationship with the Knowledge Manager proved instrumental in facilitating critical self-reflections on his own practice as well as collective reflections on the learning from the review to subsequently inform actions. As opposed to the snapshot evaluation of the context evident in the existing knowledge audit methodologies, this approach promoted iterative learning and on-going assessment of practice that will help maintain relevance and strategic impact of the performance knowledge initiatives. In addition, a meta cycle of learning was included

to guide the researcher's reflections on the implementation of the KMR and inform her learning regarding the practice of audits and of knowledge management. This in turn helped maintain a critical view on the implementation of the review, useful in upholding the rigour of the research.

The KMR recognised that the high-performance sport context is highly dynamic with change being a constant feature of the wider high-performance system. This was effectively demonstrated by the themes of External Context and Challenges in the Internal Context described in Chapter 6, that is, EIS is intricately linked with factors in the external context and affected by changes and demands of the wider high-performance context. For example, funding decisions imposed by the UK Sport result in changes in the needs and constraints for sports as well as the EIS simultaneously. The aim of the review was thus to not only inform change in the practice now, but facilitate a strategic, long-term view of the knowledge management practice. The critical self-reflections in turn were promoted as a way of raising the adaptive capacity of the knowledge management practice and the system to reflect critically on their practice, implement change and adapt to the changes in the system in an ongoing manner. Butler et al. (2015) demonstrated that an integration between top-down and bottom-up decision making helps raise the adaptive capacity of an organisation to embrace change. Specifically, they adopted participatory systemic inquiry (Burns, 2012) in a climate change planning project to facilitate learning and knowledge exchange and empower multiple stakeholders in the context to develop deeper insights into the change they are attempting to implement. They stated that such an integrated approach increases the adaptive capacity of the organisation, as compared to a traditional top-down approach. This is in turn mirrored in the EIS context where the participants stated the need to implement change "with the employees rather than to them."

The emphasis on the employees' self-reflections and learning within the participatory inquiry is further in line with Lin and Hwang's (2014) study on the role of employee commitment in knowledge management research. They discussed that sustainability of knowledge management systems and practice in organisations is mediated by the users' buy-in and voluntary commitment to the efforts. In terms of practical implications, they recommend due consideration for the self-efficacy, intrinsic motivation and

personal fulfilment of employees when designing knowledge management systems. The KMR, through the principles of CPAR, emphasised the practitioners' engagement with knowledge management practice by empowering them to critically assess their own motivations and value of engaging with Performance Knowledge, and how they contribute to realising that value.

Overall, each of the three action research approaches, SAR, CPAR and IAR, have strengths that lend themselves to informing change and improvements in practice. Aligned to the research question, the purpose of the KMR was to facilitate change in a sustainable, successful and integrated way, adopting a strategic and ongoing approach to improving practice. Drawing from an integrated perspective on knowledge management implementation (Jashapara, 2011) and a systemic view on knowledge management, the practice of knowledge management in an organisation is emergent from the interaction between a system or an organisation, its participants or organisational employees, and the knowledge manager facilitating practice. The interaction between SAR, CPAR and IAR mirrored this approach, simultaneously influencing the learning of the system, EIS employees and the Knowledge Manager to facilitate holistic change across the system and raise their capacity to inform and implement change in an ongoing, iterative manner. The outcome was the generation of practical and theoretical knowledge to affect change in a real-world context.

This interaction between research approaches draws parallels with integration and implementation science (I2S), positioned to improve the impact and integration of research in addressing complex real-world problems (Bammer, 2013). I2S posits that when tackling complex problems in the real-world, research should adopt new ways of thinking, emphasise collaboration and become more involved in the implementation of change. The three pillars of this approach are systems thinking and a systemic view of the problem, participatory methods where stakeholders contribute to the understanding of a problem and decisions about it and an understanding of how research and evidence contribute to actions (Bammer, 2005). Within I2S, Bammer (2013) stresses the integrative applied research approach, which, much like an orientation to action research, emphasises a commitment to include multiple research methodologies to best address the problem and the context in question. To influence change in complex problems, the integrative applied research posits that research

inquiry should include collaboration between the researcher and the stakeholders, to develop a multidisciplinary understanding of the problem but also to facilitate a better understanding of the problem amongst the stakeholders to empower them to take action (Bammer, 2013, pp. 6). Bammer (2005, 2013) asserts that such an approach is critical for informing change in an effective and sustainable manner in complex problems. Similarly, this research emphasised multiple action research approaches to generate a systemic understanding of knowledge management practice in the context and empowered the stakeholders to make effective decisions about improving knowledge management practice. In this way, the KMR went beyond making recommendations for knowledge management solutions and strategy, and facilitated integration of actions in ongoing practice.

Recent developments in the sport science literature also point to the need to bridge the gap between research and its application (Ross, Gupta and Sanders, 2018). The authors, who are also practitioners in the UK high-performance system, discussed that in elite sport, a systematic and structured approach to applied practice is too simplistic (Ingham, 2016; Ross, Gupta and Sanders, 2018). Furthermore, they acknowledge that human beings essentially resist a challenge to the status quo. They asserted that for research to create impact in practice, it must affect behavioural change in the stakeholders. For a practitioner, this involves translating research knowledge into actions, incorporating transferable insights and experiences to demonstrate impact and "soft-skills" (pp.6) that emphasise trust, expertise and familiarity with sport. Reflecting on the existing knowledge audit methodologies, it is evident that the predominantly snapshot approach to inquiry to design knowledge management solutions is a step removed from the implementation and acceptance of these solutions in the context. The KMR, on the other hand, emphasised embeddedness of the researcher in the context to translates insights into actions but also affect change in the perspectives and behaviours of the employees to embrace those actions.

On the whole, the KMR acknowledged that to inform sustainable and integrated knowledge management practice, it is important that change is systemic, involving multiple stakeholders and perspectives in designing and implementing actions. The interaction between SAR, CPAR and IAR was instrumental to inform systemic change in the focus and purpose of knowledge management practice in the context of the EIS,

facilitated by simultaneously influencing the learning of the stakeholders, that is, the researcher, the Knowledge Manager and the employees. Drawing from Mintzberg's (1994) argument for strategic thinking, such an approach to knowledge audits is critical to mediate the relationship between an organisation's context, their knowledge management strategy and its implementation.

7.3.3 Next generation of knowledge management

This thesis began with an introduction into the many perspectives, frameworks and terminologies present in the knowledge management literature that contribute to the multiplicity of the field (Chapter 3). This multiplicity is indicative of knowledge management as a discipline trying to explore and assert its identity. As yet, there is a lack of consensus on what constitutes knowledge management and a unified framework of knowledge management implementation (Ibrahim and Reid, 2010; Grant, 2015; Tzortzaki and Mihiotis, 2014). In the early days, this motivated authors and practitioners to question the identity of the discipline, terming it a management 'fad' (Wilson, 2002). Historically, the discipline of knowledge management has undergone considerable evolution, which authors have categorised under different generations or conceptual orientations in the field (McElroy, 2003; Snowden, 2002; Tzortzaki and Mihiotis, 2014).

Tzortzaki and Mihiotis (2014) presented a review of the knowledge management literature and future directions where they discussed the three generations of knowledge management, demonstrating the historical evolution of the field in line with the simultaneous developments in concepts, practice and technology. The first generation of knowledge management emphasised the capture, documentation and transfer of knowledge to the knowledge workers at the right time with minimal efforts, supported with a set of knowledge management tools, techniques and technologies (Snowden, 2002; McElroy and McElroy, 2003). McElroy and McElroy (2003) termed this the supply-side of knowledge management, whereby knowledge already exists in the organisation and the role of knowledge management is to supply this knowledge to the knowledge workers. The first generation of knowledge management places little emphasis on how knowledge is created, focusing instead on the use of technological solutions to distribute knowledge across the organsation, operating from the belief that more transfer of knowledge will lead to improved performance (McElroy, 2003).

Heralded by the seminal work of Nonaka and Takeuchi (1995), the second generation of knowledge management placed greater emphasis on knowledge processes and collaborative spaces that enable knowledge creation and sharing. McElroy and McElroy (2003) called this the demand-side of knowledge management indicating that the role of knowledge management is to facilitate the creation and sharing of knowledge in response to the demand for it, facilitated by a set of frameworks, models and practices. The emphasis in the second generation is on creation of new knowledge through social processes and by enabling innovation and creativity to occur (McElroy, 2009). McElroy (2009) further discusses that in the second generation, there is convergence of knowledge management and organisational learning; the emphasis is holistically on the entire knowledge life cycle whereby new knowledge is created, validated and integrated into the organisational practice and processes.

Tzortzaki and Mihiotis (2014) reported that many knowledge management authors express the need for a third generation of knowledge management. McElroy and colleagues (McElroy, 2003; Firestone, 2003; Firestone and McElory, 2003) proposed the new knowledge management emphasising a breadth and depth of issues that are considered. First, the new knowledge management discusses the application of complexity theory, describing organisations as complex adaptive systems and emphasising self-organisation and emergence of knowledge processing (Firestone, 2003). Specifically, they posit that creation and application of knowledge is defined by complex interactions in the organisational context. Similarly, Snowden (2002) critiqued that in the second generation, knowledge management practices borrowed from principles of scientific management, focused at managing knowledge as a thing. This resulted in development of best practice principles, guidelines and frameworks to impose structure and mechanisation in the management of knowledge. knowledge management authors argue that such a standardised approach can hinder innovation and creativity, highlighting the paradox of management of knowledge (Tzortzaki and Mihiotis, 2014). Snowden (2002) suggested that the third generation of knowledge management will embrace the paradox and focus on managing knowledge as a thing as well as a flow. Additionally, the new knowledge management places emphasis on how individuals learn, drawing from psychological theories of human motivation and principles of double loop learning (Firestone, 2003).

As the discipline moves towards the third generation (Grant 2015), there still appears to be a lack of consensus on the future direction of knowledge management (Tzortzaki and Mihiotis, 2014, pp.21). Tzortzaki and Mihiotis (2014) predicted that in the third generation, the focus will be on organisational networking and collaboration, where technology and processes will be used not only to communicate and share knowledge but to help knowledge workers network. In addition, traditional management practices will be replaced by democratic leadership styles whereby the employees are encouraged to volunteer knowledge and experiences. Similarly, Barley, Treem and Kuhn (2018) and Swart, Bowman and Howard's (2018) recent works allude to knowledge in networks, urging integration of knowledge assets that reside in organisational processes, people and their relationships and interactions.

On the whole, the trends in the knowledge management literature over the last few years appear to be towards acknowledging the interaction between multiple factors critical for the success of knowledge management implementation and the subsequent competitive advantage. The integrated approach in the research and practice of knowledge management is increasingly emphasised, whether that is between different forms of knowledge capital, between knowledge resources and knowledge processes or between multiple factors critical for the success of knowledge management implementation. Referring back to Ragsdell's (2003) observations on the evolution of any discipline, the field of knowledge management has moved beyond a functionalist and fragmented approach to research, and is embracing the complexity and interconnectedness of constituent factors. This research is placed within this trend in knowledge management literature, highlighting knowledge audits as critical for designing and guiding systemic organisational knowledge management, facilitating integration across an organisation.

Dwivedi et al. (2011), reflecting on the evolution of knowledge management practice and research, predicted that future research in the field requires an emphasis on studying how knowledge processes evolve in an organisation's context, in turn influencing the organisation's overall knowledge management practice. This research aligns itself to this future direction, wherein the KMR emphasised continuously reviewing an organisation's knowledge management practice through iterative cycles

of actions and learnings. Further, in his review of the knowledge management research, Grant (2015) highlighted a divide between practitioners and researchers, making it difficult to transform research into practice. This research, through adopting the action research approach, emphasised contributions to the theoretical understanding and approach to knowledge audits, whilst discussing its application in a real-world context along with the impact thereof. Further, by embedding the researcher in the organisational context, this research bridged the gap between researcher and practitioner, highlighting the KMR as a key, ongoing responsibility of the knowledge manager (see following Section 7.3.4).

Heisig et al. (2016), in their statement of the future directions of knowledge management, discussed that there is limited research exploring the relationship between an organisation's business strategy, the knowledge management strategy and their performance. Consequently, they emphasised the impact of knowledge management on business outcomes as a critical focus for advancing the theory and practice of knowledge management. This research contributed to this need, by arguing and demonstrating that a knowledge audit can facilitate the integration of knowledge management practice in the core strategic functions and objectives of an organisation. Within the EIS, this is evident in the actions that emerged from the review. First, knowledge management practice became aligned to the current strategic objectives of the EIS by becoming embedded in the learning function to promote system and practitioner learning. Second, the social network analysis and the resultant transformations in the organisation represent an example where the knowledge management principles became integrated in the strategic priorities of the EIS, with implications for organisational design, learning interventions, collaboration and funding decisions.

This research argues that knowledge management will lead to sustainable competitive advantage and impact for the strategic objectives of an organisation when it is systemic and truly integrated into the core functions of the organisation. Aligning to the movement towards the future of knowledge management (Snowden, 2002; McElroy, 2009; Tzortzaki and Mihiotis, 2014; Barley, Treem and Kuhn, 2018; Swart, Bowman and Howard, 2018), this will be accomplished when knowledge management implementation considers interconnectedness of critical success factors, is integrated

systemically across the organisational context, and emphasises facilitation of the organisational functions and objectives. The practical implications of this for a knowledge manager are to embody the role of a facilitator, managing contexts that empower organisations to engage with knowledge management principles to achieve their strategic objectives, rather than managing knowledge and knowledge processes independent of the organisational functions. By becoming systemically embedded and aligned to the way an organisation works, knowledge management practice will become sustainable and resistant to changes in the context. The KMR facilitated this integration by bridging the gap between organisational context and strategy, knowledge management strategy and its implementation.

7.3.4 Systems thinking in knowledge management

Another key theoretical implication of the KMR contributes to the alignment of systems thinking to knowledge management. The KMR was designed drawing from an integrated approach to knowledge management implementation, whereby authors have asked for an emphasis on a holistic knowledge management efforts, focusing on inclusion of multiple factors and stressing the integration of knowledge management with traditional management functions to maximise the success of knowledge management, (Liebowitz, 1999; Heisig, 2009; Ibrahim and Reid, 2010; Jashapara, 2011). Researchers and authors in the field have stressed the need to integrate knowledge management within the strategic goals, objectives and functions of an organisation, as well as adopt a multidisciplinary and multidimensional approach to knowledge management implementation (Liebowitz, 1999; Rubenstein-Montano et al., 2001; Jashapara, 2011; Heisig, 2015).

Authors such as Rubenstein-Montano et al. (2001) and Jackson (2005) argue that systems thinking can provide the theoretical underpinning to knowledge management that is so far lacking (Simatwo, Ragsdell and Jackson, 2017). Rubenstein-Montano et al. (2001) effectively championed systems thinking in knowledge management, urging a systemic approach to integrating multiple factors in knowledge management implementation. They argued that systems thinking can provide knowledge management with an overarching framework to organise its constituent parts, and ensure that the knowledge management implementation is consistently integrated across the organisation. Further, Jackson (2005) discussed the theoretical and

methodological implications for knowledge management from a critical systems thinking (CST) perspective, highlighting the compatibility between the two fields. He drew comparisons between the models that are generally applied to organisations and its implications for knowledge management. First, the machine model adopts a deterministic perspective, viewing organisations as machines. The machine model mirrors in the objectivist perspective on knowledge management, whereby the stress is on explicit, objective knowledge that can be systematically transmitted and shared. The knowledge management implementation here emphasises use of information technology and processes such as knowledge capture, storage and sharing (Jackson, 2005). The organismic model, on the other hand, views organisations as a living organism. The emphasis here is on developing a shared understanding of the context and purpose of the organisation. This model mirrors the social and human factors in knowledge management implementation, emphasising tacit knowledge and individual experiences, insights and perspectives. Ackoff and Gharajedaghi (1996) argued that the organismic model is insufficient considering complexity and change, and stress the social-systemic model as critical in the modern society.

The social-systemic model views organisations as being purposeful at multiple levels, that is, the organisation itself is purposeful, organised towards certain goals and objectives; additionally, they consist of individuals who have their own personal and professional aspirations, whilst residing within wider purposeful systems whose interests are served by the organisation (Jackson, 2005). The implications for knowledge management implementation here is the need to serve and integrate these multiple purposes. CST thus argues that knowledge management will stand to benefit from incorporating the multiple models of the organisation. Jackson (2005) urged the need to develop the conversation further, exploring the link between systems thinking and knowledge management in theory and practice. Paucar-Caceres and Pagano (2009) showed that a growing body of knowledge management literature is adopting a systems thinking perspective on knowledge management, demonstrating its impact in appreciating the complexity of knowledge management. Simatwo, Ragsdell and Jackson (2017) further highlighted that systems thinking can provide the theoretical and philosophical underpinnings to knowledge management. In response to the lack of consensus and fragmentation in the field, systems thinking can offer a holistic and unified approach, ushering knowledge management into the next generation (Simatwo,

Ragsdell and Jackson, 2017).

This study was not designed explicitly following principles of systems thinking, CST or complexity theory and their application in knowledge management at the outset, as the scope and focus of the study was based in the knowledge audit literature. However, an implicit understanding of systems thinking guided the review to facilitate a strategic and integrated approach to informing the practice of knowledge management for the EIS. This understanding was informed by an introductory review of basic concepts in systems thinking (Flood and Jackson, 1991; Flood, 2010) and demonstrated in the incorporation of principles of systemic action research in the review (Burns, 2007, 2014a, 2014b, 2015).

Specifically, the KMR adopted a systemic approach to inquiry, to highlight how the emergence of knowledge management practice is informed by the underlying system dynamics and the interrelatedness of factors in the organisational context. The KMR operated from the premise that a systematic evaluation of independent challenges, needs, processes and outcomes within knowledge management practice may be too simplistic and reductionist. Instead, the KMR emphasised that knowledge management practice on the whole is created by the interaction between multiple factors in the context. Aligned to this, the KMR stressed the importance of context in defining knowledge management practice, using an iterative approach to the inquiry to continuously review the context to inform knowledge management practice. Further, in addition to informing change, the KMR considered the participants' motivations to engage in knowledge management practice through asking why questions. Finally, taking into account the dynamic context of high-performance sport, the KMR refrained from informing practical solutions, and instead focused on systemic solutions, targeting the underlying root cause and the way the system perceives and engages with knowledge management practice. Within the EIS, KMR facilitated change in systemic understanding of knowledge management practice, that is, from a process driven approach with technological components, Performance Knowledge is now perceived in the EIS as an organisational function supporting practitioners' learning, collaborating and problem solving efforts.

There are perceived parallels between the KMR principles and the characteristics of

systems thinking (Flood, 2010; Gharajedaghi, 2011; Arnold and Wade 2015). Systems thinking emerged as a critique of reductionism, instead operating from a belief that the emergence of a phenomenon as a whole can be understood by multilinear interdependencies between the constituent elements (Flood, 2010). In terms of studying social phenomenon, systems thinking aims to construct meaning in a systemic manner drawing from people's experiences within the context (Flood, 2010). Further, Arnold and Wade (2015) discuss that system behaviours can be defined and understood by these interconnections between elements that create the whole system structure. Gharajedaghi (2011) further discussed that systems thinking operates from principles of openness and purposefulness. Openness denotes that systems operate within an external context and thus any attempt to study social phenomenon should include the context of which it is a part. Purposefulness posits that in order to understand and inform practice from a systems thinking perspective, it is important ask 'why' questions and highlight the rational choice of the individuals involved (Gharajedaghi, 2011). Overall, systems thinking can be understood as a set of skills and methodologies for "understanding systems, predicting their behaviors, and devising modifications to them in order to produce desired effects" (Arnold and Wade, 2015, pp.675).

At the outset, this research outlined the multidimensional roots of knowledge management, drawing from multiple theories of organisational science (Jashapara, 2011; Beccera-Fernandez and Sabherwal, 2014). Further, the KMR drew from the integrated perspective to knowledge management implementation that stresses inclusion of multiple factors in the organisational context to suitably inform a knowledge management strategy and its implementation (du Plessis, 2007; Dalkir, 2013). Through the review within the EIS context, the KMR demonstrated the impact of systemic approach to inquiry for facilitating integration of knowledge management practice in organisational functions for sustainably generating strategic advantage. As we move towards the next generation of knowledge management, with its emphasis on managing contexts as much as managing knowledge and knowledge processes, it is imperative that further research considers applications and interactions between systems thinking and knowledge management.

7.3.5 Summary

This research was designed to demonstrate the role of knowledge audits in informing and enhancing the sustainability, integration and success of knowledge management practice. Sustainability was operationalised as successful implementation of knowledge management practice that is embedded and integrated into the working culture of the organisation, adopts a long-term strategic focus to provide continuous competitive advantage and is resilient against the dynamic context. The KMR thus adopted a systemic approach to inquiry to assess the emergence of knowledge management practice in light of the interdependencies between multiple factors in the high-performance sport context. The KMR inquiry was iterative, conducted through multiple iterations of actions and learning simultaneously implement change in the context. Finally, the KMR was conducted in participation with the organisation to embed and integrate knowledge management practice in the working culture of the EIS. To do so, the principles of participatory paradigm were incorporated, facilitated by an interaction of IAR, SAR and CPAR (Reason and Bradbury, 2008; Coghlan and Brannick, 2014; Burns, 2014a; Kemmis, McTaggart and Nixon, 2015) to facilitate transformations in knowledge management practice by simultaneously informing and influencing learning across the system. The impact of this approach was the systemic change in the perception and focus of knowledge management practice in the organisation, integrated into the organisational functions and aligned to the strategic objectives to contribute to the attainment of competitive advantage.

The preunderstanding of the knowledge management literature highlighted that research inquiries in the wider knowledge management discipline have separately explored factors that mediate the success of knowledge management implementation, the implementation of knowledge management strategies and practice, and the implementation of knowledge audits to design and inform knowledge management practice. This research emphasised an iterative and integrated relationship between the organisational context, knowledge management strategy and knowledge management implementation, and subsequently these research inquiries. In doing so, this research challenged the purpose of and practical considerations in conducting knowledge audits. The knowledge management review was presented as a critical process in facilitating the interrelationship between the organisational context, knowledge management strategy and its implementation, to adopt a strategic thinking

perspective on knowledge management implementation and integrate knowledge management practice in the core business strategy and functions of the organisation. This research further demonstrated the strength of the iterative and systemic nature of inquiry and participation with the stakeholders to inform and implement change, directly addressing the critique of the existing knowledge audit methodologies. It is thus recommended that knowledge management reviews become a key responsibility of the knowledge manager to facilitate ongoing review of the context to continuously improve knowledge management practice.

This study further contributed to the ongoing commentary on the future direction of the field of knowledge management. It is evident that there is a widespread lack of consensus on a standard definition, framework or approach to knowledge management. As a result, a prominent section of the literature has focused on defining the field. Another section of the literature has focused on identifying opportunities in the organisational context to implement knowledge management tasks and processes, albeit aligned to their strategic needs. This study demonstrated that in order to create sustainable, strategic advantage, it is imperative that knowledge management efforts become aligned to the core functions of the organisation, critical to facilitate the realisation of the organisational objectives. In doing so, the emphasis should be on defining what knowledge management means for and can offer each individual context. Specifically, knowledge management should adopt the role of facilitating the organisational strategy, whereby knowledge resources, tasks, procedures and processes will become vehicles for supporting ongoing strategic organisational efforts. In this way, knowledge management practice will go beyond managing knowledge as a content (knowledge resources) and managing knowledge as a flow (knowledge processes), and focus on creating contexts where organisations are able to efficiently engage with knowledge management principles.

7.4 Concluding remarks

This research presents the implementation of the KMR and the emergence of the subsequent actions for the EIS during the period between October 2015 to May 2018 as well as the researcher's reflections and learning on the process. The actions are currently being implemented in the EIS. The researcher is now an employee in the organisation, facilitating the implementation of the social network analysis in the UK

high-performance system. The researcher's continuing association with the EIS has contributed to enhancing her understanding of the wider UK high-performance system and the various layers of its complexity beyond the period of this research. Further, as characteristic of a dynamic context, the EIS organisational structure, functions and culture has undergone considerable change since the beginning of the research (October 2015). The researcher's embeddedness in the context as well as the iterative approach of the action research methodology were critical in developing an emergent understanding and adapting the implementation of the KMR and the subsequent actions in knowledge management practice to the changing needs. This demonstrates a core strength of the KMR methodology, to facilitate increased agility and adaptability of knowledge management practice, aligned with the organisational context and needs.

7.5 Chapter summary

This chapter presented a discussion on the findings from the implementation of KMR at the EIS, followed by the implications for the theory and practice of knowledge audits. As highlighted in this chapter, the research has reassessed the role of knowledge audits in knowledge management practice. This chapter further discusses the implications for the wider knowledge audit literature, aligning this research to the proposed future directions in the field. The next chapter concludes this research with an overview of the research and its original theoretical, practical and methodological contributions.

Chapter 8: Conclusion

Chapter 8: Conclusion

8.1 Introduction

This chapter outlines the conclusions drawn from this research. Section 8.2 revisits the research aim and objectives to evaluate the realisation of the purpose of the research. Section 8.3 summarises the research with key research themes and recommendations for the EIS. Section 8.4 outlines the original research contributions. Section 8.5 readdresses the question 'why knowledge management'. Finally, Section 8.6 discusses the limitations of this research and recommendations for future directions.

8.2 Research aim and objectives

Considering the pervasive lack of a standard framework for knowledge management implementation, the purpose of this research was to investigate the role of a knowledge management review in informing knowledge management implementation aligned to and embedded in the organisational context, specifically positioned to enhance the sustainability of knowledge management practice. Accordingly, the aim of this research was:

RA.   To investigate the role of knowledge audits in informing knowledge management practice in an organisation.

The case study organisation, the EIS, became a vehicle through which this research aim was successfully achieved. The EIS was identified as a complex system within the hierarchy of the UK high-performance system, wherein multiple teams within and outside of the EIS organisational boundaries interact and collaborate with each other to contribute to the overarching objectives of creating performance impact in sports. Aligned to this complexity, the KMR adopted an iterative and systemic approach to inquiry, facilitated by the embeddedness of the researcher in the context. The review inquiry subsequently contributed to the emergence of multiple actions for knowledge management practice in the EIS that depicted improvements in the ongoing knowledge management initiatives, become integrated and embedded in the ongoing organisational functions and cultivated a long-term strategic perception of the knowledge function in the context critical for facilitating the organisation's strategic

objectives.

The research aim was accomplished through the following objectives:

RO 1. To review and critique the current literature, research and methodologies on knowledge audits

RO 2. To design a knowledge management review methodology addressing the gaps in the current literature

RO 1 and RO 2 were met by conducting an exploratory review of the knowledge management literature, preliminary observations of the case study context and a critical review of the knowledge audit literature in an iterative manner. This led to the design of the KMR, positioned to address the gaps in the literature and aligned to the needs of the organisational context.

RO 3. To implement the knowledge management review methodology in the case study organisation and use the findings to inform their knowledge management practice

RO 3 was achieved by implementing the KMR at the EIS. By incorporating the action research approach, the KMR iteratively reviewed the organisational context and needs and informed actions. Thus, the KMR simultaneously facilitated the review inquiry as well as changes and improvements in knowledge management practice in a timely and relevant manner.

RO 4. To identify learning from the review process and assess the impact of   the methodology in informing knowledge management practice

RO 4 was accomplished through the researcher's critical reflections on the implications of the KMR methodology for EIS's knowledge management practice. The actions that emerged from the audit inquiry were critical in enhancing the integration of knowledge management practice in the context and changing the strategic perception and role of the knowledge function for facilitating EIS's strategic objectives. Thereafter, the implementation of the KMR methodology was reviewed, drawing from

the researcher's reflections from practice, contributing to the researcher's meta-learning. Subsequently, the practical and methodological implications of the research were discussed with regards to the practice of knowledge audits, emphasising their role in aligning knowledge management implementation to the organisational context. Further, knowledge management reviews were emphasised as a key responsibility of a knowledge manager in conducting an ongoing review of an organisation's knowledge management practice to facilitate continuous improvements and a strategic view of practice.

RO 5. To make theoretical and methodological contributions to the existing understanding and literature on knowledge audits and knowledge management implementation

RO 5 was achieved by positioning this research within the existing knowledge audit literature, practical considerations in the implementation of knowledge management practice and the general trends in the future direction of the knowledge management discipline. These contributions are outlined further in Section 8.4.

8.3 Research overview

This research commenced with a critique of the existing knowledge audit literature in suitably informing knowledge management practice that is sustainable and integrated in an organisation's context. A review of the literature suggested an iterative relationship between the organisation's context, appropriate knowledge management framework, the knowledge management strategy and its implementation. Knowledge audits have been described as the critical first step in the design and implementation of an organisation's knowledge management strategy (Liebowitz 2000; Hylton, 2002; Latif, Drus and Shariff, 2016). This research thus argued that for knowledge audits to inform knowledge management practice in a sustainable and integrated manner, they should play a key role in facilitating this iterative relationship. However, a review of the knowledge audit literature highlighted that the existing knowledge audit methodologies are predominantly structured as a systematic, objective and snapshot evaluation of an organisational context, conducted with the aim of evaluating the knowledge environment and identifying knowledge leads to recommend practical solutions for knowledge management implementation. Conducted by an external and objective

auditor, there is limited discussion regarding the design of a holistic knowledge management strategy and the impact of the recommendations thereafter. With regards to the aims of this research, there were further questions regarding the success of this approach in facilitating sustainability and integration of knowledge management practice.

To address this research gap, the KMR was designed and implemented in the case study organisation, informed by the participatory paradigm and the characteristics of action research (Reason and Bradbury 2008). From within the family of action research approaches, the KMR adapted an interaction of insider action research, systemic action research and critical participatory action research. The design of the KMR facilitated a systemic and iterative approach to inquiry and emphasised the researcher's embeddedness and participation in the EIS to simultaneously review the context, empower employees to critically reflect on knowledge management practice and inform and implement change. This research demonstrated that such an approach to the knowledge audit inquiry resulted in integration and alignment of knowledge management with the core organisational functions in the EIS, facilitating the attainment of their strategic objectives.

8.3.1 Key findings in relation to research questions

Sustainability of knowledge management was defined as knowledge management practice that adopts a long-term strategic focus to provide continuous competitive advantage, becomes successfully embedded and integrated into the working culture of the organisation, and is resilient against changes in the dynamic context. To facilitate this and in response to the systematic, objective and snapshot approach evident in the existing knowledge audit methodologies, the KMR drew from the participatory research paradigm. Specifically, the KMR fostered a strategic thinking approach to knowledge management implementation in order to continuously and strategically improve knowledge management practice, informed by actions and learnings in the context. In doing so, the KMR emphasised the researcher's participation in the context to collaboratively review knowledge management practice and implement change. Further, the KMR adopted an iterative approach to inquiry, simultaneously studying the context, reviewing the knowledge management literature and informing and implementing actions. This was instrumental to facilitate the

iterative relationship between the organisational context, knowledge management strategy and its implementation. The review inquiry in turn followed a systemic approach to highlight and challenge the systems dynamics of the context that lead to the emergence of knowledge management practice, subsequently facilitating systemic solutions. Finally, the KMR facilitated participation of the employees in the review inquiry, empowering them to inform and influence their own perceptions and engagement with knowledge management practice. Overall, this research showed that a systemic and iterative approach to inquiry, facilitated by the researcher's participation in the context, is critical to integrate knowledge management practice in the core functions of the organisation, aligned to facilitate the attainment of organisational strategic objectives. This further enhances the sustainability of knowledge management practice, contributing to the discipline's move away from being termed a management fad.

8.3.2 Impact for the EIS

The research aims and objectives were achieved by implementing the KMR in the EIS context. In terms of the practical impact for the EIS, the KMR was primarily successful in transforming the systemic perception and engagement with the Performance Knowledge function. Primarily, through critical reflections on his own practice and the focus of Performance Knowledge aligned to the needs of the system, there were considerable changes in Knowledge Manager's perceptions of his role and implementation of Performance Knowledge in the EIS. He discussed being more critical about knowledge management practice and embodied the role of a facilitator in helping individuals and teams across the system to share and collaborate. The focus of Performance Knowledge thus transformed from driving technological solutions and processes, to a systemic embeddedness in the working culture of the EIS.

Further, the remit of Performance Knowledge is now evidently across the system, rather than focused at a single department in the EIS. This is visible in the Knowledge Manager's efforts in promoting and facilitating collaboration between the EIS, sports, strategic partners and other home country sport institutes. This is also evident in the change in the structural position of Performance Knowledge, now residing within the Learning function tasked to promote system learning. Thus, the Performance Knowledge function is now integrated into a core organisational function, contributing

to learning and development across the system. Finally, aligned herewith, recent developments in the high-performance system urged the SLT to promote learning and problem solving through collaborating in the high-performance network. The embeddedness of the researcher was instrumental in identifying this strategic opportunity to align knowledge management efforts with, to understand how individuals, teams and sports in the high-performance system currently work, learn and collaborate in networks. Subsequently, the EIS has now focused efforts in analysing the existing network of expertise and optimise it for competitive advantage in elite sport.

Thus, the KMR, with its emphasis on critical self-reflections and systemic solutions, created the context and opportunity for the EIS to identify the system dynamics and align their perceptions and engagement with knowledge management accordingly. With the SLT's support, integration in strategic objectives and embeddedness in the working culture of the EIS, knowledge management practice now has a long-term and strategic focus in the context, contributing to its sustainability.

8.4 Research contributions

This research made original contributions to theory and practice in the field of knowledge management. These include theoretical, methodological and practical contributions, outlined in the following sections.

8.4.1 Theoretical contributions

This research identified a research gap, in the theoretical purpose of knowledge audits and practical approach to implementation in suitably informing knowledge management practice that is sustainable, integrated and successful in creating competitive advantage. Through implementation in a high-performance sport context, this research contributed to redesign of knowledge audits. Further, by demonstrating the role of knowledge audits in integrating knowledge management practice in the organisation, this research aligns itself to the future directions in the field of knowledge management.

8.4.1.1   Knowledge management review

In response to the systematic and snapshot approach to evaluation predominantly

evident in the knowledge audit literature, this research contributed a revision in the terminology. Specifically, the term knowledge management review was adopted to emphasise a systemic and iterative approach to inquiry. Facilitated by the researcher's embeddedness and participation in the context, this research demonstrated the impact of this approach in informing knowledge management practice that is integrated in the organisation and aligned to the strategic objectives to facilitate competitive advantage. The wider knowledge management literature suggested the need to adopt an integrated perspective to knowledge management practice that considers multiple factors in the organisational context in the design and implementation of the knowledge management strategy (du Plessis, 2007; Jashapara, 2011). This research contributed to this line of thinking by demonstrating that knowledge audits play an instrumental role in facilitating the iterative relationship between the organisational context, organisational strategy and knowledge management strategy. Further, this research showed that the role of knowledge management reviews extends beyond the initial step in knowledge management strategy design. Specifically, through adopting a strategic thinking approach to implementation, knowledge management reviews can play a critical role in continuously improving practice through iterative cycles of actions, learnings and change.

8.4.1.2　Future of knowledge management

This research also aligns itself to the future directions in the field of knowledge management. Specifically, emerging trends in the knowledge management literature point to the need for an integrated approach to knowledge management practice (Barley, Treem and Kuhn, 2018; Swart, Bowman and Howard, 2018). Further, it has been speculated that the next generation of knowledge management will focus on managing contexts in order to help organisations collaborate and network, rather than emphasise the management of knowledge and processes (Snowden 2002; McElroy, 2003; Tzortzaki and Mihiotis 2014). This research contributed to this need for an integrated approach by highlighting the role of knowledge management reviews in facilitating the iterative relationship between the organisational context, knowledge management strategy and knowledge management implementation. Subsequently, by aligning knowledge management practice to the organisational functions and objectives, this research contributed to help challenge the identity of the discipline of knowledge management as just another management fad.

8.4.2 Methodological contributions

This research directly questioned the methodological approach predominantly followed in the existing knowledge audit methodologies. The KMR was accordingly designed following the principles of the participatory research paradigm and the characteristics of action research. Consequently, this research made methodological contributions to action research literature.

8.4.2.1 Action research approaches

In methodological literature, action research has been defined as a family of approaches and commitment to inquiry, rather than a specific methodology, informed by the context and the researcher's ideas (Reason and Bradbury, 2006; Kemmis, 2008). In order to facilitate systemic, iterative and strategic focus in the audit inquiry conducted in participation with the EIS, the KMR drew from three action research approaches. Burns (2014a) discussed that learning processes within the action research approach exist on a spectrum ranging from individual and group to whole systems, thereby suggesting the need for research to explore this relationship further. This research demonstrated the interaction between insider action research, systemic action research and critical participatory action research. Specifically, the KMR facilitated systemic inquiry in the context, implemented change and empowered the Knowledge Manager and the employees to critical reflect on practice simultaneously and iteratively. Drawing from the reflexive-dialectic view of practice, the KMR was thus able to facilitate transformations in the context along with transformations in the way people act and behave (Kemmis and McTaggart, 2000; Burns, 2007). Overall, this research showed that systemic inquiry for systemic solutions is enabled by participatory inquiry and reflective practice.

8.4.3 Practical contributions

Informed by the action research approach, the purpose of this research was to contribute to theoretical understanding as well as generate practical knowledge. This research accordingly made contributions to the practice of knowledge audits and the role of a knowledge manager.

8.4.3.1 Practice of knowledge audits

Knowledge audits are described as the critical first step in the design and implementation of knowledge management strategy (Hylton, 2002; Latif, et al 2016). This research argued that in order to sustainably and successfully inform knowledge management practice, the knowledge management strategy should be aligned to the organisational context and the core business strategy. The role of knowledge audits is then critical to facilitate this iterative relationship. The existing knowledge audit methodologies highlight the need to assess the organisational objectives, evaluate the knowledge environment and needs, and make recommendations for the implementation of knowledge management strategy. However, it appears that no methodology has consistently studied every element of this relationship. Accordingly, this research contributed to the practice of knowledge audits, depicted by the following approach:

- Pre-review: Context – Assess the wider context, organisational objectives and core organisational functions to identify the approach to knowledge management implementation that aligns herewith. This will in turn inform the approach to the inquiry in the next phase.

- Focused review: KM strategy – Identify multiple factors in the organisational context that affect and inform knowledge management practice. In addition, identify opportunities across the context where knowledge management practice can facilitate organisation's strategic objectives. This inquiry will inform actions for knowledge management implementation.

- Ongoing review: KM implementation – The actions designed upon the focused inquiry are then simultaneously implemented in the context. This phase of the review will be conducted in an ongoing manner to monitor implementation, facilitated by iterations of actions and learnings, as well as to continuously review the context for adapting knowledge management practice to the new needs and changes that emerge in it.

This research also questioned the systematic and snapshot approach to evaluation predominantly followed by the knowledge audit methodologies presented in the literature. Instead, this research contributed to the practice of knowledge audits by

incorporating a systemic and iterative approach to inquiry to integrate knowledge management strategy with the organisational strategy, foster a strategic focus to knowledge management implementation and continuously improve knowledge management practice.

8.4.3.2   Role of knowledge managers

To facilitate the systemic and iterative approach to inquiry, this research emphasised the knowledge audit as a key responsibility of the knowledge manager. This is directly in response to the objective evaluation by an external consultant evident in the existing knowledge audit methodologies. This research argued that to maximise the sustainability, integration and success of knowledge management practice, knowledge management strategy and implementation should be informed by the participation of the stakeholders. Further, to foster a strategic thinking perspective to knowledge management practice, it is important that knowledge management implementation is continuously reviewed. This will be accomplished when the audit is conducted as an ongoing review of knowledge management practice, rather than being conducted periodically to inform solutions. Thus, this research contributed to the role of a knowledge manager as the facilitator of knowledge management practice in collaboration with and integrated within the organisational context. Within this role, the knowledge management review will be conducted to inform knowledge management practice, to facilitate its implementation in the organisation aligned to the strategic objectives and functions, and to continuously review and monitor the implementation, progress and relevance of knowledge management practice.

8.5 Why knowledge management?

Recent trends in the literature suggest that the future of knowledge management will emphasise managing contexts and behaviours that contribute to more effective collaboration and sharing and adaptive learning to enable evolution of knowledge management practices in response to the changing needs of the context (Snowden, 2002; Dwivedi et al., 2011; Tzortzaki and Mihiotis, 2014; Barley, Treem and Kuhn, 2018). This study contributed to this line of research by facilitating the systemic significance and integration of knowledge management in the case study organisation. Specifically, this research contributed to the emergence of multiple actions that had far reaching impact than a series of knowledge management solutions and processes

and became integrated in the strategic objectives and strategies of the EIS. The overall strategic direction of knowledge management evolved to improve problem solving and learning capacity and maximise the organisational capability to continuously adapt to changes in the emerging context. Altogether, these actions contributed to an evolution in the purpose of knowledge management to improve and maximise the EIS's capability to leverage its knowledge for ongoing organisational learning, development and competitive advantage.

The literature suggests that due to its multidisciplinary roots, the field of knowledge management has considerable overlap with other organisational sciences such as human resource management, information systems and collaborative technologies (Baskerville, 2006; Dalkir, 2013). This research argued that future development in this field should consider how knowledge management can align with these areas to improve an organisation's capability to systemically leverage its knowledge and intellectual capital for continuous organisational development and competitive advantage. In doing so, this research defined systemic organisational knowledge management as the infrastructure by which an organisation leverages, maintains and improves its knowledge and intellectual capital to improve organisational effectiveness and provide competitive advantage. Using the concept of emergence in complex systems (Burns, 2014; Flood, 2010; Checkland, 1999), knowledge management is not limited to individual tools, activities and processes or situated within a particular organisational department. Instead, it emerges out of an interaction between multiple factors in the internal and external context of an organisation.

8.7 Limitations and future directions

This research empirically demonstrated the role of knowledge audits in informing knowledge management practice in a real-world context. In doing so, certain limitations are identified along with recommendations for further research.

8.7.1 Limitations

Primarily, the nature of inquiry in this research emphasised the researcher's active participation in the context. Although this was imperative to address the research questions, it poses a risk for researcher bias. Informed by recommendations in the methodological literature to enhance the quality of action research, this bias was

minimised through reflective practice and reflexivity. Specifically, and supported by the meta cycle of learning insider action research (Coghlan and Brannick, 2014), the researcher constantly reflected on within the research and questioned her own perspectives and subjectivity within the research. This was further accomplished by critically reflecting on the research and challenging practice with the academic supervisors as well as the Knowledge Manager.

Similarly, the research was conducted in a real-world dynamic context that was constantly changing, with ongoing knowledge management practice. Thus, although it facilitated a reassessment of the role and purpose of knowledge management practice in the context, this research is not claiming sole credit for the transformation evident in practice. Specifically, the various actions that emerged in the EIS were collectively informed and are owned by different individuals in the institute, whilst the researcher actively facilitated the emergence of these actions. This is also in line with the multilinear causality characteristic of systemic change and demonstrates a strength of the participatory approach to inform practice. Furthermore, the interpretation of sustainability of knowledge management included a long-term strategic focus on knowledge management practice. However, the long-term impact of this research for the case study organisation is not known. It is expected that the strategic alignment and embeddedness of Performance Knowledge initiatives in the core organisational objectives and functions will contribute to its sustainability and resilience in the dynamic context. This is further supported by emphasising a continuous and critical review of practice as the responsibility of the Knowledge Manager, changes in the Knowledge Manager's perceptions of his role in facilitating knowledge management practice rather than driving independent solutions, and the researcher's continued engagement in the EIS to implement one of the actions. Nevertheless, the impact for the EIS should be carefully considered.

Finally, the context of this research was the UK high-performance sport system. This research emphasised the role of context in informing knowledge management practice and thus acknowledges that the research itself may be informed and rooted in the complex, dynamic and high-performance context of elite sport. By the adopting an iterative and systemic approach to inquiry, this research argues that the knowledge audit inquiry should itself be informed by the organisational context in order to

successfully and sustainably inform knowledge management practice. Further, the discussion and implications of findings have been related back to the theory and practice of knowledge audits and the wider literature on knowledge management. Yet, this research acknowledges that further research is required to assess the impact of such a research approach and the KMR to facilitate successful, integrated and sustainable knowledge management practice in other contexts.

8.7.2 Future directions

This research emphasised the iterative relationship between the organisational context and the implementation of the knowledge management strategy. This was demonstrated in the high-performance sport context, characterised by complex system dynamics and interdependencies between components. Subsequently, it is recommended that further research be conducted in other contexts and sectors to investigate the impact of the KMR in facilitating sustainability of knowledge management.

An overview of the knowledge management literature highlights that there is a section of literature highlighting and debating the theoretical underpinnings of the field, another section dedicated to knowledge audits and their implementation, a third section on the critical success factors for knowledge management implementation, and yet another section discussing frameworks for knowledge management implementation. This research was situated in the knowledge audit literature and critiqued the role and practice of knowledge audits in informing and implementing knowledge management practice. In doing so, it iteratively reviewed and incorporated general insights from the wider literature on the theoretical underpinnings, the critical success factors for knowledge management implementation and an understanding of frameworks for knowledge management implementation. Yet, further research should consider the synthesis between the knowledge audit literature with the literature on frameworks for knowledge management implementation (e.g., Heisig 2009; Liebowitz and Megbolugbe, 2003) to inform a comprehensive approach to knowledge management practice. Additionally, this research highlighted the iterative relationship between the organisational context, knowledge management strategy and knowledge management implementation and assessed the role of knowledge audits in facilitating it. Future research should explore this relationship from the point of view of the

literature on frameworks for knowledge management implementation.

Further, this research included a systemic approach to inquiry. Subsequently, it discussed the potential application of systems thinking in knowledge management to facilitate an integrated approach to knowledge management implementation. It is thus recommended that future research explicitly explore this relationship in the wider knowledge management literature. Also, future research on knowledge audits could explore the application of systems methodologies in conducting knowledge audits and informing knowledge management practice.

Finally, enabled by the researcher's continuing association with the EIS for the implementation of the social network analysis, this research facilitated the evolution of knowledge management practice in the EIS to study, highlight and develop meta-networks (e.g., networks of people, knowledge and services) in the high-performance sport context. This presents an opportunity for future research to explore the applications of network theory and knowledge management to understand how networks of people and knowledge interact to deliver performance support in sports and facilitate learning and development of practitioners.

References

References

Ackoff, R.L. and Gharajedaghi, J., 1996. Reflections on systems and their models. *Systems Research*, 13(1), pp.13-23.

Aidemark, J., 2009. Knowledge management paradoxes. *Electronic Journal of Knowledge Management,* 7(1), pp.1-10.

Akhavan, P. and Pezeshkan, A., 2014. Knowledge management critical failure factors: A multi-case study. *VINE: The Journal of Information and Knowledge Management Systems,* 44(1), pp.22-41.

Al-Hakim, L.A. and Hassan, S., 2016. Core requirements of knowledge management implementation, innovation and organizational performance. *Journal of Business Economics and Management,* 17(1), pp.109-124.

Alavi, M., Kayworth, T.R. and Leidner, D.E., 2005. An empirical examination of the influence of organizational culture on knowledge management practices. *Journal of Management Information Systems*, 22(3), pp.191-224.

Alavi, M. and Leidner, D.E., 2001. Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS Quarterly,* 25(1), pp.107-136.

Altrichter, H., Kemmis, S., McTaggart, R., and Zuber-Skerritt, O., 2002. The concept of action research. *The Learning Organization*, 9(3), pp.125-131.

Alvesson, M., 1995. *Cultural perspectives on organizations*. Cambridge: Cambridge University Press.

Alvesson, M., 2001. Knowledge work: Ambiguity, image and identity. *Human Relations*, 54(7), pp.863-886.

Alvesson, M., 2003. Beyond neopositivists, romantics, and localists: A reflexive approach to interviews in organizational research. *Academy of Management Review*, 28(1), pp.13-33.

Alvesson, M. and Kärreman, D., 2001. Odd couple: making sense of the curious concept of knowledge management. *Journal of Management Studies*, 38(7), pp.995-1018.

Amayah, A., 2013. Determinants of knowledge sharing in a public sector organization. *Journal of Knowledge Management*, 17(3), pp.454-471.

Anand, A., Kant, R., Patel, D.P., and Singh, M.D., 2015. Knowledge management implementation: a predictive model using an analytical hierarchical process.

Journal of the Knowledge Economy, 6(1), pp.48-71.

Anantatmula, V. and Kanungo, S., 2007. Modelling enablers and barriers for successful km implementation. In: *Proceedings of the Hawaii International Conference on System Sciences (HICSS)*, Hawaii, January 2007.

Andreeva, T. and Kianto, A., 2012. Does knowledge management really matter? Linking knowledge management practices, competitiveness and economic performance. *Journal of Knowledge Management*, 16(4), pp.617-636.

Ardichvili, A., Page, V., and Wentling, T., 2003. Motivation and barriers to participation in virtual knowledge-sharing communities of practice. *Journal of Knowledge Management,* 7(1), pp.64-77.

Argyris, C. and Schön, D., 1978. *Organizational Learning*. Reading: Addison & Wesley.

Arnold, R.D. and Wade, J.P., 2015. A definition of systems thinking: A systems approach. *Procedia Computer Science*, 44, pp.669-678.

Australian Institute of Sport, 2016. *Knowledge base*. [online]. [viewed 17/9/2016]. Available from: https://www.clearinghouseforsport.gov.au/knowledge_base

Bagnell, K. and Kolb, J., 2009. The evolution of Canadian Sport Institute. *Plan du Coach (Summer)*, 16(2) pp. 43-47.

Bammer, G., 2005. Integration and implementation sciences: Building a new specialization. *Ecology and Society*, 10(2), pp.95-107.

Bammer, G., 2013. *Disciplining interdisciplinarity: Integration and implementation sciences for researching complex real-world problems*. Camberra: ANU E Press.

Barley, W.C., Treem, J.W., and Kuhn, T., 2018. Valuing multiple trajectories of knowledge: A critical review and agenda for knowledge management research. *Academy of Management Annals*, 12(1), pp.278-317.

Baskerville, R. and Dulipovici, A., 2006. The theoretical foundations of knowledge management. *Knowledge Management Research and Practice*, 4(2), pp.83-105.

Baskerville, R. and Myers, M.D., 2004. Special issue on action research in information systems: Making IS research relevant to practice: Foreword. *MIS Quarterly*, 28(3), pp.329-335.

Bayat, B., 2016. Designing a successful KM strategy: A guide for the knowledge management professional. *The Electronic Library*, 34(1), pp.169-171.

Becerra-Fernandez, I. and Sabherwal, R., 2014. *Knowledge management: Systems and processes.* New York: Routledge.

Beesley, L.G. and Chalip, L., 2011. Seeking (and not seeking) to leverage mega- sport events in non-host destinations: The case of Shanghai and the Beijing Olympics. *Journal of Sport and Tourism*, 16(4), pp.323-344.

Bell, D., 1973. *The coming of post-industrial society: A venture in social forecasting*. Basic Books, New York.

Bergold, J. and Thomas, S., 2012. Participatory research methods: A methodological approach in motion. *Historical Social Research*, 37(4), pp.191-222.

Bhatt, G.D., 2001. Knowledge management in organizations: Examining the interaction between technologies, techniques, and people. *Journal of Knowledge Management*, 5(1), pp.68-75.

Biloslavo, R. and Trnavčevič, A., 2007. Knowledge management audit in a higher educational institution: A case study. *Knowledge and Process Management*, 14(4), pp.275-286.

Birasnav, M., 2014. Knowledge management and organizational performance in the service industry: The role of transformational leadership beyond the effects of transactional leadership. *Journal of Business Research*, 67(8), pp.1622-1629.

Blackler, F., 1995. Knowledge, knowledge work and organizations: An overview and interpretation. Orga*nization Studies*, 16(6), pp.1021-1046.

Bloice, L. and Burnett, S., 2016. Barriers to knowledge sharing in third sector social care: A case study. *Journal of Knowledge Management*, 20(1), pp.125-145.

Bollinger, A.S. and Smith, R.D., 2001. Managing organizational knowledge as a strategic asset. *Journal of Knowledge Management*, 5(1), pp.8-18.

Borda, O.F., 2006. Participatory (action) research in social theory: Origins and challenges. In: P. Reason and H. Bradbury, eds. *Handbook of Action Research: Participative Inquiry and Practice*. London: Sage, pp.27-37.

Borzillo, S. and Kaminska-Labbé, R., 2011. Unravelling the dynamics of knowledge creation in communities of practice though complexity theory lenses. *Knowledge Management Research and Practice*, 9(4), pp.353-366.

Bradbury-Huang, H., 2010. What is good action research? Why the resurgent interest? *Action Research*, 8(1), pp.93-109.

Bradbury, H., 2015. Introduction: How to situate and define action research. In: H. Bradbury, ed. *The SAGE handbook of action research*. London: Sage, pp.1-9.

Brannick, T. and Coghlan, D., 2007. In defense of being "native": The case for insider academic research. *Organizational research methods*, *10*(1), pp.59-74.

British Olympic Association, 2018. *About us*. [online]. [viewed 16/10/2018]. Available from https://www.teamgb.com/about-boa

British Paralympic Association, 2018. *About the BPA*. [online]. [viewed 16/10/2018]. Available from https://paralympics.org.uk/footer-pages/about-the-bpa

Brown, J.S. and Duguid, P., 2001. Knowledge and organization: A social-practice perspective. *Organization Science*, 12(2), pp.198-213.

Brydon-Miller, M., 2008. Ethics and action research: Deepening our commitment to principles of social justice and redefining systems of democratic practice. In: P. Reason and H. Bradbury, eds. *The SAGE handbook of action research: Participative inquiry and practice*. London: Sage, pp.199-210.

Burnett, S., Illingworth, L., and Webster, L., 2004. Knowledge auditing and mapping: A pragmatic approach. *Knowledge and Process Management*, 11(1), pp.25-37.

Burnett, S., Williams, D., and Illingworth, L., 2013. Reconsidering the Knowledge Audit Process: Methodological Revisions in Practice. *Knowledge and Process Management,* 20(3), pp.141-153.

Burns, D., 2007. *Systemic action research: A strategy for whole system change*. Bristol: Policy Press.

Burns, D., 2014a. Systemic action research: Changing system dynamics to support sustainable change. *Action Research*, 12(1), pp.3-18.

Burns, D. 2014b. *Assessing impact in dynamic and complex environments: Systemic action research and participatory systemic inquiry* (CDI Practice Paper 8). Brighton: IDS.

Burns, D., 2015. How change happens: The implications of complexity and systems thinking for action research. In: H. Bradbury, ed. *The Sage handbook of action research.* London: Sage, pp.434-445.

Butler, J.R.A., Wise, R.M., Skewes, T.D., Bohensky, E.L., Peterson, N., Suadnya, W., Yanuartati, Y., Handayani, T., Habibi, P., Puspadi, K., and Bou, N., 2015. Integrating top-down and bottom-up adaptation planning to build adaptive capacity: A structured learning approach. *Coastal Management*, 43(4), pp.346-364.

Cabrilo, S. and Dahms, S., 2018. How strategic knowledge management drives

intellectual capital to superior innovation and market performance. *Journal of Knowledge Management*, *22*(3), pp.621-648.

Cairó, O. and Bottinelli, J., 2010. Knowledge Management in Professional Soccer. In: *Proceedings of the 7th International Conference on Intellectual Capital, Knowledge Management and Organisational Learning*: ICICKM, Hong Kong, December 2010. Academic Conferences Limited, p. 79.

Castro, L., 2010. *Assessment of first aid knowledge and decision making of coaches of youth soccer*. Thesis (Masters), San Jose State University.

Cavaliere, V. and Lombardi, S., 2015. Exploring different cultural configurations: How do they affect subsidiaries' knowledge sharing behaviors? *Journal of Knowledge Management,* 19(2), pp.141-163.

Cavaliere, V., Lombardi, S., and Giustiniano, L., 2015. Knowledge sharing in knowledge-intensive manufacturing firms: An empirical study of its enablers. *Journal of Knowledge Management*, 19(6), pp.1124-1145.

Chan, P.C.W. and Lee, W.B., 2011. Knowledge audit with intellectual capital in the quality management process: an empirical study in an electronics company. *Electronic Journal of Knowledge Management*, *9*(2), p.98.

Chang, H.H. and Chuang, S.S., 2011. Social capital and individual motivations on knowledge sharing: Participant involvement as a moderator. *Information and Management*, 48(1), pp.9-18.

Checkland, P., 1999. Systems thinking. In: W. Currie and B. Gallier (eds.), *Rethinking Management Information Systems*. Oxford: Oxford University Press, pp.45-56.

Chen, C.J. and Hung, S.W., 2010. To give or to receive? Factors influencing members' knowledge sharing and community promotion in professional virtual communities. *Information and Management*, 47(4), pp.226-236.

Chen, Z.J., Zhang, X., and Vogel, D., 2011. Exploring the underlying processes between conflict and knowledge sharing: A work-engagement perspective. *Journal of Applied Social Psychology*, 41(5), pp.1005-1033.

Cheung, C.F., Li, M.L., Shel, W.Y., Lee, W.B., and Tsang, T.S. 2007. A systematic approach for knowledge auditing: A case study in transportation sector. *Journal of Knowledge Management*, 11(4), pp 140-158.

Choy, S.Y., Lee, W.B., and Cheung, C.F., 2004. A systematic approach for knowledge audit analysis: Integration of knowledge inventory, mapping and knowledge flow analysis. *Journal of Universal Computer Science*, 10(6), pp.674-682.

Coch, L. and French Jr, J.R., 1948. Overcoming resistance to change. *Human Relations*, 1(4), pp.512-532.

Coghlan, D., 2011. Action research: Exploring perspectives on a philosophy of practical knowing. *Academy of Management Annals*, *5*(1), pp.53-87.

Coghlan, D. and Brannick, T., 2005. *Doing action research in your own organization*. London: Sage.

Coghlan, D. and Brannick, T., 2014. *Doing action research in your own organization*. London: Sage.

Colechin, M. and Ragsdell, G., 2017. A Systemic Model of Engineering Knowledge Management From the Energy Sector. In *ECKM 2017 18th European Conference on Knowledge Management* (Vol. 1). Academic Conferences and publishing limited.

Cook, S.D. and Brown, J.S., 1999. Bridging epistemologies: The generative dance between organizational knowledge and organizational knowing. *Organization Science*, 10(4), pp.381-400.

Corradi, G., Gherardi, S., and Verzelloni, L., 2010. Through the practice lens: Where is the bandwagon of practice-based studies heading? *Management Learning*, 41(3), pp.265-283.

Craig, C.J., 2009a. Learning about reflection through exploring narrative inquiry. *Reflective Practice*, 10(1), pp.105-116.

Craig, D.V., 2009b. *Action research essentials*. San Francisco: John Wiley and Sons.

Creswell, J.W., 2013. *Qualitative inquiry and research design: Choosing among five approaches.* Thousand Oaks: Sage Publications.

Creswell, J.W., 2014. *Research design: International student edition*. London: Sage.

Cross, R., Borgatti, S.P., and Parker, A., 2002. Making invisible work visible: Using social network analysis to support strategic collaboration. *California Management Review,* 44(2), pp.25-46.

Culver, D. and Trudel, P., 2008. Clarifying the concept of communities of practice in sport. *International Journal of Sports Science and Coaching*, 3(1), pp.1-10.

Cunningham, A., 2002. An audit of first aid qualifications and knowledge among team officials in two English youth football leagues: a preliminary study. *British Journal of Sports Medicine,* 36(4), pp.295-300.

Dalkir, K., 2005. *Knowledge management in theory and practice*. Burlington: Elsvier Butterworth-Heinemann.

Dalkir, K., 2013. *Knowledge management in theory and practice*. New York: Routledge.

Davenport, T.H. and Prusak, L., 1998. *Working knowledge: How organizations manage what they know.* Brighton: Harvard Business Press.

Davison, R. C. and Williams, A. M., 2009. The use of sports science in preparation for Olympic competition. *Journal of Sports Sciences*, 27(13), 1363-1365.

Dayan, R., Heisig, P., and Matos, F., 2017. Knowledge management as a factor for the formulation and implementation of organization strategy. *Journal of Knowledge Management,* 21(2), pp.308-329.

De Angelis, C.T., 2013. Models of governance and the importance of KM for public administration. *Journal of Knowledge Management Practice*, 14(2), pp.1-18.

Debenham, J. and Clark, J., 1994. The knowledge audit. *Robotics and Computer-Integrated Manufacturing*, 11(3), pp.201-211.

Denning, S., 2006. Effective storytelling: Strategic business narrative techniques. *Strategy and Leadership,* 34(1), pp.42-48.

Department of Culture, Media and Sport, 2015. *UK Sport*. [online]. [viewed 19/12/2015]. Available from https://www.gov.uk/government/organisations/uk-sport

Doloriert, C. and Whitworth, K., 2011. A case study of knowledge management in the "back office" of two English football clubs. *The Learning Organization*, 18(6), pp.422-437.

Donate, M.J. and Canales, J.I., 2012. A new approach to the concept of knowledge strategy. *Journal of Knowledge Management*, 16(1), pp.22-44.

Drucker, P.F., 1993. The rise of the knowledge society. *Wilson Quarterly*, 17(2), pp.52-71.

Drus, S.M., Shariff, S.S.M., and Othman, M., 2017. Knowledge audit framework: A case study of the Malaysian electricity supply industry. *Journal of ICT*, 16(1), pp.103-120.

Dufour, Y. and Steane, P., 2007. Implementing knowledge management: a more robust model. *Journal of Knowledge Management*, 11(6), pp.68-80.

Dumay, J., 2016. A critical reflection on the future of intellectual capital: from reporting to disclosure. *Journal of Intellectual Capital*, 17(1), pp.168-184.

Du Plessis, M., 2007. Knowledge management: What makes complex implementations successful? *Journal of Knowledge Management*, 11(2),

pp.91-101.

Dwivedi, Y.K., Venkitachalam, K., Sharif, A.M., Al-Karaghouli, W., and Weerakkody, V., 2011. Research trends in knowledge management: Analyzing the past and predicting the future. *Information Systems Management*, 28(1), pp.43-56.

Dyer, J.H. and Nobeoka, K., 2000. Creating and managing a high-performance knowledge-sharing network: The Toyota case. *Strategic Management Journal*, 21(3), pp.345-367.

Earl, M., 2001. Knowledge management strategies: Toward a taxonomy. *Journal of Management Information Systems,* 18(1), pp.215-233.

Edusei-Mensah, M., 2015. *Sport England-Strategic Lead Knowledge Management*. [online]. [viewed 16/08/2016]. Available from: https://www.linkedin.com/pulse/sport-england-strategic-lead-knowledge-management-mark-edusei-mensah?forceNoSplash=true

Edwards, J.S., Shaw, D. and Collier, P.M., 2005. Knowledge management systems: finding a way with technology. *Journal of Knowledge management*, 9(1), pp.113-125.

English Institute of Sport, 2011. *The English Institute of Sport Limited Annual Report and Financial Statements for the Year Ended 31st March 2011*. Available from: https://www.gov.uk/government/publications

English Institute of Sport, 2012. *The English Institute of Sport Limited Annual Report and Financial Statements for the Year Ended 31st March 2012*. Available from: https://www.gov.uk/government/publications

English Institute of Sport, 2013. *The English Institute of Sport Limited Annual Report and Financial Statements for the Year Ended 31st March 2013*. Available from: https://www.gov.uk/government/publications

English Institute of Sport, 2015. *The English Institute of Sport Limited Annual Report and Financial Statements for the Year Ended 31st March 2015*. Available from: https://www.gov.uk/government/publications

English Institute of Sport, 2016. *The English Institute of Sport Limited Annual Report and Financial Statements for the Year Ended 31st March 2016*. Available from: https://www.gov.uk/government/publications

English Institute of Sport, 2018a. *What we do*. [online]. [viewed on 13/11/2018]. Available from: https://www.eis2win.co.uk/what-we-do/

English Institute of Sport, 2018b. *Collaboration*. [online]. [viewed on 13/11/2018].

Available from: https://www.eis2win.co.uk/what-we-do/collaboration/

English Institute of Sport, 2018c. *About us*. [online]. [viewed on 15/02/2019]. Available from: https://www.eis2win.co.uk/about-us/centres/

Erhardt, N., Martin-Rios, C., and Harkins, J., 2014. Knowledge flow from the top: The importance of teamwork structure in team sports. *European Sport Management Quarterly*, 14(4), pp.375-396.

Fetterman, D.M., 2009. *Ethnography: Step-by-step*. Thousand Oaks: Sage Publications.

Firestone, J.M., 2003. *The new knowledge management: A paradigm and its problems.* [online]. [viewed on 18/11/2018]. Available from: http://www.iwp.jku.at/born/mpwfst/05/0509Firestone.pdf

Firestone, J.M. and McElroy, M.W., 2003. *Key issues in the new knowledge management*. New York: Routledge.

Flood, R.L., 1990. *Liberating systems theory*. Boston: Springer.

Flood, R.L., 2010. The relationship of 'systems thinking' to action research. *Systemic Practice and Action Research,* 23(4), pp.269-284.

Flood, R.L. and Jackson, M.C., 1991. *Critical systems thinking*. Chichester: Wiley.

Flood, R.L. and Romm, N.R., 1996. Contours of diversity management and triple loop learning. *Kybernetes*, 25(7/8), pp.154-163.

Flood, R.L. and Romm, N.R., 2018. A systemic approach to processes of power in learning organizations: Part I–literature, theory, and methodology of triple loop learning. *The Learning Organization*, 25(4), pp.260-272.

Franken, A. and Braganza, A., 2006. Organizational forms and knowledge management: One size fits all? *International Journal of Knowledge Management Studies,* 1(1-2), pp.18–37.

Galipeau, J. and Trudel, P., 2006. Athlete learning in a community of practice: Is there a role for the coach. In: R.L. Jones, ed. *The sports coach as educator: Re-conceptualising sports coaching.* London: Routledge, pp.7-94.

Garlatti, A., Massaro, M., Dumay, J., and Zanin, L., 2014. Intellectual capital and knowledge management within the public sector: A systematic literature review and future developments. In *Proceedings of the 11th International Conference on Intellectual Capital, Knowledge Management & Organizational Learning ICICKM,* Bangkok, October 2014, pp. 175-184.

Gaventa, J. and Cornwall, A., 2006. Challenging the boundaries of the possible:

Participation, knowledge and power. *IDS Bulletin*, 37(6), pp.122-128.

Geisler, E. and Wickramasinghe, N., 2015. *Principles of knowledge management: Theory, practice, and cases*. New York: Routledge.

Gharajedaghi, J., 2011. *Systems thinking: Managing chaos and complexity: A platform for designing business architecture*. London: Elsevier.

Gherardi, 2000. Practice-based theorizing on learning and knowing in organizations. *Organization*, 7(2) pp.329–349.

Gherardi, S., 2001. From organizational learning to practice-based knowing. *Human Relations*, 54(1), pp.131-139.

Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P. and Trow, M. (1994). *The New Production of Knowledge*. London: Sage.

Glaser, B.G. 2001. *The grounded theory perspective: Conceptualization contrasted with description*. Mill Valley, CA: Sociology Press.

Glaser, B.G. and Strauss, A.L., 1967. *The discovery of grounded theory*. Chicago: Aldine.

Gomez, S., Opazo, M., and Marti, C., 2008. *Structural characteristics of sport organizations: Main trends in the academic discussion*. Madrid: IESE Business School – University of Navarra.

Gouldner, A. W. (1970). *The coming crisis of Western sociology*. New York: Basic Books

Gourova, E., Antonova, A., and Todorova, Y., 2009. Knowledge audit concepts, processes and practice. *WSEAS Transactions on Business and Economics*, 6(12), pp.605-619.

Grant, R.M., 1996. Toward a knowledge-based theory of the firm. *Strategic Management Journal,* 17(S2), pp.109-122.

Grant, K., 2015. Knowledge management: An enduring but confusing fashion. *Leading Issues in Knowledge Management*, 2, pp.1-26.

Grant, K.A. and Grant, C.T., 2008. Developing a model of next generation knowledge management. *Issues in Informing Science and Information Technology*, 5, pp.571-591.

Greiner, M.E., Böhmann, T., and Krcmar, H., 2007. A strategy for knowledge management. *Journal of Knowledge Management*, 11(6), pp.3-15.

Guba, E.G. and Lincoln, Y.S., 1994. Competing paradigms in qualitative research. *Handbook of qualitative research*, 2(163-194), p.105.

Gunasekaran, A. and Ngai, E.W.T., 2007. Knowledge management in 21st century manufacturing. *International Journal of Production Research*, 45(11), pp.2391-2418.

Gustavsen, B., 2006. Theory and practice: The mediating discourse. In: P. Reason and H. Bradbury, eds. *Handbook of Action Research*. London: Sage, pp.17-26.

Guthrie, J., Ricceri, F. and Dumay, J., 2012. Reflections and projections: a decade of intellectual capital accounting research. *The British Accounting Review*, 44 (2), pp.68-82.

Haas, M.R. and Hansen, M.T., 2007. Different knowledge, different benefits: Toward a productivity perspective on knowledge sharing in organizations. *Strategic Management Journal,* 28(11), pp.1133-1153.

Halbwirth, S. and Toohey, K., 2001. The Olympic Games and knowledge management: A case study of the Sydney organising committee of the Olympic Games. *European Sport Management Quarterly*, 1(2), pp.91-111.

Han, T.S., Chiang, H.H., and Chang, A., 2010. Employee participation in decision making, psychological ownership and knowledge sharing: Mediating role of organizational commitment in Taiwanese high-tech organizations. *The International Journal of Human Resource Management,* 21(12), pp.2218-2233.

Hansen, S. and Avital, M., 2005. Share and share alike: The social and technological influences on knowledge sharing behavior. *Sprouts: Working Papers on Information Systems,* 5(13), pp.1-19.

Hansen, M.T., Mors, M.L., and Løvås, B., 2005. Knowledge sharing in organizations: Multiple networks, multiple phases. *Academy of Management Journal*, 48(5), pp.776-793.

Hansen, M.T., Nohria, N., and Tierney, T., 1999. What's your strategy for managing knowledge. *The Knowledge Management Yearbook 2000–2001*, 77(2), pp.106-116.

Heisig, P., 2009. Harmonisation of knowledge management–comparing 160 KM frameworks around the globe. *Journal of Knowledge Management*, 13(4), pp.4-31.

Heisig, P., 2015. Future research in knowledge management: Results from the global knowledge research network study. In: *Advances in knowledge management*.

New York: Springer, pp. 151-182.

Heisig, P., Suraj, O.A., Kianto, A., Kemboi, C., Perez Arrau, G., and Fathi Easa, N., 2016. Knowledge management and business performance: Global experts' views on future research needs. *Journal of Knowledge Management*, 20(6), pp.1169-1198.

Henczel, S., 2000. The information audit as a first step towards effective knowledge management: an opportunity for the special librarian. *Inspel*, 34(3/4), pp.210-226.

Heron, J. and Reason, P., 1997. A participatory inquiry paradigm. *Qualitative Inquiry,* 3(3), pp.274-294.

Heracleous, L., 1998. Strategic thinking or strategic planning? *Long Range Planning*, 31(3), pp.481-487.

Herr, K. and Anderson, G.L., 2014. *The action research dissertation: A guide for students and faculty*. London: Sage.

Hills, L. and Maitland, A., 2014. Research-based knowledge utilization in a community sport evaluation: a case study. *International Journal of Public Sector Management,* 27(2), pp.165-172.

Hislop, D., 2013. *Knowledge management in organisations: A critical introduction*. Oxford: Oxford University Press.

Hislop, D., Bosua, R., and Helms, R., 2018. *Knowledge management in organizations: A critical introduction*. Oxford: Oxford University Press.

Hsu, I.C. and Sabherwal, R., 2012. Relationship between intellectual capital and knowledge management: an empirical investigation. *Decision Sciences*, 43(3), pp.489-524.

Huck, J., Al, R., and Rathi, D., 2011. Finding KM solutions for a volunteer-based non-profit organization. *Vine*, 41(1), pp.26-40.

Hylton, A., 2002. A KM initiative is unlikely to succeed without a knowledge audit [online]. *Knowledge Board* [viewed on 3/02/2016]. Available from: http://www.providersedge.com/docs/km_articles/km_initiative_unlikely_to_succeed_without_a_k_audit.pdf

Ibrahim, F. and Reid, V., 2010. Unpacking knowledge management: Management fad or real business practice? *Enterprise Risk Management*, 2(1), pp.24-38

Ingham, S., 2016. *How to support a champion: The art of applying science to the elite athlete*. UK: Simply Said.

Inkinen, H., 2016. Review of empirical research on knowledge management practices and firm performance. *Journal of Knowledge Management*, 20(2), pp.230-257.

Inkinen, H.T., Kianto, A., and Vanhala, M., 2015. Knowledge management practices and innovation performance in Finland. *Baltic Journal of Management*, 10(4), pp.432-455.

Intezari, A., Taskin, N., and Pauleen, D.J., 2017. Looking beyond knowledge sharing: An integrative approach to knowledge management culture. *Journal of Knowledge Management,* 21(2), pp.492-515.

Jackson, M.C., 2005. Reflections on knowledge management from a critical systems perspective. *Knowledge Management Research & Practice*, 3(4), pp.187-196.

Jain, A.K. and Jeppesen, H., 2013. Knowledge management practices in a public sector organisation: The role of leaders' cognitive styles. *Journal of Knowledge Management*, 17(3), pp.347-362.

Jashapara, A., 2011. *Knowledge management: An integrated approach*. London: Pearson Education.

Johnson, P. and Duberley, J., 2003. Reflexivity in management research. *Journal of Management Studies*, 40(5), pp.1279-1303.

Johnson, B. and Lundvall, B.A., 1994. The learning economy. *Journal of Industry Studies,* 1(2), pp.23-42.

Kamhawi, E.M., 2012. Knowledge management fishbone: A standard framework of organizational enablers. *Journal of Knowledge Management*, 16(5), pp.808-828.

Kane, H., Ragsdell, G., and Oppenheim, C., 2006. Knowledge management methodologies. *The Electronic Journal of Knowledge Management*, 4(2), pp.141-152.

Kaplan, R. S., & Norton, D. P. (1992). The balanced scorecard-Measures that drive performance. *Harvard Business Review*,70(1), 71–79.

Karabag, A., 2010. Critical barrier and success factors for implementing knowledge management in organisations. In *Cross-cultural management education and research: balancing scholarly concerns with practitioner challenges*. IXth Annual Conference and Doctoral Seminar of the International Association of Cross-Cultural Competence and Management, University of Central Lancashire, Preston, UK, June 2010.

Kemmis, S., 2008. Critical theory and participatory action research. In: P. Reason and

H. Bradbury, eds. *The SAGE handbook of action research: Participative inquiry and practice.* London: Sage, pp.121-138.

Kemmis, S. and McTaggart, R., 2000. Participatory action research. In E.K. Denzin and Y.S. Lincoln, eds. *Handbook of qualitative research*. London: Sage, pp.567-605.

Kemmis, S., McTaggart, R., and Nixon, R., 2015. Critical theory and critical participatory action research. In: H. Bradbury, ed. *The Sage handbook of action research.* Los Angeles: Sage, pp. 454-464.

Kennedy, P. and Kennedy, D., 2016. The role of sport science in the elite football labour process. *Sport, Business and Management: An International Journal*, 6(3), pp.341-359.

Kianto, A., Ritala, P., Spender, J.C., and Vanhala, M., 2014. The interaction of intellectual capital assets and knowledge management practices in organizational value creation. *Journal of Intellectual Capital*, 15(3), pp.362-375.

Kim, W. C., & Mauborgne, R. A. (1998). Procedural justice, strategic decision making, and the knowledge economy. *Strategic Management Journal*, 19, pp.323–338.

Kogut, B. and Zander, U., 1992. Knowledge of the firm, combinative capabilities, and the replication of technology. *Organization Science*, 3(3), pp.383-397.

Krippendorff, K., 2004. Reliability in content analysis. *Human Communication Research,* 30(3), pp.411-433.

Kuipers, B.S., Higgs, M., Kickert, W., Tummers, L., Grandia, J., and Van der Voet, J., 2014. The management of change in public organizations: A literature review. *Public Administration*, 92(1), pp.1-20.

Ladyman, J., Lambert, J., and Wiesner, K., 2013. What is a complex system? *European Journal for Philosophy of Science*, 3(1), pp.33-67.

Latif, A.S.A., Drus, S.M., and Shariff, S.S.M., 2016. A review of knowledge audit process and tools. *Information*, 19(7B), p.2773.

Lauer, T. and Tanniru, M., 2001. Knowledge management audit-a methodology and case study. *Australasian Journal of Information Systems*, 9(1). 23-41

Lee, P., Gillespie, N., Mann, L., and Wearing, A., 2010. Leadership and trust: Their effect on knowledge sharing and team performance. *Management Learning,* 41(4), pp.473-491.

Lee, J. and Price, N., 2016. A national sports institute as a learning culture. *Physical*

Education and Sport Pedagogy, 21(1), pp.10-23.

Levantakis, T., Helms, R., and Spruit, M., 2008. *Developing a reference method for knowledge auditing.* In International Conference on Practical Aspects of Knowledge Management, Berlin, Heidelberg, November 2008, pp. 147-159.

Lewin, K., 1946. Action research and minority problems. *Journal of Social Issues,* 2(4), pp.34-46.

Lettieri, E., Borga, F., and Savoldelli, A., 2004. Knowledge management in non-profit organizations. *Journal of Knowledge Management*, 8(6), pp.16-30.

Liebowitz, J., 1999. Key ingredients to the success of an organization's knowledge management strategy. *Knowledge and Process Management*, 6(1), pp.37-40.

Liebowitz, J., 2000. Knowledge management receptivity at a major pharmaceutical company. *Journal of Knowledge Management*, 4(3), pp.252-258.

Liebowitz, J., Rubenstein-Montano, B., McCaw, D., Buchwalter, J., Browning, C., Newman, B., and Rebeck, K., 2000. The knowledge audit. *Knowledge and Process Management*, 7(1), pp.3-10.

Liebowitz, J., 2016. *Beyond knowledge management: What every leader should know.* Florida: Auerbach Publications.

Lin, H.F., 2011. The effects of employee motivation, social interaction, and knowledge management strategy on KM implementation level. *Knowledge Management Research & Practice*, 9(3), pp.263-275.

Lin, H. and Hwang, Y., 2014. Do feelings matter? The effects of intrinsic benefits on individuals' commitment toward knowledge systems. *Computers in Human Behavior*, 30, pp.191-198.

Lincoln, Y.S. and Guba, E.G., 2000. The only generalization is: There is no generalization. *Case Study Method*, pp.27-44.

Lincoln, Y.S., Lynham, S.A., and Guba, E.G., 2011. Paradigmatic controversies, contradictions, and emerging confluences, revisited. In: N.K. Denzin and Y.S. Lincoln, eds. *The Sage handbook of qualitative research*. London: Sage, pp.97-128.

Ma, M. and Agarwal, R., 2007. Through a glass darkly: Information technology design, identity verification, and knowledge contribution in online communities. *Information Systems Research,* 18(1), pp.42-67.

Massaro, M., Dumay, J., and Garlatti, A., 2015. Public sector knowledge management: A structured literature review. *Journal of Knowledge*

Management, 19(3), pp.530-558.

Massingham, P., 2014. An evaluation of knowledge management tools: Part 1–managing knowledge resources. *Journal of Knowledge Management*, 18(6), pp.1075-1100.

Maurer, I., Bartsch, V., and Ebers, M., 2011. The value of intra-organizational social capital: How it fosters knowledge transfer, innovation performance, and growth. *Organization Studies*, 32(2), pp.157-185.

Maylor, H. and Turner, N., 2017. Understand, reduce, respond: project complexity management theory and practice. *International Journal of Operations & Production Management*, 37(8), pp.1076-1093.

McDermott, R., 1999. Why information technology inspired but cannot deliver knowledge management. *California Management Review*, 41(4), pp.103-117.

McElroy, M.W., 2003. *The new knowledge management: Complexity, learning, and sustainable innovation*. London: Routledge.

McElroy, M.W., 2009. *Second-generation KM: A white paper* [viewed on 15/09/2017]. Available from: www.macroinnovation.com/images/Second-Generation%20KM.pdf

McElroy, M.W., and Mcelroy, L., 2003. *The new knowledge management: Complexity, learning, and sustainable innovation*. London: Routledge.

McNiff, J. and Whitehead, J. 2010. *You and your action research project*. London: Routledge.

McNiff, J., 2016. *Writing up your action research project*. London: Routledge.

Mearns, M.A. and Du Toit, A.S.A., 2008. Knowledge audit: Tools of the trade transmitted to tools for tradition. *International Journal of Information Management,* 28(3), pp.161-167.

Merono-Cerdan, L. A., Lopez-Nicolas, C., and Sabater-Sanchez, R., 2007. Knowledge management strategy diagnosis from KM instruments use. *Journal of Knowledge Management*, 11(2), pp.60–72.

Mertins, K., Heisig, P., Finke, I., and Ulbrich, C., 2003. The Fraunhofer Knowledge Management Audit (FKM-Audit). In J. Vorbeck, P. Heisig and K. Mertins, eds. *Knowledge Management: Concepts and best practices*. Berlin: Springer, pp.45-65.

Miles, M.B. and Huberman, M., 1994. *Qualitative data analysis: A sourcebook of new methods*. Thousand Oaks: Sage Publications.

Mintzberg, H., 1991. The Effective Organization: Forces and Forms. *MIT Sloan Management Review*, *32*(2), p.54-70.

Mintzberg, H., 1994. Rethinking strategic planning part I: Pitfalls and fallacies. *Long Range Planning*, 27(3), pp.12-21.

Mintzberg, H., Ahlstrand, B., Lampel, J. and Safari, S.T.R.A.T.E.G.Y., 1998. *A guided tour through the wilds of strategic management*. New York.

Mintzberg, H. and Waters, J.A., 1985. Of strategies, deliberate and emergent. *Strategic Management Journal*, *6*(3), pp.257-272.

Morris, T. and Empson, L., 1998. Organisation and expertise: An exploration of knowledge bases and the management of accounting and consulting firms. *Accounting, Organizations and Society*, 23(5-6), pp.609-624.

Müller, M. and Stewart, A., 2016. Does temporary geographical proximity predict learning? Knowledge dynamics in the Olympic Games. *Regional Studies*, 50(3), pp.377-390.

Nahapiet, J. and Ghoshal, S., 1998. Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review*, 23(2), pp.242-266.

Newell, S., Robertson, M., Scarbrough, H., and Swan, J., 2009. *Managing knowledge work and innovation.* London: Macmillan International Higher Education.

Nicolini, D., Mørk, B.E., Masovic, J., and Hanseth, O., 2018. The changing nature of expertise: Insights from the case of TAVI. Stu*dies in Continuing Education,* 40(3), pp.306-322.

Nonaka, I. and Takeuchi, H., 1995. *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. Oxford: Oxford university press.

Nonaka, I. and Konno, N., 1998. The concept of "Ba": Building a foundation for knowledge creation. *California Management Review*, 40(3), pp.40-54.

O'Dell, C. and Grayson, C.J., 1998. If only we knew what we know: Identification and transfer of internal best practices. *California Management Review*, 40(3), pp.154-174.

O'Reilly, N.J. and Knight, P., 2007. Knowledge management best practices in national sport organisations. *International Journal of Sport Management and Marketing,* 2(3), pp.264-280.

O'Reilly, K., 2012. *Ethnographic methods*. London: Routledge.

OECD 1999. *University Research in Transition*. Paris.

OGKM, 2014. OGKM: *Learning from Experience* [online]. IOC [viewed on 6/11/2017]. Available from https://www.olympic.org/news/ogkm-learning-from- experience

Omotayo, F.O., 2015. Knowledge management as an important tool in organizational management: a review of literature. *Library Philosophy and Practice,* (e-Journal), pp.1-23.

Onojeharho, E.J., 2015. *Knowledge technologies process and cultures-improving information and knowledge sharing at the Amateur Swimming Association (ASA)*. Thesis (PhD), Loughborough University.

Orlikowski, W.J., 2002. Knowing in practice: Enacting a collective capability in distributed organizing. *Organization Science*, 13(3), pp.249-273.

Ottosson, S. (2003). Participation action research - A key to improved knowledge of management. *Technovation*, 23, pp.87-94.

Ozlati, S., 2015. The moderating effect of trust on the relationship between autonomy and knowledge sharing: A national multi-industry survey of knowledge workers. *Knowledge and Process Management*, 22(3), pp.191- 205.

Parent, M.M., MacDonald, D., and Goulet, G., 2014. The theory and practice of knowledge management and transfer: The case of the Olympic Games. *Sport Management Review,* 17(2), pp.205-218.

Paroutis, S. and Al Saleh, A., 2009. Determinants of knowledge sharing using Web 2.0 technologies. *Journal of Knowledge Management*, 13(4), pp.52-63.

Pasmore, W., 2006. Action research in the workplace: The socio-technical perspective. In: P. Reason and H. Bradbury, eds. *The Sage handbook of action research.* London: Sage, pp.38-48.

Patton, M.Q., 2002. Two decades of developments in qualitative inquiry: A personal, experiential perspective. *Qualitative Social Work*, 1(3), pp.261-283.

Paucar-Caceres, A. and Pagano, R., 2009. Systems thinking and the use of systemic methodologies in knowledge management. *Systems Research and Behavioral Science: The Official Journal of the International Federation for Systems Research,* 26(3), pp.343-355.

Pazzaglia, F., Flynn, S., and Sonpar, K., 2012. Performance implications of knowledge and competitive arousal in times of employee mobility: The immutable law of the ex. *Human Resource Management*, 51(5), pp.687-707.

Pee, L.G. and Kankanhalli, A., 2016. Interactions among factors influencing knowledge management in public-sector organizations: A resource-based

view. *Government Information Quarterly*, 33(1), pp.188-199.

Perez-Soltero, A., Barcelo-Valenzuela, M., Sanchez-Schmitz, G., Martin-Rubio, F., Palma-Mendez, J.T., and Vanti, A.A., 2007. A model and methodology to knowledge auditing considering core processes. *ICFAI Journal of Knowledge Management,* 5(1), pp.7-23.

Perez-Soltero, A., Zavala-Guerrero, A.G., Barcelo-Valenzuela, M., Sanchez-Schmitz, G., and Meroño-Cerdan, A.L., 2015. A methodology for the development and implementation of knowledge management strategy in a Mexican SME trading company. *IUP Journal of Knowledge Management,* 13(2), pp.25-44.

Polanyi, M. 1967. *The tacit dimension*. London: Routledge & Kegan Paul Ltd.

PwC, 2018. *What is an audit*? [online]. PwC [viewed on 16/4/2016]. Available from: https://www.pwc.com/m1/en/services/assurance/what-is-an-audit.html

Poonamallee, L., 2009. Building grounded theory in action research through the interplay of subjective ontology and objective epistemology. *Action Research*, 7(1), pp.69-83.

Prahalad, C.K. and Hamel, G., 1990. Core competency concept. *Harvard Business Review*, 64(3), pp.70-92.

Quaye, I., Osei, A., Sarbah, A. and Abrokwah, E., 2015. The Applicability of the Learning School Model of Strategy Formulation (Strategy Formulation as an Emergent Process). *Open Journal of Business and Management*, 3(02), pp.135-152.

Ragsdell, G. 2003. No need to reinvent the wheel? Enhancing knowledge management practice with critical systems thinking. In: J. Edwards, ed. *KMAC Proceedings*, OR Society, Aston University, pp. 284-291

Ragsdell, G., 2009. Participatory action research: A winning strategy for KM. *Journal of Knowledge Management,* 13(6), pp.564-576.

Ragsdell, G., 2016. Knowledge management in the not-for-profit sector. *Journal of Knowledge Management,* 20(1), pp.8-12.

Ragsdell, G., Probets, S., Ahmed, G., and Murray, I., 2014. Knowledge audit: Findings from the energy sector. *Knowledge and Process Management*, 21(4), pp.270-279.

Rathi, D., Given, L.M., and Forcier, E., 2016. Knowledge needs in the non-profit sector: an evidence-based model of organizational practices. *Journal of Knowledge Management,* 20(1), pp.23-48.

Rawal, N. and Mahini, S.A., 2014. Models and methods of intellectual capital accounting. *Advances in Economics and Business Management (*AEBM), 1(1).

Razaghi, M.E., Moosavi, S.J., and Safania, A.M., 2013. Successful knowledge management establishment in sport organizations with an emphasis on Iranian localization. *International Journal of Sport Studies*, 3(1), pp.30-37.

Razmerita, L., Kirchner, K., and Nielsen, P., 2016. What factors influence knowledge sharing in organizations? A social dilemma perspective of social media communication. *Journal of Knowledge Management*, 20(6), pp.1225-1246.

Reade, I., Rodgers, W., and Hall, N., 2008. Knowledge transfer: How do high performance coaches access the knowledge of sport scientists? International *Journal of Sports Science and Coaching*, 3(3), pp.319-334.

Reason, P., 1994. Co-operative inquiry, participatory action research & action inquiry: Three approaches to participative inquiry. In: N.K. Denzin and Y.S. Lincoln, eds. *Handbook of qualitative research*. Thousand Oaks: Sage.

Reason, P., 1999. Integrating action and reflection through co-operative inquiry. *Management Learning*, 30(2), pp.207-225.

Reason, P., 2006. Choice and quality in action research practice. *Journal of Management Inquiry*, 15(2), pp.187-203.

Reason, P. and Bradbury, H., 2006. Introduction: Inquiry and participation in a world worthy of human aspiration. In: P. Reason and H. Bradbury, eds. *Handbook of Action Research*. London: Sage.

Reason, P. and Bradbury, H., 2008. *The Sage handbook of action research participative inquiry and practice*. London: Sage.

Reid, C., Stewart, E., and Thorne, G., 2004. Multidisciplinary sport science teams in elite sport: comprehensive servicing or conflict and confusion? *The Sport Psychologist,* 18(2), pp.204-217.

Ricceri, F., and Guthrie, J., 2009. Critical analysis of international guidelines for the management of knowledge resources. In: *Handbook of Research on Knowledge-Intensive Organizations*. IGI Global, pp. 375-392.

Riege, A., 2005. Three-dozen knowledge-sharing barriers managers must consider. *Journal of Knowledge Management*, 9(3), pp.18-35.

Riege, A. and Lindsay, N., 2006. Knowledge management in the public sector: stakeholder partnerships in the public policy development. *Journal of Knowledge Management,* 10(3), pp.24-39.

Roberts, J., 2000. From know-how to show-how? Questioning the role of information and communication technologies in knowledge transfer. *Technology Analysis & Strategic Management,* 12(4), pp.429-443.

Robertson, S., 2006. Masculinity and reflexivity in health research with men. *Auto/Biography*, 14(4), p.302.

Robertson, M. and Swan, J., 2003. Control–what control? Culture and ambiguity within a knowledge intensive firm. *Journal of Management Studies*, 40(4), pp.831-858.

Robson, C., 2011. *Real world research*. Chichester: John Wiley and Sons.

Rosca, V., 2014. A model for eliciting expert knowledge into sports-specific knowledge management systems. *Revista de Management Comparat International,* 15(1), p.57-68

Rosendaal, B. and Bijlsma-Frankema, K., 2015. Knowledge sharing within teams: Enabling and constraining factors. *Knowledge Management Research & Practice,* 13(3), pp.235-247.

Ross, E., Gupta, L., and Sanders, L., 2018. When research leads to learning, but not action in high performance sport. *Progress in Brain Research*, 240, pp.201-217.

Roth, J., 2003. Enabling knowledge creation: Learning from an R&D organization. *Journal of Knowledge Management*, 7(1), pp.32-48.

Roy, M.C., Mosconi, E., Sager, M., and Ricard, J.F., 2014. knowledge audit approach for a large-scale government KM strategy. *Journal of Information and Knowledge Management,* 13(04), pp.1450029-1-10.

Rubenstein-Montano, B., Liebowitz, J., Buchwalter, J., McCaw, D., Newman, B. and Rebeck, K., 2001. A systems thinking framework for knowledge management. *Decision Support Systems*, 31(1), pp.5-16.

Schenk, J., Parent, M.M., MacDonald, D., and Proulx Therrien, L., 2015. The evolution of knowledge management and transfer processes from domestic to international multi-sport events. *European Sport Management Quarterly,* 15(5), pp.535-554.

Schon, D. A., 1983. *The reflective practitioner*. New York: Basic Books.

Schön, D.A., 1987. *Educating the reflective practitioner: Toward a new design for teaching and learning in the professions*. San Francisco: Jossey-Bass.

Scholl, H.J. and Carlson, T.S., 2012. Professional sports teams on the Web: A

comparative study employing the information management perspective. *European Sport Management Quarterly*, 12(2), pp.137-160.

Schultze, U. and Stabell, C., 2004. Knowing what you don't know? Discourses and contradictions in knowledge management research. *Journal of Management Studies,* 41(4), pp.549-573.

Schumaker, R.P., Solieman, O.K., and Chen, H., 2010. Sports knowledge management and data mining. *ARIST*, 44(1), pp.115-157.

Schwikkard, D.B. and Du Toit, A.S.A., 2004. Analysing knowledge requirements: a case study. In *Aslib Proceedings*, April, 2004. London: Emarald Group Publishing Limited, pp.104-111.

Serenko, A. and Bontis, N., 2016. Understanding counterproductive knowledge behavior: antecedents and consequences of intra-organizational knowledge hiding. *Journal of Knowledge Management*, 20(6), pp.1199-1224.

Serrat, O., 2017. *Knowledge Solutions*. Singapore: Springer.

Shani, A.B., Mohrman, S.A., Pasmore, W.A., Stymne, B. and Adler, N. eds., 2008. *Handbook of collaborative management research*. London: Sage Publications.

Shani, A.B. and Pasmore, W.A., 1985. Organization inquiry: Towards a new model of the action research process. In: D.D. Warrick, ed. *Contemporary organization development: Current thinking and applications*. Glenview: Scott Foresman, pp.438-448.

Shaw, G. and Williams, A., 2009. Knowledge transfer and management in tourism organisations: An emerging research agenda. *Tourism Management*, 30(3), pp.325-335.

Simatwo, S., Ragsdell, G., and Jackson, T., 2017. Moving KM to the next generation: The contribution of critical systems thinking. In: *Proceedings of the 18th European Congress on Knowledge Management, Barcelona, September 2017.* Academic Conferences and Publishing International Limited.

Singh, N. and Hu, C., 2008. Understanding strategic alignment for destination marketing and the 2004 Athens Olympic Games: Implications from extracted tacit knowledge. *Tourism Management*, 29(5), pp.929-939.

Smith, E.A., 2001. The role of tacit and explicit knowledge in the workplace. *Journal of Knowledge Management,* 5(4), pp.311-321.

Snowden, D., 2002. Complex acts of knowing: Paradox and descriptive self-

awareness. *Journal of Knowledge Management*, 1(2), pp.100-111.

Soto-Acosta, P., Popa, S., and Palacios-Marqués, D., 2017. Social web knowledge sharing and innovation performance in knowledge-intensive manufacturing SMEs. *The Journal of Technology Transfer*, 42(2), pp.425-440.

Sport New Zealand, 2014. *Knowledge management field guide*. Auckland: Information Leadership.

Srivastava, P. and Hopwood, N., 2009. A practical iterative framework for qualitative data analysis. *International Journal of Qualitative Methods*, 8(1), pp.76-84.

Stake, R.E., 1995. The art of case study research. Thousand Oaks: Sage. Starbuck, W.H., 1992. Learning by knowledge-intensive firms. *Journal of Management Studies,* 29(6), pp.713-740.

Steel, K.A., Harris, B., Baxter, D., and King, M., 2013. Skill acquisition specialists, coaches and athletes: The current state of play? *Journal of Sport Behavior*, 36(3) pp.291-305.

Stewart, T.A., 1997. *Intellectual Capital*. New York: Currency/ Doubleday.

Stewart, T.A., 2002. The *case against knowledge management*. Business, 2(3), p.2-5.

Storey, J. and Barnett, E., 2000. Knowledge management initiatives: Learning from failure. *Journal of Knowledge Management*, 4(2), pp.145-156.

Stringer, E.T., 2013. *Action research*. Thousand Oaks: Sage Publications.

Sveiby, K.E., 1997. *The new organizational wealth: Managing & measuring knowledge-based assets*. San Francisco, California: Berrett-Koehler Publishers.

Sveiby, K. E., & Riesling, A., 1986. *Kunskapföretaget – Seklets Viktigaste Ledarutmaning?* Malmö: Liber AB.

Swan, J., Newell, S., Scarbrough, H., and Hislop, D., 1999. Knowledge management and innovation: Networks and networking. *Journal of Knowledge Management,* 3(4), pp.262-275.

Swan, J. and Scarbrough, H., 2001. Knowledge management: Concepts and controversies. *Journal of Management Studies*, 38(7), pp.913-921.

Swart, J. and Kinnie, N., 2003. Sharing knowledge in knowledge-intensive firms. *Human Resource Management Journal*, 13(2), pp.60-75.

Swart, J., Bowman, C., and Howard, K., 2018. Knowledge assets: Identification and integration. In: J. Syed, P. Murray, D. Hislop and Y, Mouzughi, eds. *The*

Palgrave Handbook of Knowledge Management. Cham: Palgrave Macmillan, pp. 273-303.

Swart, J. and Harcup, J., 2013. 'If I learn do we learn?': The link between executive coaching and organizational learning. *Management Learning*, 44(4), pp.337-354.

Swart, J., Kinnie, N., Van Rossenberg, Y., and Yalabik, Z.Y., 2014. Why should I share my knowledge? A multiple foci of commitment perspective. *Human Resource Management Journal*, 24(3), pp.269-289.

Swart, J., Turner, N., and Prieto-Pastor, I., 2017. *The role of knowledge resources in managing complexity.* Paper presented at 7th International Conference on Organizational Learning, Knowledge and Capabilities (OLKC). Universidad de Valladolid, 26-28 April. Valencia, Spain.

Szulanski, G., 1996. Exploring internal stickiness: Impediments to the transfer of best practice within the firm. *Strategic Management Journal,* 17(S2), pp.27-43.

Taylor, S. S., Rudolph, J. W., and Foldy, E. G., 2008. Teaching reflective practice in the action science/action inquiry tradition: Key stages, concepts and practices. In: P. Reason and H. Bradbury, eds. *The Sage handbook of action research: Participative inquiry and practice*. Los Angeles: Sage, pp.656–668.

Teece, D.J., Pisano, G. and Shuen, A., 1997. Dynamic capabilities and strategic management. *Strategic management journal*, 18(7), pp.509-533.

Tekin, A.K. and Kotaman, H., 2013. The epistemological perspectives on action research. *Journal of Educational and Social Research*, 3(1), pp.81-91.

Toma, S.G., Marinescu, P., and Grădinaru, C., 2016. Strategic planning and strategic thinking. *Revista Economică*, 68(5) pp.168-175.

Ton, Z. and Huckman, R.S., 2008. Managing the impact of employee turnover on performance: The role of process conformance. *Organization Science*, 19(1), pp.56-68.

Trusson, C., Hislop, D., and Doherty, N.F., 2018. The role of ICTs in the servitisation and degradation of IT professional work. *New Technology, Work and Employment,* 33(2), pp.149-170.

Tsoukas, H., 1996. The firm as a distributed knowledge system: A constructionist approach. *Strategic Management Journal*, 17(S2), pp.11-25.

Tsoukas, H., 2009. A dialogical approach to the creation of new knowledge in organizations. *Organization Science*, 20(6), pp.941-957.

Tzortzaki, A.M. and Mihiotis, A., 2014. A review of knowledge management theory and future directions. *Knowledge and Process Management*, 21(1), pp.29-41.

UK Sport, 2018a. Partners [online]. *UK Sport* [viewed on 19/12/2018]. Available from: http://www.uksport.gov.uk/about-us/partners

UK Sport, 2018b. *How UK Sport funding works* [online]. UK Sport [viewed on 19/12/2018]. Available from: http://www.uksport.gov.uk/our-work/investing-in-sport/how-uk-sport-funding-works

UK Sport, 2018c. Our work [online]. *UK Sport* [viewed on 19/12/2018]. Available from: https://www.uksport.gov.uk/our-work

UK Sport, 2018d. *What is a Performance Pathway* [online]. UK Sport [viewed on 19/12/2018]. Available from: http://www.uksport.gov.uk/our-work/talent-id/what-is-a-performance-pathway

Usoro, A., Sharratt, M.W., Tsui, E., and Shekhar, S., 2007. Trust as an antecedent to knowledge sharing in virtual communities of practice. *Knowledge Management Research and Practice,* 5(3), pp.199-212.

Valmohammadi, C. and Ghassemi, A., 2016. Identification and prioritization of the barriers of knowledge management implementation using fuzzy analytical network process: A case study of the Iranian context. *VINE Journal of Information and Knowledge Management Systems,* 46(3), pp.319-337.

Vangen, S. and Huxham, C., 2006. Achieving collaborative advantage: Understanding the challenge and making it happen. *Strategic Direction*, 22(2), pp.3-5.

Wang, Y.M. and Wang, Y.C., 2016. Determinants of firms' knowledge management system implementation: An empirical study. *Computers in Human Behavior,* 64, pp.829-842.

Wasko, M.M. and Faraj, S., 2005. Why should I share? Examining social capital and knowledge contribution in electronic networks of practice. *MIS Quarterly*, 29(1), pp.35-57.

Wenger, E., McDermott, R.A., and Snyder, W., 2002. *Cultivating communities of practice: A guide to managing knowledge.* Brighton: Harvard Business Press.

Wiig, K.M., 1993. *Knowledge management foundations: Thinking about thinking: How people and organizations create, represent, and use knowledge*. Arlington: Schema press.

Wiig, K.M., 1997a. Knowledge management: Where did it come from and where will it go? *Expert Systems with Applications*, 13(1), pp.1-14.

Wiig, K.M., 1997b. Integrating intellectual capital and knowledge management. *Long range planning*, 30(3), pp.399-405.

Wiig, K.M., 1998. Perspectives on introducing enterprise knowledge management. In: PAKM, October 1998.

Wiig, K.M., 1999. What future knowledge management users may expect. *Journal of Knowledge Management,* 3(2), pp.155-166.

Wiig, K.M., 2002. Knowledge management in public administration. *Journal of Knowledge Management,* 6(3), pp.224-239.

Wilson, T.D., 2002. The nonsense of knowledge management. *Information Research*, 8(1), pp.8-18.

Williams, S.J. and Kendall, L., 2007a. Perceptions of elite coaches and sports scientists of the research needs for elite coaching practice. *Journal of Sports Sciences,* 25(14), pp.1577-1586.

Williams, S.J. and Kendall, L.R., 2007b. A profile of sports science research (1983–2003). *Journal of Science and Medicine in Sport*, 10(4), pp.193-200.

Wu, Y.L. and Li, Y.H., 2008. Research on the model of knowledge audit. In: 4th *International Conference on Wireless Communications, Networking and Mobile Computing*, October 2008. IEEE, pp. 1-4.

Xiao, J., Wang J., and Peng, J., 2010. Enterprise knowledge management audit based on processes: Toward an integrated conceptual framework. In: IEEE *International Conference on Management of Innovation & Technology, Singapore*, 2010. pp. 940-945.

Xu, J., Sankaran, G., Sankaran, S., and Clarke, D., 2008. Knowledge management in twenty-first century: Literature review and future research directions. *The International Technology Management Review*, 1(2), pp.16-24.

Yip, J.Y., Lee, R.W., and Tsui, E., 2015. Examining knowledge audit for structured and unstructured business processes: a comparative study in two Hong Kong companies. *Journal of Knowledge Management*, 19(3), pp.514-529.

Zack, M.H., 1999. Developing a knowledge strategy. *California Management Review,* 41(3), pp.125-145.

Appendices

Appendix 1: Information sheet and informed consent

As part of the Performance Knowledge team, Divyata is looking to understand the high-performance sport context. In addition, her PhD is concerned with identifying the specific knowledge needs of the institute. Accordingly, she will be using this discussion to inform her PhD and the PK strategy in general.

Taking Part

- I give my informed consent to participate in the study and for the researcher to include the data collected from today's discussion in her PhD research. ☐
- The purpose and details of this study have been explained to me. I understand that this study is designed to further scientific knowledge and that all procedures have been approved by the Loughborough University Ethics Approvals (Human Participants) Sub-Committee. ☐
- I have read and understood the information sheet and this consent form. ☐
- I understand that I am under no obligation to take part in the study, have the right to withdraw from this study at any stage for any reason, and will not be required to explain my reasons for withdrawing. ☐
- I agree to take part in this study. Taking part in the project will include the discussion being audio recorded. ☐

Use of Information

- I understand that all the personal information I provide will be treated in strict confidence and will be kept anonymous and confidential to the researchers unless (under the statutory obligations of the agencies which the researchers are working with), it is judged that confidentiality will have to be breached for the safety of the participant or others or for audit by regulatory authorities. ☐
- I understand that anonymised quotes may be used in publications, reports, web pages, and other research outputs. ☐
- I agree for the data I provide to be securely archived at the end of the project. ☐

_____ _____ _____

Name   Signature   Date

_____ _____ _____

Researcher   Signature   Date

Appendix 2: Informed consent for workshop

Enhancing knowledge capability and redefining collaboration practices in the EIS practitioners:
Information sheet and Informed consent form

As part of the Performance Knowledge team, Divyata is looking at possible solutions to improve the collaboration practices of the EIS practitioner. Accordingly, she will be using the discussions, outcomes and solutions from today's forum to inform her PhD and the PK strategy in general.

Taking Part

- I give my informed consent to participate in the study and for the researcher to include the data collected from today's forum in her PhD research.
- The purpose and details of this study have been explained to me. I understand that this study is designed to further scientific knowledge and that all procedures have been approved by the Loughborough University Ethics Approvals (Human Participants) Sub-Committee.
- I have read and understood the information sheet and this consent form.
- I understand that I am under no obligation to take part in the study, have the right to withdraw from this study at any stage for any reason, and will not be required to explain my reasons for withdrawing.
- I agree to take part in this study. Taking part in the project will include being recorded during today's forum (audio or video).

Use of Information

- I understand that all the personal information I provide will be treated in strict confidence and will be kept anonymous and confidential to the researchers unless (under the statutory obligations of the agencies which the researchers are working with), it is judged that confidentiality will have to be breached for the safety of the participant or others or for audit by regulatory authorities.
- I understand that anonymised quotes may be used in publications, reports, web pages, and other research outputs.
- I agree for the data I provide to be securely archived at the end of the project.

_____   _____   _____

Researcher   Signature   Date

Name	Department	Signature

Appendix 3: ECKM 2017 Paper

Insights from this research were presented at the 18th European Conference on Knowledge Management, at Barcelona, Spain in September 2017, where the researcher won the Best PhD Award. The final submission of the paper is attached below. The citation reference for the same is the following:

Sohal, D., Ragsdell, G. and Hislop, D., 2017. Towards sustainable knowledge management in high-performance sport. In: F. Marimon, et al., eds., *Proceedings of the 18th European Conference on Knowledge Management (ECKM),* International University of Catalonia, Barcelona, Spain, 7-8th September. Reading: Academic Conferences and Publishing International Limited, Vol. 2, pp 1212-1219.

Towards Sustainable Knowledge Management in High-Performance Sport

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Abstract

For knowledge management initiatives to be successful and provide sustainable competitive advantage, it is imperative that they are rooted in the organisation's context. This paper presents a knowledge management audit methodology for conducting a systemic inquiry into the multiple factors within an organisational context that can impact on the success of the KM strategy. Drawing from the practice-based perspective, the KM audit is proposed to study the organisational objectives, identify the strengths and barriers in the context and highlight the existing knowledge resources and processes. As opposed to the existing audit methodologies in the literature that present a snapshot evaluation of the context, the present audit methodology will adopt the iterative approach of the action research process; the data collection and analysis phases will be conducted simultaneously, progressively developing insight and meaning. Further, the findings will be continuously fed back to the organisation and used directly to inform the KM strategy through forming a working relationship with the current Knowledge Manager in the organisation. The

overall aim is to inform a KM strategy that will strategically align to the organisational context whilst utilising the available resources. It is expected that this approach will result in a KM strategy that will foster a long-term focus on KM in the organisation, provide sustainable competitive advantage and be robust in the face of dynamic organisational climates. This work-in-progress study is being conducted in a not-for-profit, knowledge intensive, high-performance sport organisation to illustrate the KM audit in practice. This paper presents the audit methodology and discusses the rationale and benefits of conducting a KM audit, along with preliminary findings and reflections from the audit process at the case study organisation.

Keywords: Knowledge management audit, knowledge strategy, high-performance sport.

Introduction

An organisation's ability to efficiently manage its knowledge has been proposed as a significant source of strategic advantage. However, despite the promise of strategic advantage, attempts at introducing knowledge management (KM) initiatives in organisations have sometimes been unsuccessful (Hylton, 2002). Stewart (2002) reasoned that often organisations implement KM strategies without first understanding what knowledge they need and how to manage it. Accordingly, knowledge audits (KA) are stressed as a critical first step in designing and implementing a KM strategy in an organisation. KA are instrumental in understanding the organisation's culture and context, highlighting the KM needs and defining KM goals.

In addition to being successful, for KM initiatives to provide continued strategic advantage, it is imperative that they are sustainable against the complex and dynamic context of an organisation. Okunoye (2002) stressed the need to study the organisational context, and the pertaining socio-cultural and organisational issues to design KM initiatives that are sustainable. Further, Bhatt (2001) emphasised that sustainable KM involves creating an enabling culture where people, processes and technology interact to manage an organisation's knowledge and provide sustainable competitive advantage. This suggests that careful consideration of multiple factors in an organisation's context and the interaction between them is required to design a KM strategy that is successful and sustainable.

This study proposes a knowledge management audit methodology for conducting a systemic inquiry into an organisational context to inform a KM strategy that is aligned to the strategic organisational objectives and provides sustainable competitive advantage. In this instance, the study is based at a high-performance sport organisation that can be classed as a not-for-profit, knowledge-intensive firm. The study attempts to extend understanding of knowledge audits in the previously less explored sport sector. The paper presents a review and critique of the current KA

literature, highlighting the gaps. Following on from this, the case study organisation where the audit is to be conducted is introduced, highlighting the relevance of knowledge management efforts and the rationale for conducting the audit. Finally, the knowledge management audit methodology is presented, with a specific discussion around addressing the gaps in the literature and the various phases involved in conducting the audit.

Knowledge audits: Literature review

Early research on KA made references to information audits (e.g., Orna, 1999; Henczel, 2000) and focused predominantly on identifying existing knowledge resources and future knowledge needs (e.g., Debenham and Clark, 1994). This appears to mirror the early conceptualisation of knowledge, and the focus of KM literature on the management of knowledge resources. As the field of KM progressed, the focus shifted onto the impact of organisational context, leadership and interpersonal interaction on knowledge creation, transfer and application (e.g., Nonaka and Takeuchi, 1995; Nonaka, von Krogh and Voelpel, 2006). Accordingly, the focus of knowledge audits expanded to include a study of the larger organisational context.

A review of the KA literature highlighted a lack of a standard methodology for conducting knowledge audits. It appears that researchers generally sort through the existing theoretical and empirical literature and select methodologies, tools and techniques to suit the context of their organisation. Thus, several different KA methodologies have been presented in an attempt to address this gap (e.g., Liebowitz et al, 2000; Burnett, Illingworth and Webster, 2004; Perez-Soltero et al, 2006; Cheung et al, 2007; Burnett, Williams and Illingworth, 2013). In addition to the KA methodologies, a series of KA case studies have been published in the literature (e.g., Bontis, Fearon and Hishon, 2003; Mearns and du Toit, 2008; Huck, Al and Rathi, 2011). A majority of these studies have not followed a systematic methodology but have adopted various KA tools and activities to study their respective case study organisation.

Analysis of the KA methodologies revealed some similarities and common tools and techniques used. Firstly, the authors generally recommended starting with identifying the organisational objectives and processes of strategic importance on which to focus the audit efforts. Across all methodologies, knowledge inventories and maps were developed to highlight the current knowledge flow and resources. This was followed by conducting a gap analysis, that is, comparing the existing knowledge health of the organisation against what they require to operate more effectively. Thereafter, audit reports were prepared to communicate the findings and make recommendations for the KM strategy. Finally, the authors asked for re-audit to continuously monitor the KM initiatives in the organisation. These reflections are also supported by the Levantakis, Helms and Spruit's (2008) review of KA literature.

Reflecting on the KA methodologies and case studies in the literature, it is clear that the knowledge audit is a critical first step in informing and developing a knowledge management strategy that is to become embedded in the culture of the organisation leading to sustainable competitive advantage. As Bloice and Burnett (2016) discussed, KM endeavours need to be moulded and adapted to the context in question. Direct application of KM initiatives without understanding the context could be prone to failure, costing the organisation significant time and resources. The knowledge audit will be instrumental in understanding the context, its strengths, constraints and requirements, giving direction to the KM strategy in the organisation.

Knowledge audits: Critique

A review of the KA case studies highlighted certain gaps in the literature. Primarily, a majority of the authors have stressed the need to continuously assess the KM environment (e.g., Perez-Soltero et al, 2006; Cheung et al, 2007). However, the existing KA methodologies are generally described as a snapshot evaluation of the KM environment in an organisation (Wei, Choy and Yeow, 2006; Burnett et al, 2013). This indicates a disparity between the theoretical principles and the practice of knowledge audits. Furthermore, the existing methodologies appear to be progressing systematically, in a structured and hierarchical manner. There are uncertainties about the application of such methodologies in organisations where established KM practices are being carried out simultaneously.

Knowledge audits are considered as a crucial starting point for an organisation's KM strategy, and continuous assessment of the environment is deemed important to ensure success of the KM initiatives. Therefore, KA should be considered an important responsibility of the KM managers. However, a review of the case studies suggests that most the audits were conducted periodically by an external consultant or researcher. This approach poses questions about the quality of the data collected during the audit and their applicability for the resultant KM strategy. Specifically, drawing from the practice-based perspective, where knowledge is considered inseparable from the context (Gherardi, 2006), a periodic evaluation of the organisation by an external consultant may appear superficial. A more embedded approach that involves ethnographic understanding of the context and culture may help design a KM strategy that is strategically aligned to meet the organisation's KM needs.

Knowledge audits can be considered as a bridge between the practical needs of an organisation and the specific theoretical literature on KM suited to address those needs. However, a significant gap in the existing literature appears to be the limited discussion on how audit findings were used to develop a KM strategy for the organisation. Finally, the general trend amongst the KA

methodologies has been to adopt the existing KA literature and techniques to suit the specific context. However, again there has been limited mention of how the audit process was designed or why the specific KA tools were adopted, particularly as aligned to the strategic objectives of the organisation. A more explicit review and statement of the rationale behind the audit design will help align the KA to the specific needs of the organisation.

Knowledge management audit: Addressing the gaps

This study proposed a knowledge management audit methodology to address these gaps in the literature. A major emphasis of existing KA methodologies has been on identifying the knowledge gaps and needs, drawing from information audits. The term 'knowledge management audit' has been used instead to stress towards a holistic KM strategy for managing the people, processes and culture to indirectly manage the organisational knowledge. The methodology adopted the practice-based perspective of KM, which understands knowledge as being embedded in the context, processes and people (see Hislop, 2013). Accordingly, the audit process emphasized on a comprehensive exploration of multiple factors in the organisational context that can have a potential impact on KM initiatives. These included organisational objectives, key business operations, culture, staff attitude, technological resources and external climate, in addition to the knowledge resources and needs. This approach was expected to facilitate the development of a KM strategy that is sustainable and embedded in the organisation.

As opposed to the structured and systematic approach often followed in the existing KA methodologies, the study adopted the interpretive framework to explore the dynamic and complex organisational context. Within the interpretive framework, the participant's worldview is sought to construct their reality (Creswell, 2013). Rather than an evaluation of the context, an iterative approach was followed to study multiple factors in the KM environment systemically, and provide a holistic understanding of the context. These factors included the context and culture of the organisation, the knowledge workers, knowledge resources, KM processes and cultural barriers and enablers, along with their role in the KM strategy for the organisation. Specifically, the data collection and analysis phases were proposed to progress simultaneously as "inextricably linked" rather than as distinct phases (O'Reilly, 2012, pp. 30). Srivastava and Hopwood (2009) stressed the reflexive process within the iterative approach to data analysis. Specifically, reflexive iteration allows the researcher to revisit and engage with the data to progressively develop insight and meaning. As the audit process progressed, the iterative approach helped shape the researcher's understanding of the multiple factors that can impact on the KM strategy.

KA in the literature are generally conducted by external consultants. This approach could be perceived as an exercise in performance management; it is possible that the employees of the

organisation feel that their performance is being reviewed and evaluated, thereby affecting the quality of the data collected. The present study, on the other hand, adopted the ethnographic approach (Creswell, 2013; O'Reilly, 2012) and stressed the embeddedness of the auditor in the context. This approach was expected to provide rich insight into the context, resulting in a more robust KM strategy. Additionally, it highlighted collaborative practice between the auditor and the employees, aimed to result in solutions and recommendations that would benefit the organisation. Further, this approach would inform applied practice wherein the KM manager can incorporate KA into their daily role, continuously and regularly assessing the context, designing relevant KM practices and evaluating their impact. The present study further acknowledged that due to the presence and participation of the researcher in the context, the audit would not be conducted in a vacuum. During the audit process, conversations about KM could influence the staff's perceptions and facilitate adoption of KM behaviours in their daily work. The iterative approach was thus proposed to identify and analyse any changes that may take place in the context throughout the audit process (Ragsdell et al, 2014).

Case study organisation

The study is based in a not-for-profit, high-performance sport organisation. The organisation's key business objectives include delivery of sport science, medicine and technology (SSM) to elite athletes for enhanced performance impact. This strategic support is provided by the SSM practitioners who are contracted by the organisation to work with various sport governing bodies. The organisation is in turn committed to support the development of the practitioners' knowledge and create a nationwide network of expertise within the UK high-performance sport system. Due to the knowledge-intensive nature of its key objectives and operations, the organisation has formalised knowledge management within the structure with the appointment of a Knowledge Manager. The audit process was thus proposed in collaboration with the Manager to inform the KM strategy and align KM initiatives to the strategic organisational objectives.

Knowledge management was initially introduced in the organisation to improve knowledge sharing amongst the practitioners and with strategic partners to strengthen the overall high-performance sport network. Considering the KA literature, it was decided that KM solutions that are tailored to the needs and objectives of the organisation will be suitable to provide sustainable competitive advantage. The audit was thus proposed to understand the complexities and intricacies of the organisation within the high-performance sport context. The audit has been designed to progressively develop an understanding of the organisational structure, culture and objectives within which the subsequent KM strategy and initiatives will be outlined and implemented. Thus, following this brief introduction of the organisation, a more comprehensive discussion on the organisational context as a critical success factor for KM initiatives will be presented as the audit

progresses.

Knowledge management audit: Methodology

The existing KA methodologies, tools and techniques were adapted to develop the knowledge management audit methodology proposed in the study. To make explicit the rationale for the audit design, an initial Pre- Audit phase was proposed. Here the context, culture and core business processes of the organisation were explored to define the scope of the audit, linked to the strategic organisational objectives. Following this, to engender a holistic understanding of the context, the methodology was further divided into two parts (Figure 1). The Focused Audit part was proposed to progress systematically to collect data on the strategic organisational objectives, their vision for KM strategy, barriers and enablers in the context, best practices and specific needs for KM initiatives. The purpose of this part of the audit was to establish the link between the organisation's strategic objectives and the KM strategy by identifying specific solutions that can be implemented to foster a long-term focus on KM.

The second part, Ongoing Audit, was proposed to proceed throughout the audit process to reflect the iterative approach. In addition to exploring the complex reality of the organisation, this approach was devised to help assess the current KM environment and ongoing KM practices in the organisation and any changes that result out of the audit process. Furthermore, the Ongoing Audit allowed for regular feedback on audit findings and informed recommendations to be made to the Knowledge Manager. This approach, conceptualised as an action research approach, was also adopted by Burnett et al (2013). The Ongoing Audit was proposed to observe and understand the culture, inform action and assess the impact of those actions in a continuous and cyclical manner. This was deemed beneficial for the dynamic context of the organisation. Rather than waiting for the audit report at the end of the project, this approach would help apply actions that are relevant to the context at the time and assess the impact thereof.

Phase: Context

Following the recommendations made by various KA authors (Burnett et al, 2004; Cheung et al, 2007), the first phase of the audit emphasised an inquiry into the context of the organisation, within the wider high- performance sport system (Figure 1). Specifically, interviews with the senior management team (SMT) and document analysis of key strategy documents were proposed to identify the organisation's strategic objectives, understand the SMT's conceptualisation and vision for KM and gauge the organisation's receptivity towards KM.

Phase: Current KM strategy

The next phase focused on understanding the existing KM strategy and initiatives (Burnett et al,

2004; Perez- Soltero et al, 2006). Multiple, in-depth interviews were proposed with the Knowledge Manager to analyse the past and current KM initiatives and future focus of the KM strategy. This was expected to establish a collective understanding of the history of KM in the organisation, assess the existing KM initiatives and identify a suitable way to proceed.

Ongoing Audit – Phase: Organisational Culture and Phase: Analysis and Feedback
The Ongoing Audit consisted of ethnographic observations whereby the researcher engaged with the people and processes in the organisation to provide a rich insight into the context and knowledge environment of the organisation. Further, a close collaborative relationship was stressed with the Knowledge Manager to continuously feedback audit findings and assess the ongoing KM processes in the organisation. This acknowledged that the audit would not be conducted in a vacuum and KM processes are expected to operate simultaneously.
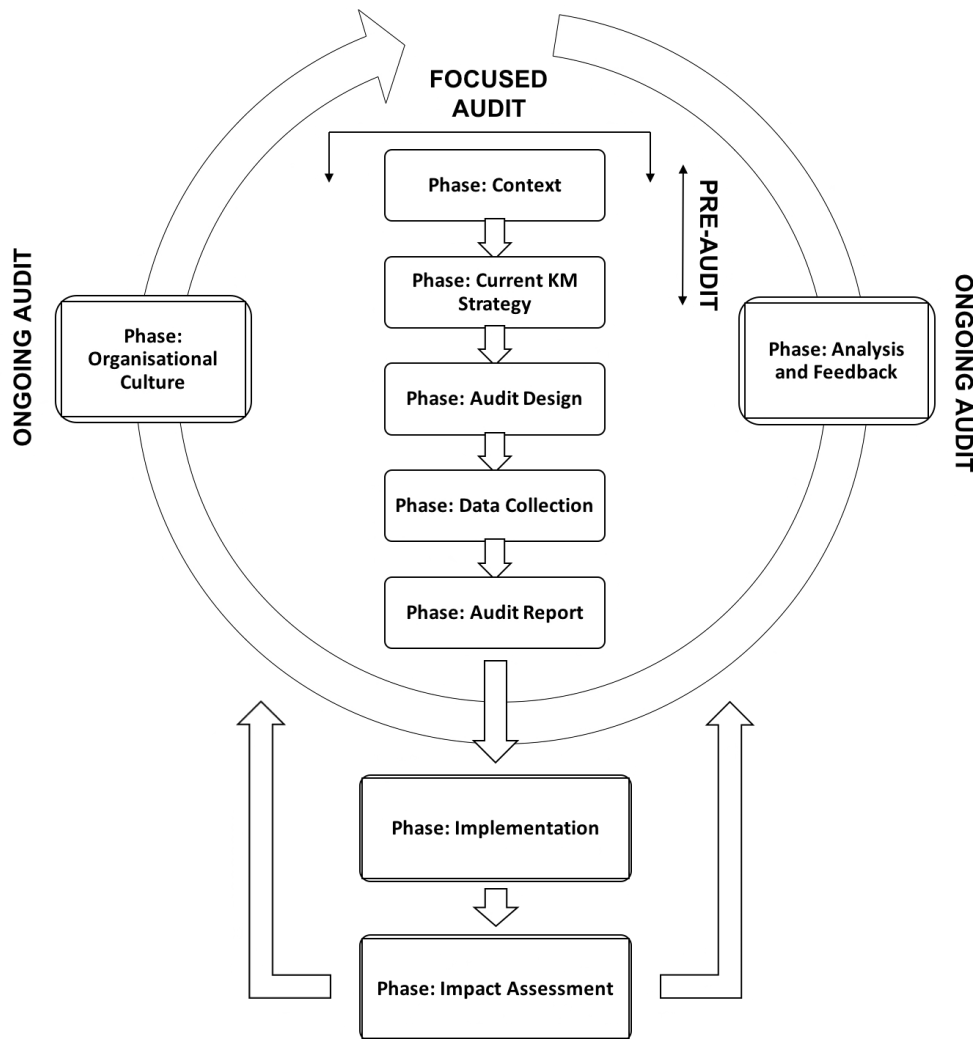

Figure 1: Knowledge management audit methodology

Phase: Audit Design

The initial phases of the audit were expected to contribute towards defining the scope of the audit (Henzcel, 2001). Specifically, working in collaboration with the Knowledge Manager, Phase: Audit Design was proposed to identify the strategic focus of KM for the organisation and design the subsequent phases of the audit, aligned to the organisation's objectives. Additionally, specific KA tools to be adopted were identified considering the practical and cultural constraints and availability of resources.

Phase: Data Collection

Upon finalising the KA methodology, the next phase included in-depth data collection and investigation into the organisation's context and culture. The data was collected from staff across the organisational structure to form a representative understanding of the specific strengths, weaknesses, best practices, challenges, opportunities and requirements in the organisational context with regards to KM processes.

Phase: Audit Report and Phase: Implementation

Upon conducting the data collection, the next phase was proposed to develop an audit report and action plan for the organisation. Following Rubenstein-Montano, et al.'s (2001) recommendations, the audit report would be developed considering multiple factors in the organisational context. Moreover, a simultaneous review of the academic and empirical literature was proposed to inform the recommendations made. Mearns and du Toit (2008) stated that KA is successful only if the subsequent recommendations are actionable. Thus, working in collaboration with the Knowledge Manager, specific actionable solutions and interventions would be developed that can be directly and efficiently implemented in the organisation.

Phase: Re-audit and Impact Assessment

Drawing from the existing literature on KA, most methodologies have emphasised continuously auditing the KM environment to ensure success. The final phase of the methodology was thus proposed to continue the audit as an on-going activity within the organisation. The Ongoing Audit would be promoted as an integral aspect of the Knowledge Manager's role to enable continuous assessment of the KM environment to ensure that the KM initiatives are relevant to the context of the organisation.

Knowledge management audit: Implementation

Within the case study organisation, considerable progress has been made with the audit process. Phase: Context was implemented with the SMT and the senior managers in the organisation, along with document analysis of the organisation's annual reports. Initial analysis suggested that the

organisational structure is highly complex. Being a knowledge intensive organisation, certain KM processes have already been adapted and implemented by different departments in the organisation. Further analysis revealed certain risks and challenges in the context, specifically tight time constraints and limited funding. Due to these challenges, the existing resources and staff are already performing at their optimal. As a result, although the organisation collectively has a positive attitude towards KM and the benefits of knowledge sharing, the staff are likely to show limited engagement in brand new and complicated processes. Thus, the initial phases of the audit revealed possible enablers and barriers in the context whilst highlighting the scope for the next phase of the audit.

Phase: Current KM Strategy was subsequently conducted with the Knowledge Manager to analyse and evaluate the past and existing KM initiatives in the organisation. It became apparent that the barriers to KM that emerged in Phase: Context had affected the success of past KM initiatives in the organisation. For example, in the past technological solutions have been implemented to improve communication and collaboration within the organisation. However, they garnered limited engagement because they were perceived as complicated to learn and standalone processes rather than integrated in the working practices of the staff. This finding highlighted the need to study the interaction between the culture, technology, people and processes in an organisation to design sustainable KM solutions (Bhatt, 2001). Further, Lettieri, Borga and Savoldelli (2004) stressed the need to manage all available resources efficiently in not-for-profit organisations to maximise excellence. Thus, considering the existing contextual barriers of time and funding, the Knowledge Manager and the researcher collectively agreed that the organisation's KM strategy should emphasise processes that can become embedded in the organisational context and culture. The next phase, Phase: Audit Design was thus conducted in collaboration with the Knowledge Manager to design a data collection method to identify the existing KM processes, resources and roles and responsibilities.

Based on the audit design, the subsequent phase, Phase: Data Collection, consisted of interviews, focus groups and ethnographic observations with the organisation's staff. The purpose of data collection was to map out a network of people, resources and processes in the organisation to facilitate an efficient flow of knowledge. The data collected from multiple sources throughout the audit process will be analysed to develop an action plan for the organisation, in collaboration with the Knowledge Manager. The overarching aim is to place the responsibility of KM on the organisation's staff and the role of the Knowledge Manager will then be to support and facilitate the KM processes.

Conclusion

For knowledge management to provide sustainable competitive advantage, it is important that KM practices themselves are sustainable and robust in dynamic organisational contexts. This will be possible if the KM practices are embedded in the organisation, aligned to the organisational objectives, optimise the existing resources and consider the challenges and enablers in the context. The paper presented a knowledge management audit methodology to conduct a systemic inquiry into an organisational context to inform their KM strategy. Building on the existing KA literature, the methodology stressed the embeddedness of the auditor in the organisation to study multiple factors and how they interact to influence the knowledge environment of the organisation. The study aims to assess the impact of this approach on developing a KM strategy that is aligned to the organisational context and objectives and provides sustainable competitive advantage. In this instance, the methodology is being implemented in a knowledge-intensive, not-for-profit, high-performance sport organisation. Thus, in addition to contributing to the KA literature, the study will attempt to provide insight into the application of KM principles in the field of high-performance sport.

References

Bhatt, G.D. (2001) "Knowledge Management in Organizations: Examining the Interaction Between Technologies, Techniques, and People", *Journal of Knowledge Management*, Vol 5, No. 1, pp 68-75.

Bloice, L. and Burnett, S. (2016) "Barriers to Knowledge Sharing in Third Sector Social Care: A Case Study", *Journal of Knowledge Management*, Vol 20, No. 1, pp 125-145.

Bontis, N., Fearon, M. and Hishon, M. (2003) "The E-Flow Audit: An Evaluation of Knowledge Flow Within and Outside a High-Tech Firm", *Journal of Knowledge Management*, Vol 7, No. 1, pp 6-19.

Burnett, S., Illingworth, L. and Webster, L. (2004) "Knowledge Auditing and Mapping: A Pragmatic Approach", *Knowledge and Process Management*, Vol 11, No. 1, pp 25-37.

Burnett, S., Williams, D. and Illingworth, L. (2013) "Reconsidering the Knowledge Audit Process: Methodological Revisions in Practice", *Knowledge and Process Management*, Vol 20, No. 3, pp 141-153.

Cheung, C.F., Li, M.L., Shel, W.Y., Lee, W.B. and Tsang, T.S. (2007) "A Systematic Approach for Knowledge Auditing: A Case Study in Transportation Sector", *Journal of Knowledge Management*, Vol 11, No. 4, pp 140- 158.

Creswell, J.W. (2013) *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*, Sage, Thousand Oaks.

Debenham, J. and Clark, J. (1994) "The Knowledge Audit", *Robotics and Computer-Integrated Manufacturing,* Vol 11, No. 3, pp 201–211.

Gherardi, S. (2006) *Organizational Knowledge: The Texture of Organizing*, Blackwells, London.

Henczel, S. (2001) The *Information Audit: A Practical Guide*, Walter de Gruyter, Berlin.

Hislop, D. (2013) *Knowledge Management in Organizations: A Critical Introduction*, Oxford University Press, Oxford.

Huck, J., Al, R. and Rathi, D. (2011) "Finding KM Solutions for a Volunteer-Based Non-Profit Organization", *Vine*, Vol 41, No. 1, pp 26-40.

Hylton, A. (2002) A KM *Initiative is Unlikely to Succeed Without a Knowledge Audit*, Knowledge Board, Brussels.

Lettieri, E., Borga, F. and Savoldelli, A. (2004) "Knowledge Management in Non-Profit Organizations", *Journal of Knowledge Management*, Vol 8, No. 6, pp 16-30.

Levantakis, T., Helms, R. and Spruit, M. (2008) "Developing a Reference Method for Knowledge Auditing", In: T. Yamaguchi, ed. *Practical Aspects of Knowledge Management*, Springer Berlin Heidelberg, Berlin, pp 147-159.

Liebowitz, J., Rubenstein-Montano, B., McCaw, D., Buchwalter, J., Browning, C., Butler, N. and Rebeck, K. (2000) "The Knowledge Audit", *Knowledge and Process Management*, Vol 7, No. 1, pp 3-10.

Mearns, M.A. and du Toit, A.S.A. (2008) "Knowledge Audit: Tools of the Trade Transmitted to Tools for Tradition", *International Journal of Information Management*, Vol 28, No. 3, pp 161-167.

Nonaka, I. and Takeuchi, H. (1995) *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*, Oxford University Press, Oxford.

Nonaka, I., von Krogh, G. and Voelpel, S. (2006) "Organizational Knowledge Creation Theory: Evolutionary Paths and Future Advances", *Organization Studies*, Vol 27, No. 8, pp 1179-1208.

Okunoye, A. (2002) "Towards a Framework for Sustainable Knowledge Management in Organisations in Developing Countries", In: K. Brunnstein and J. Berleur, eds. *Human Choice and Computers: Issues of Choice and Quality of Life in the Information Society*, pp 225-237. International Federation of Information Processing, World Computer Congress, August 25-30, 2002, Kluwer Academic Publishers, USA.

O'Reilly, K. (2012) *Ethnographic Methods*, Routledge, New York.

Orna, E. (1999) *Practical Information Policies*, Gower Publishing, Ltd, Aldershot.

Perez-Soltero, A., Barcelo-Valenzuela, M., Sanchez-Schmitz, G., Martin-Rubio, F. and Palma-Mendez, J.T. (2006) "Knowledge Audit Methodology with Emphasis on Core Processes", *European and Mediterranean Conference on Information Systems*, July, 1- 10.

Ragsdell, G., Probets, S., Ahmed, G. and Murray, I. (2014) "Knowledge Audit: Findings from the Energy Sector", *Knowledge and Process Management*, Vol 21, No. 4, pp 270-279.

Rubenstein-Montano, B., Liebowitz, J., Buchwalter, J., McCaw, D., Newman, B., Rebeck, K. and

Team, T.K.M.M. (2001) "A Systems Thinking Framework for Knowledge Management", *Decision Support Systems*, Vol 31, No. 1, pp 5-16.

Srivastava, P. and Hopwood, N. (2009) "A Practical Iterative Framework for Qualitative Data Analysis", *International Journal of Qualitative Methods*, Vol 8, No. 1, pp 76-84.

Stewart, T.A. (2002) "The Case Against Knowledge Management", *Business 2.0*, Vol 3, No. 2, pp 80-83.

Wei, C.C., Choy, C.S. and Yeow, P.H.P. (2006) "KM Implementation in Malaysian Telecommunication Industry: An Empirical Analysis", *Industrial Management & Data Systems*, Vol 106, No. 8, pp 1112-1132.

Appendix 4: Examples of thematic analysis on Nvivo

Key themes:

<u>Culture</u>

Challenges:

- Time – practitioners always feel pressured for time, balancing sport and institute, as well as external work for better pay
- Sports pose a challenge in terms of understanding the value of CPD
- Structure is very complex in terms of different COP, size, location, some practitioners are isolated, and high change and turnover

Existing culture

- Development of practitioners key aim
- Already a culture of collaboration where people want to share and understand the value of KM
- Practitioners identify more with sports and less with EIS – why give back to the system?
- Everything is focused on the sports
- Already examples of implicit KM

KM culture

- Develop a culture where people just collaborate naturally and tools and systems are there to support it
- Focus on developing KM as a culture rather than a standalone discipline or process
- Implicit KM processes will be successful where tweaks and nudges are made in how people work currently
- Culture includes people development – trust, reciprocity, confidence, encouragement, desire to learn and grow

KM culture – sports

- Need to widen the culture across the network

- Collaborative practice in sports
- Highlight the impact and benefit for sports

Strengths

- Focus on development of practitioners
- People and their potential
- Practitioners have a desire to learn, develop and value KM
- The existing EIS culture is inclusive and nurturing

<u>Existing KM</u>

- Disciplines have their own way of understanding and doing KM
- Consistency of messages but allowing them flexibility to design it to work for themselves
- It's currently identified with tallyfox – do not understand full potential
- Systems are complicated and people want simple solutions because they don't have time
- People prefer talking face-to-face
- PK seen as isolated discipline
- Limited understanding of what is the value, why engage in it, and how
- Things have been haphazard – it hasn't stuck on the ground
- It feels like it is done to them, no engagement

<u>Quotes</u>

- Tagline used a lot
- But need to be careful that it isn't just a soundbite, it means something

<u>Practitioners</u>

- Acknowledge and appreciate individual preferences to communicate
- Psychology big on sharing face-to-face
- People will always prefer to pick up the phone and ask questions

Value for practitioners

- Access to the EIS network – acknowledge that not everyone can have all the

knowledge but they have access to network that can have the knowledge they are looking for

- More supported for decision making within the wider network
- More knowledge for learning and practitioner development
- Value – save time, improve efficiency, greater impact for sport

<u>Suggestions for KM strategy</u> Characteristics

- Needs to be sold properly – timing, messages, what is the value, consistency and reinforcing messages
- Things have been started but not seen through
- It needs to be something simple that can be weaved into the existing culture, implicit
- To increase ownership – increase their engagement in designing processes
- Understand specific needs and challenges – time, pressure from sports, their allegiance to the sport, pressure to deliver, short term focus on sport, problems of pay, time, etc.

KM processes

- Create a culture where it is good practice to share
- Acquire and capture knowledge but then also collate knowledge to look at themes, lessons, best practice that emerge
- Make the network and knowledge visible so that people know where to go
- Suggestions of knowledge champions/leads who can facilitate this process
- Also suggestions for sending practitioners to spend time with other practitioners to learn
- Be creative with CPD and acknowledge that an informal conversation can also be perceived as reflective learning
- Optimise the existing KM processes – why? Who? How?
- Communicate what they are doing to the rest of the institute

Leadership roles

- PD – important to sell the benefits of KM to get buy-in
- TL and HOPS key for faciliateting the flow of knowledge in EIS and sports

- Good awareness of the knowledge that exists in the network
- Key for garnering sport engagement
- TL and HOPS responsible for creating right environment for sharing – draw from Kirstie – trust, encouragement, praise, role model behaviour, behavioural expectations to share

Type of knowledge

- Technical knowledge is valued but acceptance that people come in with high level of technical knowledge
- Sharing of technical knowledge is done well
- People are valued for their potential, application of technical knowledge and soft skills
- Applied knowledge is difficult to separate from person and context and thus requires appropriate systems and processes to share, etc.
- Acknowledgement of the importance of soft skills – relationship stuff – this cannot be easily communicated – need ways to manage this specialised knowledge

Why KM?

- Limited understanding of role initially but even now limited understanding of its potential
- Mostly identified with tallyfox – good for visibility, but dangerous when tallyfox gets negative feedback
- Introduced to harness the knowledge in the network – knowledge exists, how to make the most of it to provide sustained competitive advantage
- Create a culture of collaborative practice where people constantly talk to each other be it in sport, institute or discipline rather than work in isolation