



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Gordon Institute of Business Science

University of Pretoria

COMPETING IN KNOWLEDGE-INTENSIVE SERVICES: THE DICHOTOMY BETWEEN TALENT AND TECHNOLOGY

CANDICE BURIN

13417470

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

11 November 2014

ABSTRACT

This qualitative exploratory study was designed to discover the impact emerging exponential technologies (EmX technologies) have and will increasingly have on the talent and business models of knowledge-intensive services (KIS) firms. This research indicated the importance of talent and the extent to which talent is likely to be augmented or replaced due to these technologies. The dichotomy between talent and technology was of particular interest as KIS firms have generally based their ability to compete purely on their recruited and trained talent. The rationale for this study is that the researcher found limited academically published research addressing the impact of how KIS firms could increasingly use EmX technologies to enhance their competitive advantage in the market, while many of these firms face intensified client expectations and increased competitor rivalry. It was the researcher's assumption that this research would aid KIS firms to obtain a more profound understanding of how they could use EmX technologies to modify their business models as a means of gaining a competitive advantage over their competitors.

A judgement sample of ten senior executives in KIS firms was selected and in-depth interviews were employed as the primary data-collection method. The data was coded and organised according to the research questions. The analysis and interpretations of findings was structured to answer each of the research questions.

This research revealed that EmX technologies are likely to evolve KIS firms' business models to ensure greater use of these technologies through adopting digital strategies that better enable their talent; enhance their products and services and how they are delivered and alter their methodologies, processes and structures to gain an initial competitive advantage. Resultantly, KIS firms are likely to obtain reputational benefits of being 'idea leaders', which aids in differentiating them in the market; they would be able to better scale their businesses and achieve cost efficiencies. However, KIS firms would need to keep innovating as their competitors rapidly imitate any successful implementations. Various talent and business model recommendations were made to KIS firms in this study to help them take advantage of EmX technologies in an effective way.

KEYWORDS

Competitiveness, Knowledge, Services, Talent, Technology, Consulting

DECLARATION

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

Candice Burin

11 November 2014

ACKNOWLEDGEMENTS

I would like to extend my sincere gratitude to the following individuals:

- My supervisor, Manoj Chiba, for his dedication, direction and advice during this research project. I am exceptionally grateful to have had him as my supervisor over other supervisors.
- My friends, Mithun Kalan and Jacek Guzek, for advising and inspiring me to select the path for completing an MBA, which has enabled me to participate in this research project.
- My friends, boyfriend, family and work colleagues for their patience, understanding, council and support over this period.
- My leadership and company of employ, for providing the financial support and council to enable me to do this research.
- Yoda group, without which I would never have been able to complete this research.

TABLE OF CONTENTS

ABSTRACT	i
KEYWORDS	ii
DECLARATION	iii
ACKNOWLEDGEMENTS	iv
LIST OF TABLES	ix
LIST OF FIGURES.....	ix
LIST OF CHARTS.....	x
CHAPTER 1 INTRODUCTION TO THE RESEARCH PROBLEM.....	1
1.1 INTRODUCTION TO THE STUDY	1
1.1.1 The increasing relevance of KIS industries.....	2
1.1.2 How firms in KIS industries compete and differentiate themselves	4
1.1.3 The rising impact of technology on talent in KIS industries.....	5
1.2 THE IMPORTANCE OF THIS RESEARCH.....	7
1.3 THE RESEARCH PROBLEM.....	8
1.4 DEFINITIONS OF TERMS EMPLOYED IN STUDY	10
1.4.1 Knowledge Intensive Services.....	10
1.4.2 Competitive advantage.....	10
1.4.3 Business model.....	10
1.4.4 Reputation in KIS firms.....	11
1.4.5 Differentiation.....	11
1.4.6 Economies of scale	11
1.4.7 Imitation	12
CHAPTER 2 LITERATURE REVIEW.....	13
2.1 INTRODUCTION TO THE LITERATURE REVIEW	13
2.2 COMPETITIVE ADVANTAGE IN THE KNOWLEDGE ECONOMY	14
2.2.1 Gaining competitive advantage in the knowledge-economy	15
2.2.2 The difference between competitive advantage and comparative advantage ..	16
2.3 COMPETING IN KIS INDUSTRIES.....	17
2.3.1 Defining and classifying KIS industries.....	17
2.3.2 Management consulting as a proxy for KIS industries	17

2.4	COMPETING THROUGH TALENT IN KIS INDUSTRIES.....	19
2.4.1	The role of talent in KIS industries.....	20
2.4.2	Supporting talent competitiveness through knowledge management practices.....	24
2.4.3	The interplay between talent and technology in KIS firms	26
2.5	THE ROLE OF EMX TECHNOLOGIES IN KIS INDUSTRIES	27
2.5.1	Cloud computing and crowd-sourcing models being adopted.....	29
2.5.2	Advanced analytics being adopted in KIS industries	30
2.5.3	Technology-mediated services.....	31
2.5.4	Expert advisory systems	32
2.5.5	The 'Internet of Things', sensors and drones.....	34
2.5.6	Competing using EmX technologies in KIS firms.....	35
2.6	CHAPTER SUMMARY	36
CHAPTER 3 RESEARCH QUESTIONS		37
3.1	RESEARCH QUESTIONS	37
CHAPTER 4 RESEARCH METHODOLOGY		42
4.1	INTRODUCTION TO THE RESEARCH METHODOLOGY	42
4.2	RESEARCH APPROACH	42
4.2.1	Exploratory qualitative study.....	42
4.3	RESEARCH DESIGN.....	43
4.3.1	Population and unit of analysis.....	43
4.3.2	Sampling method and sample size.....	43
4.3.3	Ethics considerations	44
4.3.4	Data collection.....	45
4.3.4.1	<i>Questionnaire design and pilot interviews.....</i>	<i>45</i>
4.3.4.2	<i>Reliability and validity.....</i>	<i>46</i>
4.3.4.3	<i>In-depth interview process.....</i>	<i>47</i>
4.3.5	Data analysis	48
4.4	RESEARCH LIMITATIONS	49
4.5	CHAPTER SUMMARY	50

CHAPTER 5 RESULTS	51
5.1 RESULTS OF THE STUDY.....	51
5.2 DEMOGRAPHIC AND CONTEXTUAL OVERVIEW OF THE PARTICIPANTS	51
5.3 DETAILED RESULTS OF THE STUDY	53
5.3.1 Factors affecting the competitive advantage of KIS firms	54
5.3.1.1 <i>The speed of outputs to the market</i>	54
5.3.1.2 <i>Quality of outputs to the market</i>	55
5.3.1.3 <i>Specialised knowledge and advice</i>	55
5.3.1.4 <i>Relationship capital in terms of reputation, brand network ownership and client relationships</i>	56
5.3.1.5 <i>Customer understanding and co-creation</i>	56
5.3.1.6 <i>Innovation and first-mover advantage</i>	57
5.3.2 EmX technologies' impact on KIS firms' business models	58
5.3.3 EmX technologies' impact on replacing talent partially or entirely for KIS work	62
5.3.4 EmX technologies' contribution to a positive reputation for KIS firms	64
5.3.5 EmX technologies' impact of differentiating KIS firms.....	66
5.3.6 EmX technologies' impact on creating economies of scale and lowering costs for KIS firms	68
5.3.7 EmX technologies' impact on making KIS offerings less imitable	70
5.3.8 The impact of EmX technologies on talent in creating a competitive advantage for KIS firms.....	70
5.4 CHAPTER SUMMARY	73
CHAPTER 6 DISCUSSION OF RESULTS.....	75
6.1 INTRODUCTION.....	75
6.2 EMX TECHNOLOGIES EFFECT ON KIS FIRMS' BUSINESS MODELS	76
6.2.1 Evolving business strategies to be more digital	78
6.2.2 Evolving structures to be more efficient.....	79
6.2.3 Evolving processes and methodologies to use EmX technologies	80
6.2.4 Evolving products and services	80
6.2.5 Evolving the way products and services are delivered.....	81
6.3 EMX TECHNOLOGIES EFFECT ON AUGMENTING OR REPLACING TALENT ..	82
6.4 EMX TECHNOLOGIES CONTRIBUTION TO A POSITIVE REPUTATION	85

6.5	EMX TECHNOLOGIES EFFECT ON DIFFERENTIATING KIS FIRMS	86
6.6	EMX TECHNOLOGIES' EFFECT ON CREATING ECONOMIES OF SCALE AND LOWER COSTS	87
6.7	EMX TECHNOLOGIES EFFECT ON MAKING KIS OFFERINGS LESS IMITABLE.....	89
6.8	EMX TECHNOLOGIES' EFFECT ON TALENT IN CREATING A COMPETITIVE ADVANTAGE	90
6.9	CONCLUSION	91
CHAPTER 7 CONCLUSION		92
7.1	INTRODUCTION.....	92
7.2	OVERALL FINDINGS OF THE STUDY.....	92
7.2.1	EmX technologies impact on changing KIS firms' business models	92
7.2.2	EmX technologies impact on replacing talent partially or entirely	93
7.2.3	EmX technologies contribution to a positive reputation for KIS firms	94
7.2.4	EmX technologies impact on differentiating KIS firms.....	94
7.2.5	EmX technologies impact on creating economies of scale and lower costs....	94
7.2.6	EmX technologies contribute towards making KIS offerings less imitable.....	95
7.2.7	EmX technologies impact on talent in creating a competitive advantage for KIS firms	95
7.3	RECOMMENDATIONS	96
7.3.1	Talent considerations	96
7.3.2	Business model considerations	96
7.4	FUTURE RESEARCH AND MANAGERIAL IMPLICATIONS	97
REFERENCES.....		99
APPENDICES.....		112
Appendix 1: Informed Consent Letter		112
Appendix 2: Interview questionnaire.....		113
Appendix 3: Interview questions mapped to research questions matrix		115

LIST OF TABLES

Table 1: Different types of knowledge capital	20
Table 2: Types of KM approaches at management consultancies	25
Table 3: KM technologies in KIS firms	27
Table 4: List of participants of in-depth interviews conducted with KIS firms.....	44
Table 5: Demographics of the participants.....	52
Table 6: Consolidated results of the interview questions (excluding question 1).....	53

LIST OF FIGURES

Figure 1: Sources of competitive advantage for KIS firms	54
--	----

LIST OF CHARTS

Chart 1: Business model changes due to EmX technologies	58
Chart 2: EmX technologies' effect on discovering, sharing and organising knowledge	60
Chart 3: Will some employees' roles/skills be replaced by EmX technologies?	63
Chart 4: EmX technologies' effect on KIS firms having a positive reputation	65
Chart 5: EmX technologies' effect on differentiating KIS firms	66
Chart 6: EmX technologies' effect on KIS firms achieving greater economies of scale and lowering costs.....	68
Chart 7: EmX technologies' effect on creating a difficult to imitate competitive advantage for KIS firms.....	70
Chart 8: Will talent or technology be more important to KIS firms' competitiveness in the present and future?.....	71

CHAPTER 1

INTRODUCTION TO THE RESEARCH PROBLEM

1.1 INTRODUCTION TO THE STUDY

According to Chesbrough (2007), all organisations have a business model. The purpose of a business model is to produce value and exploit opportunities through a series of activities and resources that satisfy client needs. However, due to economic globalisation, technological advancements, accelerated product lifecycles and changing client behaviour, the world increasingly forges a knowledge and progressively more innovation-based economy (Castro, López-Sáez & Delgado-Verde, 2011).

The increase in both information and communication technologies have enhanced the growth of the global services sector over the last few decades (Mujahid & Alam, 2014). Hendarman and Tjakraatmadja (2012) contributed that a knowledge economy is based on producing, valuing and exchanging knowledge. Inasmuch, the most valuable asset and means of production in a knowledge economy is knowledge workers and their levels of productivity. Powell and Snellman (2004) agreed and further discussed that the knowledge economy is characterised by economies and societies that have a greater dependence on intangible, intellectual competencies rather than on physical inputs. Prasad and Prasad (2013) contended however that the knowledge economy resulted from the digital revolution where the increased use of technology enabled the rapid creation, application and circulation of knowledge, which increased the use of knowledge and its intensity in different products, services, societies and industries.

The above-mentioned literature emphasises that the knowledge economy is characterised by a dependence on a combination of intangible and intellectual competencies (Powell & Snellman, 2004). While these competencies originally appear to be based on inputs of knowledge workers, capabilities have been more easily created, applied and circulated through the incorporation of technology, making technology the catalyst for the cost-effective diffusion of knowledge into different products and services.

Castro *et al.*, (2011) mentioned that the emergent knowledge economy resulted in an increased prevalence of knowledge intensive services, commonly referred to as KIS industries. The global economy has shifted from being based on industrial inputs and outputs, to one that is based on technology and innovation. KIS industries are currently considered as emerging models for future service industries (Rajshekhar, Gross, Joseph & Granot, 2011). KIS firms operate in particularly innovative sectors, where companies sell complex offerings that require highly experienced and skilled employees who demonstrate strong relationships with clients to deliver high-quality solutions (Santos-Vijande, González-Mieres & López-Sánchez, 2013). Therefore knowledge gained about how these industries create a competitive advantage, adopt emerging technologies and adapt their talent-based business models may provide insights into how KIS firms can accordingly structure their business models to be appropriate in an increasingly digital and disruptive future.

1.1.1 The increasing relevance of KIS industries

In this knowledge and progressively more innovation-based economy organisations are becoming increasingly reliant on idea origination to generate value and compete (Anand, Gardner & Morris, 2007; Makani & Marche, 2012 and Holtshouse, 2010). According to Rajshekhar *et al.*, (2011) service industries are significant to the global economy and contribute towards economic competitiveness. Services are inherently different to manufacturing industries as they are commonly characterised as being intangible, inseparable, heterogeneous and perishable. This makes services more complex to deliver as they frequently require the client to be present at a certain time and place in order for them to be delivered (Wirtz, Chew & Lovelock, 2012).

KIS industries however are more multifaceted than basic service industries (Rajshekhar *et al.*, 2011). These services are highly customisable and operate under conditions of uncertainty, which often requires them to take on a certain degree of risk in comparison to basic services (Rajshekhar *et al.*, 2011). KIS industries are also different in that knowledge is used as the core ingredient in producing what is essentially the product of “advice” to clients (Desmarchelier, Djellal & Gallouj, 2013). This is particularly significant as value-adding information and knowledge are becoming progressively more important in creating an innovation-driven competitive advantage for service firms (Probert, Connell & Mina, 2013). KIS industries are highly relevant to modern-day business as they are dependent on their ability to innovate and this is recognised as a fundamental facet of

their competitive advantage, particularly if they can deliver innovative solutions more effectively and proficiently than competitors (Hogan, Soutar, McColl-Kennedy & Sweeney, 2011).

KIS industries furthermore play the crucial role of innovation brokers between different organisations and contribute to the development of the economy due to their ability to distribute diverse knowledge (Fischer, 2011). Probert et al., (2013), contributed that these services firms are categorised by a substantial dependence on expert knowledge, concentrated and inventive use of information technology and an emphasis on the provision of codified and tacit knowledge that contributes to solving problems for their clients. Therefore, KIS industries, have traditionally, been highly dependent on their employees as their strategic assets to create and deliver services due to the knowledge, skills and expertise they possess (Marquart, 2006 and Demartini & Paoloni, 2011).

According to Furusten (2013) in the past many KIS firms, such as management consultancies as one example, could compete purely on analytical expertise and convincing research reports. However as increasingly more client organisations develop these skills in-house, they become more selective and demanding when it comes to selecting a firm with which to work. Clients make use of KIS firms due to the belief that these firms have superior knowledge to their own and that the knowledge they have can aid in solving the client's problem (Sheehan & Stabell, 2010). However, due to intensified client expectations of receiving a greater level of value at a diminishing price, it has become increasingly expected that KIS firms demonstrate and deliver increased value in order to secure work from both existing and prospective clients (Chelliah & Davis, 2010). La, Patterson and Styles (2009) advised that value is often connected to client satisfaction, loyalty, increased revenues, business continuity and competitive advantage. These authors further stipulated that the concept of value is often subjective in nature and is dependent on the client's interpretation of value. This is relevant to note, as KIS services are often selected based on superficial signals, such as the country of origin and personal service, rather than fundamental signals such as core service qualities that are challenging to determine from KIS firms, due to the intrinsic intangibility of their services. Furthermore, clients increasingly equate value garnered from KIS firms in terms of how successfully the KIS firms disseminate information and teach their in-house teams to solve their own problems (Abraham & Allio, 2006). Organisations are also increasingly dependent on innovative knowledge to create value, and often utilise KIS firms to provide these differentiating aspects of service (Anand et al., 2007).

Concurrently, many industries have also recognised the crucial and increasingly active role of technology in business (Castro, Delgado-Verde, Amores-Salvado & Navas-Lopez, 2013). Ashurst, Freer, Ekdahl and Gibbons (2012), advocated that innovation is increasingly being associated with technology due to its ability to enable business transformations that result in increased cost savings and efficiencies. Innovative technology creates a competitive advantage by enabling firms to alter their business models and improve their products, services and processes and aids in lowering their cost base through increased efficiencies (de Brentani, Kleinschmidt & Salomo, 2010). Therefore innovation and technology are progressively becoming more important in creating competitive advantage (Probert et al., 2013). Cabrera Trujillo (2014) mentioned that technology enthusiasts have indicated that technology developments have in fact been occurring at an exponential rate. Exponential technologies can be described as core digital technologies of computing power, storage and bandwidth such as cloud computing, data collection, analytics and processing techniques (Hagel, Brown, Samoylova & Lui, 2013). The changes brought about by these emerging 'exponential technologies' leads to exponential innovation that pressures organisations to perform as they, in turn, enable the creation of new products, services, businesses and technologies (Deloitte, 2013, October). Emerging exponential (EmX) technologies consequently present an important opportunity for KIS firms to adapt their business models, in order to gain a competitive advantage (Palo & Tähtinen, 2011).

1.1.2 How firms in KIS industries compete and differentiate themselves

KIS firms generate value for their clients either by discovering, structuring or resolving client problems or by executing and maintaining solutions (Sheehan & Stabell, 2010). Kipping and Kirkpatrick (2013) contended that a vital differentiator of KIS firms is that their services are generally delivered under highly professional standards of conduct, which provides clients a certain degree of confidence in the quality of their experts. Holtshouse (2010) identified that the ability for KIS organisations to grow and compete requires access to knowledge and the skills of knowledge workers. In fact, KIS firms have traditionally been considered to be "people dependent" (Edenius & Styhre, 2009). In these firms, employees or talent are recognised as important sources of competitive advantage (Kattara & El-Said, 2013). A strong and well-known brand therefore becomes important as it can aid in facilitating the recruitment of highly skilled employees and it is therefore important both internally and externally (Kärreman & Rylander, 2008). Another factor contributing to differentiating KIS firms is their reputations, as studies have found that KIS firms

with a more superior and ethical reputation are perceived as higher quality providers and attract higher fees (Duflo, Greenstone, Pande and Ryan, 2013 and Nordenflycht, 2010).

1.1.3 The rising impact of technology on talent in KIS industries

Kattara and El-Said (2013) advised that many service industries are increasingly shifting towards substituting more service employees with technology-based services. Many organisations make use of technology-mediated or self-service technologies to obtain services at a lower cost than those provided directly by employees. These types of technology-mediated services make use of technology interfaces that enable clients to obtain the benefits of a service, without an employee physically providing them a service and without them needing to be in close proximity of the employee or service location (Schumann, Wunderlich & Wangenheim, 2012). Examples of self-service technologies include online check-ins in the hospitality industry and online and ATM-based self-service banking (Kattara & El-Said, 2013). It is evident that as services are progressively becoming more technology-mediated in nature, while in the past many of these technology-mediated services were considered low-value services. New innovative technologies are steadily emerging with the ability to imitate creative problem-solving functions that were typically conducted by human beings (Schumann et al., 2012). This makes it possible that EmX technologies may be used to replace more sophisticated and KIS-based jobs in the future (Héder, 2014).

KIS industries in particular can make use of technology-mediation, as they are independent of the time and place aspects of traditional services, which enable KIS firms to be more productive, in the sense that new methods of working and delivery are made possible through technology (Laihonen, Jääskeläinen, Lönnqvist & Ruostela, 2012). Technology-based services can contribute to creating a competitive advantage by enabling services to be delivered efficiently and on demand to clients (Kattara & El-Said, 2013 and Héder, 2014). Prasad and Prasad (2013), agree and advise that due to the need to operate faster, many firms have incorporated technology into activities not only to differentiate them and cost costs efficiencies, but simply to compete in the marketplace. This may be particularly important to KIS firms as if they are perceived as having a reputation for being able to deliver high-quality solutions more efficiently in comparison to their competitors, they would have the potential to garner a better reputation in the market. Having a strong reputation enables KIS firms to attract better clients, which in turn enables them to attract

better talent that aids in solving more complex problems, which aids in the creation of a competitive advantage (Sheehan & Stabell, 2010).

Services are readily being accepted as considerably more significant and pivotal in building competitive advantage than initially proposed in Porter's value chain structure (Gallego, Rubalcaba & Hipp, 2013). In the value chain structure, Porter (1985) identified and divided the primary activities (core competencies and assets of the firm) and support processes (technology advances, insourcing and outsourcing) that contributed to the cost-base or differentiation of a firm's competitive advantage. The premise was that by viewing an organisation as a value chain enabled the identification of the activities that were most important to improving the competitive advantage of the organisation. However Gallego *et al.*, (2013) have recently argued that new services and methods of delivering services have altered traditional value chains. The intricacy and rich value of services in business management, innovation and marketing increasingly contribute to value and support innovation systems to be more dynamic than previously considered.

The business world has become more complex and interconnected, traditional industry boundaries and core competencies have blurred, clients have become more demanding and mobile and information technologies have become pervasive. Businesses now compete in both physical and virtual worlds, where past business truisms are not necessarily relevant (Evans & Smith, 2004). All firms are required to operate rapidly and to be able to continuously remodel the value chain by disrupting their traditional business models, technologies, monetary and human assets in an effort to remain relevant to customers in an increasingly competitive world (Mascarenhas, Kesavan & Bernacchi, 2004). This disruption of business models was confirmed by Christensen, Wang and van Bever's (2013) emphasis that KIS firms had already commenced innovation of their business models. They explained that consultancies, were already undergoing business model innovations. They stressed that consultancies, such McKinsey & Company, had introduced McKinsey Solutions software and technology analytics tools that could be secured by clients to enable ongoing engagements and support, as opposed to the traditional consulting model of once-off projects. This innovative offering demonstrated a fundamental diversification from deploying human-based resources and delivered solutions to deploying technology solutions instead.

Krauss and Heng (2013) shared this view and indicated that many consultancies have obtained software assets where they can leverage their skills, proprietary intellectual property (IP) and proprietary or third-party analytics solutions as a predefined solution to clients for a subscription or license fee model, termed “asset-based” consulting. This type of offering enables consultancies to scale their operations, IP and software across numerous clients, as revenues would become uncoupled from human deployment. Christensen *et al.*, (2013) further indicated that junior analyst positions in consultancies were becoming redundant, due to large data specialist organisations increasingly being able to automatically assess large and infinite data sets, detect significant insights and present these in a visually appealing way, at a fraction of the cost and effort traditionally incurred by a consultancy. It has also been confirmed that consultancies are losing business to marketing intelligence companies that are able to employ predictive models and software to deliver customer insights at a fraction of the expense (Christensen *et al.*, 2013).

1.2 THE IMPORTANCE OF THIS RESEARCH

Clearly KIS industries are either considering or have already commenced the innovation of their client solutions and traditional service offerings, which may be in an attempt to remain relevant and competitive in a fast-paced innovation economy. The pertinent issue is the manner in which KIS industries will implement these innovative changes. While the factors contributing to competitive advantage are many (Porter, 1985), there is limited academic research regarding how KIS industries could use technology, not as a support to competitive advantage, but as a means or core element to enabling the creation of a competitive advantage.

The dichotomy between talent and technology is of particular interest as KIS firms generally base their ability to compete on the quality of talent they recruit and train. KIS firms consequently focus a large amount of attention and resources on recruitment, talent management and retention practices as knowledge, skills and expertise are generally rooted in people (Nuria & Rodriguez, 2010 and Demartini & Paoloni, 2011). However in a recent study compiled by Smith and Anderson (2014), it was identified that EmX technologies are likely to displace numerous blue and white collar workers from current jobs, and create entirely new types of jobs and industries. Smith and Anderson (2014), also indicated that the most highly educated employees would compete with machines rather than people. Brynjolfsson and McAfee (2014) echoed the sentiment that technology will affect existing jobs due to the world entering what they have termed the “second

machine age". They postulated that highly educated employees with special skills will be even more relevant than in the past, and these people will be able to use technologies to generate value in entirely novel ways. However, they also declared that employees with conventional skills will be more replaceable by EmX technologies and that these employees are likely to be substituted at an astonishing rate. Some experts have posited that machine-learning algorithms are just as competent, if not even more competent, at many activities that were previously only thought possible of humans (Kirkland, 2014, September). Given these developments, it becomes evident that the extent to which employees being replaced or augmented in KIS firms needs to be analysed. If employees could be replaced or augmented with technology, it could fundamentally alter the traditional business models of KIS firms, enabling them to redirect unprecedented resources and effort into technology rather than human talent.

1.3 THE RESEARCH PROBLEM

The literature thus far has stressed the importance of talent in creating a competitive advantage for KIS firms, however there is limited academic literature (Christensen et al., 2013; Smith & Anderson, 2014; Brynjolfsson & McAfee, 2014; Kirkland, 2014, September; Edvardsson & Osarksson, 2011; Forstenlechner, Lettice, Bourne & Webb, 2007; Sung-Kwan & Trimi, 2007) regarding the impact EmX technologies have and will increasingly have on the talent and business models of KIS firms. Even the existing literature identified does not adequately provide complete coverage of the growing influence of EmX technologies on creating dynamic capabilities that are altering the business models of KIS firms. Therefore the basic premise of this research study is to bridge this knowledge gap and uncover the extent to which EmX technologies facilitate KIS firms gaining a competitive advantage over rivals by enabling them to differentiate themselves through increased innovation, a more positive reputation and efficiencies. While the importance of talent in these organisations is not diminished, firms may not be reliant solely on talent to produce and deliver services capable of solving advanced problems. Rather, these service firms could become increasingly more dependent on EmX technologies that enable increased efficiencies and capabilities that are scalable and potentially more difficult for competitors to duplicate. New EmX technologies would thereby create a competitive advantage for KIS firms, by reconfiguring the right combination of talent and technology to deliver optimal performance, at an optimal price (Kattara & El-Said, 2013). If this is the case, it must be determined to what extent KIS solutions

that traditionally delivered by skilled experts, could become technology-mediated or even replaced entirely by EmX technologies.

This research aimed to determine the extent to which EmX technologies are changing the talent configurations of KIS industries. This is important to define, because if KIS firms are considering changes to their business models, it would have a profound impact on the traditional composition of KIS firms, which have been considered strongly talent dependent in nature. Inasmuch, it is also important to recognise whether KIS industries believe they can gain a competitive advantage by introducing EmX technologies into their business models, as this could aid in identifying a shift in how these types of service firms are likely to compete in the future and how they are likely to augment or replace talent in their organisations. Therefore the primary question the research sought to answer is:

What is the impact of EmX technologies on talent in creating a competitive advantage for KIS firms?

To understand the richness and impact of this question amongst KIS firms, the research further purposed to determine to what extent EmX technologies:

- are changing KIS industries' business models?
- replace talent partially or entirely in creating and delivering certain types of knowledge-intensive work?
- contribute to a positive reputation of KIS firms?
- differentiate KIS firms?
- create economies of scale and lower costs for KIS firms?
- contribute to making KIS firms less imitable?

1.4 DEFINITIONS OF TERMS EMPLOYED IN STUDY

This section explains the main definitions to which the research is bound throughout the study to ensure clarity of frequently referred to terms.

1.4.1 Knowledge Intensive Services

According to Sheehan and Stabell (2010), knowledge intensive services (KIS) firms sell services aimed at solving complex problems. The solutions are based on the interactions between the client and the personnel at these firms. Expert, frequently specialised and professional, knowledge is the principal offering traded by these firms.

1.4.2 Competitive advantage

According to Porter (1985) competitive advantage emerges from the numerous distinct activities that a firm implement when crafting, generating, marketing, and distributing and supporting its product and that each of these events culminates in a firm's ability to decrease costs and/or create a basis for differentiation in the marketplace. A firm is considered to have a competitive advantage when it has superiority over its competitors and that the main competitive tactics include differentiation, cost leadership and focus (Ling and Gui, 2009). In Chapter 2, the definition for competitive advantage in relation to this study is further discussed and clarified, which has resulted in the below definition of competitive advantage for this study:

The capability of a firm to innovate to achieve cost leadership, differentiation or a difficult-to-imitate position, either through the introduction of new knowledge and technologies, products, services and strategies; new methodologies and processes; new forms of supply; exploring new markets or new methods of structuring and organising business, in anticipation of opportunities and to overcome threats relevant to its chosen market, better and faster than its competitors.

1.4.3 Business model

According to Guo, Zhao and Tang (2013) a business model is defined as the products and services, configuration, and control of connections with the intention of creating value *via* taking advantage of commercial opportunities. A business model is essentially a set of assumptions on how to manage an organisation, and needs to generate and expose value derived from the

structure of its resources, competencies and practices (Weixing, Xinwei & Keyi, 2013). A business model is also intended to connect an organisation to its stakeholders, including customers, employees, suppliers and others in order to effectively exploit opportunities and capture value (Guo et al., 2013). The business model of KIS firms is typically considered “people dependent” (Edenius & Styhre, 2009). The ability for KIS organisations to grow and compete requires access to the knowledge and the skills of knowledge workers (Holtshouse, 2010).

1.4.4 Reputation in KIS firms

According to Sheehan and Stabell (2010), a KIS firm’s reputation is composed of the disposable perceptions that external stakeholders have as a result of the collective performance of the firm’s activities. Reputation is a social and relative outcome of the KIS firm’s activities and performance, when compared to its competitors by its external stakeholders. High reputations based on accumulated successes rather than failures enable KIS firms to attract superior clients and high-quality talent, which enables them to continually improve the quality of their services, enabling greater levels of client satisfaction and positive reputational effects.

1.4.5 Differentiation

According to Douglas, Douglas and Davies (2010), differentiation is defined as offering a perceived distinct product or service *versus* competitors that are of value to clients. When a product is considered distinctive it enables the organisation to charge a premium price for its unique benefits (Porter, 1985). Differentiation strategies typically include the use of warranties, brand image, product and services features, service and quality outputs that are relevant to clients (Douglas, et al., 2010).

1.4.6 Economies of scale

According to Celli (2013) economies of scale consist of potential reductions of average costs that are associated with higher levels of productivity over a set period. Economies of scale in KIS firms can be attributed to economies of learning in that their employees become more productive and more efficient the more knowledge and experience they have. Bettiol, Maria and Grandinetti (2012) indicated that KIS firms seek the advantages of service replication and that from a knowledge perspective, KIS firms seek to invest in codification to obtain the advantages of high

levels of knowledge replication by standardising knowledge created within the organisation, to be resold.

1.4.7 Imitation

It is difficult to patent the unique features of services and therefore a differentiation strategy is likely to result in imitation by competitors (Douglas et al., 2010). According to Valdani and Arbore (2007) imitation occurs when an imitating firm follows an innovator's lead by replicating a comparable, popular product or service when there are inadequate barriers to protect the innovation from replication. Opportunistic imitators might be able to offer enhancements and more competitive prices than the original innovation. Some firms may consider imitation a strategy as it is more cost-effective and considered to be an effective way of meeting the standard of the original innovation.

Chapter 2 reviews the literature that is relevant to the variables explored within the research.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION TO THE LITERATURE REVIEW

Lee, Olson and Trimi (2012) identified that the rules of business have been rewritten due to disruptive changes in the global economy, which has resulted in organisations rethinking the means by which they gain and maintain a competitive advantage. Edvardsson and Oskarsson (2011) advised that the economy has experienced a growth of knowledge workers and simultaneously technological advances have created flatter organisational structures, debureaucratisation, and online and networked organisations. Sung-Kwan and Trimi (2007) suggested that advances in technology have enabled organisations to be more nimble, resistant and uninterrupted. This has led to firms searching for the creation of new competencies that enable them to establish and maintain a competitive advantage in the evolving marketplace. However, Leon (2011) advised that in this type of economy, organisations face an unpredictable environment that is increasingly impacted and dependent on knowledge workers. She argued that only through the knowledge and skills of employees can all other resources be transformed to create a sustainable competitive advantage. By accepting that the business environment has altered, it is important that KIS firms commence exploring the reasons for the changing relationship between technology and talent in organisations as a means to create and maintain a competitive advantage, both now and in the future.

In this research study there are five main themes:

- Competitive advantage in the knowledge economy.
- How KIS firms now need to compete due to this economy.
- How KIS firms traditionally used talent to compete.
- The role of EmX technologies in KIS firms.
- How KIS firms are increasingly using or considering EmX technologies to compete.

The following chapter is therefore structured to address each of the key themes as follows:

Competitive advantage in the knowledge economy

Competing in KIS industries

Competing through talent in KIS industries

The role of EmX technologies in KIS firms

Competing using EmX technologies in KIS firms

2.2 COMPETITIVE ADVANTAGE IN THE KNOWLEDGE ECONOMY

According to Porter (1985) competitive advantage emerges from the numerous distinct activities that a firm implements when crafting, generating, marketing, distributing and supporting its product and that each of these events culminate in a firm's ability to decrease costs and/or create a basis for differentiation in the marketplace. A firm is considered to have a competitive advantage when it has superiority over its competitors and that the main competitive tactics include differentiation, cost leadership and focus (Ling and Gui, 2009). When a firm is able to differentiate itself from competitors by offering distinctive benefits, it is able to command a premium price (Porter, 1985). Ling and Gui (2009) further advised that competitive advantage results from a firm exploiting opportunities and minimising threats from its external environment, and in order for a service to be competitive it must be relevant to its market and difficult for competitors to imitate.

Therefore this literature considers that a competitive advantage is founded in an organisation's ability to differentiate itself, obtain cost leadership or have a difficult-to-imitate position in the market. It can further be considered, that if being competitive requires firms to be relevant to their markets and take external factors into account, then the changes incurred by operating in a knowledge economy need to be determined in this study when defining what a competitive advantage is in the modern day and age.

Dumitrascu and Dumitrascu (2014) indicated that a competitive advantage in the modern business landscape is usually short-lived, as many new business models have and are overcoming the traditional barriers to entry such as time, financing, space, distance and location. These authors further reported that business is being transformed due to two main influences, namely complexity

and knowledge. Complexity resulted from extraordinary diversity, ambiguity and flux in the business environment, which in turn increased the need for knowledge to become a vital competency and served as the foundation for the competitiveness in both organisations and countries. Hence a new competitive dynamic began appearing, in which organisations gave increasing importance to knowledge and intellectual assets over fixed assets, as a means to achieve and sustain a competitive advantage (Castro et al., 2011).

2.2.1 Gaining competitive advantage in the knowledge-economy

Esterhuizen, Schutte and du Toit (2011) imparted that the competitiveness of the modern firms is increasingly associated with their ability to innovate either through the introduction of new products, services and strategies; new methodologies and processes; new forms of supply; exploring new markets or new methods of structuring and organising business. Semadeni and Anderson (2010) and Yitmen (2011) confirmed that innovation is regarded as a pertinent method of obtaining a competitive advantage and that it is considered to be a necessary precondition for organisational triumph and endurance. Firms operating with diverse knowledge can be perceived as having superior knowledge or market leaders by introducing innovative offerings.

Song, Zhao and Benedetto (2013) mentioned that there are many benefits to being the innovation pioneer, in the sense that these firms may differentiate and create a positive reputations for themselves of being technological leaders, they are able to take advantage of economies of scale and the learning curve or and they are able to attain patent protection. However, according to Semadeni and Anderson (2010) KIS firms also frequently imitate their competitors in order to ensure their offerings are relevant to the market and to maintain competitive parity. They further noted that the choice regarding whether a competitor could or should imitate an innovation pioneer, is based on an organisation's resources and capabilities and that offerings can only be imitated if competitors have similar resources and competencies. Therefore a degree of consideration is needed to determine the balance between how much to imitate for competitive parity *versus* how much to innovate to gain the advantageous and competitive reputation of being considered a knowledge-leader. Ashurst *et al.*, (2012) contributed that information technology is often cited as a facilitator of corporate innovation, increased efficiencies and lowering of costs. Therefore if technology is considered an enabler of innovation, efficiencies and cost competitiveness, and these are considered a means of competitive advantage and innovation,

then it becomes evident that technology may play a role in creating modern day competitive advantage.

From the preceding discussion, competitive advantage, in the context of knowledge economies, for the purposes of this study is considered to be:

The capability of a firm to innovate to achieve cost leadership, differentiation or a difficult-to-imitate position, either through the introduction of new knowledge and technologies, products, services and strategies; new methodologies and processes; new forms of supply; exploring new markets or new methods of structuring and organising business, in anticipation of opportunities and to overcome threats relevant to its chosen market, better and faster than its competitors.

2.2.2 The difference between competitive advantage and comparative advantage

Competitive advantage is not to be confused with comparative advantage. A comparative advantage refers to a country's ability to produce a product or service more efficiently than other countries. Essentially, one country has a lower opportunity cost when producing a good or service than another country due to lower labour rates and/or operating costs in that country. Comparative advantage may be a condition for competitive advantage, but is not a necessary condition (Welch & Welch, 2012). For example, KIS firms, such as many management consultants, operate globally and to thrive internationally it is advocated that these firms require ownership, location and global advantages. Ownership advantages include having intangible assets, commercial development competence, transactional and administrative advantages or country specific ownership advantages such as a large low-cost workforce or favourable legal and financing opportunities. Location advantages relate to the host country's benefits such as market size, the cost of doing business, geographical proximity and common language. Global advantages relate to the firm's ability to operate within a global context. Using comparative advantage in this manner enables a combination of both firm- and country-specific advantages as means of differentiation (Ling & Gui, 2009). This study however focused more on the talent and technology-based aspects of competitive advantage rather than those obtained through comparative advantage.

2.3 COMPETING IN KIS INDUSTRIES

Tzortzaki (2014) advised that a more holistic view of competitiveness is required and that organisations need to rather base their strategies on their effectiveness and adaptability. According to Voon-Hsien, Lai-Ying, Hew and Ooi (2013), a company that learns is a company that innovates. A company that is able to acquire new information, articulate, generate and present new information, is placed in a better position to innovate new products, processes and concepts. KIS firms in particular need to capitalise on their intellectual capital, and learn from experience, collaborate and generate new knowledge that converts into innovation for their businesses (Tzortzaki, 2014).

2.3.1 Defining and classifying KIS industries

KIS industries are categorised as industries where knowledge is critical to the success of the firms in the industry (Makani & Marche, 2012). Knowledge can be tacit (practical know-how) or explicit (information that can be simply determined and interpreted) in nature (Richter & Niewiem, 2009). Expertise, however, are considered to be applied knowledge that is refined and perfected through experience, and from which strength is based on knowing when to apply this knowledge to a specific set of circumstances (Funes & Johnson, 1998). KIS firms generate value for their clients by discovering, structuring or resolving client problems, or by executing and maintaining solutions (Sheehan & Stabell, 2010). Kipping and Kirkpatrick (2013) contended that a strategic differentiator of KIS firms is that their services are generally delivered under highly professional standards of conduct, which gives clients a certain degree of confidence in the quality of their experts. KIS industries include professional services industries such as management consulting, advertising, financing, accountancy, employment and human resource services and tax and legal services that are based in relationships and professional knowledge, and technology-based services such as research and development, technology and design services, information and communication services, architectural and engineering services (Makani & Marche, 2012; Probert et al., 2013; Rajskekar et al., 2011 and Richter & Niewiem, 2009).

2.3.2 Management consulting as a proxy for KIS industries

It is argued that management consulting firms, in particular, are the embodiment of KIS firms because they are less capital intensive, as their core asset is the expertise and competency of

their employees in creating and delivering their services (Anand et al., 2007 and Nordenflycht, 2010). In fact it is even considered that the core product of management consulting organisations is knowledge (Sung-Kwan & Trimi, 2007).

While management consultancies are considered the embodiment of KIS firms, Kipping and Kirkpatrick (2013) argued that management consulting in specific have lower barriers to entry than more professional services such as legal and accounting services, due to a weak control of entry criteria (such as professional associations and qualifications) for those seeking employment. Therefore management consultancies are more likely to experience increased competitive rivalry, as new start-up firms and firms from other industries can compete with management consultancies without having to implement extensive licensing or certification to practice. In addition, due to the informal nature and structure of management consultancies, new entrants can emerge with alternative business models as a means of differentiating themselves. The works of Kubr (2002) and Furusten (2013) confirmed that competition in management consulting has accelerated over the past few decades, which has led to a greater focus on client targeting, marketing and innovating services as means to gaining a competitive advantage.

Mason (2010) added that management consulting firms generally participate in helping their clients develop and maintain a competitive advantage, yet the consulting industry persistently faces economic reshaping, uncertainty and ambiguity regarding its own future prospects. Costa, Martinho, Miguel and Luís Barreiros (2013) emphasised that management consultancies are under pressure from clients to become 'idea leaders' that change the paradigm and provide objective opinions, avenues for change, new knowledge and innovation. Mason (2010) agreed and stipulated that the competitive advantage of consulting firms in the future will be based on their ability to anticipate emerging shifts and deliver services rapidly and more adaptably to clients. Ciampi (2007) and da Costa and Antonio (2011) advocated that the ability of management consultancies to compete against rivals lies in their ability to reinvent and diversify their business models, offerings and strategies. Technology is often perceived as an enabler of business innovation and increasingly technology-driven innovation is perceived to differentiate leaders from followers in creating a competitive advantage (Ashurst et al., 2012).

Not only are management consultancies facing increased rivalry from non-traditional competitors, but Schultz and Doerr (2009) and Höner and Mohe (2009) argued that clients of management consultancies progressively view the services they provide as commodities and are increasingly

questioning their fee structures. Segal-Horn and Dean (2008) and Kubr (2002), indicated that professional advice is progressively viewed as a minimum expectation by clients of management consulting firms and that these clients now seek more comprehensive and intuitive value-adding services. Castro *et al.*, (2011) and Krauss (2010) contributed that as management consulting has become a progressively commoditised market, it has resulted in many management consulting firms considering whether to integrate human and technological assets in order to remain competitive. Segal-Horn and Dean (2008) and Kubr (2002) iterated this view and stated that management consultancies are beginning to consider new generation business models that utilise innovative software, thereby increasing their competitors to include software companies, technology service providers and business and knowledge process outsourcers.

The previous literature has identified that due to increased competitor rivalry and intensified client expectations, management consulting is more likely than other KIS firms to have an intensified sense of urgency to adapt their business models in an effort to increase or maintain a competitive advantage. Management consulting services have also been identified as highly diverse, with numerous competitors from numerous industries that tend to operate in uncertain and rapidly changing conditions, which are not necessarily as aggressive for other KIS firms. Given, management consultancies are considered the embodiment of KIS firms, and due to the variety and velocity of factors impacting management consulting, the researcher considered these firms as basic proxy to represent KIS firms in this study. Given these firms are under mounting pressure from both competitors and clients to alter their business models in order to offer greater levels of value at lower costs, the researcher believed that these firms would show greater levels of interest and urgency in altering their business models .

2.4 COMPETING THROUGH TALENT IN KIS INDUSTRIES

The literature to this point has identified that firms operating in KIS industries' ability to innovate and compete is closely related to their ability to learn and generate new knowledge. It has also been identified that management consultancies are most likely to experience mounting and rapid competitive pressures and are controlled by intensified client expectations that are not as inclusively experienced in other KIS industries. The role of talent in KIS firms is now discussed.

2.4.1 The role of talent in KIS industries

Holtshouse (2010) identified that the ability for KIS organisations to grow and compete requires access to knowledge and the skills of knowledge workers. In fact, KIS firms have traditionally been considered to be “people dependent” (Edenius & Styhre, 2009). In these firms, employees or talent are recognised as important sources of competitive advantage (Kattara & El-Said, 2013). Holtshouse (2010) further advised that collaboration and technical skills in particular are important when determining the future for these organisations. Yitmen (2011) developed this admonition and advised that knowledge could be derived through human capital, structural capital and relational capital. These different forms of capital are explained in Table 1:

Table 1: Different types of knowledge capital

Type of capital	Description
Human capital	<p>Represents the talent area of focus and is the collection of intangible resources that are embedded in the members of an organisation consisting of:</p> <ul style="list-style-type: none"> • Competencies (including skills and know-how) • Attitude (motivation, leadership qualities of top management), and; • Intellectual agility (innovation and entrepreneurship)
Structural capital	<p>Focuses more on the technical aspect and represents the organisation’s capabilities to meet its internal and external challenges. It includes:</p> <ul style="list-style-type: none"> • Infrastructures • Information systems • Routines • Procedures • Organisational culture
Relational capital	<p>Involves a thorough understanding of the knowledge embedded in customer preferences and market channels, including suppliers and relationships with government and related industry associations.</p> <p>It can be defined as “the actual and potential resources individuals obtain from knowing others, being part of the social network with them or merely being known to them and having a good reputation”.</p>

Source: Yitmen (2011)

From a human capital perspective in KIS firms, consultants, like many other knowledge workers, are expected to have high levels of general knowledge, on-the-job learning and practical problem-solving skills. Many clients expect to have access to the history or background of consultants to determine whether the consultant has the correct knowledge and experience to assist the organisation. Clients of management consultants often expect the consultancy to be able to validate their ability to implement solutions both on time and with the availability of the relevant skills (Consoli & Elche, 2013 and Janicot & Mignon, 2012). Sahin (2011) advised that managing employees in KIS firms is, however, more complex and different to managing people in other businesses because most services are highly customised, and the services are delivered by highly skilled individuals. Furthermore Sahin, (2011) explained that employees within management consultancies for example are generally enabled, independent, customer-centric knowledge workers whose skills can contribute to the competitiveness of the management consultancy. Richter, Dickermann and Graubner (2008) agreed and further emphasised that a KIS firm's success is dependent on how well talent is managed and that retaining and leading highly skilled employees is challenging, as these employees are in a strong negotiating positions in comparison to the firm due to their rare and frequently portable skills. These authors further argued that employees in KIS industries also tend to prefer autonomy and informal organisational structures. In addition, these employees tend to dislike authority, supervision and command structures and rather prefer to be guided and persuaded, making authority and compensation systems less effective in these types of organisation (Nordenflycht, 2010). More focus is provided to employees to carve out their career paths based on their knowledge base and individual aspirations of employees, as well as to progress their career as a means to creating new innovative service offerings (Anand et al., 2007). However, these firms tend to enable revenue targets to be missed, through lenient accountability, and inefficiencies often emerge due to their informal management practices, which may weaken these firms' competitiveness (Nordenflycht, 2010).

Nordenflycht (2010) identified that clients routinely find it challenging to evaluate the quality of KIS firm outputs. Studies have found that KIS firms with a more superior and ethical reputation are perceived as higher quality providers and subsequently attract higher fees (Duflo et al., 2013 and Nordenflycht, 2010). Additionally, the appearance of employees and their deliverables to clients have been considered important indicators that contribute to the quality perceptions of the service (Kipping, 2011). Clearly, KIS firms seek to create guarantees of quality through the ethical, reputational and physical attributes of their employees (Kipping, 2011, Oosthuizen, 2003 and Crăciun, 2013). Crăciun (2013) and Oosthuizen (2003) advised that the knowledge, competence

and the capability of delivering quality work on time and with relevant resources is critical to the success of management consulting firms. The employees of management consulting firms are also expected to have a high level of integrity and professionalism as they are frequently exposed to private information and propose strategic decisions about their client's organisations, therefore it is important that they have high ethical standards and treat information with confidentiality.

KIS firms therefore need to recruit and retain quality talent based on their perceived knowledge, skills and expertise (Demartini & Paoloni, 2011). A strong and well-known brand can aid in facilitating the recruitment of highly skilled employees and the perception of the brand is therefore important both internally and externally (Kärreman & Rylander, 2008). A strong and positive reputation is considered important to achieving competitiveness for KIS firms as it enables them to attract highly sought-after talent.

From a relational capital perspective, KIS firms have employees that build close, trusted relationships with clients that can and often do act as a competitive advantage, as clients tend to be more satisfied and loyal to firms where they have personal relationships with employees (Kattara & El-Said, 2013). The relationship between a client and a consultant is critical to the effective implementation of consulting projects and the competitiveness of consulting firms, as it enables the influencing of perceptions, problem-solving and the negotiating of expectations (Nikolova, Reihlen & Schilapner, 2009). Management consultants first act as knowledge advisors and integrators and then as standard setters and implementers (Canato & Giangreco, 2011). The knowledge of these employees is also distributed through the relationships they have with clients (Castro et al., 2013).

Chelliah and Davis (2010) contended that clients that make use of management consulting firms generally expect more than only technical competence from a consultant. According to Richter and Niewiem (2009) the relationship between the client and a consultant goes beyond a business context and that a degree of trust and loyalty develops between the two parties that can act as a competitive advantage and garner repeat business. The very relationship between the client and the consultant may be a source of innovation as it is suggested that knowledge is socially-constructed and frequently clients and consultants mutually identify a client's problem, particularly more complex problems, and mutually develop solutions to solve the problem (Nikolova et al., 2009). The act of mutually creating value with clients by allowing them to part-take in the creation of a unique and personalised service experience is known as "co-creation" and has been viewed

as critical to revealing new forms of competitive advantage. Co-creation enables KIS firms to create new forms of value for clients, however it further requires them to develop new infrastructure, functional and governance capabilities focussed on delivering co-created experiences and value with clients (Prahalad & Ramaswamy, 2004). Co-creation plays an increasingly prevalent role in KIS firms as clients frequently expect management consultants to invest time in learning their business and industry, provide a personalised experience, practical advice and skills transfer of competencies to their employees at no additional fee. It is also common for clients of management consulting firms to expect consultants to fit into their environment and culture in order to have a stronger relationship and understanding of the client (Chelliah & Davis, 2010). Therefore the very nature of the relationship acts as a form of competitive advantage and innovation.

In discussing relational capital, it is also important to emphasise the importance of networks. Kosta, Krishnamurthy and Krishnamurthy (2010) advised that the network will become the typical approach for business in order to connect to and access a wealth of information. Firms must make connections to develop, as these interactions create sources of knowledge, ideas and information (Mu, Peng & Love, 2008). According to Huggins (2010), social network theory argues that firms can influence their relationships to gain competitive advantage.

From a structural capital perspective, Kubr (2002) advised that knowledge in management consulting firms is commoditised into standard offerings such as diagnostic instruments and various software and change programmes, amongst others, which enables consultants to provide the best system, methodology or approach at an affordable price to clients that seek minimal, to no, customisation. Richter and Niewiem (2009) advised that management consultants seek to achieve economies of scale with regard to knowledge as they are able to acquire, apply and reapply intellectual property across numerous different clients and industries. This generates economies for clients as a client would be unable to obtain the expertise of consultants, who have had the advantage of working across a broad range of projects and organisations. Kubr (2002) contributed that consultants benefit from commoditising knowledge as it enables them to obtain a greater return from the knowledge methodology, as more junior staff are able to implement a standard methodology, which has aided in the growth of virtual and technology consultancies, as it reduces the need for more experienced consultant. Therefore many KIS industries such as management consultancies make use of knowledge management practices. According to Goel, Rana and Rastogi (2010) knowledge management is considered the capability to identify and

structure the system of core competencies necessary for KIS organisations. Frequently knowledge management involves a cohesive, universal attitude to recognise, attain, convert, evolve, distribute, combine, collaborate and protect knowledge gained from databases, documents and the undisclosed tacit know-how and experience inside employees' heads. In fact, increasingly there is a focus on the union of knowledge management and talent management known as "smart talent management" (Vance & Vaiman, 2008). This involves supporting talent in generating, acquiring, storing, transferring and applying knowledge to achieve the organisation's goals (Whelan & Carcary, 2011).

2.4.2 Supporting talent competitiveness through knowledge management practices

Sung-Kwan and Trimi (2007) advised that "knowledge management (KM) envisions retrieving the right information within the right context to the right person at the right time for the right business purpose. KM includes the entire cycle of the discovery, creation, storage, dissemination, and utilisation of knowledge and that information technology (IT) is the critical resource for supporting KM". Sung-Kwan and Trimi (2007) further advised that technology has enabled the practice of KM to exist and has reduced costs and increased the speed of knowledge diffusion. They further advised that management consultancies use either a centralised and codified or decentralised and individualised approach to manage knowledge. These two different approaches are summarised in Table 2:

Table 2: Types of KM approaches at management consultancies

Type of KM approach	Description	Types of solutions	Examples
Centralised and codified	<ul style="list-style-type: none"> • Knowledge is codified and stored in a central knowledge repository within the organisation. • The knowledge can be accessed and reused by any employee. • The focus is on capturing existing knowledge and reusing it. • Used by KIS firms who use technology intensively and have are geographically dispersed employees. 	<ul style="list-style-type: none"> • Customer problems are typically operational • Highly standardised solutions • Low context dependence • Solutions can be created, stored and retrieved in the form of manuals, databases and knowledge repositories. 	<ul style="list-style-type: none"> • Accenture • PWC • Deloitte • KMPG • EY
Decentralised and individualised	<ul style="list-style-type: none"> • Focus is on creating new knowledge for new problems and new challenges. • New knowledge is generated through continuous communication and collaboration among people. 	<ul style="list-style-type: none"> • Customers' problems tend to be unique. • Solutions are highly customised. • Highly context dependent. • Knowledge is difficult to codify and standardize therefore emphasis shifts to facilitating connections and collaboration amongst people. 	<ul style="list-style-type: none"> • McKinsey • Bain • Boston Consulting Group

Source: Sung-Kwan and Trimi (2007)

According to Edvardsson and Oskarsson (2011) knowledge management can enhance talent as it can be stored and accessed from a database. This contributes to efficiencies as the knowledge of an employee can be reused rather than recreated, communication costs are also reduced and it enables the organisation to be more efficient and able to take on more projects. This indicates that KIS firms consider technology as a means to support the development of talent by enabling them to access knowledge. It also indicates a desire to create efficiencies and economies of scale with regard to knowledge so that the organisation can be more efficient.

2.4.3 The interplay between talent and technology in KIS firms

According to Schumann *et al.*, (2011) technology has altered the very nature of services in terms of how they are conceptualised and delivered. Technology can enable the creation of dynamic capabilities in terms of how organisations solve problems. According to Denford (2013), dynamic capabilities are concerned with the firm's ability to configure, generate and redesign internal and external competencies in order to respond to rapidly changing environments, and that the knowledge within a firm is considered the primary contributor to generating dynamic capabilities and value for the firm. Cepeda and Vera (2007) supplement that dynamic capabilities have been considered an important source of competitive advantage where it is argued that competitive advantage does not automatically result from resources or capabilities, but rather from a firm's ability to persistently generate new competencies. Dynamic capabilities are considered to involve the methods of developing new skills and practices that enable firms to compete and are concerned with altering operational capabilities that result in changes to a firm's offerings or invention practices.

Ashurst *et al.*, (2012) highlights that dynamic capabilities are considered to consist of reconfiguring assets and resources to produce new configurations, leveraging systems across other business areas, learning to perform tasks more efficiently and effectively, searching for new opportunities or threats and/or sensing changing customer requirements. Silvia, Carmen & Cepeda-Carrion (2011), postulate that firms need to focus on their dynamic capabilities in order to understand and meet their customers' demands for superior value. Vermuelen (2013) further adds that dynamic capabilities exist in the processes designed by the firms' position in the market, direction of its strategy, learning curves and technological opportunities. For example, the supply of business methods software is becoming a principle part of management consulting, as it becomes possible to patent and license the methodologies and innovations produced by past projects to create methodologies for additional clients at reduced costs (Hansen & Hughes, 2005). Farajpour and Zerehnazi (2013) recognised that computers are absorbing the skills of humans, as computers have been able to solve simple problems rapidly and efficiently, conduct complex calculations and compete against humans at games such as chess. They further advised that computers have been exceptionally good at solving simple problems, however increasingly expert systems are being developed that make use of artificial intelligence to conduct more technical problem-solving that was typically performed by human experts. Clearly, a combination of technology and human interaction is becoming more common in an effort to keep competitive (Makarem, Mudambi &

Podoshen, 2009). Tzortzaki (2014) postulated however that knowledge is obtained *via* experience and technology is merely a business tool and not the sole means of sustainable success. He emphasised that organisations leverage knowledge from clusters of people who collaborate and not from systems of technology that interconnect.

Given that not all knowledge needs to always be talent-based and that knowledge can be commoditised, it presents the notion and the potential that EmX technologies could play a role in augmenting and even replacing talent in delivering some functions in KIS firms.

2.5 THE ROLE OF EMX TECHNOLOGIES IN KIS INDUSTRIES

Castro *et al.*, (2011) mentioned that one of the most effective methods to gaining a competitive advantage was *via* relentless technological innovations. Forstenlechner, *et al.*, (2007), agreed and cited that technological advances have altered the speed of knowledge advancement by providing a means of providing services to clients in a more agile, customisable and diverse way. It has also enabled a higher quality output from employees, which has enabled organisations to reflect a more positive image and garner a better reputation in the market. Given EmX technologies such as cloud computing and crowd-sourcing, advanced analytics, technology-mediated services, expert advisory systems and the “Internet of Things”, sensors and drones, KIS industries may need to reconsider their existing business models to take advantage of these technologies to gain and/or maintain competitiveness. In the past management consultancies for example, have typically used technologies to manage knowledge in the form of internet technologies, data management technologies, collaborating technologies and artificial intelligence technologies (Sung-Kwan & Trimi, 2007). These are explained and illustrated in Table 3:

Table 3: KM technologies in KIS firms

Technology group	Description	Use	Examples
Internet technology	<ul style="list-style-type: none"> • These technologies are focused on making knowledge workers more productive by organising and making information easily accessible through the use of key words or directories. 	<ul style="list-style-type: none"> • Widely used to expand an organisation’s access to information and knowledge. 	<ul style="list-style-type: none"> • E-mail • Search engines • Intranets

Data management technology	<ul style="list-style-type: none"> • Data management technology integrates information from multiple data sources and makes it easier to explore hidden meaning of data. • Data and knowledge mining technologies are used to find patterns, trends or relationships in large collections of data and predict future behaviours. • Knowledge mining is a more advanced form of data mining in the sense that associated data and information on the internet can be collected using software agent technology such as Web Crawlers or Web Spiders. 	<ul style="list-style-type: none"> • These systems can be used to store manuals, best practices, policy books and drawings. • Employees can access large amounts of information that can be analysed from different perspectives to enhance decision-making quality. 	<ul style="list-style-type: none"> • Relational databases • Knowledge repositories • Document databases • Object-oriented database management systems
Collaborating technology	<ul style="list-style-type: none"> • Include group decision support systems that can overcome space and time barriers for group interaction. Its focus is on helping knowledge workers share their expertise, particularly in a physically dispersed environment. 	<ul style="list-style-type: none"> • Used to assist thinking and creativity in individuals or in groups such as idea generation and sharing tools for concurrent product development. 	<ul style="list-style-type: none"> • Knowledge maps • Workflow management • Groupware • Information sharing software • Videoconferencing • Electronic meeting and scheduling software
Artificial intelligence technology	<ul style="list-style-type: none"> • These are a class of software that operate autonomously, intelligently, and knowledgeably. They use a built-in or learned knowledge base to carry out specific, repetitive, and predictable tasks on the behalf of users. 	<ul style="list-style-type: none"> • Users can input the characteristics of their problem. Then the system searches for stored past cases with similar characteristics and provides a solution. 	<ul style="list-style-type: none"> • Expert systems • Case-based reasoning systems • Neural networks • Intelligent agents

Source: Sung-Kwan & Trimi, (2007)

In the Sung-Kwan and Trimi (2007) study, they found that management consultancies typically make use of internet technology, followed by data management technologies and then group technologies. Artificial intelligence (AI) technologies were the least used technologies by most management consultancies. However Puccio, Cabra, Fox and Cahen (2010) mentioned that during the past few decades there has been considerable growth in numerous exponential

technologies. These authors explained that computer programmes that are able to mimic the thinking patterns of human experts have become more developed, thereby allowing the growth in use of expert systems in conjunction with—or instead of—talent for certain forms of expertise. Bogue (2014) contributed that these systems and programmes make use of the least used technology amongst management consultancies, AI, which originated on the proposition that human intelligence can be so accurately defined that it can be replicated by technology. These technologies are characterised by their ability to interpret, perceive, learn from practice, plot, design, and identify patterns. The disruptive technology of cloud computing is also emerging, which changes how information and communication technologies are accessed and used. Its apparent benefits include cost efficiency, scalability, transferability and reduced software and hardware outmodedness (Ross & Blumenstein, 2013). Examples of these EmX technologies and their effects are further explained below.

2.5.1 Cloud computing and crowd-sourcing models being adopted

Graham-Hyde (2014) advised that cloud computing is defined by shared resources, accessible in a self-service model with adaptable capacity that is used on a pay-as-you-go model that became popularised by the way Amazon reinvented their computing model. It has created and continues to create new business models, opportunities and competitors. It has been associated with entrepreneurship and innovation as its pay-as-you-go model enables technology to be simpler to access and more cost-effective for anyone, anywhere, to run a business with cutting-edge technology infrastructure (Ross & Blumenstein, 2013). Cloud technologies disrupt traditional consulting business models, as now emerging competitors are able crowd source tasks from a large community of skilled workers that can be accessed *via* various analytics software tools and usage cases, which are made available in the same method as Amazon Web Services are, and these models are increasingly being adopted by services organisations (Graham-Hyde, 2014).

Perera and Perera (2014) advised that crowd-sourcing can be understood as a process of outsourcing tasks of an organisation to a crowd and that it is the “act of taking a job traditionally performed by an employee and outsourcing it to an undefined, generally large group of people in the form of an open call”. Ismail (2014) explained that many executives who are often unfamiliar with crowd-sourcing often dismiss it or only use it on an internal basis. He advised that organisations can leverage the power of crowd-sourcing through micro-tasking, in which an organisation creates small pieces of work to outsource or to develop software.

Conley and Tosti-Kharas (2014), for example, cite Amazon's Mechanical Turk ("mTurk") as a cost-effective, efficient crowd-sourcing marketplace for a diverse range of tasks. This crowd-sourcing marketplace has components of work, called Human Intelligence Tasks (HITs), which are submitted by people or organisations, called Requesters. Registered workers which are called Turkers, choose and complete HITs available on the website at as little as one cent per HIT, creating a micro-task market (Kittur, Chi & Suh, 2008, April). From a quality perspective, the work of Turkers' has been considered comparable to that of experts when it comes to tasks such as classifying written information, speech data, and images as well as assessing the production of current machine learning or artificial intelligence algorithms. The mTurk is increasingly being considered as a means of conducting research and analysing content (Conley & Tosti-Kharas, 2014).

According to Deloitte (2014) crowd-sourcing is becoming more advanced and able to even be used for complex, experienced based KIS solutions that require expert and qualified skill sets for sophisticated problem-solving such as software engineers, data scientists, artists, designers and management consultants. Platforms for this form of crowd-sourcing include 10EQS, crowdSPRING, Kaggle, oDesk, and Tongal. For example, Kaggle enables big-data crowdsourcing which enables firms to access the benefits of large scale, diverse and on-demand skills which gives these firms access to talent in other industries such as astronomers, hedge fund quants, statisticians, economists, mathematicians and others, who have the ability to outperform work done by internal teams as they are not accustomed to the standard method of problem solving that the internal teams are (Henschen, 2013). Therefore it is increasingly likely that traditional KIS industries, such as management consulting, will be pressurised to alter their business models in order to compete with new forms of more cost effective competition.

2.5.2 Advanced analytics being adopted in KIS industries

Bose (2009) postulated that advanced analytics, a term used to define the use of leading-edge analytical procedures to produce data in order to answer questions and solve problems, are progressively being used. Advanced analytics are series of technologies and tools used in combination with one another to obtain and analyse information and predict outcomes of the potential solutions. Advanced analytics enables organisations to gain greater insights about their customers and operations, which permits them to direct, optimise and automate decision-making associated with them increasing cross-sales revenue, decrease production and service costs,

reduce fraudulent activity or increase promotional campaign response (Klatt, Schlaefke & Moeller, 2011). Baars and Kemper (2008) further advised that business analytics have progressed to the degree that they offer organisations who are increasingly inundated with large quantities of data and information, with high-quality support to strategic planning and performance management in the form of decision support systems, expert systems, and data mining systems, which provide algorithms to implement analytical processes that predict and demystify complex patterns and relationships. Bose (2009) further mentioned that knowledge can be sent to employees' and clients' desktops using analytical applications, driven by rules engines which use logical conditions to determine the solution to a standard problem or predictive models that statistically calculate the probability of certain actions, to realise the desired results.

However, Bose (2009) also contended that advanced analytics are not always simple models or technology for users to interpret or use, as specialist computer scientists or business managers need to be trained to be able to understand and utilise the systems. In addition, the technologies in this area of specialisation evolve rapidly and frequently, which can result in it being costly and potentially unstable. Finally the outputs from advanced analytics need to be simple, concise, readable and useable, which can often be challenging when managing large data sets and therefore support tools such as dashboards, reports and data visualisation systems are required. However, despite the drawbacks, changes such as this in technology, have allowed many service providers to alter the way services are imagined, created and provided, shifting many service models from being human-based to technology-driven or mediated (Schumann et al., 2012). Kosta *et al.*, (2010) specified that businesses will increasingly incorporate analytics and predictive modelling into their software and systems to take advantage of the fortune of data and information at their disposal to make more intelligent decisions and increase competitiveness. This may indicate a need for a change in the type or quantity of employees required by KIS firms.

2.5.3 Technology-mediated services

Schumann *et al.*, (2012) identified technology-mediated interactive consulting services, which enable the provision of consulting services in a technology-mediated interaction between the provider and the client. Clients using such services can often be considered co-creators of real-time value, which results in client determined and created benefits. In addition, technology-mediated interactive consulting services are generally considered to lower costs as services can be provided remotely, and the human talent maintaining the systems can be located in lower cost

countries, thereby achieving greater capacity utilisation and higher rents from technology assets and greater convenience and flexibility can be realised. This is relevant for KIS firms as Krauss and Heng (2013) contended that many consultancies have obtained software assets where they can leverage their skills, proprietary intellectual property (IP) and proprietary or third-party analytics solutions as a predefined solution to clients for a subscription or license fee model, termed “asset-based” consulting. This type of offering enables consultancies to scale their operations, IP and software across numerous clients, as revenues would become delinked from human deployment.

Christensen *et al.*, (2013) contributed that McKinsey Solutions is an example of “asset-based” consulting and that it involves the packaging of ideas, processes, frameworks, analytics and other intellectual property for delivery through technology. The extent of talent involvement varies, but is less than that of the typical consulting model with lower expenses, payable over longer periods of time (through licenses and subscriptions). These technologies are considered to be the most appropriate for routine solutions. They further identified that by formulating proprietary analytics at a client, consultancies could benefit from maintaining top-of-mind awareness at their clients. However, Schumann *et al.*, (2012) indicated that considerations needed to include communication mediums and channels in technology-mediated consulting services, as services literature over the past two decades had stressed the importance of relationships and trust, which could become hampered by a reduction in personal face-to-face contact resulting in a potential loss of competitive advantage.

2.5.4 Expert advisory systems

Artificial intelligence complements advisory systems to create “intelligent” methods and tools designed to assist in diagnosing, predicting, planning, interpreting, monitoring, repairing and to control problems (Gaizler, 2013). Brezillion (2011) further clarified that knowledge plays an important role in artificial intelligence and that most learning institutions teach students theoretical knowledge, while organisations require employees to have operational knowledge. In order to transform theoretical knowledge into expertise requires practice and application to a project, situation or setting. Therefore, advisory systems are emerging as a form of expert systems that act as virtual consultants. These systems are assembled to assist decision-making practices. Advisory systems are connected with the growing concept of ‘knowledge engineering’, which

focuses on obtaining and configuring knowledge from experts, matching suitable implications and descriptive methods and creating interfaces amongst the user and the system (Gaizler, 2013).

Nofal and Fouad (2014) contributed that these systems often contain knowledge from numerous different experts, enabling the knowledge in them to be more advanced and comprehensive than an individual expert. Farajpour and Zerehnazi (2013) identified that these systems often act as consultants for their users. Brézillon (2011) clarified that these systems have a simulation element to them that enables them to anticipate the outcomes of certain problems. In order to be accurate, these systems need to determine real-world processes, as well as the current tasks and the users' behaviours. The system should automatically solve minor problems and prepare elements of complex problems that the user will have to solve. The system must also learn from user interactions to acquire new knowledge and practices. Ultimately expert systems aim to provide unskilled users the knowledge of experts. In addition, these systems do not get tired, impatient, stressed or make human mistakes (Farajpour & Zerehnazi, 2013).

Puccio *et al.*, (2010) contended that expert systems have been successfully used in various industries but had several limitations such as knowledge blockages, fragile performance, as well as that these systems can be inconvenient and inaccessible and difficult to distribute and communicate between applications. However Kumar and Mishra (2010) advised that many organisations have begun collaborating using web-based services to gain rapid and dynamic service configurations. They further stated that with the emergence of cloud computing, the internet now provides an effective method of delivering expert systems due to it providing easy-to-access, standardised web interfaces that enable cooperation among expert systems by various emerging protocols. Puccio *et al.*, (2010) proposed that these web-based expert systems (WBES) are a series of web applications designed through the combination of expert system technology and web technology that enable users to access the expert system in remote areas through the Internet. They further identified that these systems are increasingly being used for creative process methods such as mind-mapping and visual tagging, knowledge illustration, problem-solving, language interpretation, digitised prototypes and simulations that can undergo endless iterations and improvements, and for implementation tools and interfaces.

According to Kumar and Mishra (2010) WBES are already being used across numerous industries including substituting and supporting engineering activities for functions such as industrial automation, communication, computation and aeronautics due to their high computational speed,

accuracy and efficiency. They have also explained that WBESs are being used across multiple business and managerial functions such as supporting, automating or replacing certain activities in various departments across organisations such as human resources, strategic planning, finance, design and training. Nofal and Fouad (2014) added that these systems are used for strategic planning, marketing and even consulting. They further advised that WBES are becoming highly important as due to the Internet they are readily accessible, have a common multimedia interface, they are generally compatible and able to connect with other web-based applications, and they are portable. Kumar and Mishra (2010) reasoned however that while delivering expert systems' *via* the Internet provides several benefits there are also numerous disadvantages including keeping pace with rapid technological changes to intelligent tools, servers, browsers, programming languages, inference engines, knowledge bases, client-server software, interface components, need to provide decentralised support and training for users and limited infrastructure to support communication and multimedia.

2.5.5 The 'Internet of Things', sensors and drones

Xu, Ding, Zhao, Hu and Fu (2013) postulated that the Internet of Things (IoT) is a concept that relates to the ubiquitous presence of diversity of intelligent objects such as Radio-Frequency Identification (RFID) tags, sensors, mobile devices and others, that have the ability to connect and be managed remotely *via* the internet and interact with each other to achieve common goals. RFID tags and wireless sensor networks (WSN) enable the existence of the IoT. According to Roman, Alcaraz, Lopez and Sklavos (2011) WSN are able to provide an autonomous and intelligent connection between the virtual world and the physical world, and in fact it has been thoroughly studied. The core element of a WSN is the sensor nodes that are low-powered and resource-constrained devices that can 'feel' (gather physical data), 'think' (process data and make informed decisions), and 'talk' (communicate with other entities using a wireless channel). These sensor nodes (or simply, nodes) collaborate with each other in a distributed manner towards the same goal: to provide any virtual entity with information from its physical surroundings, such as temperature, humidity, light, or even radiation. WSN and sensor networks also enable the use of geographic or geo-technologies to be used which take geographic, weather and contextual factors into account in creating data and algorithms (Sagl, Blaschke, Beinat and Resch, 2012).

The previously discussed EmX technologies act as enabling technologies for IoT, increasing the feasibility of producing products and services *via* a sensor network entailing a large number of

intelligent sensors, thereby enabling the gathering, processing, analysis and distribution of valued information from a variety of settings (Xu et al., 2013).

Drones are examples of some of the robotics that make use of these sensor technologies. According to Berkowitz (2014) drones are intelligent machines that have the capacity to perform repetitive tasks with efficiency, reliability, and mechanical rationality that are able to mimic human action and human judgment, These tasks are able to be performed through advanced algorithmic instructions that permit machines to react with exceptional speed and reliability to external factors in ways that seem intelligent; drones mimic or improve upon human responses.

2.5.6 Competing using EmX technologies in KIS firms

In Chapter 1 it was explained that KIS firms, such as management consultancies, were losing business to market intelligence companies that were able to employ predictive models and software to deliver customer insights at a fraction of the expense. Christensen *et al.*, (2013), contributed that clients carefully monitor the costs of KIS firms and have become less susceptible to purchase services for problems that the client is capable of solving. This has caused a shift for management consultancies from being integrated solution shops that are involved in all aspects of a client engagement to more flexible providers that instead concentrate on various links in the value chain.

Ju and Shen (2010) mentioned that alternative business models are evolving such as facilitated networks and expert crowd-sourced solutions that require smaller project teams and more freelance consultants. With the entrance of crowd-sourcing technologies, clients and management consulting firms are now able to post problems and challenges to 'knowledge service' platforms composed of creative and collaborative problem solvers and a team can form from the network to bid for and provide solutions to the problem. Knowledge services are increasingly developing into fundamental mechanisms in supporting knowledge-based innovation. Numerous KIS firms, such as management consulting firms, are beginning to recognise and consider new software, analytics, asset-based consulting and technology-based tools when engaging with clients. Systems and tools are beginning to be implemented at clients instead of having project consultants on site (Christensen et al., 2013). Therefore it appears EmX technologies are already being considered in some KIS firms to some degree. However Kattara and El-Said (2013) mentioned that many services may be too extensive or multifaceted to be

delivered through technology alone. They further contended that technology-mediated and self-service technologies generally require higher hardware and maintenance fees and can at times malfunction. In addition if interfaces are not optimally designed they could cause client dissatisfaction, rather than satisfaction. Nevertheless, with the mounting volume of information and data, the use of remote and technology-mediated services becomes more practical, to the point that these technologies may even become a substitute for human-delivered services (Schumann et al., 2011).

2.6 CHAPTER SUMMARY

This chapter discussed competitive advantage and explained how KIS firms generally derive a competitive advantage. Management consultancies in particular were identified as a proxy for KIS firms due to their offerings predominantly being based on knowledge. This chapter also discussed the critical role of talent in KIS industries and touched on the need for firms to have dynamic capabilities as a means of reconfiguring their business models in a changing environment. The role of talent and EmX technologies, and the relationship between the two, were discussed with reference to how they create a competitive advantage for KIS firms was also discussed. Chapter 3 will provide and contextualise the research questions the study seeks to answer.

CHAPTER 3

RESEARCH QUESTIONS

3.1 RESEARCH QUESTIONS

Chapter 2 reviewed literature from an extensive body of research that explained the growing potential impact of EmX technologies on talent and business models in creating a competitive advantage for KIS firms. Research pertaining to the competitive environment of the knowledge economy was discussed. KIS industries, the talent available in KIS industries and the use of EmX technologies in KIS industries were also deliberated.

In Chapter 1 it was cited that KIS firms, such as consultancies were losing business to market intelligence companies that were able to employ predictive models and software to deliver customer insights at a fraction of the expense. Lee *et al.*, (2012) determined that the rules of business had been rewritten due to disruptive changes in the global economy, which has resulted in organisations rethinking the means by which they gain and maintain a competitive advantage. It was advised that when a firm is able to differentiate itself from competitors by offering distinctive benefits, it is able to command a premium price (Porter, 1985). A KIS firm's ability to differentiate itself, have a positive reputation and brand, create economies of scale and cost efficiencies and ensuring these elements were difficult for rivals to imitate were discussed in Chapter 2.

However it was also indicated by Dumitrascu and Dumitrascu (2013) that a competitive advantage in the modern business landscape is usually short-lived, as many new business models either have or are overcoming the traditional barriers to entry such as time, financing, space, distance and location. Ling and Gui (2009) further advised that competitive advantage resulted from a firm exploiting opportunities and minimising threats from its external environment, and that in order for a service to be competitive it must be relevant to its market and difficult for competitors to imitate. Schumann *et al.*, (2011) indicated that technology had altered the very nature of services in terms of how they are conceptualised and delivered and could enable the creation of dynamic capabilities in terms of how organisations solve problems. If this is the case then it becomes apparent that adopting new EmX technologies are an opportunity that KIS firms could exploit to gain a competitive advantage and differentiate themselves. Esterhuizen *et al.*, (2011) posited that the competitiveness of the modern firm is increasingly related to the firm's ability to innovate either

through the introduction of new products, services and strategies; new methodologies and processes; new forms of supply; exploring new markets or new methods of structuring and organising business.

Castro *et al.*, (2011) mentioned that one of the most effective methods to gaining a competitive advantage was *via* relentless technological innovations. However if a combination of both technology and human interaction are becoming more common in an effort to keep competitive, then KIS firms can readily determine the impact of the EmX technologies on augmenting or replacing their existing talent (Makarem et al., 2009). With Farajpour and Zerehnazi (2013) indicating that computers are over-taking the skills of humans and having the ability to solve simple problems rapidly and efficiently, conduct complex calculations and compete against humans at games such as chess, would talent even be relevant or important to KIS firms in the future?

The literature thus far has stressed the importance of talent towards creating a competitive advantage for KIS firms, however there is limited academic literature (Christensen et al., 2013; Smith & Anderson, 2014; Brynjolfsson & McAfee, 2014; Kirkland, 2014, September; Edvardsson & Osarksson, 2011; Forstenlechner et al., 2007; Sung-Kwan & Trimi, 2007) regarding the impact EmX technologies have and will increasingly have on the talent and business models of KIS firms. Even the existing literature identified does not adequately provide complete coverage of the growing influence of EmX technologies on creating dynamic capabilities that are altering the business models of KIS firms. Therefore the basic premise of this research study is to bridge this knowledge gap and uncover the extent to which EmX technologies facilitate KIS firms gaining a competitive advantage over rivals by enabling them to differentiate themselves through increased innovation, a more positive reputation and efficiencies. While talent currently remains important in these firms, the firms may not be reliant solely on talent to produce and deliver services capable of solving advanced problems. Rather, these service firms could become increasingly more dependent on EmX technologies that enable increased efficiencies and capabilities that are scalable and potentially more difficult for competitors to duplicate. New EmX technologies would thereby create a competitive advantage for KIS firms, by reconfiguring the right combination of talent and technology to deliver optimal performance, at an optimal price (Kattara & El-Said, 2013). If this is the case the extent to which KIS solutions, traditionally delivered by skilled experts, become technology-mediated or even replaced entirely by EmX technologies needs to be determined.

At the commencement of the study, it became apparent that the existing body of literature did not adequately address how KIS firms are required to respond to increased competitor rivalry, more intense customer expectations for value and lower costs, with regards to how they could use EmX technologies to adapt their business models and gain a competitive advantage. Therefore this research was focused on qualitatively exploring the extent to which EmX technologies are changing the talent configurations of previously “people dependent” KIS industries as a means to begin bridging this gap. This is important to determine, as if they are considering changing their business models, this would have a profound impact on the traditional KIS firms’ compositions. To determine this it is also important to determine whether KIS industries believe they can gain a competitive advantage through introducing EmX technologies into their business models, as this could aid in identifying a shift in how these types of service firms are likely to compete in the future and how they are likely to augment or replace talent in their organisations. Therefore the primary question the research sought to answer was:

What is the impact of EmX technologies on talent in creating a competitive advantage for KIS firms?

It was identified that the ability of KIS firms, such as management consultancies, to compete against rivals lied in their ability to:

- Diversify their business models, offerings and strategies and that technology was seen as an enabler of innovation.
- Access the knowledge and skills of knowledge workers and having a strong and positive reputation is considered important to achieving competitiveness for KIS firms as it enables them to attract talent.

The researcher therefore considered it important to determine the extent to which KIS firms were using EmX technologies to alter their business models and whether they contributed to a positive reputation for KIS firms. Therefore the research further aimed to determine to what extent EmX technologies:

- are changing KIS industries’ business models.
- contribute to a positive reputation of KIS firms.

Chapter 2 identified a competitive advantage stemmed from an organisation's ability to:

- differentiate itself;
- obtain cost leadership or economies of scale; or
- have a difficult to imitate position in the market.

Therefore the researcher considered the following sub-questions as relevant to gain a more profound understanding of how EmX technologies were affecting areas that could create a competitive advantage. Therefore the research still further aimed to determine to what extent EmX technologies:

- differentiate KIS firms.
- create economies of scale and lower costs for KIS firms.
- contribute to making KIS firms less imitable.

However, it was also recognised in the literature that computers were over-taking the skills of humans due to the ability to solve simple problems rapidly and efficiently. Therefore the researcher desired to explore to what extent EmX technologies could replace talent partially or entirely in creating and delivering certain types of knowledge-intensive work.

These research queries emanating from the literature resulted in the researcher's consideration of the following seven research questions as the key areas of consideration for this study.

Primary research question	
What is the impact of EmX technologies on talent in creating a competitive advantage for KIS firms?	
Secondary research questions	
Question 1	To what extent are EmX technologies changing KIS industries' business models?
Question 2	To what extent are EmX technologies replacing talent partially or entirely in creating and delivering certain types of KIS work?
Question 3	To what extent are EmX technologies contributing to a positive reputation of KIS firms?
Question 4	To what extent are EmX technologies differentiating KIS firms?

Question 5	To what extent are EmX technologies creating economies of scale and lower costs for KIS firms?
Question 6	To what extent are EmX technologies contributing to making KIS offerings less imitable?

Chapter 4 describes the research methodology used to explore these questions and potentially uncover new insights *via* this study.

CHAPTER 4

RESEARCH METHODOLOGY

4.1 INTRODUCTION TO THE RESEARCH METHODOLOGY

The purpose of this research was to explore the impact of EmX technologies on talent in creating a competitive advantage for KIS firms. To determine this it was also important to ascertain whether KIS industries believe they can gain a competitive advantage by introducing EmX technologies into their business models, as this could aid in identifying a shift in how KIS firms are likely to compete in the future and how they are likely to augment or replace talent in their organisations. The extent to which EmX technologies contribute to a positive reputation, differentiate, create economies of scale and lower costs for KIS firms and contribute to KIS firms' offerings being less imitable are all considered areas of exploration and discovery for the researcher.

This chapter explains the research methodology of the study and includes discussions regarding a) the type of qualitative research approach selected, b) the research design, c) the population and unit of analysis, d) the sampling method and sampling size, e) ethical considerations, f) data collection, g) data analysis, i) the limitations of the research and finally concludes with j) a closing summary of the chapter.

4.2 RESEARCH APPROACH

4.2.1 Exploratory qualitative study

According to Saunders and Lewis (2012), an exploratory qualitative study is research that focuses on obtaining new understandings and considers subjects in a different way. An exploratory study is most appropriate for the purposes of this research as the researcher does not have specific hypotheses that required being tested (Zikmund, Babin, Carr & Griffin, 2012). This study explored, rather than tested, the potential that EmX technologies may have had in augmenting or replacing talent to create a competitive advantage for KIS firms.

4.3 RESEARCH DESIGN

Zikmund *et al.*, (2012) defined the research design as the principal plan that positions the processes and techniques for accumulating and examining the necessity for information. Deciding on the most appropriate research design is founded on the research objectives and the particular information requirements of the research study. In determining the most suitable research design, the researcher considered the nature of data that is required to be collected, the design technique and the sampling methodology and procedures (Hair, Bush & Ortinao, 2006).

4.3.1 Population and unit of analysis

The population is the whole number of group members considered in the study (Saunders & Lewis, 2012). The population for this study was mainly KIS firms that may be global or local in nature, but have local representative offices in South Africa as legally registered with the Companies and Intellectual Property Commission (CIPC). In particular the researcher focused on management consulting firms as these were identified in the literature as proxies for KIS firms. The researcher also focused on market intelligence firms, as it was cited in Chapter 1 that many consultancies were losing business to these firms as they were able to employ predictive models and software to deliver customer insights at a fraction of the expense of traditional management consulting firms. The population for the descriptive research was people that were interested in or members of KIS firms.

The unit of analysis within a study specifies what or who must give the researcher data and in what combination (Zikmund *et al.*, 2012). The unit of analysis in this research study was senior executives at KIS firms such as managing directors, heads of division and c-suite executives, as they were more likely to have insight into the future vision and direction of these services firms and would also have insight regarding the continuous development of these firms.

4.3.2 Sampling method and sample size

A sample is a sub-group of the population that makes conclusions about the population (Saunders & Lewis, 2012 and Zikmund *et al.*, 2012). Non-probability sampling was used in the form of judgement sampling. Zikmund *et al.*, (2012) explained that judgement sampling is a form of non-probability sampling where an experienced person or individual selects the sample based on his

or her judgement about the applicable factors required of the sample participant. The researcher selected ten participants in senior executive roles at KIS firms, as they were believed to be the most likely participants to have knowledge of the current and prospective strategy of their firms.

Table 4: List of participants of in-depth interviews conducted with KIS firms

Participant no.	Industry	Position	Experience in KIS firms	Qualification
P1	Market intelligence	Chief Operating Officer for Africa	20	• BCom
P2	Market intelligence - Financial Services	Head of Operations for Africa	19	• BA Politics and Finance
P3	Market intelligence - Financial Services	Head of Sales South Africa	15	• BCom Honours Economics • Pending a Master's in Finance
P4	Consulting	Managing Director	20	• CA(SA)
P5	Consulting	Managing Director of Strategy	15	• Master's Degree in Engineering
P6	Consulting	Strategy Director for Africa	20	• CA(SA)
P7	Consulting	National IT Director	15	• Certified system engineer for Microsoft • Microsoft operations manager • Certified information systems • Auditor • Various web development certifications
P8	Market intelligence	Associate Director	7	• BCom Economics and Finance • Post Graduate Diploma in Marketing Management
P9	Consulting	Chief Operating Officer for Consulting Africa	30	• CA(SA) • MCom
P10	Consulting	Director of Technology and Data Analytics	24	• CA(SA)

4.3.3 Ethics considerations

Zikmund *et al.*, (2012), advised that the privacy rights of the research participants create an obligation for the researcher. Ethical concerns relating to the protection of the participants is highly important in social science research. The research process involved obtaining voluntary cooperation and participants were informed of the study's purpose. One of the main concerns with respect to protecting participants involved how the information they provided would be used. To provide assurance and comfort to the participants, the following measures were taken:

- To ensure high levels of ethical conduct the researcher ensured approval from the Ethics Committee at GIBs prior to meeting with participants.

- Written consent to voluntarily proceed with the study was received from each participant.
- Participants' rights, interests and preferences were treated as important to report accurately and honestly when compiling the data.
- The researcher was committed to ensuring the identities of the participants and their respective firms were kept confidential.
- Cautionary measures were taken to secure the storage of research-related records and data so that nobody other than the researcher had access to this material (Bloomberg & Volpe, 2008).

4.3.4 Data collection

According to Zikmund *et al.*, (2012), data collection commences once the sampling plan is in place and is considered the formal process of obtaining the data. Bloor and Wood (2006) identified that qualitative research invariably involves making audio recordings of the face-to-face interviews conducted. In-depth interviews were selected as the primary method for data collection in this study. The interview method was considered to be the most relevant to this study due to its ability to gain profound insights from senior experts in the industry. In addition it enabled the researcher to ask probing questions that would enable a deeper understanding of the current industry landscape (Bloomberg & Volpe, 2008).

4.3.4.1. Questionnaire design and pilot interviews

The approach regarding the development of the questionnaire entailed devising a preliminary outline based on the academic literature (Zikmund et al. 2012). The research included various demographic descriptors such as age, race, gender, tenure, profession, qualifications and industry to contextualise the participants of the study. It was considered that the level of experience and the age of the respondents were important descriptors that indicated the high quality of the data collected, as it was from experienced and knowledgeable participants. With guidance from her advisor, the researcher used the study's seven research questions as the framework to develop the 12 interview questions. Matrices were constructed to illustrate the relationship between this study's research questions and the interview questions as they were being developed (refer to Appendix 3) (Bloomberg & Volpe, 2008).

Researchers must also always pre-test a questionnaire. Pretesting is conducted with subjects or people who represent those who will be requested to complete the survey (Hair et al., 2006:66). During the pretesting phase the researcher tested the questionnaire at face validity to determine if the information being asked was relevant to the research questions prepared by the study. Two work colleagues from the researchers' KIS firm were then asked to review and provide feedback to the researcher, and their comments were incorporated into the revised, final questionnaire (refer to Appendix 2). The researcher resubmitted the schedule of questions to her supervisor. With the supervisor's approval, one face-to-face pilot interview was conducted. The preliminary themes that emerged from the pilot interview were concerned with reasons for the impact of EmX technologies on talent in creating a competitive advantage KIS firms (Bloomberg & Volpe, 2008).

4.3.4.2. Reliability and validity

In qualitative research, trustworthiness features consist of any efforts by the researcher to address the more traditional quantitative issues of validity (the extent to which the research produces a true depiction of reality) and reliability (the degree to which the research produces the same results when repeated). Methodological validity involves determining how well-matched the logic of the method is to the kinds of research questions that are being posed and the kind of explanation that the researcher is attempting to develop. Dealing with this type of validity involves consideration of the interrelationship between the research design components, such as the study's purpose, conceptual framework, research questions, and methods. Interpretative validity involves asking how valid the data analysis is and the interpretation on which it is based. To enhance the methodological validity of the study, the researcher triangulated the interviews against each other and against the literature. Given the study was explorative in nature and sought to discover new insights rather than prove hypotheses, this method was considered appropriate in achieving the studies objectives (Bloomberg & Volpe, 2008 and Bloor & Wood, 2006).

Once it was relevant, the researcher needed to ensure the accuracy of information obtained from the questionnaire would be valid and reliable. The researcher ensured that questions were clear, concise and well considered in order to minimise the potential for bias (Zikmund et al., 2012). The researcher also pre-tested the questionnaire with her research supervisor for final review and validity prior to obtaining ethics clearance. Validity is important as it measures the accuracy of the

degree to which the research questionnaire honestly characterises a concept (Zikmund & Babin, 2007:323).

4.3.4.3. *In-depth interview process*

The researcher sent discrete e-mails to potential participants describing the purpose of the study, providing the university letter of consent required for participation in the study, inviting their participation, and requesting a convenient date and time for a face-to-face interview at a quiet venue of the participants choosing. The researcher sent confirming e-mails to ten individuals who agreed to be interviewed. The interviews took place between July and September 2014. Before the interview commenced, the participant was asked to review and sign a copy of the previously sent university consent form required for participation in this study (refer to Appendix 1) (Bloomberg & Volpe, 2008). The researcher kept copies of all the signed consent forms.

All ten interviews were conducted face-to-face and were recorded using a mobile application. In interview research ten interviews are considered saturation point, as interviews beyond this point are likely to repeat similar notions to the first 10 and therefore unlikely to add material differences to the findings (Creswell, 2013). Participants were advised on the purpose of the research and that their identities and their respective organisations would be kept confidential. The participants were not offered any monetary allocation for partaking in the study, but were promised to receive a copy of the final results to induce participation (Zikmund et al., 2012). The researcher attempted to ensure a similar line of questioning with all interview participants but made use of semi-structured questions that were reordered and probed further based on the answers of the participant. The researcher developed many open-ended questions that focused on addressing the research problem and supporting questions. The same set of questions was asked to all individuals interviewed. There was an element of deductive reasoning in a sense that the questions asked were based on the literature reviewed (Lewis & Saunders, 2012). To ensure consistency and accuracy the same researcher interviewed all participants. All interviews were voice recorded to ensure accurate and unbiased written transcripts of the data. At the end of each interview, the researcher stored the recordings in an electronic format on her computer.

Transcription is a methodical capturing process for translating verbal interactions into writing. It is normally performed during data collection and analysis, and is considered a critical step in the creation of logical knowledge due to it capturing the interactions between the researcher and the

interview participant at specific moment in time (Bloor & Wood, 2006). Given that transcription is generally a lengthy process the researcher made use of a transcription service provider and sent the service provider copies of the audio files. It was noted by the researcher that there was a risk that certain aspects of the context could have been lost during transcription, therefore the researcher referred back to the audio tapes to ensure the context was understood, that there was strong familiarity with the data and no pertinent information was missing or misinterpreted (Gibbs, 2008).

4.3.5 Data analysis

Data analysis makes use of reasoning in an effort to understand the data that has been collected (Zikmund et al., 2012). The researcher focussed on determining similar patterns from the research transcripts and summarised the relevant findings. Qualitative research consists of three stages namely, abduction, deduction and induction. The unknown outputs that are revealed through the exploratory data provided by the interview process are considered part of the abduction process; this data represents new ideas and types of relationships. The data is then compared with the literature review to determine the accuracy of the literature and if the narrative is correct or has developed (Flick, 2014). An inductive approach was used to develop theory based on the outcomes of the research (Saunders & Lewis, 2012).

Qualitative research is usually conveyed in a narrative fashion. While the general intent is not to compute qualitative data, counts and occurrences in qualitative research are basically an enhancement to the story. Essentially, even qualitative data records common occurring phenomena and opinions from studies. The challenge throughout data collection and analysis was to work through large amounts of information, recognise patterns in the information and construct a framework. To do this, the researcher made use of coding, which is the central procedure in classic grounded theory methodology. Coding is essentially a system of classification; the process of noting what is of interest or significance, identifying different segments of the data, and labelling these to organise the information contained in the data. For the purposes of confidentiality the researcher renamed the participants using the shorthand P (denoting the term *participant*) and the order in which they were interviewed (1 representing the first person who was interviewed). The researcher then made use of words to describe the different trends. Initially the researcher made use of open coding where the descriptors emerge from the data. The researcher read the transcriptions of the interviews and noted all common and

outlying themes that were evident from the data, which acted as second tier themes. The researcher then made use of theoretical coding to determine which themes could be combined into larger primary themes. This enabled the researcher to make sense of what the participants had stated and integrated what different participants had said to determine trends and patterns in meaning. The researcher then followed a reduction process that involved questioning the data, identifying and noting common patterns in the data, creating primary and secondary codes that describe data patterns and aligning them with the conceptual framework. The coding scheme is included as Appendix 4 (Bloomberg & Volpe, 2008).

4.4 RESEARCH LIMITATIONS

Fundamental limitations of the proposed research methodology involved the following:

- The study was qualitative and exploratory in nature, which means it may provide original insights but these are based on perceptions (Saunders & Lewis, 2012).
- Exploratory research is subjective and there is the potential for interviewer bias. Interview participants may view some questions as giving away confidential information regarding their strategies to compete against competitors and therefore choose not to answer some questions (Saunders & Lewis, 2012). Additionally, the researcher works in a KIS firm, and therefore is subject to further biases, and may have created discomfort for participants from competing KIS firms. To manage this prejudice the researcher acknowledged her position and research outline to participants prior to the interview, by giving participants a letter of consent outlining the intent of the research and ensuring them professionalism and confidentiality.
- Participants however may have been guarded with information due to the researcher's position at a KIS firm, which may limit the depth of the information provided by the participants (Saunders & Lewis, 2012).
- The coding system was analysed by the researcher's supervisor and the researcher made use of external transcription services to compile the transcripts. To reduce the limitation of potential bias during the data analysis the researcher removed all the participants' names and coded all interview transcripts (Bloomberg & Volpe, 2008).

- The sample size was small and based on judgment sampling which may negatively affect the validity of the results and may have made the results difficult to generalise across all KIS firms (Bloomberg & Volpe, 2008).

4.5 CHAPTER SUMMARY

In summary, this chapter provided a comprehensive description of this study's research methodology. This study had an exploratory qualitative research design consisting of ten of ten in-depth interviews with senior executives at KIS firms. Judgment sampling was used to select the executive sample. Ethical considerations regarding protecting the participants were discussed. The questionnaire consisted of various demographic descriptors and 12 theory-based questions, designed to address the seven research questions and was pretested and piloted accordingly. The importance and measures taken to ensure reliability and validity were discussed. All interviews were recorded, transcribed and were then coded to determine patterns in the data. The main limitations to the research were also discussed. Chapter 5 commences with the discussion of the results garnered from the interviews.

CHAPTER 5

RESULTS

5.1 RESULTS OF THE STUDY

The methodology employed to test the research questions proposed for this study was discussed in Chapter 4. This chapter provides an overview of the main findings of the 10 qualitative in-depth interviews. This chapter commences with demographic variables relating to the participants that were interviewed, followed by an overview of the pertinent findings relating to the purpose and questions posed by this study.

5.2 DEMOGRAPHIC AND CONTEXTUAL OVERVIEW OF THE PARTICIPANTS

Six of the ten participants were from the consulting industry and the remaining four participants were from the market intelligence industry. The youngest participant was 31 years of age, ranging to the oldest participant being 55 years old. The minimum amount of work experience of the participants in KIS firms was seven years, while 9 out of 10 of the respondents reported to have been employed in the industry for 15 years or more. Nine of the ten participants had advanced tertiary qualifications, while the remaining respondent had acquired numerous diploma level tertiary qualifications. All participants held senior strategic roles within their KIS firms. There were seven male participants and three female participants. Of the participants that were interviewed, eight of them were white, one was Indian and one was black.

The following Table 5 provides a detailed overview of the demographics of the ten participants.

Table 5: Demographics of the participants

Participant no.	Industry	Position	Experience in KIS firms	Qualification	Gender	Race	Age
P1	Market intelligence	Chief Operating Officer for Africa	20	<ul style="list-style-type: none"> • BCom 	Female	White	46
P2	Market intelligence - Financial Services	Head of Operations for Africa	19	<ul style="list-style-type: none"> • BA Politics and Finance 	Female	Indian	41
P3	Market intelligence - Financial Services	Head of Sales South Africa	15	<ul style="list-style-type: none"> • BCom Honours Economics • Pending a Master's in Finance 	Male	White	37
P4	Consulting	Managing Director	20	<ul style="list-style-type: none"> • CA(SA) 	Male	White	44
P5	Consulting	Managing Director of Strategy	15	<ul style="list-style-type: none"> • Master's Degree in Engineering 	Male	White	39
P6	Consulting	Strategy Director for Africa	20	<ul style="list-style-type: none"> • CA(SA) 	Male	White	44
P7	Consulting	National IT Director	15	<ul style="list-style-type: none"> • Certified system engineer for Microsoft • Microsoft operations manager • Certified information systems Auditor • Various web development certifications 	Male	White	55
P8	Market intelligence	Associate Director	7	<ul style="list-style-type: none"> • BCom Economics and Finance • Post Graduate Diploma in Marketing Management 	Female	Black	31
P9	Consulting	Chief Operating Officer for Consulting Africa	30	<ul style="list-style-type: none"> • CA(SA) • MCom 	Male	White	50
P10	Consulting	Director of Technology and Data Analytics	24	<ul style="list-style-type: none"> • CA(SA) 	Male	White	46

5.3 DETAILED RESULTS OF THE STUDY

The research questions of this study were used to formulate and structure the results. The interview questions were created based on the research questions (refer to Appendix 3). A brief overview regarding what the participants perceived as important in creating a competitive advantage for their firms was established prior to addressing the questions posed by the study. The research problem was addressed based on the findings of the ten interviews.

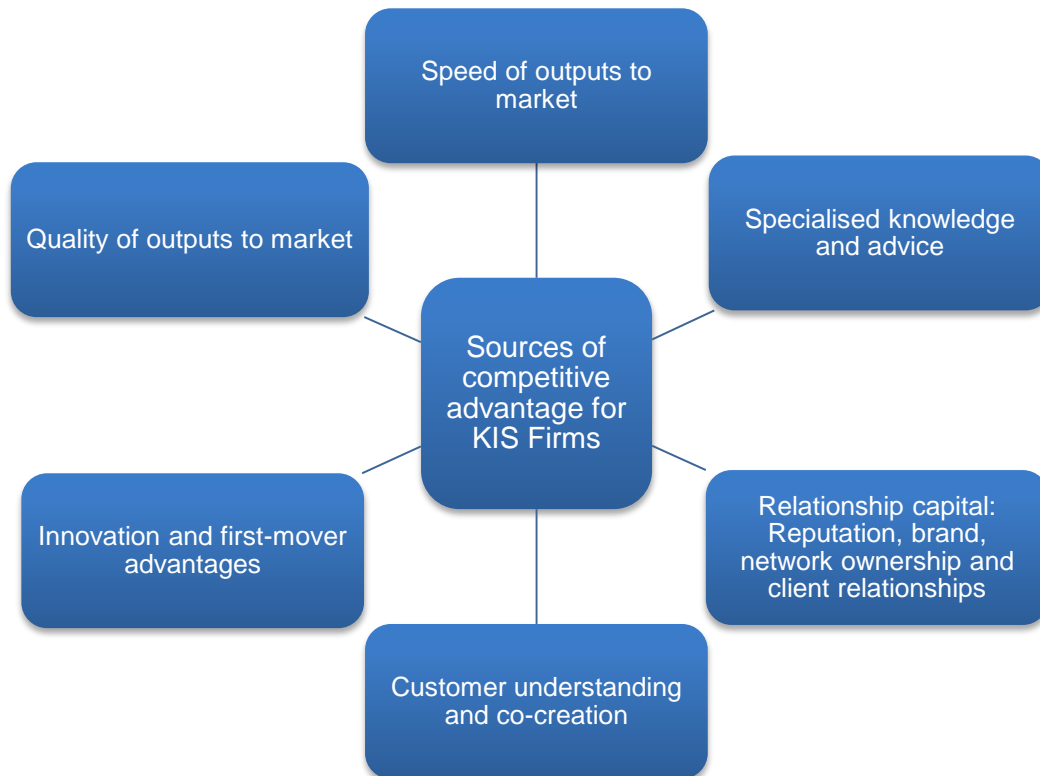
Table 6: Consolidated results of the interview questions (excluding question 1)

Questions	Talent	Both Technology and Talent	No	Yes	Both positive and negative reputational effects	Grand Total
Has your organisation had to change its business model due to emerging exponential technologies?			1	9		10
Do you feel emerging exponential technologies can create a difficult-to-imitate competitive advantage for your organisation?			6	4		10
Do you believe talent or technology would be more important to your competitiveness in the present and future?	6	4				10
Will some employees' roles/skills be augmented by emerging exponential technologies?				10		10
Will some employees' roles/skills be replaced by emerging exponential technologies?			1	9		10
When creating and storing knowledge in your organisation, do you perceive that emerging exponential technologies are playing a greater role?				10		10
When discovering, sharing and organising knowledge in your organisation, do you perceive emerging exponential technologies as playing a greater role?			3	7		10
When distributing, delivering and transferring the knowledge to your clients, do you perceive emerging exponential technologies playing a greater role?				10		10
Do you believe the use of emerging exponential technologies will contribute to your organisation having a positive reputation?			1	7	2	10
Do you believe the use of emerging exponential technologies will differentiate your organisation amongst your competitors?			2	8		10
Do you believe you will achieve greater economies of scale and lower your costs by making use of emerging exponential technologies?			1	9		10
Grand Total	6	4	15	83	2	110

5.3.1 Factors affecting the competitive advantage of KIS firms

The initial opening question focused on the factors that have traditionally given KIS firms a competitive advantage. The following five factors were frequently cited by the participants as important sources of competitive advantage for KIS firms.

Figure 1: Sources of competitive advantage for KIS firms



5.3.1.1 *The speed of outputs to the market*

The participants were asked about what factors had traditionally given them a competitive advantage in KIS firms. Six of the participants cited having swift speed to market in terms of ideas and delivery, as critical to their competitive advantage as knowledge is commoditised in KIS industries. Talent was cited as an important aid in KIS firms remaining ahead of their competitors, with a quotation (as presented on the next page) confirming this sentiment:

"Being 4 to 6 months ahead of the competition as knowledge gets commoditised after about 6 months with clients, so you have about 6 months ahead with any new innovation to be really effective, then everybody else catches up, it isn't always easy because it depends on the talent you have, which is where you get competitive advantage."

5.3.1.2. *Quality of outputs to the market*

Many of the participants agreed that being quick to market was not enough, citing that the quality of the outputs needed to be accurate, convenient, more efficient and better than competitors, confirmed by the following quote:

"Best in terms of both data quality and accuracy and speed"

5.3.1.3. *Specialised knowledge and advice*

Five of the participants cited foresight, specialist and accurate knowledge and advice as important to them assisting clients to make critical decisions. They also indicated how technology created efficiencies and mentioned their use of knowledge repository and collaboration technologies to access knowledge and professionals within their organisation, with quotes such as:

"Remember in the knowledge intensive industry your clients are expecting you to be ahead, so we make our money out of anticipating what's going to come, placing our bets on where the next trends are going to be and if we are right and the perfect storm is there we will be ready when our clients ask the question; we can give them the answer."

The ability to scale knowledge and advice *via* talent or codifying the knowledge of talent to be replicable, to gain a deeper depth and breadth of knowledge, was mentioned by several of the participants with the following two quotations:

"Scale—and what I mean by scale is being part of an organisation of local, regional and global scale—Which gives you access to breadth and depth of capability."

"The ability to replicate solutions. The sharing of method tools, but it is if you have done something great, you can do it again. You can start to do it better and better by replicating how to solve complex or large problems."

5.3.1.4. *Relationship capital in terms of reputation, brand, network ownership and client relationships*

Relationship capital in the form of the reputation and brand of KIS firms was identified by several of the participants as an important factor influencing competitive advantage, in terms of attracting both talent and clients. Quotes that indicated this included:

"I think reputation and then first mover advantage, so being first into something that becomes the next wave, good client relationships, and then I think brand makes a big difference, so having a brand also, I think those are the things I would hand it down to, lots of detail under that but I think those are the big factors."

One of the participants indicated that having ownership of a network that facilitates the community, acts as a strong competitive advantage for their organisation. Clients were reluctant to leave the community due to not being able to access and interact with the people within that community. This participant cited that the reason for this is that in order for a single client to change the KIS firm as a provider, the entire community would need to switch providers, as the value was found in the interactions within the community that the KIS firm facilitated, as indicated in the following quote:

"Community is where you create competitive advantage. If you don't have the community, you have to move the whole community across, and if you can get the whole community across then the better system will keep them there, but better systems don't keep you there if you can't access the people around you, that's social network."

5.3.1.5. *Customer understanding and co-creation*

Four of the participants cited that understanding their clients or creating an environment that facilitated the involvement of their clients in creating value for the client was important in creating a unique competitive advantage and referenced the use of EmX technologies to enable this, as indicated in the following quotes:

"We don't have every piece of content that matters to our clients. We don't have every piece of technology that matters to our clients. But what we do have is a really flexible platform. So why don't we create an open platform. Open technology. And create best of breed with our partners"

and our clients and bring that data in. So I think actually, our unique competitive advantage is on this space is that we are actually enabling other people to work with us.

Others indicated that the experience the client had with them acted as a competitive advantage. The experience a client had with the KIS firm was dependent on the level of control clients had over a process provided by the KIS firm and the talent and culture nurtured by the KIS firm, with the following quotation confirming these indications:

“Culture. The experience of clients to work with the organisation. The other competitive edge is the ability to tract and retain and adopt talent.”

5.3.1.6. *Innovation and first-mover advantages*

Six of the participants cited innovation and first-mover advantages as important to differentiating themselves and providing a competitive advantage for KIS firms. It was indicated that EmX technologies enabled some firms to gain a lead in the market in the past, but over time their competitors began imitating their innovations and that in order to maintain a competitor advantage, they had to continually innovate. This was affirmed by the following quotes:

“I think we probably were the emerging leaders of that sort of technology (cloud) in the past which gave us, in that time, an advantage over our competitors; certainly they have had more than enough opportunity to catch up and I think they have caught up in terms of structures and how it works, but it gave us a first-mover advantage.”

“I think it’s about being innovative, being able to differentiate from yourself from a rather competitive market.”

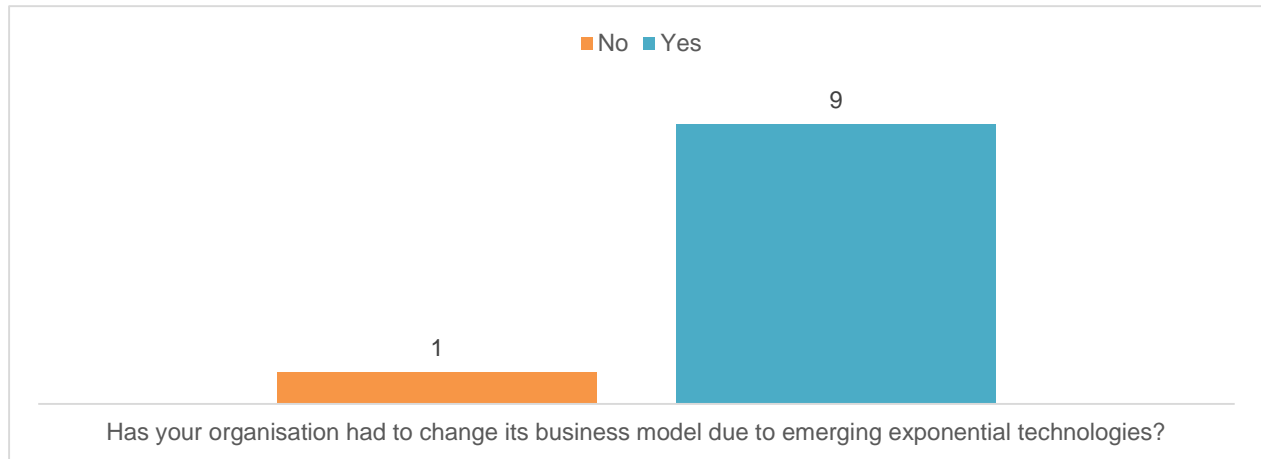
The timing of innovations and market readiness was also cited in the sense that the market needs to be ready to adopt an innovation, as introducing new innovations can be costly if the KIS firm makes a mistake regarding timing. This quote proves the impeccability of timing:

“So we had an audit tool advantage over the rest of the market in South Africa and initially we were actually too early in the market because of our 3G network infrastructure, was actually lagging international norms. So we were paying too much for that collaboration to happen and that had an impact on the business. So we had to focus on reducing costs in that regard, but now most of the audit firms have caught up. It takes three to five years to catch up.”

5.3.2. EmX technologies' impact on KIS firms' business models

Only one participant refuted that EmX technologies had fundamentally altered their business models, and maintained that it had simply made them more effective and obtaining knowledge from their people.

Chart 1: Business model changes due to EmX technologies



Nine of the ten participants agreed to a greater or lesser extent that they have had to evolve or alter their business models due to technologies, but not specifically EmX technologies to remain competitive, quoting:

"We have evolved to cope with the emerging technologies as opposed to revolutionise the business model. The business model is still an audit, tax and advisory business model. So audit and tax [are] probably the ones that have been least affected but are evolving. In the advisory business there are probably some evidence of revolutionary stuff because as new things have come up we then viable to either advise or consult in a different way, so of enhancing the power of technology."

Interestingly, one of the participants mentioned that there are also disadvantages from a risk perspective, as online crime and fraud are associated with EmX technologies, as quoted:

"What a lot of people don't understand is how much commerce is done on the internet that the consumer in the street never sees. It's also unfortunately a huge magnet for online crime and fraud, but I think that's a running battle since the first bank put up a vault door, so there are

spectacular successes and failures along this path every year but there is no doubt that it's going to be worth it to stay and if you are not going to keep up you will be left behind."

Four of the interview participants cited that they have recently altered their business strategies, due to EmX technologies, to be more digital in nature, quoting:

"Our current business model is about four months old that we have created. We have now created a digital business unit where all of our analytics capabilities sits and it focuses very specifically on digital disruption and what the new technology trends mean for industries so we have restructured along those lines, our marketing campaigns are restructured along those lines, we are taking it seriously and we are spending a lot of money to have the capability to do that."

Participants cited that they needed to change the way they structured and organised their businesses due to EmX technologies, as their clients were demanding greater levels of value from them. They indicated that clients were seeking deep expertise. The participants indicated that data analytics enabled them to track and understand clients' business requirements better and where they should focus their efforts. They mentioned tools like cloud, collaboration and storage tools enabled their talent to be more mobile and efficient. They further advised that these technologies could be used to track down expertise in their business, quoting:

"The age of the good, general clever person becoming a consultant is over, you start out that way but clients are demanding a lot more value from the knowledge that they get from our people and our clients know the difference and they will look at their service providers to provide that level of expertise, the demand from the market for really deep specialisation in these industries is much more prevalent than it used to be. So we spend a lot of time and energy and money to make sure we develop that level of specialisation in our people. You have to be able to bring that level of global network and specialisation, and technology is making [a] massive difference in terms of how we catalogue and track who knows what and also getting access to them and bringing them to our clients is much easier and efficient."

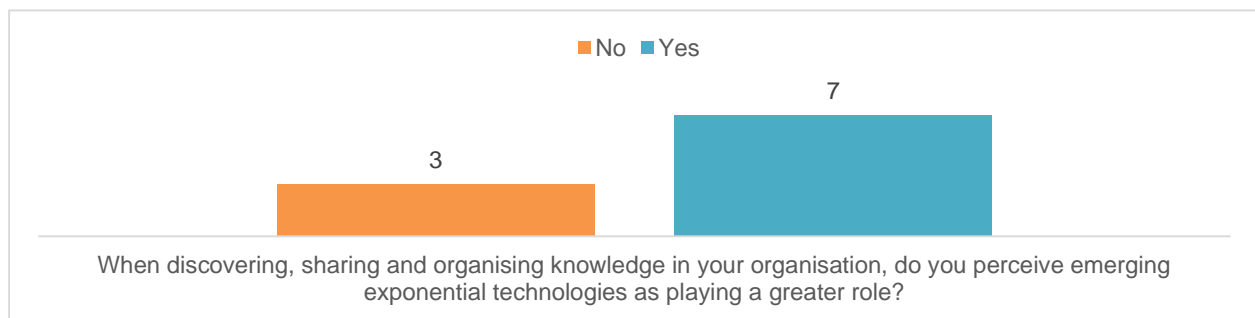
"There is a lot more big data analytics going on, the organisation can be smarter about where the requirements of the business are coming from, where product development should focus, where product development is properly appropriate so that you match in your resources to the needs of the client and that's where those sort of things can be useful, 'where are the gaps?'

'where are the people not using?', 'what are we not promoting properly?' or because they don't find it useful so try and answer those questions and then taking that forward and seeing what you can do with that.'

All ten participants explained that they needed to change their processes and methodologies using EmX technologies to better research, gather, index, store and disseminate knowledge in a more streamlined, faster and efficient manner.

Seven of the ten participants stated that they perceived EmX technologies to play a greater role when discovering, sharing and organising knowledge inside their organisations.

Chart 2: EmX technologies' effect on discovering, sharing and organising knowledge



The full complement of interview respondents mentioned that they perceived EmX technologies as playing a greater role when distributing, delivering and transferring knowledge to clients.

One participant indicated the use of geo-technologies to gather information in remote areas that were difficult for people to access. Another participant mentioned the use of algorithm-based trading (algo-trading) to process large amounts of information in real time. Another participant mentioned the use of web delivered, automated, reporting that analysed trends, quoting:

"We continue to look for ways that technology can make harvesting of knowledge, indexing and storing of knowledge, and disseminating of knowledge more streamlined, faster, efficient."

"The older technologies, the past technologies were very dead basic, often had some kind of fixed client way of engaging with it. Rather than just giving you raw results which is the more traditional ways where you stick stuff in the codify database and then you search and you get thousands of results and you have got to sift through what might be good for you. So the emerging technology will make it sort of smarter. Make it easier to find the information, a richer

search. The consultant will be less concerned with whether it's a person or it's a document or how that information is stored."

Participants explained that due to people's mind-sets changing, they needed to change the actual design and type of products and services they deliver. Some cited the inclusion of EmX technologies such as predictive search functionality in their products. Others cited the increased use of selling predictive technologies and analytics as a service to make internal audits more efficient and that data visualisation tools were being incorporated into their offerings. A participant mentioned the use of web-based platforms were being used in Tax applications for clients conducting business internationally and in Africa, and was quoted as stating:

"With internal audit, companies are getting access to technology that is predictive in nature. Analytical tools that can predict certain problems and can look for problems within the business diminishes the need for the internal auditor to come in and provide that advisory service. So we are looking at developing those types of continual auditing tools or analytical tools to actually sell as a service because that market is changing completely and technology is changing. Now with technological platforms where you consolidate services into a database and you can put an analytical tool on top of it. That analytical tool can do the work of four or five people and probably be more accurate. Your risk will probably be only the person either administering or managing the analytical tool and maybe the developers or the administrators that have access to the database.

Participants referred to the requirement for change regarding the way they delivered products and services, as EmX technologies were changing the customer experience. Some participants were even considering offering their clients self-service options. One participant mentioned using collaborative technologies to deliver a different customer experience. Several participants mentioned the need for more real-time interactions and interactivity with clients using analytics and digital interfaces, as quoted below:

"Emerging technologies would enable that. If you think of potential futures you will find I think there will be much richer ways for that client to engage with us. Insights I can offer depends on how they get those insights over time, almost in a kind of self-service kind of manner. How do they do that without us? So the only way to do would be taken out of structured documents, so I think the same description to how our consultants would engage in information in a less structured way, I think clients will start to do the same. That poses large challenges for us as

to how do we protect our IP. We don't want to just give it all away to clients and let them bypass working with us in a fee generating way to access that content, so I don't think we would have answers right now as to how we would do that but I can see that being more of a requirement in the future."

"Yes I would. I think the traditional approach is that a consultant writes it in a document, power point, or Word document and shares that with the client as a report. So it's static, it's once off. You get paid for that deck, then the job is done and then the client does sort of what it pleases but they have to respect our intellectual rights which may or may not exist in that content. That is how it works today. In the future I think they probably would have access to something more fluid. That is a set of information that they can start to manipulate themselves, and do something with and add to in their own way, so it is probably not as static piece of content as a document."

5.3.3. EmX technologies' impact on replacing talent partially or entirely for KIS work

All ten participants agreed that EmX technologies would augment the existing roles and skills of talent in their organisations in the present and future.

Many respondents explained that skills of a repetitive nature, such as data capturing, would be automated and reduced, quoting the following:

"In some areas of your business like data capture, there is that perfect place for automation and a lot can be done in the way of automation. From a client services perspective people want to deal with people and as far as I am concerned that is never going to change. So from a client services perspective you can facilitate the interactions better with good systems, good survey systems. You can remove the manual intervention in that but you will always need front line people, good front line people to be engaging with the clients."

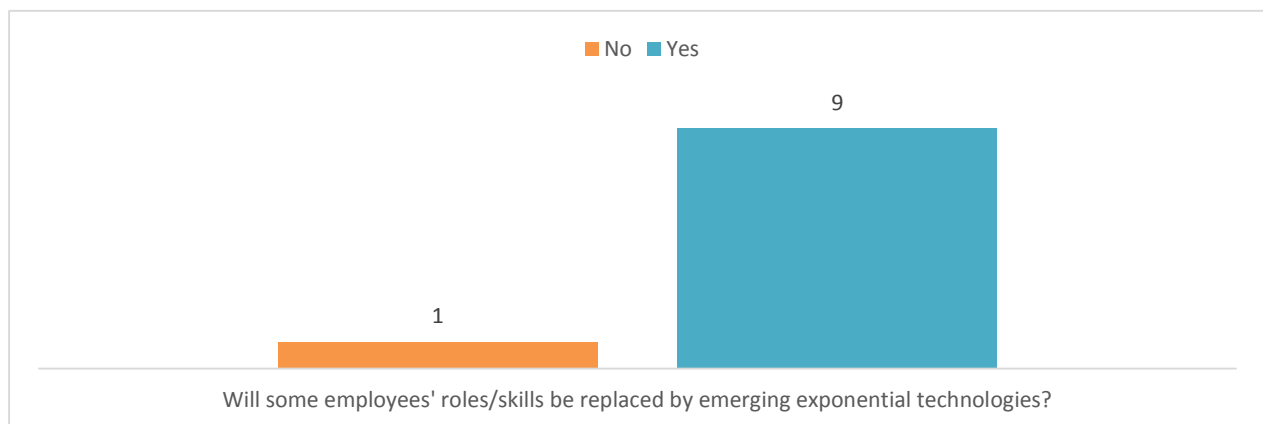
Several participants mentioned that employees would be able to be more efficient, multi-task more and do their existing jobs differently through using technology, as quoted below:

"Technology will always be a way of doing things faster, better, smarter, to do new things in new ways and new places and it will always allow smart people to put new ways of doing business onto the table or to solve existing business problems, but it won't ever solve the problem. You need the talent to do that, but leveraging that talent, especially in a knowledge-

intensive industry where global networks are critical. It's a key enabler for us, make no mistake, we spend a fortune on things like collaboration tools and things like video conferencing facilities and those types of things, because it really does change the way that we bring our talent together on our clients but it will never be a substitute for good quality of people that are working with clients."

Nine out of ten of the participants agreed that EmX technologies would result in KIS firms replacing certain roles and skills in the present and future.

Chart 3: Will some employees' roles/skills be replaced by EmX technologies?



Repeatable, middle-man and basic front office and support roles were considered replaceable, unless these roles were considered a training ground for junior staff members, as was quoted:

"I think the mundane repetitive things, whether somebody needs to constantly run a report or if someone needs to clean up content for example, can be automated if you can start developing quite interesting algorithms."

"The middle man. Anybody in administrative things that sits between people, because they will connect directly. There are going to be ways to take that intra-connect out."

Three participants mentioned that employees would need to gain new skills to remain commercially relevant and that the ones that chose not to would increasingly become irrelevant, quoting:

"It's about remaining commercially relevant to the industry you are working in and the situation of that industry. The knowledge industry is phenomenally good at reskilling itself and a lot of

these new innovations came from this industry so our people remain relevant in that space. But you always find people who don't want to change or who can't change and you have to make sure that your work force always remains appropriately skilled, could be the same people, it will be a combination of the same people and new people because hopefully you grow the business but also you will want new talent that bring in new things, and the trick for us leading this business is to figure out what the right balance is and when to do it and we don't always get it right. The knowledge industry is very cyclical and I think if you talk to the market in this space you find a lot of guys doing different things at different times, testing different types of models and diversifying across different areas of their industry to make sure that they stay relevant because if you don't and you catch a dip at the wrong time you can get into serious trouble."

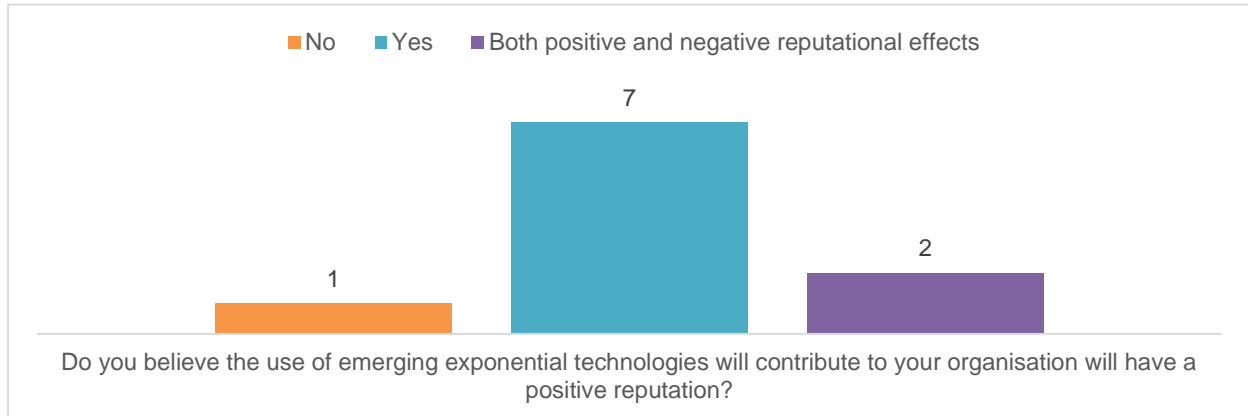
The roles that several participants cited as unlikely to be replaced by EmX technologies included roles that required sales skills, human judgment or those that impact the customer experience, as was quoted by one respondent:

"If I don't have the talent showing my clients how to use that product, showing them the value of the product, then I will lose my space in the market to other people because there are always competitors."

5.3.4. EmX technologies' contribution to a positive reputation for KIS firms

Seven of the ten participants agreed that using EmX technologies would contribute to a positive reputation for KIS firms. Two respondents perceived these technologies as having the potential to have both a positive or negative effect and one interviewee perceived these technologies would not contribute to a positive reputation to the KIS firm.

Chart 4: EmX technologies' effect on KIS firms having a positive reputation



A positive reputation for KIS firms would either be created directly (by being cutting-edge and innovative by demonstrating new technologies) or indirectly (through improving turn-around time), citing the following quotes:

"Technology does play a part, but it is about how you use it and leverage your own unique selling proposition to sort of distribute it."

"It has a positive reputation in our recruitment pipeline. If we are more on the cutting edge of technology than less. It has an impact on clients that expect us to be consultants with fresh ideas. They expect us to be sort of ahead of where they are. If we come in and we are very much more, they are much more innovative than us around technology, they are surprised. So it does change the reputation that way. Not in a profound way like we unethical or something like that. That sort of reputation but it's positioning more than reputation from where we are perceived more insightful, more cutting edge, more innovative. If we can match it with technology that supports that."

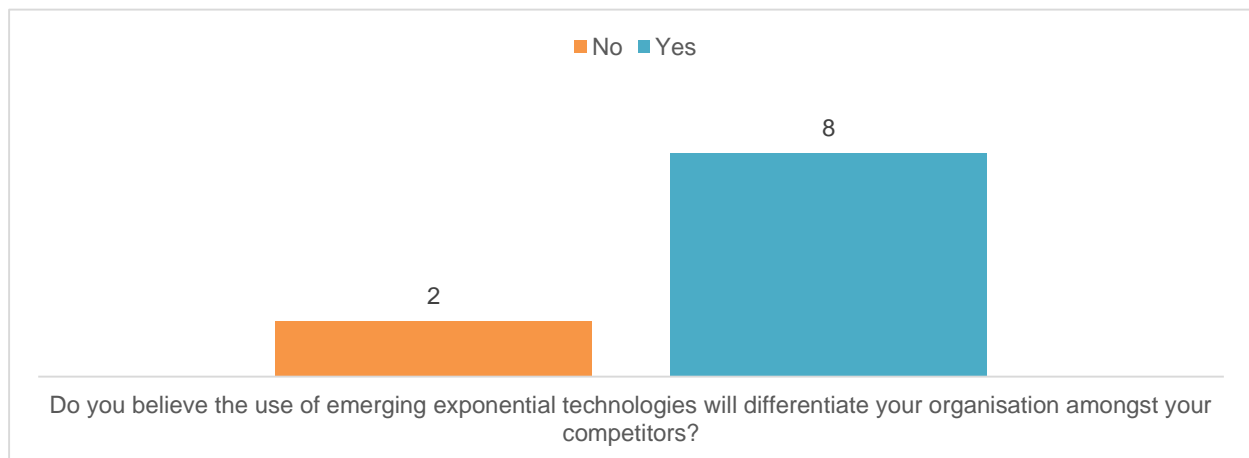
Two participants however warned that if there was too much use of EmX technologies, or if they are not structured and implemented effectively, then they could result in creating a negative reputation for KIS firms by quoting:

"It's a big double-edged sword. It can create nice differentiation, but if you neglect the internal complexities of that system and it's not supported properly and it's not structured properly and things break and they go down then the negative market impact could be huge."

5.3.5. EmX technologies' impact of differentiating KIS firms

Eight of the ten participants interviewed believed that EmX technologies would have a positive impact on differentiating their KIS firms.

Chart 5: EmX technologies' effect on differentiating KIS firms



The eight participants perceived it would differentiate KIS firms through speed, visuals, innovation and convenience, as mentioned in these quotes:

"Yes. It will and your ability to disrupt and innovate will differentiate itself. You need to do it faster than your competitors."

"I don't think it will differentiate us in the technology space. I think it is how you use it. The application of that tech. How could we use the internet of things to deliver a service to a client and this is really real by the way. We have an opportunity where we talking to some client about when by deploying a bunch of sensors into their processed based organisation, we are able to real time collect data that won't just, like in the old days from a consulting point of view what would you do. You go and do a site visit, you talk about your people. Create your dark room and put a solution together. Do all that but now using Internet of things. You can now corroborate all that with real data points from a chemical process or whatever the thing is because I am able to deploy sensors, run it for a month, collect real data and say did you know that, if you talking aerospace, this particular flight route is less utilised than this one. Because I have deployed things into your environment for a time that gives me more data points. Talking to people there is always bias. You can't argue with a cold hard data. The facts that come out

of the sensors. And in fact what we have seen, we have done some of these exercises around the world. You pick up something that everybody missed. Because I guess what you also looking for is what you know, you don't know. By deploying these sensors you might even find another type of issue that you were not even aware of. That's where the power of this stuff is."

However, two of the participants cited some challenges, in that it would only differentiate them with clients in some industries. It was indicated that larger clients of KIS firms may value reliability and predictability over innovation and that it can often be costly to lead with EmX technologies. Early adoption was considered to come with cost implications, which may be too costly for organisations to incur. This was demonstrated in the following quotes:

"The short answer is yes but not in all industries and not all clients, we tend to work a lot with a larger more established, more risk adverse clients and for them reliability and predictability is sometimes more important than EmX technology use or innovation and that's a bit of a general statement because it's not always true. I think the challenge for us in this industry is to be able to find the right use for the right client in the right situation, because not everybody looks and thinks about it the way we do and it's not going to be useful for everybody. You have to be clever about how you do it and that will be a differentiator in certain cases and being able to pick the right one that's going to be the next big wave of general use is critical for us because that's where we make the large amount of money."

"Not sure because sometimes being an early adopter comes with a lot of pain. I think you need to be current. I don't think you need to be first. I think you need to be current and maybe allow other people to sort of pay the school fees and then you can at least learn from that, so when you are adopting you know it worked for so and so. And being on the cutting edge of adoption is not always the best."

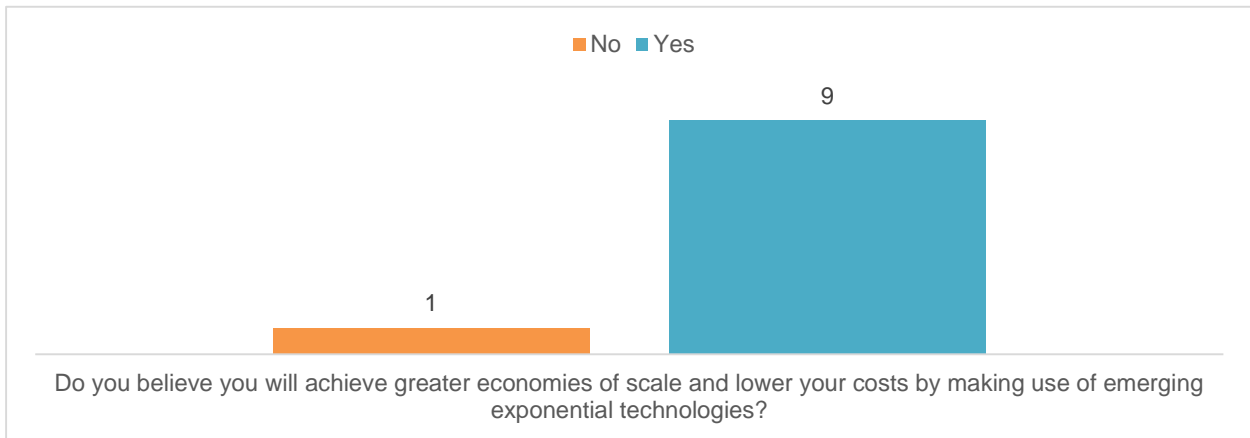
Another participant cited that EmX technologies needed to be employed and adopted correctly in order to have a differentiating effect, citing:

"Definitely if it's employed correctly. It's no use just putting the technology in and it's not adopted by the business and it's not utilised by the business and that is always the biggest challenge to convince a partner that's fifty years old, who still has a good fifteen years left of productive lifespan to change and that is the challenge that you have within a modern business."

5.3.6. EmX technologies' impact on creating economies of scale and lowering costs for KIS firms

Nine out of ten of the participants agreed that EmX technologies had a positive impact on creating economies of scale and lowering costs for KIS firms.

Chart 6: Emerging exponential technologies' effect on KIS firms achieving greater economies of scale and lowering costs



Many KIS firms identified that these technologies could lower the expense of deploying knowledgeable talent from one country to another, as evidenced by the participants responses that have been quoted below:

"Our old model is to put teams together and physically deploy them to a client site. We are starting to see more and more of this happening virtually, especially across the African continent. Given the price sensitivity in the market, the need for value, you will have to use technology to do your delivery differently and cost effectively, because you can't just move people around. Technology is an enhancing collaboration; it is also giving us ways to do things cheaper, which enhances the value proposition for clients. They get more value for less cost. I suspect technology is going to influence our framework more going forward than what it has up to now."

Other participants cited that they could lower costs by having less employees, having their employees use their time more productively, making use of advanced robotics to do research in remote areas such as drones, or even transforming their cost base by adopting new crowd-

sourcing and cloud-based technologies and drones. Some of the quotes cited include the following:

"Crowd-sourcing will, instead of having full time experts on the payroll you can breakdown your work into a variable cost model where you access specific expertise when you need it. That will be significantly cheaper than having a workforce of a thousand people all the time. There are thousands of female professionals that somewhere exit the workplace, but actually they still have about 50% productive time available that could be solved by crowd-sourcing. It would change our cost base significantly, our margins and our whole talent model but we haven't cracked the code yet. Then you could change the world, the whole business process of how we deliver certain solutions to our clients."

"Yes tons of costs, direct costs, actual cash costs of infrastructure and opportunity costs of our people, given we sell time, we sell expertise, anything you can save from the consultants day, could be time they spend advising a client. So we spend huge amounts of money, most of it not even accounted for in internal meetings and internal conversations trying to track down information. So who in the world has done a project like this in this market, in this sector, with an organisation like this? And we spend an awful lot of time on email, on calls, on face-to-face meetings, try and track down information on how we solve these problems. Well anything we can do to shorten that and take the basic and make therefore the meetings about much more creative, how do we design a solution for this client rather than find out whom else has done something like this. That would cut massive costs. So that would be a comparative difference if we could do that better than others. Again you go and make that unique and no one else can do it and that makes it harder."

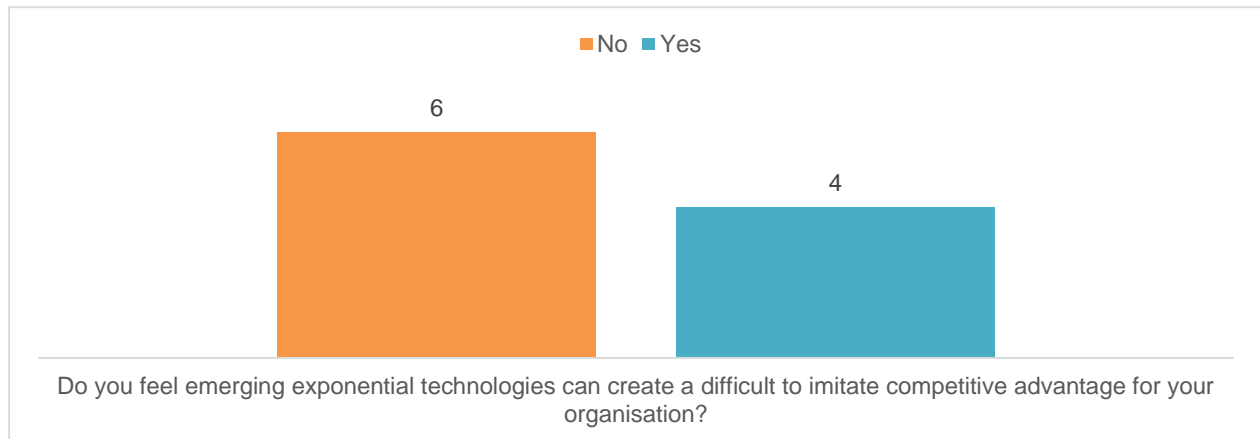
One participant cited that it was not the efficiencies that these technologies created that was interesting, but the effectiveness of the services KIS firms could provide using these technologies and that was the competitive advantage of these technologies, as explained in the response cited as follows:

"Efficiency does not excite me. Yes there is an element of that. It is much more about the effectiveness of the service that we can deliver. To me that is where the value and promise lies in the emerging tech, not the efficiency."

5.3.7. EmX technologies' impact on making KIS offerings less imitable

Only four out of the ten participants thought EmX technologies would make KIS offerings less imitable.

Chart 7: EmX technologies' effect on creating a difficult to imitate competitive advantage for KIS firms



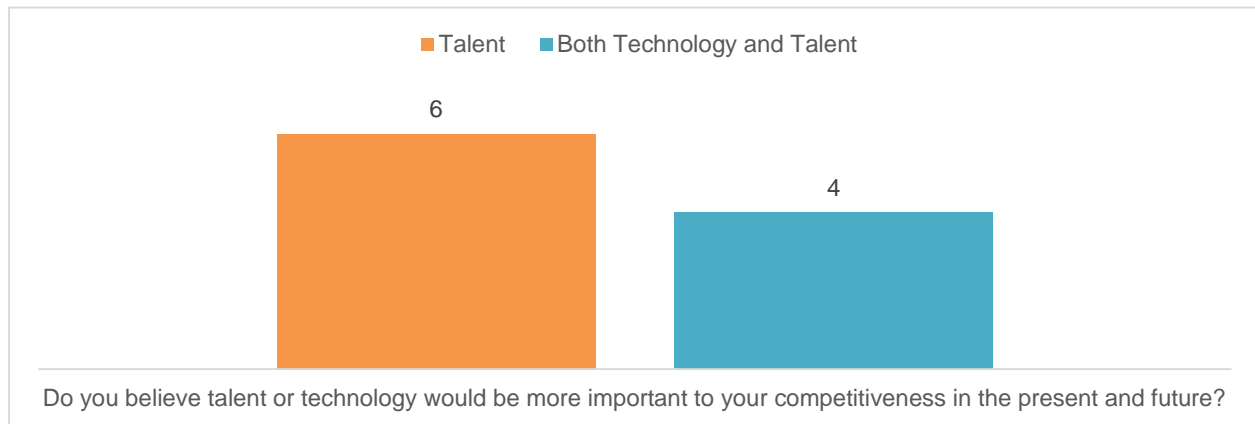
Many cited that these technologies could initially create a competitive advantage, but that competitors would catch up over time, with quotes such as:

"No. I suspect it is going to get easier. You can do anything. You can deliver a leading consulting type project by Googling what they do. I am sure you are going to get enough consulting IP to try to learn it yourself. It is the speed of change and disruption of your own business that is going to be what creates competitive advantage or uniqueness. I suspect anything we do in the knowledge intensive space is not going to protect your intellectual property (IP). You are not going to protect anybody imitating you. You will have to move quicker to the next big, best thing from what your competitors are."

5.3.8. The impact of EmX technologies on talent in creating a competitive advantage for KIS firms

When the participants asked whether talent or technology would be more important to their competitiveness in the present or future, all respondents viewed talent as important. However, four of the ten participants viewed both talent and technology as important in gaining and maintaining a competitive advantage.

Chart 8: Will talent or technology be more important to KIS firms' competitiveness in the present and future?



The participants strongly perceived that talent was needed to drive technology and to lead in a highly competitive market. Some of their responses were quoted:

"You require both to be working hand-in-hand to actually maintain your competitive position, if you lose one or the other, without the technology you can have the best talent in the world but it can't shine, with the technology but without the talent nobody knows what you are doing."

Many of the participants identified that EmX technologies may rather require higher skilled analytical, creative and strategic talent than they currently have. Rather than augmenting or replacing the roles and skills of their current talent, many quoted the need for a new form of data analysis and strategic insight skills or advocated the reskilling of existing skills, as was quoted:

"You probably do now need a subset of people which you didn't need before, who can come along into the business and make proper sense of the data and from a more topped-up strategic point of view, what the data is really saying to you and direct the company appropriately but I don't think you need every single person to do that."

"As much as I am a technologist at heart, I think talent still is by far the biggest factor in those two and becoming increasingly so. The challenge here it is quite specialised talent and so before years ago you could just get clever people and with relevant degrees and you would be able to utilise them and great value for clients. Now it is becoming quite specialised in specific talent that we are looking for. So in my role, you are looking for people that understand maths, technology, business and science those total sorts of four disciplines. Data scientists with all

these skills are a type of unicorn as you can't find them. That combination of skills set in one person is very rare and I think that is what is defining the new wave of talent. It's fine to have degrees but it's which degrees in which areas have you got experience in and special skills in.

"The technology skills are different. It's not programming skills or using Excel skills, it's more what probably a younger generation would consider. The technology itself is just in the background. It goes without saying that they using tablets, phones, apps, and a variety of things to access the information. It's much like we don't consider a skill to use a book as a skill requirement. We assume people know to use a book. We will end up assuming that they now use the technology to access content and what they do with the content and the ability to make connections between things, look through large amounts, be very skilled at search, know how to look through large amounts of data and find the bits they want, aggregate it, package it up differently, turn it into something new. It's those technology skills, the ability to do that will be one. The learning skill I think will be a huge one. The ability to work with large amounts of information that they did not create and make it their own and design a solution for the client. So design oriented skills would be more important than they have been in the past. The ability to communicate a lot better. You can't rely on the raw experience that you have. In the past a consultant with a lot of experience, could be a poor communicator and get by because they were the only person with that knowledge. So in the future it is likely that anyone that can learn fast will have that knowledge as long as you have knowledge in your network. So you have to be a better communicator, better at human relations, better at presenting information. Much better designing out how we take information, complicated information and use what bits and how do we simplify it so that it can be used for the client. Those are some of the skills that will be different, which are more creating skills and creative skills."

Participants identified that EmX technologies may in fact be critical to attracting talent, who desire to work quickly and efficiently for KIS firms, as quoted:

"Your use of technology will be a key ingredient to attract the top talent. Top talent are increasingly become tech snobs. Young consultants hate wasting time compiling PowerPoint decks. So they will look for employers who will give them the tools, and I would suspect 90% of those tools will be leveraging technology to do their work smarter and quicker."

5.4. CHAPTER SUMMARY

This chapter presented the results of the ten interviews conducted by this study, organised according to the research questions. Data from ten in depth interviews revealed senior executives in KIS firm's perceptions of the impact EmX technologies were having on talent in creating a competitive advantage for KIS firms. It explored this through considering the extent to which EmX technologies were changing KIS industries' business models, replacing talent partially or entirely in creating and delivering certain types of knowledge intensive work, contributing to a positive reputation for KIS firms, differentiating KIS firms, creating economies of scale and lower costs for KIS firms and contributing to making KIS offerings less imitable.

This chapter presents the key findings obtained from the ten in-depth interviews conducted. The following major findings emerged from this study:

- The factors most perceived to create a competitive advantage for KIS firms included speed and quality outputs to market, specialised knowledge and advice, relationship capital such as reputation, brand, network ownership and client relationships, customer understanding and co-creation and innovation and first-mover advantages.
- Nine out of ten of the participants agreed that EmX technologies play a role in KIS firms changing their business models; however all of them still emphasised the importance of talent in their businesses.
- All ten of the participants believed current roles and skills in their KIS firms were being augmented by EmX technologies.
- Nine out of ten believed that some roles or skills are or would be replaced by EmX technologies
- Six out of ten of the participants felt talent would still be more important to their competitiveness in the future, however the other four out of ten increasingly recognised that both talent and technology would be important to be competitive.
- Seven of the ten respondents agreed EmX technologies would create a positive reputation for KIS firms.
- Eight out of ten agreed EmX technologies would differentiate KIS firms.

- Nine of the ten interviewees agreed that EmX technologies would create economies of scale and lower costs for KIS firms.
- Only four out of ten believed that EmX technologies would make KIS services less imitable.

CHAPTER 6

DISCUSSION OF RESULTS

6.1. INTRODUCTION

The basic premise of this research study was to bridge the academic knowledge gap regarding the extent to which EmX technologies facilitate KIS firms gaining a competitive advantage over rivals by enabling them to differentiate themselves through increased innovation, a more positive reputation and efficiencies. The research aimed to determine the extent to which EmX technologies are changing the talent configurations of KIS industries. According to Bloomberg and Volpe (2008), qualitative research focuses on gaining a more profound understanding of a situation, therefore Chapter 6 analyses, interprets and synthesises the literature against the exploratory findings of this study to provide a robust understanding of the situation. The synthesis in this chapter focuses on answering the research questions using the findings of the data collected, how these findings relate to the literature and how the findings relate to the researcher's prior assumptions about the situation. This chapter is organised by the following analytic categories:

- The extent to which EmX technologies are changing KIS industries' business models (Secondary research question 1).
- The extent to which EmX technologies are replacing talent partially or entirely in creating and delivering certain types of KIS work (Secondary research question 2).
- The extent to which EmX technologies contribute to a positive reputation for KIS firms (Secondary research question 3).
- The extent to which EmX technologies are differentiating KIS firms (Secondary research question 4).
- The extent that EmX technologies create economies of scale and lower costs for KIS firms (Secondary research question 5).
- The extent to which EmX technologies contribute towards making KIS offerings less imitable (Secondary research question 6).

- The impact of EmX technologies on talent in creating a competitive advantage for KIS firms (Primary research question).

6.2. EMX TECHNOLOGIES EFFECT ON KIS FIRMS' BUSINESS MODELS

In Chapter 1, de Brentani *et al.*, (2010) indicated that innovative technologies were creating an advantage for firms by enabling them to alter their business models and improve their products, services and processes. Palo and Tähtinen (2011) mentioned that emerging exponential (EmX) technologies presented an important opportunity for KIS firms to adapt their business models, in order to gain a competitive advantage. The findings of the exploratory research confirmed that nine out of ten KIS firms were evolving their business models to a greater or lesser extent due to EmX technologies to remain competitive. Some respondents cited that their business model would remain “people dependent” and that investing in EmX technologies would simply act as an aid in making information more readily available, in larger quantities and more rapidly. It was also identified as an enabler of finding people who have the knowledge in their organisations.

Ciampi (2007) and da Costa and Antonio (2011) advocated in the literature that the ability of management consultancies to compete against rivals lay in their ability to reinvent and diversify their business models, offerings and strategies and that technology was often seen as an enabler of business innovation. It was mentioned that increasingly technology-driven innovation was perceived to differentiate leaders from followers in creating a competitive advantage (Ashurst *et al.*, 2012). It was identified in Chapter 1 that a business model is essentially a set of assumptions on how to manage an organisation, and needs to generate and expose value derived from the structure of its resources, competencies and practices (Weixing *et al.*, 2013). It was further mentioned that a business model is intended to connect an organisation to its stakeholders, including customers, employees, suppliers and others in order to effectively exploit opportunities and capture value (Guo *et al.*, 2013). However the operating conditions that all firms are required to operate in are constantly changing and need to be able to continuously remodel the value chain by disrupting their traditional business models, technologies, monetary and human assets in an effort to remain relevant to customers in an increasingly competitive world (Mascarenhas *et al.*, 2004). In such an environment a focus on dynamic capabilities seems to become increasingly relevant as dynamic capabilities are concerned with the firm's ability to configure, generate and

redesign internal and external competencies in order to respond to rapidly changing environments, and that the knowledge within a firm, which is generally “people dependent” in KIS firms, is considered the primary contributor to generating dynamic capabilities and value for the firm (Denford, 2013). Vermuelen (2013) further added that dynamic capabilities exist in the processes designed by the firms' position in the market, direction of its strategy, learning curves and technological opportunities. The exploratory findings tended to support the notion that KIS firms were adapting their business models to be able to remain competitive and compete against rivals, and that several of them have begun or are considering altering their business strategies, structures, processes and methodologies, the products and services they sell as well as how they deliver their products and services.

In Chapter 2, Mason (2010) indicated that the competitive advantage of consulting firms in the future would be based on their ability to anticipate emerging shifts and deliver services rapidly and more adaptably to clients. The exploratory findings tended to agree with the literature. Therefore in being able to anticipate emerging shifts and deliver services rapidly, the literature previously identified that all firms needed to operate faster and be able to continuously remodel the value chain by disrupting their traditional business models, technologies, monetary and human assets in an effort to remain relevant to customers in an increasingly competitive world (Mascarenhas et al., 2004). When reviewing how participants viewed the factors that contributed to them creating a competitive advantage for their firms, it became evident that KIS firms needed to be able to work quickly and get quality outputs to the market speedily as knowledge is often commoditised and staying ahead was frequently attributed to talent.

In Chapter 2, Segal-Horn and Dean (2008) and Kubr (2002), indicated that professional advice was progressively viewed as a minimum expectation by clients of management consulting firms and that these clients were now seeking more comprehensive and intuitive value-adding services. Castro *et al.*, (2011) and Krauss (2010) contributed that with management consulting becoming a progressively commoditised market, it had resulted in many of them having to consider integrating human and technological assets in order to compete. The exploratory research supported this view, indicating that KIS firms may be considering adopting EmX technologies simply to evolve to maintain a certain level of competitiveness in the knowledge-based economy rather than revolutionising their business models. A combination of technology and human interaction was identified as becoming more common in an effort to keep competitive (Makarem et al., 2009). However the findings of the study also supported the works of Tzortzaki (2014) who postulate that

knowledge is obtained *via* experience and technology is merely a business tool and not the sole means of sustainable success. He emphasised that organisations leverage knowledge from clusters of people who collaborate and not from systems of technology that interconnect, as talent was still considered critical by all ten participants. Therefore the views of Nikolova et al., (2009) regarding the very relationship between the client and the consultant being a source of innovation may remain relevant as it is suggested that knowledge is socially-constructed and frequently clients and consultants mutually identify a client's problem, particularly more complex problems, and mutually develop solutions to solve the problem (Nikolova et al., 2009). Alternatively, Kosta *et al.*, (2010) advised that the network will become the typical approach for business in order to connect to and access a wealth of information and that firms must make connections to develop as these interactions create sources of knowledge, ideas and information (Mu, Peng & Love, 2008). Huggins (2010) further stated that social network theory suggested that firms can influence their relationships to gain competitive advantage. One of the interviewed participants cited access to networks and communities in the sense that having ownership of a network that facilitates the community, acts as a strong competitive advantage for their organisation. Clients were reluctant to leave the community due to not being able to access and interact with the people within that community. This participant cited that the reason for this is that in order for a single client to change the KIS firm as a provider, the entire community would need to switch providers, as the value was in the interactions within the community that the KIS firm facilitated. However the extent of business model evolutions in KIS firms are multiple and are therefore discussed in further detail the ensuing sections.

6.2.1. Evolving business strategies to be more digital

Ashurst *et al.*, (2012), advocated that innovation was increasingly being connected to technology due to its ability to enable business transformations that result in increased cost savings and efficiencies. This was evident in the exploratory findings where many KIS firms were adapting their businesses to adopt digital strategies to take advantage of EmX technologies. It was evident that several KIS firms had identified the need to adopt new strategies that are more digitally inclined and incorporate EmX technologies in order to remain relevant to clients and provide them with the experience they demand. They did not necessarily mention the strategy as a means of cost saving and efficiency, but rather as a means of meeting the changing demands of their clients.

However, these strategies were not without risks, as one of the participants cited that there were online crime and fraud risks associated with using EmX technologies.

6.2.2. Evolving structures to be more efficient

In previous chapters of this research study, Schumann *et al.*, (2011) indicated that technology had altered the very nature of services in terms of how they were conceptualised and delivered and that technology could enable the creation of dynamic capabilities, in terms of how organisations solve problems. Dynamic capabilities were considered to consist of reconfiguring assets and resources to produce new configurations, leveraging systems across other business areas, learning to perform tasks more efficiently and effectively, searching for new opportunities or threats and/or sensing changing customer requirements (Ashurst *et al.*, 2012). It was evident from the exploratory research that KIS firms were structuring or considering structuring their businesses differently order to meet the increasing demands from clients for more profound expertise and were making use of EmX technologies to do this.

Baars and Kemper (2008) mentioned that business analytics had progressed to the degree that they offered organisations high-quality support to strategic planning and performance management in the form of decision support systems, expert systems, and data mining systems, which provided algorithms to implement analytical processes that predict and demystify complex patterns and relationships. It was evident from the exploratory findings that in order to gain a more profound understanding of their customers, some KIS firms were building dynamic capabilities using data analytics to track and understand clients' business requirements better and where they should focus their efforts.

In the literature reviewed in Chapter 2, it was mentioned that cloud technologies were disrupting traditional consulting business models, as now emerging competitors were able to crowd-source tasks from a large community of skilled workers that can be accessed *via* various analytics software tools and usage cases, which are made available in the same method as Amazon Web Services are, and these models are increasingly being adopted by services organisations (Graham-Hyde, 2014). The exploratory findings seemed to suggest that many KIS firms were not considerably advanced in terms of crowd-sourcing, only one respondent cited how crowd-sourcing could be used to transform their cost base. Most KIS firms were rather making more effective use of their existing talent base by making use of tools like cloud, collaboration and

storage tools, thereby enabling their talent to be more mobile and efficient. However, a participant indicated that new crowd-sourcing technologies could transform a KIS firm's cost base and way of doing business.

6.2.3. Evolving processes and methodologies to use EmX technologies

The disruptive technology of cloud computing was identified in the literature as a means of altering how information and communication technologies were accessed and used resulting in benefits such as cost efficiency, scalability, transferability and reduced software and hardware outmodedness (Ross & Blumenstein, 2013). The exploratory findings indicated that KIS firms were beginning to use EmX technologies such as cloud computing and that they needed to change their processes and methodologies using EmX technologies to better research, gather, index, store and disseminate knowledge in a more streamlined, rapid and efficient manner. They further advised that these technologies could be used to track down expertise in their business. However, in Chapter 2, Sung-Kwan and Trimi (2007) suggested that they found that management consultancies typically made use of internet technology, followed by data management technologies and then group technologies. AI technologies were the least used technologies by most management consultancies. From this perspective, EmX technologies appear to be the updated, more advanced, extension of previous internet, repository and collaboration technologies rather than the AI-specific technologies, identified in Chapter 2, used by KIS firms and not necessarily a complete shift in current processes and methodologies. However some organisations had begun to alter how they collected and processed data using EmX technologies. One participant indicated the use of geo-technologies to gather information in remote areas that were difficult for people to access. Another participant mentioned the use of algo-trading to process large amounts of information in real-time. Another participant mentioned the use of web-delivered, automated reporting that analysed trends on their behalf.

6.2.4. Evolving products and services

In the literature it was identified that artificial intelligence complements expert advisory systems to create "intelligent" methods and tools designed to assist in diagnosing, predicting, planning, interpreting, monitoring, repairing and to control problems (Gaizler, 2013). Nofal and Fouad (2014) contributed that these systems often contain knowledge from numerous different experts, enabling the knowledge in them to be more advanced and comprehensive than an individual

expert. Farajpour and Zerehnazi (2013) identified that these systems often act as consultants for their users. Puccio *et al.*, (2010) proposed that these web-based expert systems (WBES) are a series of web applications designed through the combination of expert system technology and web technology. Kumar and Mishra (2010) identified that with the emergence of cloud computing, the internet provided an effective method of delivering expert systems due to it providing easy-to-access, standardised web interfaces that enable cooperation among expert systems by various emerging protocols. Participants explained that due to people's mind-sets changing, they needed to change the actual design and type of products and services they deliver. Some alluded to the inclusion of EmX technologies such as predictive search functionality in their products. Others referred to the increased use of selling predictive technologies and analytics as a service to make internal audit more efficient and that data visualisation tools were being incorporated into their offerings. A participant in the exploratory research mentioned the use of web-based platforms being used for delivering Tax services to clients conducting business internationally and in Africa.

6.2.5. Evolving the way products and services are delivered

The literature in Chapter 2, mentioned that Forstenlechner *et al.*, (2007) perceived technological advances to alter the speed of knowledge advancement by providing a means of providing services to clients in a more agile, customisable and diverse way. These authors also emphasised that new technologies enabled a higher quality output from employees. In the exploratory research participants explained that they needed to change the way they delivered products and services due to EmX technologies as digital technologies were changing the customer experience. Some were even considering offering their clients self-service options. One participant mentioned using collaborative technologies to deliver a different customer experience. Several participants mentioned the need for more real-time interactions and interactivity with clients using analytics and digital interfaces.

In Chapter 1, Schumann *et al.*, (2012) identified technology-mediated interactive consulting services, which enable the provision of consulting services in a technology-mediated interaction between the provider and the client. Clients using such services could often be considered as co-creators of real-time value, which results in client determined and created benefits. In addition, technology-mediated interactive consulting services were generally considered to lower costs as services could be provided remotely, with human talent maintaining the systems that could be located in lower cost countries, thereby achieving greater capacity utilisation and higher rents from

technology assets and greater convenience and flexibility could be realised. Some KIS firms were considering offering technology-mediated services as they cited that they needed to change the way they delivered products and services due to EmX technologies; and some were considering offering their clients self-service options. Others mentioned that they were using collaborative technologies such as *Lync* to deliver a different customer experience. It is expected that more KIS firms are likely to adopt collaborative systems that enable real-time interactions with clients as the exploratory research found that some KIS firms identified the need for more real-time interactions and interactivity with clients using analytics and digital interfaces.

6.3. EMX TECHNOLOGIES EFFECT ON AUGMENTING OR REPLACING TALENT

Smith and Anderson (2014) identified that EmX technologies as likely to displace numerous blue and white collar workers from current jobs, and create entirely new types of jobs and industries. They indicated that the most highly educated employees would compete with machines rather than people. Brynjolfsson and McAfee (2014) mentioned that employees with conventional skills would be more replicable by EmX technologies and that these employees are likely to be replaced at an astonishing rate. Machine-learning algorithms were mentioned as just as competent, if not even more competent, at many activities that were previously only thought possible of humans (Kirkland, 2014, September). All ten participants interviewed from KIS firms agreed that EmX technologies would augment the existing roles and skills of talent in their organisations in the present and future. Many cited that low-end skills of a repetitive and administrative nature, such as data capturing, would be automated and reduced.

In the literature Farajpour and Zerehnazi (2013) recognised that computers were over-taking the skills of humans, they have been able to solve simple problems rapidly and efficiently, conduct complex calculations and compete against humans at games such as chess. They further advised that computers have been exceptionally good at solving simple problems, however increasingly expert systems were being developed, that make use of AI, to conduct more technical problem-solving that was traditionally done by human experts. Clearly, a combination of technology and human interaction were considered becoming more common in an effort to keep competitive (Makarem et al., 2009). The exploratory findings identified that many KIS firms may choose to still bring on junior-level skills with the long-term view of developing a future talent pipeline for KIS

firms. However, the exploratory findings agreed with the literature in the sense that conventional, simple jobs would be replaceable by identifying these jobs as being repeatable, middle-man and basic front office and support roles, unless these roles were considered a training ground for junior staff members.

In Chapter 2, Edvardsson and Oskarsson (2011) identified that knowledge management could enhance talent as it can be stored and accessed from a database. This contributed to efficiencies as the knowledge of an employee can be reused rather than recreated, communication costs are also reduced and it enables the organisation to be more efficient and able to take on more projects. This indicated that KIS firms consider technology as a means of supporting the development of talent by enabling them to access knowledge. It also indicated a desire to create efficiencies and economies of scale with regard to knowledge so that the organisation can be more efficient. The exploratory findings agreed by identifying that employees would be able to be more efficient, multi-task more and do their existing jobs differently by employing relevant technology.

In Chapter 2, it was mentioned that clients of KIS firms such as management consultancies would often expect the consultancy to be able to validate their ability to implement solutions both on time and with the availability of the relevant skills (Consoli & Elche, 2013 and Janicot & Mignon, 2012). KIS firms consequently focus a large amount of attention and resources on recruitment, talent management and retention practices as knowledge, skills and expertise are generally rooted in people (Nuria & Rodriguez, 2010 and Demartini & Paoloni, 2011). However Smith and Anderson (2014) identified that EmX technologies are likely to displace numerous blue and white collar workers from current jobs, and create entirely new types of jobs and industries. While the findings of the study supported that numerous roles would be augmented or replaced by EmX technologies, the study also identified that it would make existing talent more efficient, productive and enabled through these technologies, contributing to the speed and cost competitiveness for KIS firms. This was supported in Chapter 2 where it was indicated that technology could enable the creation of dynamic capabilities in terms of how organisations solve problems. Laihonon *et al.*, (2012) also expressed that KIS industries in particular could make use of technology-mediation, as they are independent of the time and place aspects of traditional services, which enable KIS firms to be more productive, in the sense that new methods of working and delivery are made possible through technology. Dynamic capabilities routed in technology are therefore potentially critical for KIS firms as Cepeda and Vera (2007) supplemented that dynamic

capabilities have been considered an important source of competitive advantage where it is argued that competitive advantage does not automatically result from resources or capabilities, but rather from a firm's ability to persistently generate new competencies. Dynamic capabilities are considered to involve the methods of developing new skills and practices that enable firms to compete and are concerned with altering operational capabilities that result in changes to a firm's offerings or invention practices.

Where firms compete using dynamic capabilities, it can only be logical that these firms may then also require dynamic skills. The exploratory findings identified that employees would need to obtain new skills to remain relevant and that those that chose not to would increasingly become irrelevant. In Chapter 2, Chelliah and Davis (2010) contended that clients that made use of management consulting firms generally expected more than only technical competence from a consultant. From a relational capital perspective, KIS firms have employees that build close, trusted relationships with clients that can and often do act as a competitive advantage, as clients tend to be more satisfied and loyal to firms where they have personal relationships with employees (Kattara & El-Said, 2013). According to Richter and Niewiem (2009) the relationship between the client and a consultant goes beyond a business context and that a degree of trust and loyalty is developed between the two parties that can act as a competitive advantage and garner repeat business. The findings of the exploratory studies tended to support the literature that indicated that the roles that were unlikely to be replaced by EmX technologies included roles that required sales skills, human judgment or those that impacted the customer experience. The findings of the study confirm that management consultants first act as knowledge advisors and integrators and then as standard setters and implementers (Canato & Giangreco, 2011). Clients make use of KIS firms due to the belief that these firms have superior knowledge to their own and that the knowledge they have can aid in solving the client's problem (Sheehan & Stabell, 2010). The knowledge of these employees is distributed through the relationships they have with clients (Castro et al., 2013). Therefore one of the largest benefits of using external consultants or knowledge workers seems to be their ability to enable clients to obtain information from diverse sources that are generally not accessible from internal skills and not conditioned by a clients' internal culture.

The relationship between the employee and the client was still viewed as important and unlikely to be replaced by EmX technologies. The literature further identified that co-creation enabled KIS firms to create new forms of value for clients, however it further required them to build new

infrastructure, functional and governance capabilities focussed on delivering co-created experiences and value with clients (Prahalad & Ramaswamy, 2004). It identified that co-creation played an increasingly prevalent role in KIS firms as clients frequently expect management consultants to invest time in learning their business and industry, provide a personalised experience, practical advice and skills transfer of competencies to their employees at no additional fee (Chelliah & Davis, 2010). Therefore the very nature of the relationship acts as a form of competitive advantage and innovation. The exploratory findings emphasised this as a distinctive area of competitive advantage that enabled KIS firms to create a unique competitive advantage.

6.4. EMX TECHNOLOGIES CONTRIBUTION TO A POSITIVE REPUTATION

In Chapter 2 it was stipulated that it was relevant for KIS firms to have a strong brand and reputation in order to have the ability to recruit and retain quality talent based on their perceived knowledge, skills and expertise (Demartini & Paoloni, 2011). The literature further identified that a strong and well-known brand could aid in facilitating the recruitment of highly skilled employees and that the brand is therefore important both internally and externally (Kärreman & Rylander, 2008). It was identified by Forstenlechner *et al.*, (2007) that technological advances had altered the speed of knowledge advancement by providing a means of disseminating services to clients in a more agile, customisable and diverse way. It has also enabled a higher quality output from employees which has enabled organisations to reflect a more positive image and garner a better reputation in the market. Therefore, EmX technologies were considered able to contribute to creating a competitive advantage by enabling services to be delivered more quickly and on demand to clients (Kattara & El-Said, 2013 & Héder, 2014). The results of the exploratory research tended to support this and indicated that the reputation and brand of KIS firms was considered an important factor to competitive advantage, in terms of attracting both talent and clients.

The exploratory research confirmed that there was the perception that using EmX technologies would directly (by being cutting-edge and innovative by demonstrating new technologies) or indirectly (through improving turn-around time) contributes to a positive reputation both amongst talent and clients. Seven of the ten participants agreed that using EmX technologies would contribute to a positive reputation for KIS firms. While these technologies were perceived as enabling the KIS firm to appear relevant and innovative, the exploratory findings suggested that

these technologies would only represent a portion of the reputation and that a KIS firm's ability to demonstrate their uniqueness using these technologies would still be important for KIS firms. The literature identified that having a strong reputation enabled KIS firms to attract better clients and attract better talent that aids in solving more complex problems, which aids in the creation of a competitive advantage (Sheehan & Stabell, 2010). Therefore having a strong and positive reputation was considered important to achieving competitiveness for KIS firms as it enables them to attract talent that further enables these firms to compete.

Two participants however warned that if there was too much use of EmX technologies, or if the use was not structured and implemented effectively, then it could result in creating a negative reputation for KIS firms.

6.5. EMX TECHNOLOGIES EFFECT ON DIFFERENTIATING KIS FIRMS

The literature identified that a firm is considered to have a competitive advantage when it has superiority over its competitors and that the main competitive tactics, include differentiation, cost leadership and focus (Ling and Gui, 2009). It was identified that when a firm is able to differentiate itself from competitors by offering distinctive benefits, it is able to command a premium price (Porter, 1985). Eight of the participants perceived a differentiated KIS firm through speed, visuals, innovation and convenience.

Castro et al., (2011) mentioned that one of the most effective methods to gaining a competitive advantage was *via* relentless technological innovations. However the findings of the exploratory research seemed to indicate that the technology would be imitable and that the differentiation is rather based on how the technology is applied to business needs. Two of the participants cited some disadvantages included that technological innovations would only differentiate between clients in some industries. It was indicated that larger clients of KIS firms may value reliability and predictability over innovation and that it can often be costly to lead with EmX technologies. Early adoption was considered to come with cost implications, which may be too costly for organisations to incur.

Another participant cited that EmX technologies needed to be employed and adopted correctly in order to have a differentiating effect. In Chapter 2, Costa *et al.*, (2013) emphasised that

management consultancies were under pressure from clients to become 'idea leaders' that change the paradigm and provide objective opinions, avenues for change, new knowledge and innovation. Semadeni and Anderson (2010) and Yitmen (2011) confirmed that innovation is regarded as a pertinent method of obtaining a competitive advantage and that it is considered to be a necessary precondition for organisational triumph and endurance. Firms operating with diverse knowledge can be perceived as having superior knowledge or market leaders by introducing innovative offerings. Ashurst *et al.*, (2012) contributed that information technology is often cited as a facilitator of corporate innovation, increased efficiencies and lowering of costs. Therefore if technology is considered an enabler of innovation, efficiencies and cost competitiveness, and that these are considered a means of competitive advantage and innovation, then it is plausible that technology plays a role in creating modern day competitive advantage. Six of the participants interviewed confirmed the need to be 'idea leaders' during the exploratory research citing innovation and first-mover advantages as important to differentiating themselves and providing a competitive advantage for KIS firms. It was indicated that technology enabled some of them to gain a lead in the market in the past, but over time their competitors began imitating their innovations and that in order to maintain a competitor advantage, they had to continually innovate. The timing of innovations and market readiness was also cited in the sense that the market needs to be ready to adopt an innovation, as introducing new innovations can be costly if the KIS firm makes a mistake.

6.6. EMX TECHNOLOGIES' EFFECT ON CREATING ECONOMIES OF SCALE AND LOWER COSTS

In Chapter 2 it was identified that many organisations made use of technology-mediated or self-service technologies to obtain services at a lower cost than those provided directly by employees. These types of technology-mediated services made use of technology interfaces that enable clients to obtain the benefits of a service, without an employee physically providing them a service and without them needing to be in close proximity of the employee or service location (Schumann *et al.*, 2011). Prasad and Prasad (2013) recognised that due to the need to operate faster, many firms began incorporating technology into activities not only to differentiate them and gain cost efficiencies, but simply to compete. This literature emphasised that the knowledge economy is characterised by a dependence on intangible and intellectual competencies.

These competencies originally appeared to be based on inputs of knowledge workers; however these competencies have been more easily created, applied and circulated through the incorporation of technology. Therefore it appears that technology has acted a cost effective diffuser of knowledge into different products and services. The exploratory research discovered that EmX technologies were perceived to have a positive impact on creating economies of scale and lowering costs for KIS firms. Nine of the ten participants at KIS firms identified that these technologies could lower the expense of deploying knowledgeable talent from one country to another, could lower costs through having less employees or having their employees use their time more productively, or even transforming their cost base by adopting new crowd-sourcing technologies and drones. One of the quotes indicated that these technologies were particularly useful when working across other countries as it enabled teams to work virtually rather than be deployed to another country. EmX technologies were being used to create cost efficiencies and greater value for the KIS firms due to lowering the costs of deploying knowledgeable talent from one country to another. In the literature, Richter and Niewiem (2009), advised that management consultants tried to achieve economies of scale with regards to knowledge by acquiring, applying and reapplying intellectual property across numerous different clients and industries. The exploratory findings validated this as a key area of competitive advantage for KIS firms and that the ability to scale knowledge and advice via talent or codifying the knowledge of talent to be replicable, to gain a deeper depth and breadth of knowledge.

In Chapter 2, Freer *et al.*, (2012) advocated that innovation was increasingly being linked to technology due to its ability to enable business transformations that resulted in increased cost savings and efficiencies and that this created a competitive advantage through business model innovations. This proved valid as participants cited that they could lower costs through having less employees, having their employees use their time more productively, making use of advanced robotics to do research in remote areas such as drones, or even transforming their cost base by adopting new crowd-sourcing and cloud-based technologies and drones. Ju and Shen (2010) mentioned that alternative business models were evolving such as facilitated networks and expert crowd-sourced solutions that require smaller project teams and more freelance consultants. With the entrance of crowd-sourcing technologies, clients and management consulting firms were now able to post problems and challenges to 'knowledge service' platforms composed of creative and collaborative problem solvers and a team can form from the network to bid for and provide solutions to the problem. One participant from the exploratory research tended to agree while another participant cited that it was not the efficiencies that these technologies created that was

interesting, but rather the effectiveness of the services KIS firms could provide using these technologies and that was the competitive advantage of these technologies.

6.7. EMX TECHNOLOGIES EFFECT ON MAKING KIS OFFERINGS LESS IMITABLE

Dumitrascu and Dumitrascu (2013) denoted that a competitive advantage in the modern business landscape was usually short-lived, as many new business models have and are overcoming the traditional barriers to entry such as time, financing, space, distance and location.

The exploratory research found that EmX technologies may not necessarily provide KIS firms with the ability to have less imitable offerings. Many respondents explained that these technologies could initially create a competitive advantage, but that competitors would catch up over time and it would be imperative to keep innovating to maintain an advantage. Only four out of the ten participants thought EmX technologies would make KIS offerings less imitable. Ling and Gui (2009) advised that competitive advantage resulted from a firm exploiting opportunities and minimising threats from its external environment and in order for a service to be competitive it must be relevant to its market and difficult for competitors to imitate. However, they also identified that KIS firms frequently imitate their competitors in order to ensure their offerings are relevant to the market and to maintain competitive parity. It is important to note that the choice regarding whether a competitor could or should imitate an innovation pioneer, is based on an organisation's resources and capabilities and that offerings can only be imitated if competitors have similar resources and competencies (Semadeni & Anderson, 2010). Therefore KIS firms could either begin changing their resources and capabilities to be more diverse and more difficult to imitate by having different skills and abilities or they need to innovate and operate more rapidly than their competitors, and technology-based services can contribute to creating a competitive advantage through enabling services to be delivered more quickly and on demand to clients (Kattara & El-Said, 2013 & Héder, 2014).

6.8. EMX TECHNOLOGIES' EFFECT ON TALENT IN CREATING A COMPETITIVE ADVANTAGE

The literature introduced in Chapter 1 indicated that KIS firms have a substantial dependence on expert knowledge, concentrated and inventive use of information technology and an emphasis on the provision of codified and tacit knowledge to solve problems for clients (Probert et al., 2013). It indicated that traditionally these made KIS firms highly dependent on employees (Marquart, 2006 and Demartini & Paoloni, 2011). In Chapter 2, Holtshouse (2010) identified that the ability for KIS organisations to grow and compete requires access to knowledge and the skills of knowledge workers.

These findings were largely supported by Tzortzaki (2014) who postulated that knowledge is obtained *via* experience and technology is merely a business tool and not the sole means of sustainable success. He emphasised that organisations leverage knowledge from clusters of people who collaborate and not systems of technology that interconnect. The exploratory research finding was that talent would still remain the most important for the competitiveness of KIS firms, however EmX technologies were recognised by four of the participants as critical and that talent would be required to drive technology in order to gain a competitive advantage in a highly competitive market.

In Chapter 2, Holtshouse (2010) advised that collaboration and technical skills in particular would be important in the future of KIS firms. Brynjolfsson and McAfee (2014) further postulated that highly educated employees with special skills would be even more relevant than in the past, and be able to use technologies to generate value in entirely novel ways. Many of the participants in the study identified that EmX technologies are likely to require higher skilled analytical, creative and strategic talent than they currently have. Rather than augmenting or replacing the roles and skills of their current talent, many respondents quoted the need for a new form of data analysis and strategic insight skills or the reskilling of existing skills. Bose (2009) contributed that advanced analytics were not always simple models or technology for users to interpret or use, as specialist computer scientists or business managers need to be trained to be able to understand and utilise the systems. In addition, the technologies in this area of specialisation evolve rapidly and frequently which can result in technologies being costly and potentially unstable. Finally the outputs from advanced analytics need to be simple, concise, readable and useable, which can

often be challenging when managing large data sets and therefore support tools such as dashboards, reports and data visualisation systems were required.

KIS firms focus a large amount of attention and resources on recruitment, talent management and retention practices as knowledge, skills and expertise are generally rooted in people (Nuria & Rodriguez, 2010 and Demartini & Paoloni, 2011). The dichotomy between talent and technology was considered of interest as KIS firms generally base their ability to compete on the talent they recruit and train. Amusingly the dichotomy was not evident in terms of EmX technologies completely replacing talent, but rather in attracting talent to KIS firms. Participants identified that EmX technologies may in fact be critical to attracting human talent who seek to work quickly and efficiently for KIS firms.

6.9. CONCLUSION

This chapter analysed, synthesised and interpreted the findings of this research study in relation to the theory previously identified in Chapter 2 and in relation to the research questions posed in Chapter 3. The extent to which EmX technologies change KIS industries' business models; replace talent partially or entirely in creating and delivering certain types of KIS work; contribute to a positive reputation for KIS firms; are differentiating KIS firms; create economies of scale and lower costs for KIS firms; contribute towards making KIS offerings less imitable and impact talent in creating a competitive advantage by using EmX technologies for KIS firms were all analysed, explored and discussed. Chapter 7 concludes the overall findings of the study and makes mention of recommendations, avenues for future research and management implications.

CHAPTER 7

CONCLUSION

7.1. INTRODUCTION

This chapter identifies the main findings of the research, relating the results together into a cohesive set of findings. It also includes recommendations for KIS firms and for those seeking to conduct further research based on the findings; it provides recommendations for future research avenues and managerial implications.

7.2. OVERALL FINDINGS OF THE STUDY

The purpose of the research was to answer the extent to which EmX technologies changes the talent configurations of KIS industries. This considered the extent of which KIS firms were considering changing their “people-dependent” business models. The research further aimed to determine whether KIS industries believed they could gain a competitive advantage by introducing EmX technologies into their business models to replace talent partially or entirely for certain types of KIS work, to contribute to a positive reputation of KIS firms, to differentiate KIS firms, to create economies of scale and lower costs for KIS firms and to contribute to making KIS firms less imitable. The outcomes regarding these areas of inference are distilled in the ensuing sections.

7.2.1. EmX technologies impact on changing KIS firms’ business models

Clients of KIS firms expect them to deliver more comprehensive and intuitive services. The challenge to achieving a competitive advantage is that the knowledge and offerings of KIS firms frequently become commoditised. KIS firms may need to consider adopting EmX technologies simply to evolve to maintain a certain level of competitiveness in the knowledge-based economy rather than revolutionising their business models. It is unlikely that KIS firms would move away from being talent-dependent; however they will need to be able to work quickly and attain quality outputs for the markets speedily in order to remain ahead of their competitors. In order to remain ahead of competitors KIS firms are beginning to evolve their business strategies, structures,

processes and methodologies, the products and services they sell as well as how they deliver their products and services to involve EmX technologies.

Some KIS firms are building dynamic capabilities using data analytics to track and better understand clients' business requirements. KIS firms are also beginning to use EmX technologies such as cloud computing in order to alter their processes and methodologies to better research, gather, index, store, disseminate knowledge and track down expertise in their businesses in a more streamlined, rapid and efficient manner. KIS firms are beginning to incorporate EmX technologies into their products and services that are predictive in nature and *via* web-based platforms to make their services more agile, customisable and diverse. To improve customer experience and to lower costs, some KIS firms are considering delivering self-service offerings to clients and enabling more real-time digital and analytical interactions to co-create value with clients through using EmX technologies.

7.2.2. EmX technologies impact on replacing talent partially or entirely

It is considered likely that EmX technologies will augment the existing roles and skills of talent in KIS firms in the present and future. Low-end skills of a repetitive and administrative nature, such as data capturing, middle-man, administrative and general support is likely to be automated and reduced. Talent is still considered critical to KIS firms' business models, however EmX technologies will increasingly be introduced to support and enhance talent within KIS firms in order to compete in this highly competitive industry. However a balance in hiring junior employees may be required to ensure the development of future talent pipelines within KIS firms. KIS firms may therefore consider changing their talent model to focus on the retention of strategic skills.

It is believed that EmX technologies would enable talent to become more efficient, productive and able to effectively multi-task. Talent will likely need to reskill themselves to remain relevant as clients will expect a certain level of competence from talent at these firms. The relationship between the customer-facing and sales employees and the clients of KIS firms will remain critical. Increasingly this relationship will be a form of co-creation and innovation in order to bring value to clients of KIS firms. Furthermore, the succinct use of EmX technologies that support and facilitate these interactions will be important.

7.2.3. EmX technologies contribution to a positive reputation for KIS firms

Having a strong and positive reputation and brand are considered important to achieving a competitive advantage for KIS firms. EmX technologies were perceived to either directly (by being cutting-edge and innovative by demonstrating new technologies) or indirectly (through improving turn-around time) contribute to a positive reputation both amongst talent and clients. It was perceived that EmX technologies enable KIS firms to appear relevant and innovative thereby qualifying them to attract talent and clients to their organisations. However caution is required when determining how much and how EmX technologies are structured and implemented effectively. This is to ensure the effectiveness of these technologies, because poorly implemented or ineffective use could result in negative rather than positive reputational effects.

7.2.4. EmX technologies impact on differentiating KIS firms

Differentiation through EmX technologies in the form of speed, visuals, innovation and convenience could act as a competitive advantage for KIS firms, enabling them to charge a premium price for their offerings. However maintaining this differentiation would be the challenge and KIS firms would need to consider relentless technological innovations in order to maintain their lead. EmX technologies would also need to be adopted and employed correctly by employees and also be relevant to their client base in order to have a differentiating effect.

'Idea leadership' was also considered to be a differentiator for KIS firms. EmX technologies were considered to be an enabler of innovation, efficiencies and cost competitiveness. However, to maintain this lead it is important for KIS firms to continually innovate as their competitors are likely to imitate them. The timing of innovations and market readiness are pertinent considerations in this respect as introducing new innovations can be costly if the KIS firm makes a mistake.

7.2.5. EmX technologies impact on creating economies of scale and lower costs

Many KIS firms are considering making use of EmX technologies to operate faster, differentiate themselves and gain cost efficiencies, simply to compete. EmX technologies could lower the expense of deploying knowledgeable talent from one country to another, could lower costs by employing less staff, having employees use their time more productively or even transforming their cost base by adopting new crowd-sourcing technologies and drones. By incorporating crowd-source based technologies and drones, KIS firms could have smaller teams and make use of

freelance consultants and data collection technologies to lower costs. EmX technologies could also enable KIS firms to scale knowledge and advice by codifying the knowledge to be replicable across different countries and clients.

7.2.6. EmX technologies contribute towards making KIS offerings less imitable

EmX technologies may not necessarily provide KIS firms with the ability to have less imitable offerings. These technologies could initially create a competitive advantage, but competitors would catch up over time and it would be vital to keep innovating to maintain an advantage. In order to limit imitation by competitors, KIS firms would need to begin changing their resources and capabilities to be more diverse and more difficult to imitate by having different skills and abilities or they would need to innovate and operate faster than their competitors.

7.2.7. EmX technologies impact on talent in creating a competitive advantage for KIS firms

Talent will still remain the most important factor in the competitiveness of KIS firms, however EmX technologies are increasingly being recognised as critical to competing in the highly competitive market in which the KIS firms operate. Talent would still be considered the drivers of these technologies. The inclusion of EmX technologies into KIS firms' business models will result in higher skilled analytical, creative and strategic talent that is more relevant and important than they are currently. Many KIS firms believe a new form of data analysis and strategic insight skills or the reskilling of existing skills would be required within their organisations. The dichotomy does therefore consider how EmX technologies will replace talent entirely, but rather how EmX technologies will attract talent who seek to work quickly and efficiently to KIS firms.

In conclusion, EmX technologies are likely to evolve KIS firms' business models to make greater use of these technologies to adopt digital strategies that better enable their talent; enhance their products and services and delivery, as well as alter their methodologies, processes and structures to gain an initial competitive advantage. KIS firms will obtain reputational benefits of being 'idea leaders' which will aid in differentiating them in the market and will be able to better scale their businesses and achieve cost efficiencies. However, these firms will need to keep innovating as their competitors will quickly imitate any successful implementations.

7.3. RECOMMENDATIONS

The researcher offers recommendations based on the findings, analysis, and conclusions of this study. The recommendations that follow are for KIS firms:

7.3.1. Talent considerations

EmX technologies, if adopted and implemented correctly, have the potential to provide KIS firms with a positive reputation and brand as they will appear innovative and relevant. KIS firms should therefore consider adopting EmX technologies not only to create a competitive advantage amongst clients but to attract talent to their firms that seek to work quickly and more efficiently.

KIS firms should start understanding where they could use EmX technologies to optimise certain processes and reduce the need for certain employee roles within their organisations that are repetitive, administrative, middle-man and low value-adding and ascertain where these employees could be reskilled or reallocated.

KIS firms should begin reviewing their future talent and skills requirements to enable them to effectively adopt EmX technologies. Their hiring practices will need to adapt to ensure they have the right amounts of analytical, creative and strategic skills to effectively compete using EmX technologies. In addition, KIS firms should begin reviewing their current skills within the organisation to determine where they need to upskill and reskill certain employees.

KIS firms should measure and compare the cost savings and benefits that could be derived from using EmX technologies instead of deploying employees when working across borders. Many of the KIS firms indicated that this would enable KIS firms to maintain smaller teams and make better use of freelance consultants, which would lower the cost base.

The KIS firm that manages to create an effective crowd-sourcing model to gain access to skills could potentially transform their cost base and enable them to scale talent needs more agilely.

7.3.2. Business model considerations

EmX technologies are already being used in several KIS firms to evolve their business models to a greater or lesser extent. KIS firms should adhere to this trend, and analyse possible entry points

in terms of imitating their competitors' successes, as it is costly to be an innovation leader in all aspects of their firms.

EmX technologies may enable more efficient, streamlined and faster processes and methodologies within KIS firms and aid them in better researching, gathering, indexing, storing, disseminating knowledge and tracking down expertise. Therefore KIS firms that seek to be able to deliver faster and better outputs to their clients should seek a more profound understanding of how and which EmX technologies could benefit and enable their organisations to operate more effectively, as this is likely to enable better customer service and cost efficiencies.

KIS firms are expected to be 'idea leaders' therefore it is important that they make use of EmX technologies in their products and services, as well as how they are delivered, in the very least to be perceived as being leaders. Use of self-service technologies and web-based systems were already being adopted by some KIS firms in order to offer real-time co-created experiences with clients. KIS firms that do not take heed of these changes may find themselves at a competitive disadvantage as they may be perceived as followers rather than leaders.

EmX technologies should be considered as a means of differentiating KIS firms, however this requires a relentless commitment to updating and developing these technologies as competitors frequently catch-up and imitate each other. By differentiating themselves, KIS firms would be able to charge a premium price or validate the current price of their services.

7.4. FUTURE RESEARCH AND MANAGERIAL IMPLICATIONS

Based on the limitations of the current study and to correct for researchers' bias, a larger study or quantitative study to prove the accuracy of the findings of this study should be conducted to assess the extent to which the same or similar findings would be revealed.

The researcher recommends further studies be conducted to develop a greater body of knowledge on how KIS firms can create a less imitable competitive advantage in the market by considering the following research avenues:

- The type of EmX technologies that KIS firms should adopt to reap a less imitable position in the market.

- To what extent membership to a network or community could reduce the desire of a KIS firm's client to switch providers. This is relevant as collaborative EmX technologies could enable a community to be cultivated and create barriers to exit from a KIS firm as leaving the community would create a loss of access to the knowledge and talent within the community.
- The risks associated with EmX technologies, such as online crime and fraud, and how these could be overcome by KIS firms.
- The extent to which crowd-sourcing technologies could practically transform KIS firms' cost bases and ways of conducting business.
- The relationship between comparative advantage and the adoption of EmX technologies

REFERENCES

- Abraham, S., & Allio, R. J. (2006). The troubled strategic-business-advice industry: why it's failing decision makers. *Strategy & Leadership*, 34(3), 4-13.
- Anand, N., Gardner, H. K., & Morris, T. (2007). Knowledge-based innovation: emergence and embedding of new practice areas in management consulting firms. *Academy of Management Journal*, 50(2), 406-428.
- Ashurst, C., Freer, A., Ekdahl, J., & Gibbons, C. (2012). Exploring IT-enabled innovation: A new paradigm? *International Journal of Information Management*, 32(4), 326.
- Baars, H., & Kemper, H. G. (2008). Management support with structured and unstructured data—an integrated business intelligence framework. *Information Systems Management*, 25(2), 132-148.
- Berkowitz, R. (2014). Drones and the question of "the human". *Ethics & International Affairs*, 28(2), 159-169.
- Bettiol, M., Maria, E. D., & Grandinetti, R. (2012). Codification and creativity: Knowledge management strategies in KIBS. *Journal of Knowledge Management*, 16(4), 550-562.
- Bloomberg, L. D., & Volpe, M. (2008). *Completing your qualitative dissertation: A roadmap from beginning to end*. Thousand Oaks: Sage Publications, Inc.
- Bloor, M., & Wood, F. (2006). *Keywords in Qualitative Methods*. London: Sage Publications Ltd
- Bogue, R. (2014). The role of artificial intelligence in robotics. *The Industrial Robot*, 41(2), 119-123.
- Bose, R. (2009). Advanced analytics: Opportunities and challenges. *Industrial Management + Data Systems*, 109(2), 155-172.
- Brézillon, P. (2011). From expert systems to context-based intelligent assistant systems: A testimony. *The Knowledge Engineering Review*, 26(1), 19-24.

- Brynjolfsson, E., & McAfee, A. (2014). *The second machine age: work, progress, and prosperity in a time of brilliant technologies*. New York: WW Norton & Company.
- Cabrera Trujillo, L. Y. (2014). Visioneering and the role of active engagement and assessment. *Nanoethics*, 8(2), 201-206.
- Canato, A., & Giangreco, A. (2011). Gurus or wizards? A review of the role of management consultants. *European Management Review*, 8(4), 231.
- Castro, G. M., Delgado-Verde, M., Amores-Salvadó, J., & Navas-López, J. E. (2013). Linking human, technological, and relational assets to technological innovation: Exploring a new approach. *Knowledge Management Research & Practice*, 11(2), 123-132.
- Castro, G.M., López-Sáez, P., & Delgado-Verde, M. (2011). Towards a knowledge-based view of firm innovation. theory and exploratory research. *Journal of Knowledge Management*, 15(6), 871-874.
- Celli, M. 2013, "Determinants of Economies of Scale in Large Businesses--A Survey on UE Listed Firms", *American Journal of Industrial and Business Management*, vol. 3, no. 3, pp. 255-261.
- Cepeda, G., & Vera, D. (2007). Dynamic capabilities and operational capabilities: A knowledge management perspective. *Journal of Business Research*, 60(5), 426-437.
- Chelliah, J., & Davis, D. (2011). What clients really want from management consultants: Evidence from Australia. *Journal of International Management Studies*, 6(1), 1-10.
- Chesbrough, H. (2007). Business model innovation: It's not just about technology anymore. *Strategy & Leadership*, 35(6), 12-17. doi:<http://dx.doi.org/10.1108/10878570710833714>
- Christensen, C. M., Wang, D., & van Bever, D. (2013, 10). Consulting on the cusp of disruption. *Harvard Business Review*, 91, 106-114.
- Ciampi, F. (2007). Management consulting and knowledge creation: Emerging issues in management, 1. *Symphonia*, University of Milan. Electronic copy available at: <http://ssrn.com/abstract=2230296>

- Conley, C., & Tosti-Kharas, J. (2014). Crowd-sourcing content analysis for managerial research. *Management Decision*, 52(4), 2-2.
- Consoli, D., & Elche, D. (2013). The evolving knowledge base of professional service sectors. *Journal of Evolutionary Economics*, 23(2), 477-501. doi:<http://dx.doi.org/10.1007/s00191-012-0277-1>
- Costa, R. L., Martinho, F., Miguel, I., & Barreiros, L. (2013). The "fashionable knowledge" of management consulting. *Journal of Management and Sustainability*, 3(3), 180-188.
- Crăciun, C. (2013). Quality of business consulting services. *International Journal of Academic Research in Economics and Management Sciences*, 2(1), 53-58.
- Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage.
- da Costa, R. L., & António, N. S. (2011). The "outsourcing" as an instrument of competitiveness in the business consulting industry. *Journal of Management Research*, 3(1), 1-13.
- de Brentani, U., Kleinschmidt, E. J., & Salomo, S. (2010). Success in global new product development: Impact of strategy and the behavioral environment of the firm. *The Journal of Product Innovation Management*, 27(2), 143.
- Deloitte. (2013, October). Exponential technologies to exponential innovation weekend reading. *Wall Street Journal*. Retrieved from:
<http://deloitte.wsj.com/riskandcompliance/2013/10/11/exponential-technologies-to-exponential-innovation-weekend-reading/>
- Deloitte. (2014). Tech Trends 2014: Inspiring Disruption. Retrieved from:
http://www.deloitte.com/assets/Dcom-Luxembourg/Local%20Assets/Documents/Whitepapers/2014/dtt_en_wp_techtrends_10022014.pdf
- Demartini, P., & Paoloni, P. (2011). Assessing human capital in knowledge intensive business services. *Measuring Business Excellence*, 15(4), 16-26.

- Denford, J. S. (2013). Building knowledge: Developing a knowledge-based dynamic capabilities typology. *Journal of Knowledge Management*, 17(2), 175-194.
- Desmarchelier, B., Djellal, F., & Gallouj, F. (2013). Knowledge intensive business services and long term growth. *Structural Change and Economic Dynamics*, 25, 188-205.
- Douglas, A., Douglas, J., & Davies, J. (2010). Differentiation for competitive advantage in a small family business. *Journal of Small Business and Enterprise Development*, 17(3), 371-386.
- Duflo, E., Greenstone, M., Pande, R., & Ryan, N. (2013). What does reputation buy? differentiation in a market for third-party auditors. *The American Economic Review*, 103(3), 314-319.
- Dumitrascu. V., & Dumitrascu. R.A. (2014). Competitive Organizations Knowledge Based on Economy. *Procedia – Social and Behavioural Sciences*, 116 (2014), 3432 -3436.
- Edenius, M., & Styhre, A. (2009). The social embedding of management control in knowledge-intensive firms. *Journal of HRCA : Human Resource Costing & Accounting*, 13(1), 9-28.
- Edvardsson, I. R., & Gudmundur, K. O. (2011). Knowledge management and value creation in service firms. *Measuring Business Excellence*, 15(4), 7-15.
- Esterhuizen, D., Schutte, C. S. L, & du Toit, A. S. A (2011). Enhancing innovation capability maturity through knowledge conversion. *Acta Commercii*, (11), 211-231. Retrieved from <http://0-reference.sabinet.co.za.innopac.up.ac.za/document/EJC14646>
- Evans, D. M., & Smith, A. C. T. (2004). Augmenting the value chain: identifying competitive advantage via the internet. *Journal of Information Technology Theory and Application*, 6(1):61.
- Farajpour, S., & Zerehnazi, M. (2013). Defining the place of expert systems in the operation of organizations. *Kuwait Chapter of the Arabian Journal of Business and Management Review*, 2(5), 122-134.
- Fischer, A. (2011). Recognizing opportunities: Initiating service innovation in PSFs. *Journal of Knowledge Management*, 15(6), 915-927.

- Flick, U. (2014). *The Sage handbook of qualitative data analysis*. London: Sage Publications Ltd
- Forstenlechner, I., Lettice, F., Bourne, M., & Webb, C. (2007). Turning knowledge into value in professional service firms. *Performance Measurement and Metrics*, 8(3), 146-156.
- Funes, M., & Johnson, N. (1998). *Honing your knowledge skills*. Oxford: Butterworth Heinemann.
- Furusten, S. (2013). Commercialized professionalism on the field of management consulting. *Journal of Organizational Change Management*, 26(2), 265-285.
doi:<http://dx.doi.org/10.1108/09534811311328344>
- Gajzler, M. (2013). The Idea of Knowledge Supplementation and Explanation Using Neural Networks to Support Decisions in Construction Engineering. *Procedia Engineering*, 57, 302-309.
- Gallego, J., Rubalcaba, L., & Hipp, C. (2013). Services and organizational innovation: the right mix of value creation. *Management Decision*, 51(6):1117-1134.
- Gibbs, G. R. (2008). *Analysing qualitative data*. Sage.
- Goel, A., Rana, G., & Rastogi, R. (2010). Knowledge management as a process to develop sustainable competitive advantage. *South Asian Journal of Management*, 17(3), 104-116.
- Graham-Hyde, M. (2014). Technology is reinventing your business. *Strategic Direction*, 30(4), 1-2.
- Guo, H., Zhao, J., & Tang, J. (2013). The role of top managers' human and social capital in business model innovation. *Chinese Management Studies*, 7(3), 447-469.
- Hagel, J., Brown, J. S., Samoylova, T., & Lui, M. (2013). *From exponential technologies to exponential innovation*. USA: Deloitte University Press.
- Hair, J., Bush, R. & Ortinau, D. (2006). *Marketing Research: Within a Changing Environment*. 3rd Edition. New York, USA: McGraw-Hill.

- Hansen, S. C., & Hughes, J. S. (2005). The dissemination of management consulting innovations and the pace of technological improvements. *Journal of Institutional and Theoretical Economics*, 161(3), 536-555.
- Héder, M. (2014). The machine's role in human's service automation and knowledge sharing. *AI & Society*, 29(2), 185-192.
- Hendarman, A. F., & Tjakraatmadja, J. H. (2012). Relationship among Soft Skills, Hard Skills, and Innovativeness of Knowledge Workers in the Knowledge Economy Era. *Procedia-Social and Behavioral Sciences*, 52, 35-44.
- Henschen, D. (2013). Big data hiring: Unorthodox advice. *Informationweek - Online*, Retrieved from <http://search.proquest.com/docview/1418871667?accountid=14717>
- Hogan, S. J., Soutar, G. N., McColl-Kennedy, J., & Sweeney, J. C. (2011). Reconceptualizing professional service firm innovation capability: Scale development. *Industrial Marketing Management*, 40(8), 1264-1273.
- Holtshouse, D. (2010). Knowledge work 2020: thinking ahead about knowledge work. *On the Horizon*, 18(3), 193-203.
- Höner, D., & Mohe, M. (2009). Behind clients' doors: What hinders client firms from "professionally" dealing with consultancy? *Scandinavian Journal of Management*, 25(3), 299-312
- Huggins, R. (2010). Network resources and knowledge alliances. *The International Journal of Sociology and Social Policy*, 30(9), 515-531.
doi:<http://dx.doi.org/10.1108/01443331011072271>
- Ismail, S. (2014, June 3). Disrupt your market with crowd-sourcing. *Wall Street Journal*. Retrieved from: <http://deloitte.wsj.com/cio/2014/06/03/disrupt-your-market-with-crowd-sourcing/>
- Janicot, C., & Mignon, S. (2012). Knowledge codification in audit and consulting firms: A conceptual and exploratory approach. *Knowledge Management Research & Practice*, 10(1), 4-15.

- Ju, D., & Shen, B. (2010). Innovation platform design through knowledge services. Paper presented at the 749-XIV.
- Kärreman, D., & Rylander, A. (2008). Managing meaning through branding--the case of a consulting firm. *Organization Studies*, 29(1), 103-125.
- Kattara, H. S., & El-Said, O. (2013). Customers' preferences for new technology-based self-services versus human interaction services in hotels. *Tourism and Hospitality Research*, 13(2), 67-82.
- Kipping, M., & Kirkpatrick, I. (2013). Alternative pathways of change in professional services firms: The case of management consulting. *The Journal of Management Studies*, 50(5), 777.
- Kipping, M. (2011). Hollow from the start? Image professionalism in management consulting. *Current Sociology*, 59(4), 530-550.
- Kirkland, R. (2014, September). Artificial intelligence meets the C-suite. McKinsey Quarterly. Retrieved from: <http://www.mckinsey.com>
- Kittur, A., Chi, E. H., & Suh, B. (2008, April). Crowd-sourcing user studies with Mechanical Turk. In *Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 453-456). ACM.
- Klatt, T., Schlaefke, M., & Moeller, K. (2011). Integrating business analytics into strategic planning for better performance. *Journal of Business Strategy*, 32(6), 30-39.
- Kosta, Y. P., Krishnamurthy, G., & Krishnamurthy, S. (2010). A network based economy model using the concept of diversity, independence and decentralization (D-I-D). *Drishtikon: A Management Journal*, 1(2), 156-179.
- Krauss, D. (2010). *Management Consulting Innovation Showcase: PricewaterhouseCoopers (PWC) Germany*. Cambridge, USA: Forrester database.
- Krauss, D., & Heng, J. (2013). Competitive landscape: competing in the digitally shaped future of consulting. *Gartner*, G00248925.

- Kubr, M. (2002). *Management Consulting: A guide to the profession*. 4th Ed. Geneva: International Labour Office, Geneva.
- Kumar, S., & Mishra, R. B. (2010). Web-based expert systems and services. *The Knowledge Engineering Review*, 25(02), 167-198.
- La, V., Patterson, P., & Styles, C. (2009). Client-perceived performance and value in professional B2B services: An international perspective. *Journal of International Business Studies*, 40(2), 274-300.
- Laihonen, H., Jääskeläinen, A., Lönnqvist, A., & Ruostela, J. (2012). Measuring the productivity impacts of new ways of working. *Journal of Facilities Management*, 10(2), 102-113.
- Lee, S. M., Olson, D. L., & Trimi, S. (2012). Co-innovation: Converggenomics, collaboration, and co-creation for organizational values. *Management Decision*, 50(5), 817-831.
- Leon, R. (2011). Creating the future knowledge worker. *Management & Marketing*, 6(2), 205-222.
- Ling, F. Y., & Gui, Y. (2009). Strengths, weaknesses, opportunities, and threats: Case study of consulting firms in Shenzhen, China. *Journal of Construction Engineering and Management*, 135(7), 628-636.
- Makani, J., & Marche, S. (2012). Classifying organizations by knowledge intensity - necessary next-steps. *Journal of Knowledge Management*, 16(2), 243-266.
- Makarem, S. C., Mudambi, S. M., & Podoshen, J. S. (2009). Satisfaction in technology-enabled service encounters. *The Journal of Services Marketing*, 23(3), 134-144.
- Marquart, E. J. 2006, *Classification of knowledge-intensive organizations*, The University of Alabama in Huntsville.
- Marscareñas, O. A., Kesavan, R., & Bernacchi, M. (2004). Customer value-chain involvement for co-creating customer delight. *Journal of Consumer Marketing*, 21(7):486.

- Mason, A. J. (2010). Inside the black box: Investigating agility as a dynamic capability for sustaining a competitive advantage within consulting firms. (Order No. 3427249, Capella University). *ProQuest Dissertations and Theses*, 113-n/a.
- Mu, J., Love, E., & Peng, G. (2008). Interfirm networks, social capital, and knowledge flow. *Journal of Knowledge Management*, 12(4), 86-100.
- Mujahid, H., & Alam, S. (2014). Service sector as an engine for growth: exploratory analysis of Pakistan. *Asian Economic and Financial Review*, 4(3):377-386.
- Nikolova, N., Reihlen, M., & Schlapfner, J. (2009). Client-consultant interaction: Capturing social practices of professional service production. *Scandinavian Journal of Management*, 25(3), 289-298.
- Nofal, M., & Fouad, K. M. (2014). Developing web-based semantic expert systems. *International Journal of Computer Science Issues (IJCSI)*, 11(1), 103-110.
- Nordenflycht, A. V. (2010). What is a professional service firm? toward a theory and taxonomy of knowledge-intensive firms. *Academy of Management Review*, 35(1), 155-175.
- Nuria, C. B., & Rodríguez, R.G. (2010). Talent management in professional services firms: A HR issue? *International Journal of Organizational Analysis*, 18(4), 392-411.
- Oosthuizen, H. (2003). The management consulting industry in South Africa. *South African Journal of Business Management*, 34(4):15-26. Retrieved from <http://0-reference.sabinet.co.za/innopac.up.ac.za/document/EJC22245>
- Palo, T., & Tähtinen, J. (2011). A network perspective on business models for emerging technology-based services. *The Journal of Business & Industrial Marketing*, 26(5), 377-388.
- Perera, I., & Perera, P. A. (2014). Developments and leanings of crowd-sourcing industry: Implications of china and india. *Industrial and Commercial Training*, 46(2), 92-99.
- Porter, M. E. (1985). *Competitive advantage: creating and sustaining superior Performance*. Third Avenue, New York: The Free Press

- Powell, W. W., & Snellman, K. (2004). The knowledge economy. *Annual Review of Sociology*, 30, 199-220.
- Prahalad, C. K., & Ramaswamy, V. (2004). Co-creation experiences: The next practice in value creation. *Journal of Interactive Marketing*, 18(3), 5-14.
- Prasad, A., & Prasad, P. (2013). Innovation in the global age: Implications for business and management in the knowledge economy. *International Journal of Business Administration*, 4(6), 82-n/a.
- Probert, J., Connell, D., & Mina, A. (2013). R&D service firms: The hidden engine of the high-tech economy? *Research Policy*, 42(6-7), 1274-1285.
- Puccio, G. J., Cabra, J. F., Fox, J. M., & Cahen, H. (2010). Creativity on demand: Historical approaches and future trends. *Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AI EDAM*, 24(2), 153-159.
- Rajshekhar, G. J., Gross, A. C., Joseph, W. B., & Granot, E. (2011). Assessing competitive advantage of emerging markets in knowledge intensive business services. *The Journal of Business & Industrial Marketing*, 26(3), 171-180.
- Richter, A., Dickmann, M., & Graubner, M. (2008). Patterns of human resource management in consulting firms. *Personnel Review*, 37(2), 184-202.
- Richter, A., & Niewiem, S. (2009). Knowledge transfer across permeable boundaries: An exploratory study of clients' decisions to involve management consultants. *Scandinavian Journal of Management*, 25(3), 275-288.
- Roman, R., Alcaraz, C., Lopez, J., & Sklavos, N. (2011). Key management systems for sensor networks in the context of the internet of things. *Computers & Electrical Engineering*, 37(2), 147-159.
- Ross, P., & Blumenstein, M. (2013). Cloud computing: the nexus of strategy and technology. *Journal of Business Strategy*, 34(4), 39-47.

- Sagl, G., Blaschke, T., Beinat, E., & Resch, B. (2012). Ubiquitous geo-sensing for context-aware analysis: exploring relationships between environmental and human dynamics. *Sensors*, 12(7), 9800-9822.
- Sahin, C. (2011). Managing professional service firms: Role of managerial abilities. *The Journal of Management Development*, 30(4), 413-426.
- Santos-Vijande, M., González-Mieres, C., & López-Sánchez, J.A. (2013). An assessment of innovativeness in KIBS: Implications on KIBS' co-creation culture, innovation capability, and performance. *The Journal of Business & Industrial Marketing*, 28(2), 86-102.
- Saunders, M., & Lewis, P. (2012). *Doing Research in Business & Management: An essential guide to planning your project*. Edinburgh Gate, England: Prentice Hall
- Schultz, M., & Doerr, J. E., (2009). *Professional Services Marketing: How the best firms build premier brands, thriving lead generation engines, and cultures of business development success*. Hoboken, New Jersey: Wiley & Sons
- Schumann, J. H., Wunderlich, N. V., & Wangenheim, F. (2012). Technology mediation in service delivery: A new typology and an agenda for managers and academics. *Technovation*, 32(2), 133-143.
- Segal-Horn, S., & Dean, A. (2009). Delivering 'effortless experience' across borders: Managing internal consistency in professional service firms. *Journal of World Business*, 44(1), 41-50.
- Semadeni, M., & Anderson, B. S. (2010). The follower's dilemma: Innovation and imitation in the professional services industry. *Academy of Management Journal*, 53(5), 1175-1193.
- Sheehan, N. T., & Stabell, C. B. (2010). Reputation as a driver in activity level analysis: Reputation and competitive advantage in knowledge intensive firms. *Corporate Reputation Review*, 13(3), 198-208.
- Silvia, M. L., Carmen, B. C., & Cepeda-Carrión, G. (2011). Creating dynamic capabilities to increase customer value. *Management Decision*, 49(7), 1141-1159.
- Song, M., Zhao, Y. L., & Benedetto, C. A. (2013). Do perceived pioneering advantages lead to first-mover decisions? *Journal of Business Research*, 66(8), 1143-1152.

- Smith, A., & Anderson, J. (2014). Digital Life in 2025: AI, robotics, and the future of jobs. *Pew Research Centre*. Retrieved from: <http://thepewinternet.org/2014/03/06/future-of-jobs/>
- Sung-Kwan, K., & Trimi, S. (2007). IT for KM in the management consulting industry. *Journal of Knowledge Management*, 11(3), 145-155.
- Tzortzaki, A. M. (2014) "Knowledge-based strategies for managers in the service sector", *Management Research Review*, Vol. 37 Iss: 10. Retrieved from: <http://0-www.emeraldinsight.com.innopac.up.ac.za/journals.htm?issn=2040-8269&volume=37&issue=10&articleid=17109296&show=abstract#sthash.ES4D2MYh.dpuf>
- Valdani, E., & Arbore, A. (2007). Strategies of imitation: An insight. *Problems and Perspectives in Management*, 5(3), 198-205,286.
- Vance, C.M. and Vaiman, V. (2008), "Smart talent management: on the powerful amalgamation of talent management and knowledge management", in Vaiman, V. and Vance, C.M. (Eds), *Smart Talent Management – Building Knowledge Assets for Competitive Advantage*, Elgar Publishing, Aldershot, pp. 1-18.
- Vermeulen, C. (2013). A conceptualization linking intellectual capital, dynamic capabilities and performance of knowledge-intensive service firms. Paper presented at the 573-XV.
- Voon-Hsien, L., Lai-Ying, L., Hew, T.S., & Ooi, K.B. (2013). Knowledge management: A key determinant in advancing technological innovation? *Journal of Knowledge Management*, 17(6), 848-872.
- Weixing, L., Xinwei, D., & Keyi, W. (2013). Firm's performance analysis based on business model dynamic design. *International Journal of Modeling and Optimization*, 3(2), 185. doi:<http://dx.doi.org/10.7763/IJMO.2013.V3.264>
- Welch, P. J., & Welch, G. F. (2012). *Economics: Theory and Practice*. 10th Ed. New Jersey: John Wiley & Sons
- Whelan, E., & Carcary, M. (2011). Integrating talent and knowledge management: Where are the benefits? *Journal of Knowledge Management*, 15(4), 675-687.

Wirtz, J., Chew, P., & Lovelock, C. (2012). *Essentials of Services Marketing*. 2nd Ed. Singapore: Pearson Education

Xu, G., Ding, Y., Zhao, J., Hu, L., & Fu, X. (2013). Research on the internet of things (IoT). *Sensors & Transducers*, 160(12), 463-471.

Yitmen, I. (2011). Intellectual capital: A competitive asset for driving innovation in engineering design firms. *Engineering Management Journal*, 23(2), 3-19.

Zikmund, W. G. & Babin, B. J. 2007. *Exploring marketing research*. 9th ed. USA: Thomson South-Western.

Zikmund, W., Babin, B., Carr, J., & Griffin, M. (2012). *Business research methods*. Cengage Learning.

APPENDICES

Appendix 1: Informed Consent Letter

COMPETING IN KNOWLEDGE-INTENSIVE SERVICES: THE TALENT *VERSUS* TECHNOLOGY DICHOTOMY

I am a GIBS MBA student conducting research on the impact of EmX technologies (such as knowledge repositories, expert advisory systems, crowd-sourced systems, automation, artificial intelligence, analytics, machine-to-machine and group collaboration systems) on talent in creating a competitive advantage for knowledge-intensive service firms.

The research aims to determine to what extent EmX technologies:

1. are changing knowledge-intensive service industries' business models
2. replace talent partially or entirely in creating and delivering certain types of knowledge-intensive work
3. contribute to a positive reputation of knowledge-intensive service firms
4. differentiate knowledge-intensive service firms
5. create economies of scale and lower costs for knowledge-intensive service firms
6. contribute to making knowledge-intensive services less imitable

Your input would be greatly valued in determining the direction in which knowledge-intensive services firms are adapting their business models in order to compete effectively and sustainably.

Our interview is expected to last around an hour. Your participation is voluntary and you can withdraw at any time without penalty. The results of the study will be shared with you at no monetary expense to you. Please note that all data and your identity will be kept confidential. If you have any concerns or queries, kindly contact:

Researcher	Candice Burin	candiceburin@gmail.com	082 343 5588
Research Supervisor	Manoj Chiba	manojchiba@gmail.com	082 784 5769

Signature of respondent:

Date:

Signature of researcher:

Date:

Appendix 2: Interview questionnaire

SECTION 1: CONFIRM DEMOGRAPHICS	
Age	
Gender	
Race	
Industry	
Tertiary Education	
Years of work experience in knowledge-intensive industries	
Current position	
SECTION 2: ICEBREAKER QUESTION (10 minutes)	
1.	Briefly describe the factors that have traditionally been important in creating a competitive advantage for your business.
SECTION 3: GUIDING QUESTIONS	
2	<p>Has your organisation had to change its business model due to EmX technologies?</p> <p>Elements involved in your business model can include:</p> <ul style="list-style-type: none"> • The way you structure and organise your business • The processes and methodologies you use • The actual design and type of products and services you deliver • The way you deliver products and services
3	Do you feel EmX technologies can create a difficult to imitate competitive advantage for your organisation? If so, in what ways?
4	Given your current business model, do you believe technology or talent would be more important to your competitiveness in the present and future? If so, in what ways?

5	Which employee roles/skills in your organisation do you believe may increasingly be augmented by EmX technologies?
6	Which employee roles/skills in your organisation do you believe will be potentially replaced with EmX technologies?
7	When creating and storing knowledge in your organisation, do you perceive EmX technologies as playing a greater role? If so, in what ways?
8	When discovering, sharing and organising knowledge in your organisation, do you perceive EmX technologies as playing a greater role? If so, in what ways?
9	When distributing, delivering and transferring knowledge to your clients, do you perceive EmX technologies playing a greater role? If so, in what ways?
10	Do you believe the use of EmX technologies will contribute to your organisation having a positive reputation?
11	Do you believe that the use of EmX technologies will differentiate your organisation amongst your competitors?
12	Do you believe you can achieve greater economies of scale and lower costs by making use of EmX technologies in delivering services to clients?

APPENDIX 3: Interview questions mapped to research questions matrix

No.	Research questions	What is the impact of emerging exponential technologies on talent in creating a competitive advantage for knowledge-intensive service firms?	To what extent are emerging exponential technologies changing knowledge-intensive service industries' business models?	To what extent are emerging exponential technologies replacing talent partially or entirely in creating and delivering certain types of knowledge-intensive work?	To what extent are emerging exponential technologies contributing to a positive reputation of knowledge-intensive service firms?	To what extent are emerging exponential technologies differentiating knowledge-intensive service firms?	To what extent are emerging exponential technologies creating economies of scale and lower costs for knowledge-intensive service firms?	To what extent are emerging exponential technologies contributing to making knowledge-intensive services less imitable?
	Themes	Competitive advantage	Business model	Talent	Reputation	Differentiation	Economies of scale and lower costs	Imitability
Interview questions								
1	Briefly describe the factors that have traditionally been important in creating a competitive advantage	✓						
2	Has your organisation had to change its business model due to emerging exponential technologies?		✓					
3	Do you feel emerging exponential technologies can create a difficult to imitate competitive advantage for your organisation?							✓
4	Do you believe talent or technology would be more important to your competitiveness in the present and future?			✓				
5	Will some employees roles/skills be augmented by emerging exponential technologies?			✓				
6	Will some employees roles/skills be replaced by emerging exponential technologies?			✓				
7	When creating and storing knowledge in your organisation, do you perceive that emerging exponential technologies are playing a greater role?	✓	✓	✓				
8	When discovering, sharing and organising knowledge in your organisation, do you perceive emerging exponential technologies as playing a greater role?	✓	✓	✓				
9	When distributing and delivering and transferring the knowledge to your clients, do you perceive emerging exponential technologies playing a greater role?	✓	✓	✓	✓			
10	Do you believe the use of emerging exponential technologies will contribute to your organisation will have a positive reputation?				✓			
11	Do you believe the use of emerging exponential technologies will differentiate your organisation amongst your competitors?					✓		
12	Do you believe you will achieve greater economies of scale and lower your costs by making use of emerging exponential technologies?						✓	

