

https://dspace.org/

Towards a business analysis capability model: a South African and United Kingdom comparison

Mogodi, Shirley Phumzile

2013-03-19
http://hdl.handle.net/10539/12586

Downloaded from a DSpace repository. https://dspace.org/

Towards a Business Analysis Capability Model: a South African and United Kingdom Comparison

Shirley Phumzile Mogodi
(513056)

A research report submitted to the School of Economic and Business Sciences

Faculty of Commerce, Law and Management

University of the Witwatersrand

For the degree of Masters of Commerce (by coursework)

Submitted in 50% fulfillment of the Degree

Supervisor: Jean-Marie Bancilhon
26 October 2012

Declaration

I declare that this research report is my own unaided work, except to the extent indicated in the text, acknowledgements and reference matter. It is being submitted for the 50% research component of a Masters in Information Systems (by Research and Coursework) degree.

It has not been submitted before for any other degree or examination in this or any other institution.

……

Shirley Phumzile Mogodi

26 October 2012

Dedication

This research report is dedicated to my mother, Mrs T.V. Sibiya, who motivated me to finish my undergraduate degree.

Acknowledgements

My gratitude goes to my supervisor, Jean-Marie Bancilhon under whose guidance this research report was carried out. With his knowledge, feedback and great efforts to explain things clearly and simply, he helped to make this report a reality.

Special thanks also go to the following people:

- Dr Thavandren Ramsamy Naidoo who suggested to me that I should follow this research topic.
- All the participants who contributed to this research.
- My husband Mokone and my daughters, Lethabo and Lemo, for their support until the end.

Abstract

The increasing demand for business analysts in recent years has brought about the need for a proper articulation of the Business Analyst's role. Despite the growth of the business analysis field, and its value, academic research on the practices, competencies and capabilities of a business analyst is still limited. Drawing on the Resource-Based View of the firm theory and the concept of practice, this study proposes a business analysis capability model. A positivist qualitative research methodology has been conducted using a directed content-based analysis approach. This research analysed 300 business analyst online job advertisements in order to identify the practices, competencies and capabilities of business analysts as perceived by employers based in South Africa (SA) and the United Kingdom (UK). The findings suggest that, both in SA and the UK, analysts with systems skills, practices, competencies and capabilities are preferred by employers over those with business skills. The results of the study suggest that South African employers demand additional skills, practices and competencies from a business analyst than are required by employers based in the UK. This suggests that SA based business analysts are capable of competing for employment in the UK without the need for them to acquire additional skills. This research makes conceptual contributions to academia, and also offers managerial contributions to practice.

Keywords: Business Analyst, Directed Content Analysis, Capabilities, Competencies, Practices

Table of Contents

List of Figures viii
List of Tables viii
Chapter 1: Introduction 1
1.1 Context of the Study 3
1.2 Statement of the problem 4
1.3 Objectives of the study 5
1.4 Importance of this Research 6
1.4.1 Scarcity of IS skills 6
1.4.2 IT/IS Project Failure 6
1.4.3 Research Contribution 7
1.5 Structure of the Research 7
1.6 Conclusion 8
Chapter 2: Literature Review 9
2.1. Introduction 9
2.2. Background to the Literature Review 9
2.3. Theoretical Background 11
2.3.1. Rationale to RBV of the Firm Theory 11
2.3.2. Resource Based View of the Firm Theory 14
2.3.2.1 Resources 15
2.3.2.2 Competitive Advantage 16
2.3.2.3 Sustainability 16
2.3.2.4 Limitations of RBV 17
2.4. Literature Review 17
2.4.1. Business Analyst Capabilities 17
2.4.2. Business Analyst Competencies 18
2.4.3. Business Analyst Practices 21
2.4.4. Business Analyst Knowledge, Skills, Experience & Behaviour 22
2.5. Business Analysis Capability Research Model 23
2.6. Research Questions 25
2.7. Conclusion 27
Chapter 3: Research Methodology 28
3.1. Introduction 28
3.2. Research Paradigm 28
3.3. Methodological Approach 29
3.3.1. Source and Method of Data Collection 29
3.3.2. Context of the Study 29
3.3.3. Sampling 30
3.4. Data Analysis Method 31
3.4.1. Content Analysis Approach 31
3.4.2. Analytical Process of Content Analysis 32
3.4.3. Qualitative Data Analysis (QDA) Software 36
3.5. Validity and Reliability 37
3.6. Ethical Considerations 37
3.7. Conclusion 38

Chapter 4: Data Analysis Strategy 39
4.1. Introduction 39
4.2. Preparation of Data 39
4.3. Categories and Coding Scheme 40
4.4. Coding Scheme Testing on Sample Text 40
4.4.1. Pre-test and Pilot 40
4.4.2. Pre-test Validity and Reliability 42
4.5. Coding all Text 43
4.6. Ethical Considerations 44
4.7. Conclusion 44
Chapter 5: Presentation and Discussion of Results 45
5.1. Introduction 45
5.2. Basic Analysis Results and Findings 47
5.2.1. SA Basic Analysis 47
5.2.1.1. Job Titles Collected from SA 47
5.2.1.2. SA Qualifications 48
5.2.1.3. SA Role Seniority 49
5.2.2. UK Basic Analysis 50
5.2.2.1. Job Titles Collected from the UK 50
5.2.2.2. UK Qualifications 51
5.2.2.3. UK Role Seniority 52
5.2.3. SA and UK Basic Analysis Comparison 53
5.3. Capabilities, Competencies and Practices Results and Findings 54
5.3.1. SA Findings and Results 56
5.3.1.1. SA Knowledge, Skills and Behaviours 56
5.3.1.1. 1. SA Systems Knowledge and Skills 57
5.3.1.1. 2. SA Business Knowledge, Skills and Behaviours 58
5.3.1.1. 3. SA Technical Knowledge and Skills 60
5.3.1.2. SA Business Analysts Practices (Research Question 1a) 62
5.3.1.3. SA Business Analyst Competencies (Research Question 2a) 63
5.3.1.4. SA Business Analyst Capabilities (Research Question 3a) 65
5.3.2. UK Findings and Results 66
5.3.2.1. UK Knowledge, Skills and Behaviours 66
5.3.2.1. 1. UK Systems Knowledge and Skills 66
5.3.2.1. 2. UK Business Knowledge, Skills and Behaviours 68
5.3.2.1. 3. UK Technical Knowledge and Skills 69
5.3.2.2. UK Business Analyst Practices (Research Question 1a) 71
5.3.2.3. UK Business Analyst Competencies (Research Question 2a) 72
5.3.2.4. UK Business Analyst Capabilities (Research Question 3a) 73
5.3.3. SA and UK Findings Comparison 74
5.3.3.1. SA and UK Knowledge, Skills & Behaviours 74
5.3.3.1. 1. SA and UK Technical Knowledge and Skills 74
5.3.3.1. 2. SA and UK Business Knowledge, Skills and Behaviours 75
5.3.3.1. 3. SA and UK Systems Knowledge and Skills 75
5.3.3.2. SA and UK Practices Comparison (Research Question 1b) 76
5.3.3.3. SA and UK Competencies Comparison (Research Question 2b) 78
5.3.3.4. SA and UK Capabilities Comparison (Research Question 3b) 79
5.4. Gap Between Employers' Needs versus Educational Institutions 80
5.5. Other General Findings 80
5.6. Final Business Analysis Capability Model 81

5.7. Conclusion 82
Chapter 6: Conclusion 83
6.1. Introduction 83
6.2. Research Questions & Findings 83
6.3. Main Findings 84
6.4. Research Implications 86
6.3.1. Research 86
6.3.2. Practice 86
6.5. Limitations to the Study 87
6.6. Recommendations for Further Research 88
6.7. Conclusion 89
References 90
Appendix A: Skills & Knowledge Classification 99
Appendix B: Specific Business Analyst Skills 101
Appendix C: Business Analyst Practices 102
Appendix D: Coding Scheme 103
Appendix E: Detail View Business Analysis Capability Model 104
Appendix F: Coding Manual 105
Appendix G: SA Knowledge and Skills 110
Appendix H: UK Knowledge and Skills 111
Appendix I: Research Notes 112
Appendix J: Research Data 123

List of Figures

Figure 1: The Business Analyst in the center by Liu (2011) 10
Figure 2: The links among resources, capabilities & competitive advantage 15
Figure 3a: The relationships between capabilities, competences and practices 24
Figure 3b: The Business Analysis Capability Model 25
Figure 4: Analytic process of qualitative content analysis 36
Figure 5: Structure of Chapter 5 46
Figure 6: Capabilities, competencies, practices, knowledge, skills & behaviours 55
Figure 7: Proposed Theoretical Business Analysis Capability Model 56
Figure 8: The final Capability Model 82

List of Tables

Table 1: Key Research using RBV on IT/IS capabilities 13
Table 2a: IS professionals' skills and knowledge requirements by Topi, et al. (2010) 20
Table 2b: IS specific courses for a business analyst career path 21
Table 3: Knowledge, skills, experience and behaviour definitions 22
Table 4: Pre-Test Inter-code reliability results 43
Table 5: SA Job titles collected versus advertisements 48
Table 6: SA Qualification versus advertisements 49
Table 7: SA Role seniority versus advertisements 50
Table 8: UK Job titles collected versus advertisements 51

Table 9: UK Qualification versus advertisements 52
Table 10: UK Role seniority versus advertisements 53
Table 11: SA systems analysis and skills 57
Table 12: SA Business knowledge and skills 59
Table 13: SA Technical Knowledge and skills 60
Table 14: SA Business Analyst practices versus advertisements 63
Table 15: SA Competencies 65
Table 16a: SA Capabilities 65
Table 16b: SA Capabilities with details 66
Table 17: UK Systems knowledge and skills 67
Table 18: UK Business knowledge and skills 68
Table 19: UK Technical knowledge and skills 70
Table 20: UK Business analyst practices versus advertisements 72
Table 21: UK Competencies 73
Table 22a: UK Capabilities 73
Table 22b: UK Capabilities continued 74
Table 23: SA and UK Practices Comparison 76
Table 24: SA and UK Competencies Comparison 79
Table 25: SA and UK Capabilities Comparison 80
Table 26: Restated research questions and key results 83

Chapter 1: Introduction

The failure of Information Technology (IT)/Information Systems (IS) projects and their associated high costs are well documented in the IS field (MacManus & Wood-Harper, 2007). Organisations are therefore constantly challenged on how to improve their IS project delivery. Projects play a vital role in achieving growth and competitive advantage in an organisation, and a business analyst's role is to help an organisation achieve this business value (Schreiner, 2007). As a result, the business analyst has a key role to play in the system development of an IS project. Furthermore, the business analyst role has been identified as a key resource in reducing IS project failure (Liu, 2011). IS projects are developed using some form of lifecycle methodology like the systems development lifecycle (SDLC), prototyping, rapid development or some other methodology (Mitri & Cole, 2007). A typical SDLC has four phases, namely: project selection and planning, analysis of the systems requirements, systems design and systems implementation (Zhang, Carey, Te'eni & Tremaine, 2005). The Agile methodology, on the other hand, does not follow a formal approach like the SDLC but rather focuses on short iterations that result in a working product (Vinekar, Slinkman & Nerur, 2006). Various roles are necessary during the different phases, namely: project manager, systems analyst, developer, tester, trainer and support analyst. The business analyst is expected to provide input within each of these different phases.

In the past emphasis was mainly placed on the SDLC methodology to develop IT projects, but this has proven unsuccessful (Maguire & Redman, 2007). While theoretically, methodology assumes a harmonious environment in terms of information, resources and people behaviour, in real life, these factors might not all work exactly as expected to help deliver a successful project (Piccinno, 2004). Furthermore, development methodology such as the Waterfall methodology impedes effective communication between the business and IT because it requires business to give its user requirements upfront and expects IT to produce a complete product within a stipulated time period (Feig, 2007). Since a business analyst is a key resource in bridging business and IT, this suggests that there is a need for skilled and knowledgeable individuals to use communication and development methodology efficiently and effectively to assist organisations to deliver successful IT projects.

The demand for business analysts has significantly increased worldwide. The International Institute of Business Analysis (IIBA) 2007 Salary Survey and the United States Department of Labour released statistics reflecting a rise of 45% between 1990 and 2005, and a further 27% increase is predicted by 2014 (Schreiner, 2007). Kizior & Hidding (2010) also anticipate that there will be an increase of 18-27% or more in demand over the 2004 to 2014 period. Manshani, Dhasmana & Sylvest (2010) of the Chief Information Office Executive Board recently predicted that the demand for qualified business analysts will double by 2015. Furthermore, the Global Knowledge or TechRepublic 2010 survey found that business analysis was one of the top 10 most required IT skills (Leung, 2010). This huge demand for business analysts in organisations points to the increasing dependence on this role for the reduction of unsuccessful IT projects. The importance of the business analyst role is therefore crucial. Business analysis capability, competencies and practices will thus be the focus of the current research.

The main purpose of this research is to develop a business analysis capability model. It will draw on the theory of the Resource Based View (RBV)[1] of the firm to build the business analysis capability model, as well as the concept of practice to supply a platform where this capability is operationalised (Ashurst, Doherty & Peppard, 2008). A directed content analysis approach will be employed to compare job advertisements for business analysts based in South Africa (SA) and the United Kingdom (UK). The UK is chosen in the present study due to the number of South Africans who leave the country to work there. The emigration of South African professionals results in IT skills shortages and aggravates the issue of "brain drain" (Johnston, Muganda & Theys, 2007). A large number of Kenyans and other sub-Saharan Africans immigrated to the developed countries to work there (Oyelere, 2007). This seems to show that highly skilled IT professionals who leave SA are regarded as globally competitive and employable in the UK. The comparison between SA and the UK will therefore display the similarities that make the UK consider South Africans employable, and will also show the uniqueness of the skills that South Africans possess. Furthermore, it will show whether there are any significant similarities and differences in knowledge and skills requirements between a developing and a developed country.

[1] The justification of the use of RBV is discussed in chapter 2.

1.1 Context of the Study

Business analysts are defined by the Gartner Group as follows,

> *"Business analysts are the interpreters of business processes, workflows and requirements into functional specifications for development or application evaluation that will be used by various development teams, process owners and practice areas (such as BI, business applications and information management)" (Burton, Weiss & Blechar, 2008).*

In practice, according to Morello & Blechar (2005) of the Gartner Group, the business analyst role has, in the past, mostly been associated with systems development, whereas the business analyst role was required in different stages of the SDLC (Evans, 2004; Liu, 2011; Schreiner, 2007), hence primarily based in technology. However, this role in the near future will mainly be found in business rather than in technology (Manshani et al., 2010). This demonstrates the shift towards a more client-oriented approach. In addition, business analysis activities are generally performed working closely with customers or users. The business analyst is, therefore, not expected to be outsourced outside the organisation (Kizior & Hidding, 2010).

According to the International Institute of Business Analysis (IIBA[2]) business analysis Competency Model version 3, the business analysis profession is not limited to just a business analyst role but includes other roles such as systems analyst, requirements engineer, process analyst, product manager, product owner, enterprise analyst, business architect and management consultant (International Institute of Business Analysis, 2011). The role is versatile in that it can be based in business, IT and even across industries (Kizior & Hidding, 2010). Variations in the role seem dependent on whether the business analyst is positioned in business or IT (Vongsavanh & Campbell, 2008). The IIBA competency model, however, states that for these roles to be considered they need to perform business analysis functions as defined by the IIBA as follows:

[2] The IIBA is an independent non-profit professional association addressing the business analysis profession (International Institute of Business Analysis, 2010).

> *"the set of tasks and techniques used to work as a liaison among stakeholders in order to understand the structure, policies and operations of an Organisation, and to recommend solutions that enable the Organisation to achieve its goals"*
> (International Institute of Business Analysis, 2011:11)

This suggests therefore, that under the umbrella term 'business analyst', various roles are included.

The current trend in organisations reflects business analysts acting as systems analysts and in other emerging roles such as business architects. A business architect is responsible for presenting a business architecture which includes business functions and processes, as well as for evaluating the differences between the current and future architecture (De Haes & Van Grembergen, 2005). The systems analyst function focuses on gathering information systems requirements and developing and implementing these requirements (Green, 1989 and Lee, 2005). Burton et al. (2008), from the Gartner Group, caution against organisations using one business analyst to perform different business analysis functions and, rather, suggest that organisations should focus on establishing an environment where different capabilities and competencies are made available in the business analyst community. In other words, instead of trying to make the business analyst an expert on everything, the business analyst should rather focus on, and be an expert of, a specific function. Another emerging issue is that of a business analyst playing a strategic function in an organisation (Schreiner, 2007). The business analyst role is evolving from one requiring pure business analysis into an unstructured and complex role. There is, therefore, a need to determine and understand the important capabilities and competencies of this strategic role.

1.2 Statement of the problem

There is an increasing need for business analysts (Feig, 2007; Kizior & Hidding, 2010; Schreiner, 2007) in various organisations. This is partly due to the emphasis placed on getting correct and accurate requirements (Vongsavanh & Campbell, 2008) and to the lack of clarity of the role academically (Evans, 2004; Vashist, McKay, & Marshall, 2010; Vongsavanh & Campbell, 2008). Furthermore, some of the reasons why IS projects fail are insufficient analysis of business problems, poor quality of user requirements and

documentation, bad communication and interpersonal skills, and relationship problems (Evans, 2004). These challenges are associated with the role of a business analyst who is expected to document the user requirements and act as a bridge between the business and IT during the systems development lifecycle of the project. In order to overcome these challenges, it is important to identify the knowledge, skills and behaviour expected of a business analyst.

Past research suggests that the competencies of various IS roles are well researched. For example, Havelka & Merhout (2009) and Lee, Trauth & Farewell (1995) focused on the overall IS professionals; Todd, McKeen & Gallupe (1995) covered the programmers, systems analysts and IS managers; Merhout & Buchman (2007) looked at IT auditors; and Lee and Fang (2008) researched IS recruiters. On business analysis, authors such as Evans (2004), Vashist et al. (2010, 2011) and Vongsavanh & Campbell (2008) examined the business analyst role, skills and/or boundary practice. While professional bodies such as the IIBA have built a Competency Model, there is a lack of research into business analysis capability both in practice and in academia.

1.3 Objectives of the study

As a consequence of the problems stated above, the overall aim of this study is to present a business analysis capability model and validate it.

The wider objectives of this research are as follows:

- To suggest practices that are perceived as crucial in the business analysis profession in both SA and the UK;
- To identify business analyst competencies that employers in SA and the UK require of the business analysis profession;
- To identify business analysis capabilities that employers in both SA and the UK perceive as crucial in achieving a competitive advantage;
- To compare findings between SA and the UK.

1.4 Importance of this Research

1.4.1 Scarcity of IS skills

The fact that business analysts are highly sought after in the job market (Feig, 2007; Kizior & Hidding, 2010; Schreiner, 2007) draws attention to their scarcity. Furthermore, it indicates the importance of knowledgeable and experienced business analysts in the job marketplace. Given that, in the modern economy, organisations use knowledge to achieve competitive advantage (Chen & Edgington, 2005; Galliers, 2007 and Wenger & Snyder, 2000), knowledge management becomes a strategic focus in most organisations. This knowledge is considered a key strategic tool which is a source of sustainable competitive advantage (Basellier & Benbasat, 2004). For a resource, however, to be considered a source of sustainable competitive advantage, it needs to be valuable, rare, inimitable, and non-substitutable (Ashurst et al., 2008; Barney, 1991; Nevo & Wade, 2010). IT can be imitated and therefore is not of strategic value (Carr, 2003). The implication is that a knowledgeable worker and a knowledgeable and experienced business analyst are more important in achieving strategic value than this value being achieved by IT alone. , It is necessary, therefore, to understand the capabilities and competencies of the scarce strategic role of the business analyst.

1.4.2 IT/IS Project Failure

As suggested before, and as stated in the Standish Chaos Report of 2000, 74% of IS projects end up uncompleted (Evans, 2004). Similarly, in 2002, various authors performed research that indicated that one in eight (12%) IT projects are regarded as successful (MacManus & Wood-Harper, 2007). IT project failure is thus clearly a constant problem facing the IS field. Additionally, Schreiner (2007) argues that if an inexperienced business analyst is employed, this might result in poor systems being developed, thus exacerbating the issue of IS project failure. As a person's, or team's, knowledge and experience is valuable in determining what can be accomplished in IS projects (Ashurst et al., 2008), this places emphasis on the use of a skilled business analyst during the systems development lifecycle in order to deliver successful projects. Little is known, however, about the actual capabilities, competencies and practices of a business analyst. This also calls for more extensive research in this field in order to fill this gap.

1.4.3 Research Contribution

The primary contribution of this research is to the IS body of knowledge. Firstly, there is the conceptual contribution which applies RBV theory and concepts of practice in developing the business analysis capability model. The model is then used to identify the practices, competencies and capabilities of a business analyst. Secondly, the findings can be used by universities, training institutions or professional associations as guidelines on how to structure their IS curricula. In practice, it will assist the business analysis professional bodies, like IBA and the British Computer Society (BCS)[3], as well as the actual business analysts, in emphasising the key capabilities and competencies required by employers for this role. Furthermore, managers can use the model to identify the skills gaps of their business analysts. Lastly, the similarities and differences found between the business analysts in SA and those in the UK will provide new insight into the type of knowledge or skills requirements of a developing country versus a developed country.

1.5 Structure of the Research

Chapter 1: Introduction

The introduction to this research report will cover the background of the research, the research problem in detail, the importance of the research, the objectives of the research, the research questions and highlight its contribution to the IS field and practice.

Chapter 2: Literature review

This chapter critically reviews literature associated with the current research topic. The Resource-based View (RBV) of the firm theory and concept of practice, theoretical model and theoretical constructs used to guide this research are justified, defined and explained. The research gaps are identified and research questions are stated.

Chapter 3: Research methodology

The detailed research methodology used to address the research questions stated will be covered here. This chapter will cover the research method chosen and why it has been

[3] According to the Chartered Institute for IT website, the BCS is also a professional body, a learned society, a nominated body, an awarding body and a registered charity (http://www.bcs.org/category/6988)

chosen, the description of the methodology followed and will address the questions of validity and reliability.

Chapter 4: Data analysis strategy
This chapter discusses the data analysis strategy applied in this research which covers the analytical process of qualitative content analysis.

Chapter 5: Presentation and discussion of the results
The results of the content analysis of job advertisements are presented and interpreted in this chapter.

Chapter 6: Conclusion
The key findings from the research, any limitations identified in conducting this type of research, the implications for both practice and academia and suggestions for future research are discussed in this chapter.

1.6 Conclusion

This chapter presented the context of the study, the problem statement, the objectives of the study, the importance of the study and the research contribution. The business analyst role was defined and explained. The next chapter reviews the literature behind the theoretical framework of the study.

Chapter 2: Literature Review

2.1. Introduction

Chapter 1 introduced the research topic, described the concept of business analysis and set up the scope of this research. This chapter reviews the literature with respect to business analysts' capabilities, competencies, and practices. Firstly, it provides a background to the role of the business analyst. Then it discusses the RBV of the firm theory and the reasons why the theory was selected. It also explains the business analysis research model, including defining the capability, competencies and the practices theoretical constructs. It concludes by stating the research questions.

2.2. Background to the Literature Review

The role of a business analyst is not clearly defined (Evans, 2004; Liu, 2011; Vashist et al., 2010, 2011; Vongsavanh & Campbell, 2008), even though, in practice, business analysis is gaining widespread popularity with more organisations realising its benefits. This is exemplified by the popularity and continuous requirement of the IIBA and the BCS, referred to as the Chartered Institute for IT. The IIBA is, however, fairly new in that it was established in 2004 (Schreiner, 2007) and incorporated in May 2006 (Feig, 2007). Furthermore, the job description and role of a business analyst have not received considerable academic research interest even though, in practice, there has been extensive coverage of this subject (Vongsavanh & Campbell, 2008). Organisations are becoming aware of the necessity for having a person perform the role of a business analyst in order to improve IT projects failure (Liu, 2011). Given the vagueness of the business analyst role, however, research must be done to clarify that role.

One of the key responsibilities of a business analyst is to act as a facilitator between business and IT (Feig, 2007; Hugos, 2007; Liu, 2011; Vashist et al., 2010). In addition to linking business and IT, the role includes analysing the current business practices, understanding and documenting business requirements, and improving business processes (Evans, 2004). This role not only forms part of the documenting quality user requirements phase, but also forms part of all the SDLC phases of the solution design, development and implementation (Schreiner, 2007).

The working definition of the role of a business analyst for the current research is:

> *A business analyst acts as a bridge between business and IT in order to document business and systems requirements (Feig, 2007; Hugos, 2007; Vashist et al., 2010) and is required to participate in all the phases of the SDLC (Evans, 2004; Liu, 2011).*

Figure 1 below by Liu (2011) depicts the business analyst's role as being in the middle between the business and IT communities, and also highlights the role as being important in the delivery of projects which solve the business problems identified.

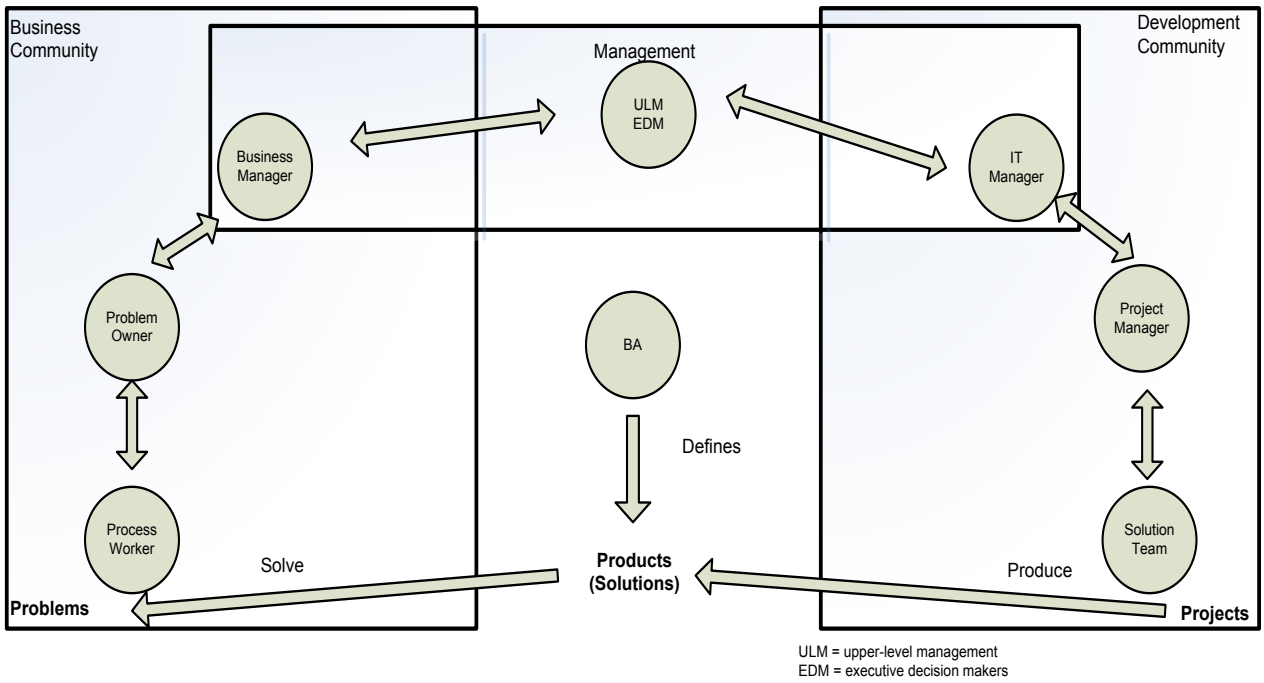

Figure 1: The Business analyst in the centre by Liu (2011)

The next section addresses the theoretical background for the research topic being studied.

2.3. Theoretical Background

2.3.1. Rationale to RBV of the Firm Theory

The use of the RBV of the firm is recommended when it is necessary to understand how to use organisational internal resources to achieve competitive advantage (Pearce & Robinson, 2003). According to Calderia & Ward (2003), the RBV of the firm theory has been used in the IS field for over 10 years in determining distinct features of competencies which help an organisation achieve a sustainable competitive advantage. This is in line with the overall aim of this research, which is to improve our knowledge of a business analyst's capabilities and competencies. The RBV of the firm, therefore, was identified as an appropriate theory to apply in this study.

Peppard & Ward (2004) presented an IS capability model with its key components and its application using RBV of the firm theory. Furthermore, Calderia & Ward (2003) applied the RBV of the firm in examining a hierarchy of relationships between skills, competencies and capabilities in order to understand the determinants of success in IS/IT adoption and use. Ashurst et al. (2008) showed that RBV and the concept of practice can be used to identify the related set of knowledge, skills and routines which clearly contribute to the overall capability, even though they focused on a benefit realisation capability model. Hence, the conceptual model guiding this report is adapted from Ashurst et al. (2008). The research model is explained in detail under section 2.8 below. The research work performed by Ashurst et al. (2008), Calderia & Ward, (2003) and Peppard & Ward (2004) point out the suitability of using the RBV of the firm theory.

Table 1 shows other key research performed on IT/IS capabilities and their key findings using RBV of the firm theory. In a mail survey to Chief IT Executives based in 202 manufacturing organisations, Bhatt & Grover (2005) found that IT-based resources which affect competitive advantage are business experience and, more significantly, the relationship infrastructure. Ravichandran & Lertwongsatien (2005) also conducted a mail survey of 129 Fortune 1000 companies to determine that IS resources and capabilities do not directly impact an organisation's performance, rather, it is the way they are used and exploited.

In a study that assessed the influence of senior leadership and IT infrastructure, Armstrong & Sambamurthy (1999) surveyed Chief Information Officers (CIOs) and senior business executives and found that CIOs' business and IT knowledge was found to have a significant influence on a firm's IT assimilation. Dehning & Stratopoulos (2003) performed a longitudinal comparison study between two sets of companies in order to ascertain the factors that are believed to lead to a sustainable competitive advantage. They concluded that only managerial IT skills are positively related to sustainability. Mata et al. (1995) conducted a literature review to assess four IT attributes and determine which provides a competitive advantage. Their results reported that only managerial IT skills can contribute to a sustainable competitive advantage. The studies by Mata et al. (1995) and Dehning & Stratopoulos (2003) agree that managerial IT skills are important in contributing to a sustainable competitive advantage.

A small and medium enterprise survey by Rivard, Raymond & Verreault (2006) found that there is a link between IT support for business strategy and IT support for business assets on business performance. Furthermore, Nevo & Wade (2010) conducted a literature review to determine whether IT assets together with original resources play a strategic role in creating business value.

No.	Author	Nature of research	Key research issues	Key findings
1	Bhatt & Grover (2005)	Mail survey of Chief IT Executives in 202 manufacturing companies, Theory used: RBV	Identify IT-based resources of competitive advantage.	IT business experience and more significantly how relationship infrastructure affects competitive advantage.
2	Ravichandran & Lertwongsatien (2005)	Mail survey of 129 companies forming part of Fortune 1000 companies, Theory used: RBV	Assess how IS resources and capabilities affect organisation's performance,	IS resources & capabilities do not directly affect organisation's performance. It is the way they are used and exploited.
3	Armstrong & Sambamurthy (1999)	Large scale survey from CIOs & senior business executives, Theory used: knowledge-based & RBV	Assess the influence of senior leadership & IT infrastructure.	CIOs' business and IT knowledge are found to have significant influence on firm's IT assimilation.
4	Dehning & Stratopoulos (2003)	Longitudinal comparison between 2 sets of companies, Theory used: RBV	Examine the factors that are believed to lead to a sustainable competitive advantage.	Managerial IT skills are found to be positively related to sustainability. Technical skills and IT infrastructure are not a source of sustainability.
5	Mata, Fuerst & Barney (1995)	Literature review, Theory used: RBV	Assess four attributes of IT to determine which provide competitive advantage.	Managerial IT skills are found to be the only ones that can contribute to sustainability.
6	Rivard, Raymond & Verreault (2006)	Survey of 96 small and medium enterprises. Theory used: RBV & competitive strategy	Assess how IT contributes to organisation's performance,	There is a link between IT support for business strategy and IT support for business assets on business performance
7	Nevo & Wade (2010)	Literature review. Theory used: RBV	The role of IT assets in creating business value,	IT assets together with organisational resources play a strategic role.

Table 1: Key research using RBV on IT/IS capabilities

2.3.2. Resource Based View of the Firm Theory

The origins of the RBV of the firm theory can tracked back to the research work done by Penrose (1959) where a firm is regarded as a "bundle of resources" (Rivard, Raymond & Verreault, 2006). Central to the RBV theory is the assumption that organisations differ in the way they control these unique "bundles of resources" and that these are tangible assets, intangible assets and organisational capabilities (Pearce & Robinson, 2003). In other words, the more different each organisation, the more superior business performance is achieved through exploiting the uniqueness of resources in each organisation (Grant, 2002). Furthermore, the organisational resources are a basis of competitive advantage which is dependent on the resources being of value, rare, inimitable and non-sustainable (Nevo & Wade, 2010; Spanos & Prastacos, 2004; Wright, Dunford & Snell, 2001). Knowledge is also regarded as a key strategic resource, that is, a source of sustainable competitive advantage (Basellier & Benbasat, 2004; Chen & Edgington, 2005 and Galliers, 2007).

The explanation of the RBV is based on three concepts: resources, competitive advantage and sustained competitive advantage (Wright, McMahan & McWilliams, 1993). These concepts are explained in detail in the next section. The relationship between resources, capabilities, and competitive advantage is shown below in figure 2, which is adapted from Grant (2002). A group of resources, and not individual resources, develop organisational capability and it is the capability that is central to increasing performance (Grant, 2002).

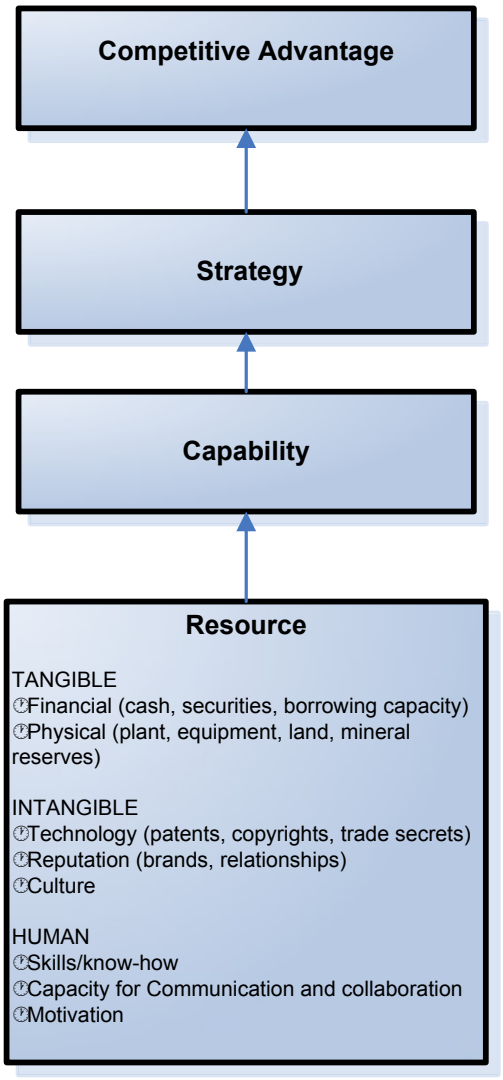

Figure 2: The links between resources, capabilities & competitive advantage - adapted from Grant (2002)

2.3.2.1 Resources

Resources are those assets which an organisation owns or controls (Ashurst et al., 2008; Nevo & Wade, 2010; Ravichandran & Lertwongsatien, 2005; Rivard et al., 2006; Spanos & Prastacos, 2004) and are either tangible or intangible (Pearce & Robinson, 2003; Spanos & Prastacos, 2004). Barney (1991) classified resources into three broad categories: physical capital resources (the physical assets an organisation uses which include an organisation's plants and equipment, it's geographical location and raw materials), human capital resources (the training, experience, judgment, intelligence, relationships and insight of individual managers and workers in an organisation) and

organisational capital resources (the organisation's formal reporting structures, formal and informal planning, controlling, and coordinating systems).

The current research focuses on human capital resources. An example of a human capital resource is a skilled person (Spanos & Prastacos, 2004). Since the RBV places people at the forefront when formulating and implementing strategy, it suggests that people are crucial in achieving competitive advantage (Wright et al., 2001). Furthermore, Basellier & Benbasat (2004), Chen & Edgington (2005) and Galliers (2007) acknowledge that knowledge is an important strategic resource which is a source of sustainable competitive advantage. As the role of a business analyst becomes better appreciated by organisations in assisting them to reduce IT projects failure (Liu, 2011), the use of a knowledgeable, competent and experienced business analyst may be able to assist organisations achieve competitive advantage.

2.3.2.2 Competitive Advantage

Competitive advantage is the implementation of value-building driven strategy by an organisation at a time when other competitors are not implementing it (Barney, 1991). According to Peppard & Ward (2004), competitive advantage is not about the business routine, but it is the actual final result. In order for a resource to provide a competitive advantage, it should satisfy four criteria: value, rare, imperfect imitability and non-substitutability (Barney, 1991). Barney (1991) defines all four criteria as follows: *Value* refers to an organisation having strategic value and exploiting opportunities as well as preventing threats from other organisations. *Rare* means the resource should be unique or rare among its current and potential competitors. *Imperfectly imitable* implies that the resource should not be easily duplicated or imitated by its current and potential competitors. *Non-substitutability* alludes to a resource that cannot be easily replaced with another alternative resource in order to achieve similar results.

2.3.2.3 Sustainability

Sustained competitive advantage is different from competitive advantage (Wright, McMahan & McWilliams, 1993). In addition to having competitive advantage, sustainability is when other competitors cannot produce the benefits derived from the value-building strategy (Barney, 1991). In IS management, sustainability is delivering business value from IS investment (Peppard & Ward, 2004). Furthermore, a sustainable

competitive advantage is achieved from managerial IT/IS capabilities through past experience, learning by doing and improved over a period of time (Bhatt & Grover, 2005). This research report, however, does not focus on sustainability. It just covers the capabilities that might bring competitive advantage or increase business performance.

2.3.2.4 Limitations of RBV

As with any other theory, the RBV of the firm is not without limitations. The first limitation is that the theory assumes that the resources are always employed in areas where they are best utilised. It does not, however, state how to do it (Nevo & Wade, 2010; Rivard et al., 2006). The second limitation is that the theory does not take into account resources that are not considered strategic (Nevo & Wade, 2010). Despite these limitations, the RBV theory has been widely used to successfully determine the capabilities and/or competencies believed to affect business performance or competitive advantage and therefore it can be used for the purpose of this study.

2.4. Literature Review

2.4.1. Business Analyst Capabilities

Capability is the ability of an organisation to deploy its resources by executing a set of the same tasks in order to achieve competitive advantage (Ashurst et al., 2008; Ravichandran & Lertwongsatien, 2005; Spanos & Prastacos, 2004). It is achieved when a set of competencies are deployed (Ashurst et al., 2008; Caldeira & Ward, 2001). Resources and capabilities can be distinguished under two main umbrellas; “having” (what the firm has or owns) or “doing” (what the firm can do), and tangible or intangible assets (Spanos & Prastacos, 2004). Spanos & Prastacos (2004) emphasise that capability falls under the “doing” and intangible assets category. This is how capabilities are viewed for the purpose of this study. Capabilities are difficult to acquire in the market place, not easily duplicated, and are achieved over a long period of time through a process of ongoing learning (Spanos & Prastacos, 2004). Given that ongoing learning improves an individual’s knowledge and, therefore, one’s ‘tacit’ knowledge which is difficult to copy by competitors, it can lead to an organisation achieving competitive advantage.

According to Rivard, Raymond & Verreault, (2006), IT capabilities, as well as IT human resources, can be used to outperform organisations. Ravichandran & Lertwongsatien (2005), however, argue that IS capabilities alone do not have a direct impact on business performance, rather, it is how these IS resources are used and exploited that impact on business performance. Similarly, Nevo & Wade (2010) propose that IT assets together with organisational resources play a strategic role in creating business value. Even though there is consensus regarding the role of IS capabilities in achieving business value, the way these capabilities are deployed is considered more important.

Based on previous literature, it becomes evident that IT/IS leadership skills, and the relationship between human actors, provide some form of competitive advantage to the organisation. For example, Mata, Fuerst & Barney (1995) assessed four IT attributes that provide competitive advantage and found that managerial skills are the only ones that contribute to sustainability. Armstrong & Sambamurthy (1999) assessed the influence of senior leadership and IT infrastructure and discovered that senior leadership's business and IT knowledge have significant influence on an organisation's IT assimilation. Dehning & Stratopoulos (2003) examined the factors that influence sustainable competitive advantage and uncovered that managerial IT skills, and not technical IT skills or IT infrastructures, are a source of sustainability. Lastly, Bhatt & Grover (2005) identified IT business experience, and the relationship infrastructure, as affecting competitive advantage.

2.4.2. Business Analyst Competencies

In different academic literatures, the term 'competency' is defined differently (Coll & Zegwaard, 2006) and therefore no agreement exists on its meaning (Spanos & Prastacos, 2004). Competence is the ability of the organisation to consolidate and make use of a set of resources to achieve competitive advantage by using organisational processes (Ashurst, et al., 2008). Competence refers to "a quality inherent in individuals or teams of individuals, a quality that develops and refines something (e.g. capabilities, resources) occasionally to a visionary end (e.g. to generate sustainable profits)" (Ljungquist, 2007:396). Knowledge and human beings are the integral components of competencies (Spanos & Prastacos, 2004).

Competence includes knowledge, skills and abilities (Ashurst et al., 2008; Basellier & Benbasat, 2004). Similarly, the BABOK[4] Guide version 2 states that the business analysis underlying competencies are the skills, knowledge and personal traits that set a base for a productive execution of business analysis (International Institute of Business Analysis, 2010). Furthermore, an individual is considered competent when his/her group of knowledge, skills and abilities is aligned to the job to be performed (Coll & Zegwaard, 2006).

Skills and knowledge requirements of IS professionals have long been a subject of research in the IS field (Todd et al., 1995; Wade & Parent, 2002). The extensive research interest in this field of study is based on the ever changing IT environment that leads to different IT/IS skills and knowledge requirements (Lee, 2005; Lee & Fang, 2008; Lee & Lee, 2006; Lee, Trauth & Farewell, 1995). This suggests that there is a constant need to understand the evolving IS competencies, which are a group of skills and knowledge of the various IS professionals.

Technical skills[5] are highly demanded of programmers, systems analysts and IS managers, even though business skills are increasingly becoming one of the critical skills required (Todd et al., 1995). Although there has been consensus over the years by Wade & Parent (2002) surveying Webmasters, Basellier & Benbasat (2004) focusing on IT professionals, Lee & Lee (2006) researching IT managers and Merhout & Buchman (2007) covering IT auditing, that specific technical skills are required from IS professionals in line with their specific roles, business and behavioural skills are repeatedly emphasised as necessary. Furthermore, there is a need to balance business and technical skills which referred to as soft and hard skills (Lee, 2005; Lee & Lee, 2006). These studies imply that, in the past, technical skills were consistently the main requirement for the job to be performed, while there is now clearly a shift which includes business and behavioural skills.

[4] BABOK is the Business Analysis Body of Knowledge which provides guidance about the knowledge needed in performing business analysis. It is defined by the International Institute of Business Analysis(International Institute of Business Analysis, 2010)

[5] Technical skills symbolises the ability to use technical knowledge with some level of proficiency (Coll & Zegwaard, 2006). Software, hardware, architectural and network skills are classified as technical skills (Lee & Lee, 2006).

According to the IS2010 Curriculum Guidelines by Topi, Valacich, Wright, Nunamaker Jr., Kaiser, Sipior & de Vreede (2010), there are three high-level IS capabilities that are reflected as skills requirements for IS professionals and these are:

1) IS specific knowledge and skills;
2) Foundational knowledge; and
3) Domain fundamentals, (please refer to Table 2a for a further detailed breakdown of this classification).

The IS2010 Curriculum Guideline, which represents what academia requires of IS professionals, seems to suggest a balanced view on technical and business skills. It further outlines an IS specific course that a student can take in order to follow a business analyst career, and how much each course is covered as part of the IS2010 curriculum. The specific courses are stated below in Table 2b. In the current evolution of the IS profession there is little agreement about academic studies regarding critical knowledge, skills and abilities requirements for IT graduates to close the gap between academia and practice (Havelka & Merhout, 2009); and no standard taxonomy or terminology relating to critical knowledge and skills (Lee & Fang, 2008). From both an academic and a practical perspective, this implies that even though there is agreement that both technical and business skills are required, there is little agreement on the classification of these skills.

IS specific knowledge and skills	**Foundational knowledge**	**Domain fundamentals**
• Identifying and designing opportunities for IT-enabled organisational improvement; • Analysing trade-offs; • Designing and implementing information systems solutions.	• Leadership and collaboration; • Communication, negotiation, analytical and critical thinking, including creativity and ethical analysis; and • Mathematical foundations.	• General models of business; • Business specializations; • Evaluation of business performance.

Table 2a: IS professionals' skills and knowledge requirements by Topi, et al. (2010)

	Significant Coverage	Some Coverage
Core IS Courses	• Foundation of IS • Enterprise Architecture • IS Strategy, Management & Acquisition • Systems Analysis & Design	• Data & Information Management • IT Infrastructure • IT Project Management
Elective IS Courses	• Business Process Management • Data Mining & Business Intelligence • Enterprise Systems • Knowledge Management	• Application Development • Information Search & Retrieval

Table 2b: IS specific courses for a business analyst career path by Topi, et al. (2010)

2.4.3. Business Analyst Practices

Practice is how the capabilities and competencies are operationalised and underpinned by knowledge, skills, experience and behaviour (Ashurst et al., 2008). Practice acts as a foundation in making learning form part of what people do and enable knowledge management (Wenger, 2004). In other words, it is through learning, and using what one has learnt, that one becomes knowledgeable. This type of learning can happen in Communities of Practice (COP). COPs are groups of people who share an interest in a particular topic or in resolving a problem, and are willing to contribute their knowledge and experience in order to do things better (Wenger & Snyder, 2000, Wenger, 2004 & Wenger, McDermott & Snyder, 2002). Furthermore, knowledge is created in COPs as individuals engage with one another through work and start sharing ideas (Bresnen, Edelman, Newell, Scarbrough & Swan, 2003). An individual is considered competent if she/he is able to attain the repertoire of communal resources, such as language, routines, sensibilities, artifacts, tools, stories, style, etc. and is able to properly utilise them (Wenger, 2000).

The working definition for the current study is in line with the definition of practice of Ashurst et al. (2008:355), which is "a set of socially defined ways of doing things, in a specific domain, to achieve a defined – and generally measurable – outcome, and create the basis for responding appropriately to individual circumstances".

Although the studies of Vashist et al., (2010) and (2011) are about business analysts, their focus is specifically on boundary practice of business analysts and the relationship between users and IT staff. The concept of boundary practice can be defined as a practice whose primary concern is "to connect other practices by addressing conflicts, reconciling perspectives, and resolving differences" Vashist et al., (2011). Furthermore, their studies are case-study based. Vashist et al. (2010) found that the role and practice of business analysts is that of mediators between users and IT staff, and that a business analyst is expected to speak business and IT languages in order to communicate better with both users and IT staff. Vashist et al. (2011) investigated the boundary practices of business analysts and their study also found key implications for business analyst practices, which include the following:

a) in order for a business analyst to meet user expectations, analytical ability is more important than technical and business skill;
b) a business analyst role is required in the entire project lifecycle;
c) a business analyst should focus equally on problem analysis and solution-orientation; and
d) a business analyst should use electronic tools with caution as they might impede the presentation of requirements.

2.4.4. Business Analyst Knowledge, Skills, Experience & Behaviour

The definitions of knowledge, skills, experience and behaviour which underpin the business analyst practices are shown in table 3:

Concept	Definition of concept
Knowledge	Knowledge can be explicit, specific knowledge that aligns to a specific content area; or tacit, experience-based knowledge (Bassellier & Benbasat, 2004). It is regarded as the "know how of the job" (Peppard & Ward, 2004:181).
Skill	Skill is the ability of an individual to show consistent behaviour in executing processes and tasks (Bassellier & Benbasat, 2004). It is the "know what of the job" (Peppard & Ward, 2004:181).
Experience	Experience can be explained in terms of depth (the intensity of the experience in terms of effort and understanding) and breadth (the diversity of tasks the experience happens in) (Bassellier & Benbasat, 2004).

Behaviour	Behaviour and attitudes are "the personal attributes or aptitudes that make knowledge useful and enable skills to be acquired in the first place" (Peppard & Ward, 2004:181).

Table 3: Knowledge, skills, experience and behaviour definitions

The next section explains the business analysis capability model that will be validated for this study.

2.5. Business Analysis Capability Research Model

The business analysis capability model is depicted in a hierarchical structure that reflects the relationship between knowledge, skills, experience and behaviour and practices, then competencies and, finally, capability. The BA capability theoretical constructs are based on the RBV of the firm theory and the concept of practice. Conceptually and empirically the concepts of competence, capabilities and resources are associated, although their characteristics are different (Ashurst et al., 2008) from a conceptual and empirical point of view (Ljungquist, 2007). In addition, these concepts, including the concept of practices, have been researched extensively in the general and strategic management literatures (Ashurst et al., 2008).

Figure 3a depicts the hierarchical relationship between the concepts of capability, competencies and practices as used in the current research and is adapted from Ashurst et al. (2008). According to Peppard & Ward (2004) there are three levels to these theoretical constructs covered in figure 3a, These are resource, organization and enterprise levels. The lowest level is the resource or individual level, which covers the knowledge and skills a particular individual should possess, and which are controlled and owned by the organization (Peppard & Ward, 2004). Practices (i.e. the informal way an individual does certain things without any formal agreement) are used to combine the individual knowledge and skills into competencies (Caldeira & Ward, 2004). Competencies form part of the organizational level. This level is concerned with how the organisation brings together these individual resources and uses them through the application of practices. According to Spanos & Prastacos (2004) people and knowledge are the key fundamental constitutive elements of an organisation's competencies. The highest level is the enterprise or business level. Capability is placed at this level and it "fundamentally rests

on the active involvement of human actors as knowledge subjects and doers" (Spanos & Prastacos, 2004:33). The theoretical concepts have been explained in detail in section 2.4.

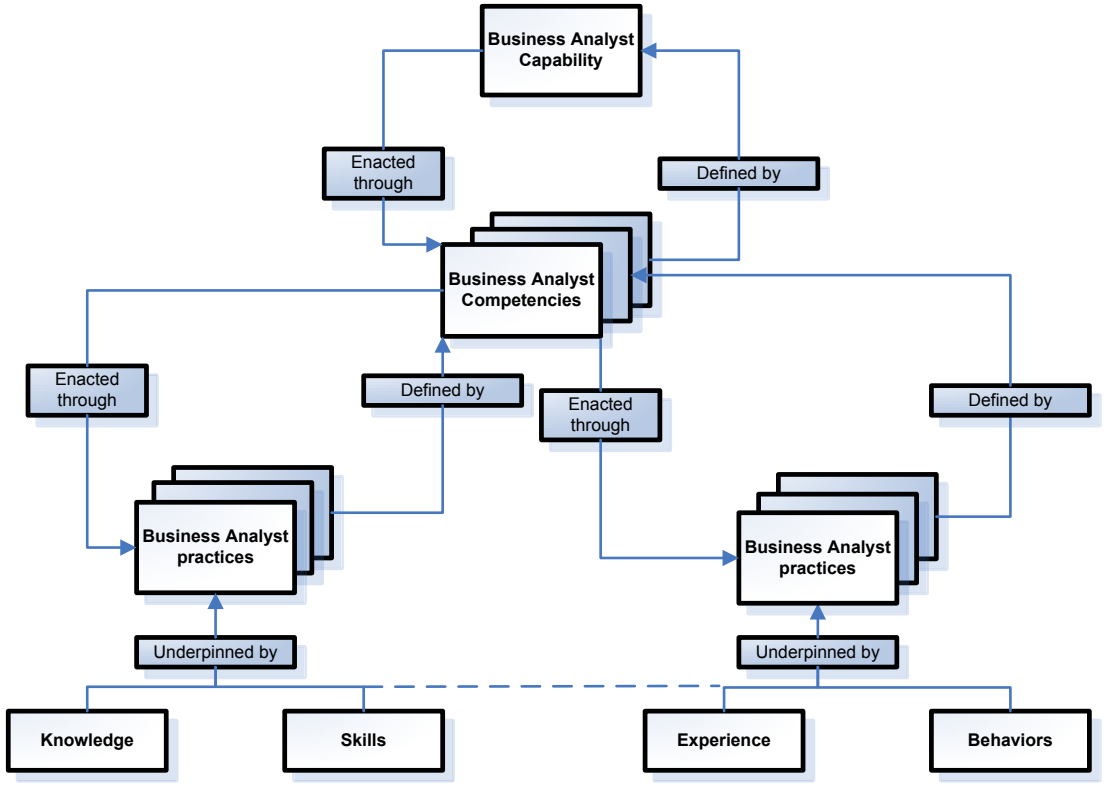

Figure 3a: The relationships between capabilities, competencies and practices - adapted from Ashurst et al. (2008)

In order to understand which competencies and practices make a specific contribution to the overall business analysis capability, the framework in figure 3a that shows the relationship between capabilities, competencies and practices, is further sub-categorised using previous literature. The skills and knowledge sub-classification was based on literature by Todd et al (1995) and Lee (2005) which is shown in Appendix A. The sub-categories are hardware, software, business, management, social, problem solving and development (Todd et al., 1995). Lee (2005) added mainly architecture and network. Evans (2004) identified specific business analysis knowledge and personal traits categories, which were added and shown under Appendix B. Previous research by Vashist et al. (2010) and Vongsavanh & Campbell (2008) established business analyst practices displayed in Appendix C. The consolidated decomposed business analysis capability model is presented in Figure 3b.

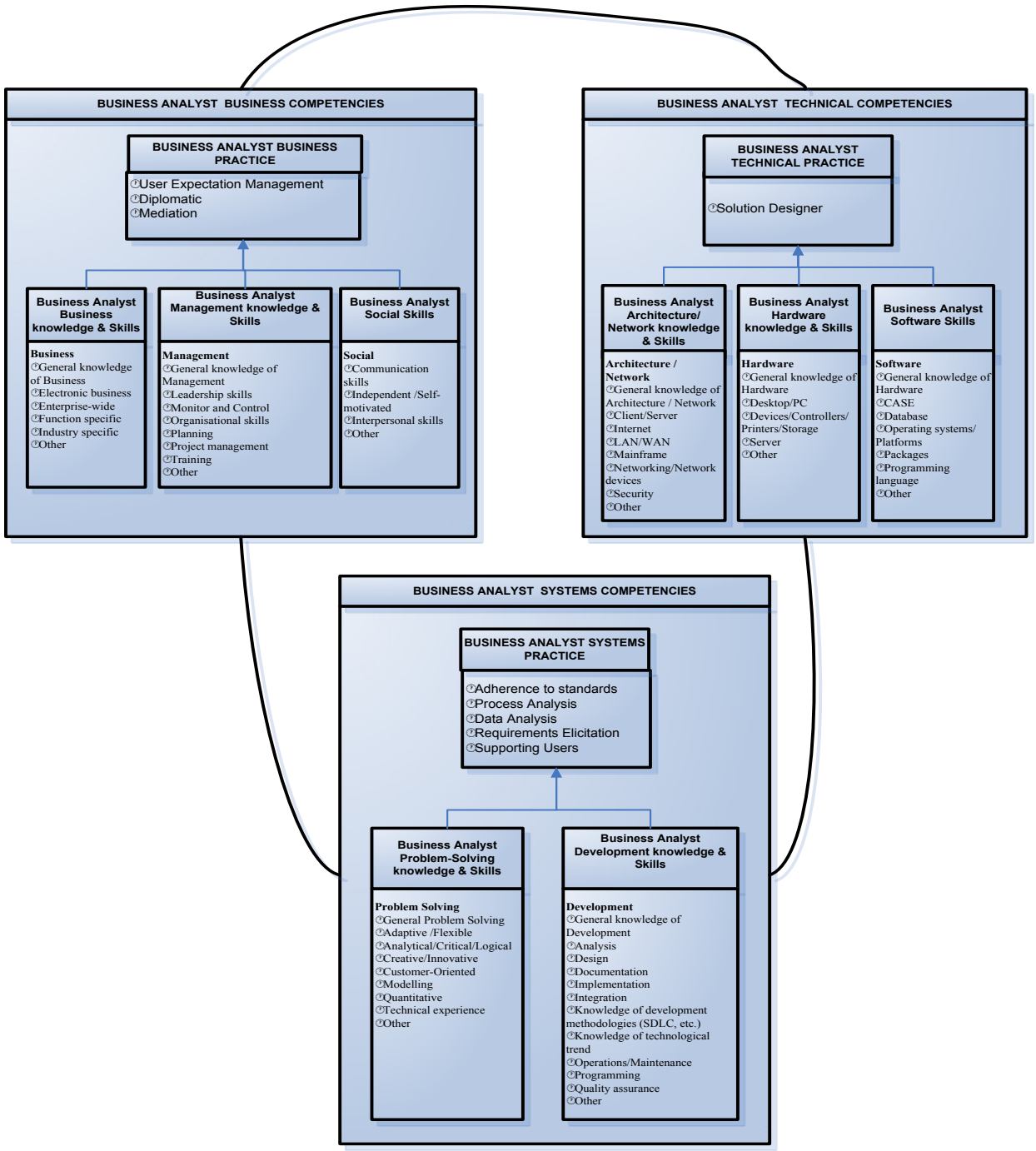

Figure 3b: The Business Analysis Capability Model

The following section affirms the research questions for this study.

2.6. Research Questions

Practice has a direct effect on the way knowledge is developed, spread and used (Bresnen et al., 2003). It can be viewed from the inside (i.e. from the participant's point of view) or from the outside (i.e. looking at patterns and regularities) (Vashist et al., 2010). Basellier, et al. (2004) suggest that practice is required and that knowledge alone does not result in

competence. In studies by Vashist et al. (2010) and Vashist et al. (2011), the concept of boundary practice was utilized and played a key role in determining the practices for business analysts from their engagement with users and IT staff. Their research scope was, however, restricted only to Australia. There is still a gap regarding making use of the concept of practice, instead of boundary practice, and on the focus on SA and the UK to identify business analyst practices. This leads to the following research questions:

- ***Question 1a****: What are the suggested practices for business analysts in S A and the UK as perceived by employers?*
- ***Question 1b****: What are the business analyst's practice differences and similarities between organisations of business analysts in SA and the UK?*

The rapidly changing IT environment makes it difficult for academics to align to practice in terms of knowledge and skills requirements (Havelka & Merhout, 2009; Lee, 2005; Lee & Fang, 2008; Lee et al., 1995). One competency that various academics like Todd et al. (1995), Basellier & Benbasat (2004), Lee & Lee (2006) and Wade & Parent (2002) consistently agree upon is that of technical skills. Business and behavioural[6] skills are becoming as important as technical skills (Basellier & Benbasat, 2004; Lee, 2005; Lee & Lee, 2006). Literature indicates that various studies have been conducted on IS professionals' knowledge and skills requirements, such as IT managers, programmers, systems analysts, IT auditors and IS professionals in general, but there is limited academic literature on business analysts' specific competencies. There is clearly a gap in what the suggested critical competencies are for the different IS roles, especially for the business analyst role. The following research questions, therefore, are suggested:

- ***Question 2a****: What are the competencies required of business analysts by employers in SA and the UK?*
- ***Question 2b****: What are the competency differences and similarities between SA and UK organisations of business analysts?*

Capabilities result from the active participation of humans as "knowledge subjects" and "doers" (Spanos & Prastacos, 2004). Peppard & Ward (2004) suggest that all

[6] Behavioural skills are skills associated with one's personal characteristics (Peppard & Ward, 2008)

organisations have an IS capability and the only distinctions are whether it is strong or weak and how it impacts on change for business advantage. Extensive research conducted by Mata et al. (1995), Dehning & Stratopoulos (2003), Peppard & Ward (2004) and Bhatt & Grover (2005) on describing IS/IT capabilities which can influence business performance or competitive advantage have focused on senior management IT/IS experience and skills. Ashurst et al. (2008) also presented a business realisation capability model. There is limited research, however, on business analysis capabilities and therefore the following research questions are suggested:

- ***Question 3a****: What are the suggested business analysis capabilities that both employers in SA and the UK perceive as having the potential to achieve competitive advantage?*
- ***Question 3b****: What are the capability differences and similarities between SA and UK organisations of business analysts?*

2.7. Conclusion

Chapter 2 discussed the justification of the theoretical underpinning of the current study, the background to the literature review, the RBV of the firm theoretical background, the business analysis research model and the research questions that need to be validated. The next section will outline the research methodology that will be used to answer the research questions stated in this chapter.

Chapter 3: Research Methodology

3.1. Introduction

The previous chapter discussed the literature review, proposed the RBV of the firm as a theoretical background and the business analysis research model guiding this research. It then concluded by stating the research questions. In validating the proposed theoretical framework and answering the research questions covered in chapter 2, the research design and the data collection and analysis methods, which will be used in conducting this research study, are addressed in this chapter. Firstly, the research paradigm underpinning this research is introduced. Secondly, the methodological approach that will be used to sample and collect the data is covered. Thirdly, the data analysis method is explained. Fourthly, the validity and reliability issues associated with the type of research being undertaken are discussed. Lastly, the limitations and ethical considerations that might arise from this type of research are stated.

3.2. Research Paradigm

Positivism is the most dominant research philosophy for studying IS phenomena (Orlikowski & Baroudi, 1991) and the present study uses neither a pure positivist nor a pure intepretivist paradigm, but rather follows a positivist qualitative research approach. This approach was chosen because it is guided by the RBV of the firm theory and tests its applicability in the development of a business analysis capability model both in qualitative and quantitative ways.

Qualitative research can be positivist, interpretivist or critical, depending on the objectives of one's research or on one's philosophical bent (Klein & Myers, 1999). Qualitative research looks for "depth rather than breadth" and meaning (Ambert, Adler, Adler & Detzner, 1995: 880). The qualitative research method is now accepted in IS research as it can produce new insights and is, itself, a valid research approach (Caroll & Swartman, 2000). Since this study intends to identify the practices, competencies and capabilities of a business analyst, it focuses on the identification of themes in the knowledge, skills and practices in job advertisements. It does not look at the meaning of the actual words within the job specifications. Rather, it assumes that the words reflect what happens in the actual working environment from a social perspective. The positivist qualitative approach is, therefore, appropriate as a guide to this research.

The methodological approach will be discussed in detail in the next section.

3.3. Methodological Approach

3.3.1. Source and Method of Data Collection

There are various techniques for data collection in qualitative research, such as interviews, observations and documentation, which includes memos, electronic mails, annual reports, financial statements, newspaper articles and websites (Bhattacherjee, 2012). Documentation, in the form of job advertisements from websites, will be used as the main source of data collection for this study. Document analysis was considered, instead of interviews or observations, solely because it would be difficult to have face-to-face access to the business analysts based in the UK from a resource (financial and time) perspective. As the study intends to study job advertisements, the Internet is currently the most commonly used medium in linking potential employees with potential employers (Lee, 2005), because it gives one current information and is an indication of what employers expect from prospective employees. Although they are based on subjective perceptions of the participants, in a quantitative research approach, surveys or questionnaires are the most popularly used forms of data collection methods (Todd et al., 1995). Predefined questions measuring the extent of agreement relating to the phenomena under study are asked.

3.3.2. Context of the Study

The current study sourced job advertisments from SA and the UK through two websites, that is, one from SA and one from the UK. Both these e-recruitment services were highly recommended by work colleagues in SA and the UK. Specific IT-focused companies were not used because business analysts work across industries and can be based in business instead of IT in different companies. The South African online e-Recruitment Service Provider from which the research data was drawn is 'PNet'. The organisation was establised in 1997 (www.PNet.co.za) and is well known in SA as an online e-Recruitment Service Provider. PNet indicates that an average of 25,000 job advertisements are updated on a weekly basis. Furthermore, it covers job advertisements for the whole of SA across different industries.

The online e-Recruitment Service Provider used to collect the UK research data was 'JobServe'. According to the JobServe website (www.jobserve.co.uk), the company was established in 1993 and operates in 17 industry sectors from 2010. Instead of covering the whole of Europe, only the UK data was sourced for the purpose of this study.

3.3.3. Sampling

One of the strengths of using job specifications is that the sample size is not restricted, because secondary data is used and a wide range of job descriptions can be sampled (Todd et al., 1995). For the purpose of this research, 300 online job advertisements were collected (150 from SA and 150 from the UK). The data was only collected in respect of business analyst and associated jobs advertised. Related business analyst jobs covered those requiring a business analyst and associated role, for example: business analyst and project manager, business process analyst, business systems analyst, etc. Only permanent jobs were considered for this research, that is, temporary and contract-based job types were excluded in order to focus on the core skill requirements.

The issue of selecting an acceptable sample size relies on the type of research being undertaken, and on whether the research aims to generalise to the entire population or to focus on theory building (Ambert et al., 1995). Sampling in qualitative studies is therefore referred to as purposeful (Forman & Damschroder, 2008). A small sample is acceptaple in qualitative research (Hussey & Hussey, 1997). The goal of this study is to generalise to the business analyst population. Therefore, this study used 300 job advertisements instead of having a very small sample size. A large sample size helps reduce bias (Bryman & Bell, 2003). Given the time and financial constraints present in conducting this research, convenience sampling was used. Convenience sampling falls under non-random sampling and is used due to its practicality, despite limiting the ability to generalise on the findings (McBurney, 2001; Welman, Kruger & Mitchell, 2005). In addition, the job advertisements were not selected haphazadly, rather, the business analyst advertisements were chosen in the sequence displayed by the search result.

Since the new online job advertisements are published on a weekly basis, they were checked and collected weekly until 300 job advertisements had been sourced. If the website allowed searching jobs that had been advertised before the search commenced,

the function was used to collect job specifications that had been published during the previous two week period. This was mainly due to the limited time available for collecting the data.

3.4. Data Analysis Method

Secondary data is pre-existing data that is found, for example, in books, documents, newspapers and films, while primary data is data gathered from the place it originated (Hussey & Hussey, 1997). This study performed data analysis using secondary data. Secondary data text can be analysed using a coding technique which is "a process of classifying and categorizing text data segments into concepts or "codes", which can then be used to uncover patterns in the data" (Bhattacherjee, 2012:113). The current study used theme identification as a method of data analysis. Theme identification is a data analysis method where words and the repetition of words are counted (Welman, Kruger & Mitchell, 2005). As part of theme identification, the researcher aimed to code the data with categories based on RBV theoretical concepts, count them and then compare the results.

The job advertisements were analysed using predefined codes based on previous research and those codes that emerged from the data were analysed using descriptive and 'in vivo' coding methods as part of the first cycle coding process. Descriptive coding expresses sentences in a single word or short phrases and 'in vivo' coding uses a word obtained from the participant or document (Saldana, 2009).

3.4.1. Content Analysis Approach

For data analysis purposes, content analysis was used. The aim of using content analysis is to contribute to knowledge building and understanding the phenomenon being studied (Hsieh & Shannon, 2005). Content analysis is an approach that is taken which analyses written, verbal or visual communication in order to gain a more concise and a broader description of the phenomenon by explaining the analysed phenomenon using concepts or categories (Elo & Kyngas, 2007). As there is limited academic knowledge on business analysis, this approach is suitable for use in achieving the objectives of this study. The concept of content analysis has its origins in the 18th century in Scandinavia (Hsieh & Shannon, 2005). The method was used to analyse hymns, newspaper and magazine articles, advertisements and political speeches (Elo & Kyngas, 2007). It has therefore been in use for a long time. Content analysis takes a systematic approach to analysing the

data (Bhattacherjee, 2012:113; Hussey & Hussey, 1997) and is a process of presenting the qualitative data in a quantitative form by establishing the frequencies and sequencing of particular words, phrases or concepts (Welman et al., 2005).

Hsieh & Shannon (2005) and Humble (2009) state that there are three types of qualitative content analysis (summative, conventional and directed), and describe *summative content analysis* as involving applying numbers to the words or content in order to statistically analyse it. *Conventional content analysis* lets the analysis guide the results of categories rather than developing categories first and then imposing them on the data. *Directed content analysis* uses pre-defined conceptual categories and is best used when validating or extending a theoretical framework or theory. Directed content analysis was employed in this research, because one of the aims of this study was to validate the extent to which the RBV of the firm theory can assist in explaining competencies and capabilities. In addition, this approach is applicable when the aim of the research is to fill a gap in an incomplete phenomenon (Humble, 2009). There is clearly a gap in knowledge regarding the business analysis phenomenon as previously stated in chapters 1 and 2, and this approach, therefore, is suitable for use in the current study.

3.4.2. Analytical Process of Content Analysis

The content analysis approach can be either inductive or deductive (Elo & Kyngas, 2007). Deductive content analysis uses a structure which is based on theory or on a conceptual model in analysing the data, while inductive content analysis builds a theory from the observation of an empirical reality (Bhattacherjee, 2012; Elo & Kyngas, 2007; Hussey & Hussey, 1997). This report is guided by the RBV of the firm theoretical framework and therefore the analytical process of content analysis was deductive in nature. Whether data analysis is inductive or deductive, there are three key high-level phases in the process: data preparation, organisation of data during the coding process and reporting (Elo & Kyngas, 2007). The analytical process that was used for this study is adapted from Zhang & Wildemuth (2009), which has eight classic steps as depicted in figure 4.

Step 1: Prepare the data

The first step entails making interview transcripts into text and explaining why a certain content is chosen (Zhang & Wildemuth, 2009). Part of the initial steps in the qualitative

analysis process is deciding which data will be used for the analysis, including the sampling which is aligned with the theory or purpose of the study (White & Marsh, 2006). In the current study interview transcripts were not used, but job specifications were, in order to identify the practices, competencies and capabilities as percieved by employers.

Step 2: Definine the unit of analysis

This involves using a word, item or theme as a unit of analysis (Hussey & Hussey, 1997) and depends on the objective of the study (Elo & Kyngas, 2007; Zhang & Wildemuth, 2009). When reviewing the Elo & Kyngas (2007) analytical process, the first and second steps form part of the preparation. For example, the themes that were used in the current research were individuals' technical skills, business skills, systems skills and practices.

Step 3: Develop categories and a coding scheme

The categories and coding scheme are based on theory or previous studies (Elo & Kyngas, 2007; Zhang & Wildemuth, 2009). The skills and knowledge classification will be based on the coding scheme by Todd et al (1995) and Lee (2005) who updated it with some of the latest skills and knowledge, as shown in Appendix A. The Todd et al. (1995) coding scheme has been validated by numerous studies, including Havelka & Merhout (2009), Lee & Lee (2006) and Wade & Parent (2002). The categories are hardware, software, business, management, social, problem solving and development (Todd et al., 1995). Specific business analysis knowledge and personal traits categories identified by Evans (2004) were added on the coding scheme and these are shown in Appendix B. Practices categories drawn from previous research by Vashist et al. (2010) and Vongsavanh & Campbell (2008) are classified and displayed in Appendix C.

A coding scheme is the formation of categories and includes the process and rules of data analysis (Hsieh & Shannon (2005). It must satisfy the goal of the research study (Forman & Damschroder, 2008). New categories that emerge during the coding process will be included in the coding scheme (Zhang & Wildemuth, 2009). Categories are formed directly from the text or obtained through analysis (Saldana, 2009). A mixed approach (inductive and deductive) was applied to develop the final coding scheme. Each job specification was coded according to the coding scheme shown in Appendix D, which was based on this study's theoretical conceptual model and previous research.

Step 4: Test the coding scheme on a sample of text

This forms part of the pre-testing and validation of the coding schema (Zhang & Wildemuth, 2009). The coding scheme was pre-tested as set out by Gerhard, Brem, Baccarella & Voigt (2011:336), and the following steps were followed. Firstly, an independent person, who was unaware of the research goal, was selected. Secondly, the independent person was trained in the coding procedure to be used and the relevant technical terms were explained. Thirdly, the person was allowed to practice the procedure a few times before the actual coding started. Fourthly, the person participated in a discussion with the coder when inconsistencies were identified until the person was familiar with the coding procedure. Ten job advertisements were coded by the researcher and another ten by the independent person as a pre-test.

As the aim was a measure of objectivity, the research was as objective as possible. In supporting objectivity, the inter-coder reliability using the Cohen Kappa was calculated to test the coding schema used for coding. The inter-coder reliability was used to determine the degree of agreement among coders who were coding the same documents (Lombard, Snyder-Duch & Bracken, 2002). This assessment is a quantitative technique and therefore supports the positivist approach, albeit in an essentially qualitative study. The calculated inter-coder reliability percentage was considered acceptable if it was equal to or higher than 75% (Lombard, Snyder-Duch & Bracken, 2002). The inter-coder reliability tested the reliability of the coding scheme. Once it's reliability was established, the job advertisements were analysed using the set coding scheme and the findings were compared between the two countries.

Step 5: Code all text

This step covers the actual coding process and brought out new themes which were included in the coding scheme (Zhang & Wildemuth, 2009). The coding process steps were iterative (Forman & Damschroder, 2008; Kotlarsky & Oshri, 2005 and Saldana, 2009) and the emergent patterns, categories, sub-categories and themes were analysed (Saldana, 2009). While themes may emerge from the data and may be considered, this study consisted mainly of predefined categories, sub-categories and themes based on previous research that aligns with the theoretical framework. It focused on theme identification where the codes were counted and then compared.

Step 6: Assess your coding consistency

Human coders can make mistakes while coding and therefore the researcher needs to check for coding consistency (Zhang & Wildemuth, 2009). The issues of validity and reliability also form part of this step. They are discussed in detail under section 3.5.

Step 7: Draw conclusions from the coded data

Step 7 draws conclusions based on findings from the coded data (Zhang & Wildemuth, 2009). In chapter 5 the results and findings will be discussed and, where appropriate, validated against literature.

Step 8: Report your method and findings

Once conclusions are drawn, the method used and the findings are reported (Zhang & Wildemuth, 2009). The actual method used is discussed under chapter 4, the findings are addressed in chapter 5 and the conclusion is set out in chapter 6.

Although the process of analysis is represented in linear format, it is an iterative process (Elo & Kyngas, 2007; Saldana, 2009).

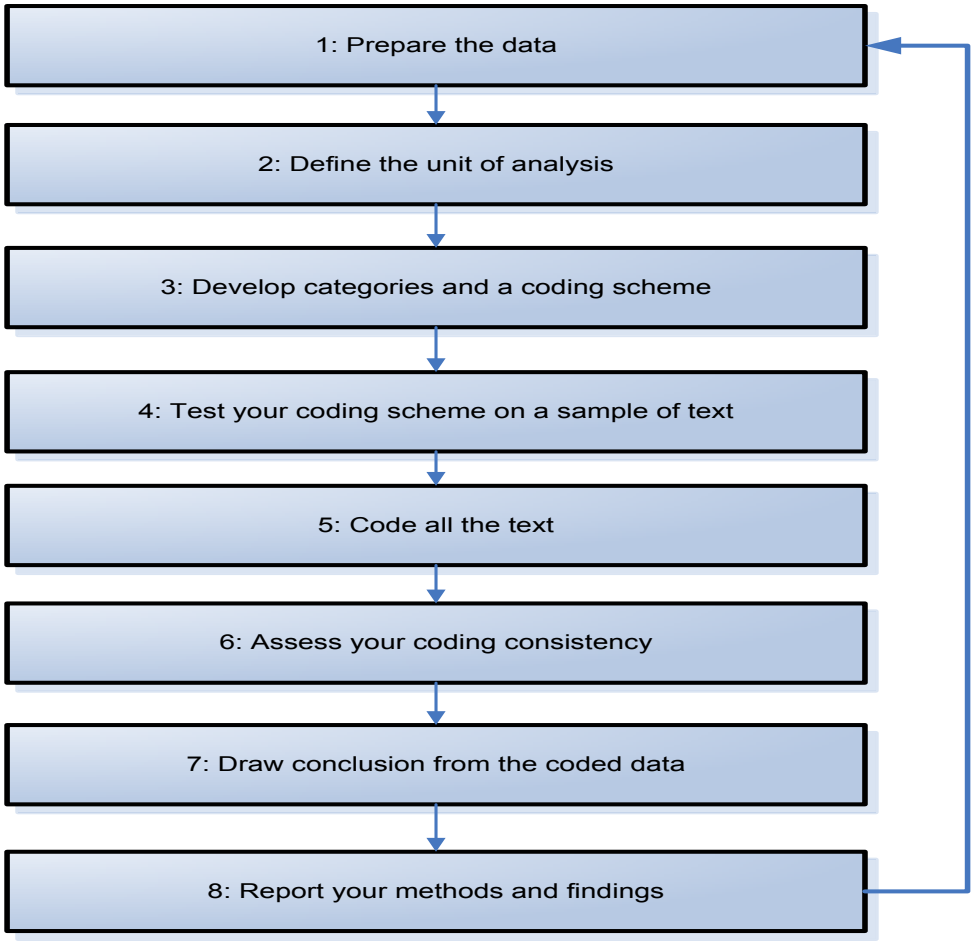

Figure 4: Analytical process of qualitative content analysis
- by Zhang& Wildemuth (2009)

3.4.3. Qualitative Data Analysis (QDA) Software

Data analysis was conducted using the Qualitative Data Analysis (QDA) software called 'Atlas.ti[7]'. It is important to highlight the fact that Atlas.ti does not perform the actual data analysis but assists in handling the amount of data collected (Forman & Damschroder, 2008). It will be used for coding and linking the codes (Kotlarsky & Oshri, 2005). The software can also be used for other purposes, including as a research assistant, manipulator and extractor of data, data collector and as a means of doing or facilitating quantitative analysis (White & Marsh, 2006:40). In order to document the process of data analysis, this research made use of a research notebook.

[7] Atlas.ti is qualitative data analysis software used to help the user perform data analysis and is used for "coding, linking codes and text segments, documenting diversity of codes, creating memos, searching, editing and reorganising, and visual representation of data and findings" (Kotlarsky & Oshri, 2005:41).

3.5. Validity and Reliability

Whilst the integrity of quantitative research lies in the instrument development, qualitative research is dependent on the researcher as an instrument (Golafshani, 2003). It is important to document the entire research process of data analysis, discussion of the results, its strengths and limitations in order for those reading the research to understand how the study was conducted and thereby increase the validity and reliability of the research (Elo & Kyngas, 2007). A research notebook was used to assist in documenting the process.

Triangulation is a strategic tool used to increase the validity or rigour of a research study, and the use of multiple methods or data collection techniques and constant comparison is considered part of it (Humble, 2009). Constant comparison is conducted by stating a theory or model and then validating research questions against it (Ambert et al., 1995). This research report, therefore, made use of constant comparison by using the RBV of the firm's theoretical framework as a base and testing the research questions against it. This is a form of validity as it is a form of constant comparison. Furthermore, the inter-coder reliability was used to test the reliability of the coding scheme as discussed in 3.4.2 under step 4 before it was used for final coding.

3.6. Ethical Considerations

For ethical consideration purposes, when conducting qualitative research there is a need to be "rigorously ethical" – that is, honesty is very important when dealing with data and therefore data should not be ignored or deleted during the data analysis stage (Saldana, 2009). Furthermore, the documents which are chosen and used for data collection and analysis by the author must be explained and substantiated in order for an evaluator to be able to judge the quality of the data (Ambert et al., 1995). This study supports both these ethical considerations and made sure that the entire process during data collection and analysis was documented. A research notebook was used to document any thoughts that came through during coding. A photocopy of the research notebook and a CD of all the data obtained are included as Appendix I and Appendix J respectively.

3.7. Conclusion

Chapter 3 outlined the research methodology that guides this research study. The research paradigm, methodological approach, data analysis, validity and reliability, as well as ethical considerations were explained in detail. The next chapter will discuss how the research data that was collected will be analysed in relation to the data analysis method that was chosen in chapter 3.

Chapter 4: Data Analysis Strategy

4.1. Introduction

The positivist qualitative research methodology adopted in this research was discussed in chapter 3. This chapter presents the data analysis strategy and is structured according to the analytical process of qualitative content analysis adapted from Zhang & Wildermuth (2009) introduced in Chapter 3. Firstly, it covers data preparation. Secondly, it defines the categories and the coding scheme that is used. Thirdly, it explains how the coding scheme was tested on a sample of text and the results of the pre-test. Finally, it presents the process of the final coding of all text and the assessesment of coding consistency.

4.2. Preparation of Data

The stage for preparation of data covers data sampling, aligning the sampled data to the theory or the purpose of the study and translating the data collected from different forms into text (White & Marsh, 2006).

The 10 job advertisements for the pre-test and the 300 for the main study were collected from online job advertisements and were in text format. Therefore there was no need to change the data. The 150 SA job advertisements were obtained from the 'Pnet' website and the 150 from the UK were sourced from the 'JobServe' website. The job advertisements were searched across industries using the keyword 'business analyst'. All 300 job advertisements were initially printed and manually analysed by the researcher. The findings, however, could not be compared with the final findings from Atlas.ti because the coding scheme was not the same as that used in some of the job advertisements and the coding rules used were different. The final coding used for presentation of the results was performed using Atlas.ti. Even though manual coding allows the human coders to decide what each word means in the context it is used, computer-aided content analysis gives the researcher better reliability in terms of text classification and saves time (Bryman & Bell, 2003). For the current study, therefore, Atlas.ti was used to assist in analysing data.

4.3. Categories and Coding Scheme

Directed content analysis uses categories based on theoretical concepts and is normally used when validating or extending a theoretical framework or theory (Hsieh & Shannon, 2006; Humble, 2009). As deductive content analysis is based on theory or previous research work (Elo & Kyngas, 2007 and Zhang & Wildemuth, 2009), the categories and sub-categories were based on previous research by Todd et al (1995), Evans (2004), Vashist et al., (2010) and Vongsavanh & Campbell (2008) as discussed in detail in Chapter 3. The coding scheme was initially created using a deductive process since this research is based on the RBV of the firm theory and the concept of practice. There were certain codes that emerged from the data while pre-testing the coding scheme. The researcher then used an inductive approach to include the emergent data as part of the coding scheme. A mixed approach was therefore used to set the coding scheme for this research.

4.4. Coding Scheme Testing on Sample Text

4.4.1. Pre-test and Pilot

A pre-test and pilot were performed before the actual coding started. As part of conducting the pre-test and pilot, three independent persons were requested to assist. The professions of the independent persons were business analyst, project manager and deputy director. None of the three had any coding experience. They were all briefed separately about the research topic, its goal, definitions of concepts (i.e. capability, competence and practices) and trained to code. The researcher and each of the independent persons coded a number of examples together to familiarise themselves with the coding scheme and the process of coding. A total of 10 job advertisements were used for the purpose of the pre-test (5 from SA and 5 from the UK). The same job specifications were given to the independent coders and the researcher.

During the first cycle of pre-test coding, the researcher and Coder 1 used manual coding. The coding scheme was modified as per the feedback obtained from the independent persons. Initially the coding schema was categorised using the theoretical framework and set at a conceptual level with examples. The feedback from the first independent person suggested that the categories should be broken down to a lower level. The categories were then sub-categorised from the conceptual level using previous research by Todd et al

(1995), Evans (2004), Vashist et al., (2010) and Vongsavanh & Campbell (2008). This is in line with the deductive approach followed in this research, which is based on theory or previous research (Elo & Kyngas, 2007).

Due to work commitments, Coder 1 was not available to test the revised coding schema. Coder 2 performed two iterations of coding the pre-test. Coding was performed using Atlas.ti. Atlas.ti assists in making the analytic process more understandable (Burla, Knierim, Barth, Liewald, Duetz & Abel, 2008). During the first iteration the coder and researcher used slightly different codes and the method of coding in Atlas.ti was different. Examples of some of the issues were that quantitative and analytical categories were bucketed as one, whilst quantitative category referred to numerical values and analytical category meant logical thinking and also coded "technical experience under systems: general development" when there was a category for technical experience. These issues are documented in Appendix I, research note 2. Furthermore, when searching, Coder 2 used a wild card like "Quantitative =>numerical|math*|numeracy" and the researcher did not make use of them. In terms of method of coding, the use of auto coding was also not agreed upon upfront and Coder 2 and the researcher applied it differently. This highlighted the importance of providing the coders with pre-defined codes that they can copy and paste into Atlas.ti. The method of coding within Atlas.ti was agreed upon. The agreement was that the semi-manual auto coding functionality be used for all documents and that coding should be performed per sentence. The search criteria which should be used as per the final coding manual are displayed in Appendix F. The same method of coding was used with Coder 3. After this process Coder 2 became too busy to continue and could not perform any more coding.

Coder 3 participated in four iterations of coding before the final coding manual was set. The same coding scheme (i.e. same code, search strings and descriptions) listed in Appendix F was given to Coder 3, together with some basic coding rules. These rules entailed using semi-manual auto coding, coding all documents per sentence, starting the coding sequentially from top to bottom, and using one code category per advertisement. If two codes of the same code were coded, the second one was to be deleted. The researcher suspects that the last rule relating to the deleting of a duplicated code might have caused Coder 3 not to follow the coding process sequentially and he ended up not following the instruction exactly as initially agreed upon. It is difficult to know exactly what Coder 3

did to tamper with the coding process as he was not supervised whilst coding to avoid affecting the objectivity of the coding process at the time. Some reasons as to why there was no agreement were that incorrect search criteria were used, a code was missed and never coded, different searching strings were used and coder fatigue, due to coding a large number of job specification. To resolve these issues, all search strings were consolidated and it was agreed that the coding would be done systematically in alphabetic order. The coder and researcher explained why one included certain codes that the other did not have. This feedback was used to update the coding manual. Overall there were 7 iterations. Even though explanations, examples and search strings were provided, the whole process is still subjective because the coder still needed to apply his mind about coding or not coding, as well as how to code. The researcher has been working in the IT industry for 13 years and is used to the variations of the terms used, while the coder, on the other hand, did not have that kind of knowledge and experience.

4.4.2. Pre-test Validity and Reliability

Once the coding of the 10 job advertisement had been completed by Coders 2 and 3, the results were exported from Atlas.ti to SPSS[8] in order to calculate inter-coder reliability. Inter-coder reliability, also referred to as inter-coder agreement, is the measurement of the coding agreement reached between two or more coders coding the same documents (Lombard, Snyder-Duch & Bracken, 2002). The aim of calculating inter-coder reliability for the pre-test data is to reflect the non-agreement or agreement between the researcher and the independent coder, as well as to indicate whether the coding scheme is easily understandable and can be used by another independent person.

Various inter-coder reliability techniques can be used, namely, percent agreement, Holsti's method, Scott's pi, Cohen kappa and Krippendorff's alpha (Lombard et al., 2002). For the purpose of this study the Cohen kappa technique was used. If the calculated inter-coder reliability percentage is equal or higher than 75%, it is considered acceptable (Lombard et al., 2002). However, 80% reflects a high agreement rate (Burla, et al., 2008) and is therefore considered acceptable. Since the Cohen kappa after the fourth iteration was calculated as being 83,3%, the coding schema was considered acceptable. The results are shown in Table 4.

[8] The version used for SPSS was 19

CODER 2 * CODER 1 Crosstabulation

Count

		CODER 1									Total
		0	1	2	3	4	5	6	7	8	
CODER 2	0	45	0	0	0	0	0	0	0	0	45
	1	1	15	1	0	0	0	0	0	0	17
	2	0	0	4	2	0	0	0	0	0	6
	3	0	0	2	2	1	0	0	0	0	5
	4	0	0	0	0	5	0	0	0	0	5
	5	0	0	0	0	0	1	0	0	0	1
	6	0	0	0	0	0	1	0	0	0	1
	7	0	0	0	0	0	0	1	1	0	2
	8	0	0	0	0	0	0	0	0	1	1
Total		46	15	7	4	6	2	1	1	1	83

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	.833	.049	13.649	.000
N of Valid Cases		83			

Table 4: Pre-Test Inter-code reliability results

4.5. Coding all Text

Initially manual coding of the 300 job advertisements was conducted with the view that the researcher would be the only coder. This study takes a positivist qualitative approach rather than an interpretivist qualitative approach and therefore a measure of objectivity is important. A second coder was included to bring such a level of objectivity to the study. As the manual coding process takes too long, the Atlas.ti software was then used to code by both Coder 3 and the researcher. As part of performing the manual coding, certain codes emerged from analysing the job advertisements. These codes were added to the coding scheme and formed part of the pre-test. These codes are change management, cost/benefit analysis, research skills, presentation skills, facilitation skills, work under pressure and adherence to standards.

After achieving acceptable pre-test inter-coder reliability, the actual coding of the 300 job advertisements was conducted on Atlas.ti by Coder 3 and the researcher independently. Once all 300 job advertisements had been coded, the results were exported from Atlas.ti to SPSS in order to calculate inter-coder reliability. Due to Coder 3 not applying the same coding rules as the researcher, the inter-coder reliability could not be calculated in SPSS. Coder 3 was given the same coding scheme (i.e. same code, search strings and

descriptions) listed in Appendix F and provided with the basic rules to follow. These rules include using auto coding, coding all documents per sentence, starting coding sequentially from top to bottom, and using one code category per advertisement. If two codes of the same code were coded, the second one was to be deleted. The researcher suspects that the last rule relating to the deleting of a duplicated code might have caused Coder 3 not to follow the coding process sequentially and ended up not following the instructions exactly as agreed upon at the beginning. It is difficult to know exactly what Coder 3 did to tamper with the coding process as he was not supervised while coding to avoid affecting the objectivity of the coding process. Although reliability for the main analysis of the study was not computed, the same coding scheme and approach used to assess the pre-test inter-coder reliability was applied for this analysis. Therefore, an assumption was made that the coding instrument was as reliable for the main analysis as it was for the pre-study analysis.

4.6. Ethical Considerations

The data analysis phase should be handled with honesty and transparency (Saldana, 2009). The researcher confirms that to the best of her ability, the ethical considerations expected of her were followed.

4.7. Conclusion

This chapter covered the data analysis strategy employed in this study. It discussed the categories, coding scheme, pre-test followed, coding of all the data and issue of validity and reliability. The next chapter will present and discuss the results of this study.

Chapter 5: Presentation and Discussion of Results

5.1. Introduction

The data analysis strategy was discussed in Chapter 4. It explained the stages of data preparation, categorising, setting of the coding scheme, coding process for the pre-test and how the final coding of all text was conducted. This chapter contains the presentation and discussion of the results after the data was analysed. It also presents the final Business Analysis Capability Model. The structure of this chapter is represented by figure 5 below:

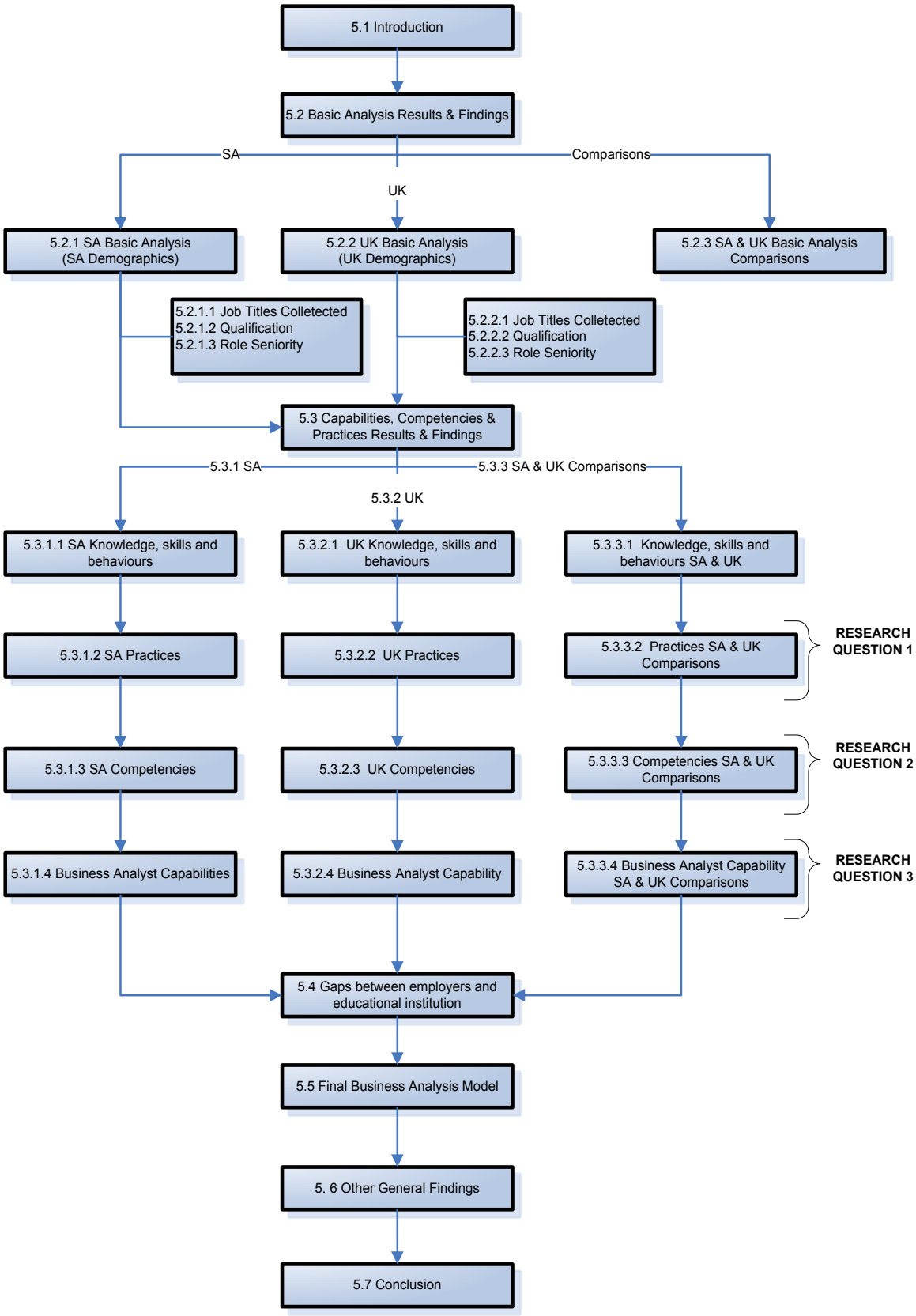

Figure 5: Structure of chapter 5

5.2. Basic Analysis Results and Findings

5.2.1. SA Basic Analysis[9]

Although the goal of the current research is to identify the practices, competencies and capabilities of business analysts, basic information was also collected in order to understand the job titles that were covered, the qualifications requirements and seniority of the role that was advertised. This section of the research will present and discuss the results of the basic analysis performed from the data collected from SA and the UK and then the comparison between the two countries. Each code was counted once in one job advertisement to prevent double counting. Furthermore, the job advertisements were numbered from 1 to 150 in both the SA documents and the UK documents to assist with eliminating the double counting. The numbering of each job advertisement allowed the coder to verify whether he was still coding within the same advertisement or not.

5.2.1.1. Job Titles Collected from SA

Table 5 displays the job titles collected from 'PNet', a South African online e-Recruitment Service Provider. 150 job advertisements were downloaded from the website and used for data analysis. The majority of the job titles in the job advertisements obtained were for a pure business analyst (86% of the total sample). There were, however, other job titles that specified a business analyst with an associated role which were also included. The second highest of these roles was for the business/systems analyst (6% of the total sample). This was not surprising as the business analyst role is normally associated with that of a systems analyst. Some of the functions performed by a business analyst are the same as those performed by a systems analyst and, according to Green (1989) and Lee (2005), these include requirements elicitation and implementation. The job titles collected for business analyst/project manager and business/process analyst roles each totalled 1,33%.

Generally, the different job titles associated with the business analyst role are due to the specific industry in which the role is based, the functions the person performs and where the role is based in terms of business or IT department (Kizior & Hidding, 2010). The fact that the role is not clear cut in terms of what it involves, does not mean it loses its significance. What it does mean is that it is more specialised on a specific analysis skill

[9] A comparison with the UK data appears later in this chapter.

set required in that organisation. For example, a business/systems analyst is expected also to be skilled in systems analysis. As the responsibilities of business analysts include involvement in the various stages of systems development (Evans, 2004), the pure business analyst role is not specialised but is the so called "jack-of-all trades". The high percentage (86%) of the pure business analyst job role seems to suggest that most organisations prefer the role to cover various stages within the Systems Development Life Cycle (SDLC), which means broader responsibilities.

Job Title	No. of ads	% of ads
Business Analyst	129	86.00%
Business Analyst/Systems Analyst	9	6.00%
Business Analyst/Project Manager	2	1.33%
Business/Process Analyst	2	1.33%
Institutional IT Business Analyst	1	0.67%
Business Consultant/Business Analyst	1	0.67%
Consultant/Business Systems Analyst	1	0.67%
Business Application Analyst	1	0.67%
Senior Business Analyst/Process Engineer	1	0.67%
Business Analyst/Product Manager	1	0.67%
Technical Project Manager/Business Analyst	1	0.67%
Business Analyst/Data analyst	1	0.67%
Total	**150**	**100%**

Table 5: SA Job titles collected versus advertisements

5.2.1.2. SA Qualifications

Qualifications requirements are used by employers as a method of eliminating or reducing unqualified applicants (Lee & Lee, 2006). The results from SA support this statement as there is a 72% tertiary qualification requirement and only a 2.67% requirement for some form of certification ranging from matric to business analysis to project management. The qualification types versus the number or percentage of job advertisements are shown in

Table 6. While most job advertisements specified a qualification requirement, there were some (25,33%) which did not mention any qualifications requirements. In addition to qualifications, job experience was a major requirement (76.67%). The number of years of experience varied. This could be due to the different numbers of years of experience expected for a junior, medium or senior business analyst. Based on these results, in SA, education and job experience were seen to be of great importance for a person seeking to perform a business analyst role. Given that the business analyst is expected to translate business requirements into specifications used by the IT department, there are some technical skills requirements that an uneducated person may struggle to perform without some form of training or previous experience.

Qualification type	**No. of ads**	**% of ads**
Qualification: Degree/Diploma	108	72.00%
Qualification: None	38	25,33%
Qualification: Certification	4	2.67%
Total	**150**	**100%**

Table 6: SA Qualifications versus advertisements

5.2.1.3. SA Role Seniority

The different seniority types of the business analyst role per number and percentage of advertisements are specified under Table 7. Of the 150 job advertisements, 19.33% indicated the need for senior business analysts and 6% for junior business analysts. The type of seniority required for the role was not disclosed in 74,67% of the job advertisements collected. The issue of whether the business analyst role is senior or junior did not appear to be important to most employers. One of the reasons for this could be associated with the problem of the scarcity of IT skills in SA. If strict criteria are stated upfront in order to reduce the number of unqualified applicants, employers may miss other individuals who have the potential to perform the role. It may, therefore, be appropriate not to include the role seniority requirement.

Role Seniority type	No. of ads	% of ads
Seniority: Other	112	74.67%
Seniority: Senior	29	19.33%
Seniority: Junior	9	6.00%
Total	150	100%

Table 7: SA Role seniority versus advertisements

5.2.2. UK Basic Analysis

5.2.2.1. Job Titles Collected from the UK

The 150 job titles collected from the UK were sourced from 'JobServe', which caters for online e-recruitment services. These job titles versus the job advertisements are shown under Table 8. Most of the job titles advertised were for a pure business analyst, an overwhelmingly 90%. The business/systems analyst and business/product manager job titles both scored the second highest at 2% each. The other 6% was shared among the roles of business analyst with another role ranging from 1.33% to 0.67%.

Job Title	No. of ads	% of ads
Business Analyst	135	90.00%
Business Analyst/System Analyst	3	2.00%
Business Analyst/Product Manager	3	2.00%
Business analyst/Project Manager	2	1.33%
Business Analyst/Consultant	2	1.33%
Business Analyst & HR Technology	1	0.67%
Business Analyst/Technical Manager	1	0.67%
Business Analyst/Data Modeller /Architect	1	0.67%
Business Analyst/Change Analyst	1	0.67%
Business Analyst/Commercial Analyst	1	0.67%
Total	**150**	**100%**

Table 8: UK Job titles collected versus advertisements

Since only a minority of the advertisements posted a requirement for a business analyst and an associated role, this suggests that there may be a lesser requirement for a business analyst who specialises, for example, in project management.

5.2.2.2. UK Qualifications

Table 9 shows the qualifications requirements for a business analyst role in the UK. Of the 150 job advertisements, only 14% stated a degree/diploma as a minimum requirement in applying for the job, and 2 % listed certification as a requirement. No qualifications requirements were specified for 84% of the job advertisements. Given that one of the key requirements on which applicants are considered is qualification (Lee & Lee, 2005), the current research results are not supported in the UK because of its 14% tertiary education requirement. Furthermore, job experience (12.67%) was not a major requirement in the UK either. Even though qualifications and job experience requirements are not included in the job advertisements, this does not mean that they are not important in the UK.

The initial job specification published online is mainly focused on knowledge and skills requirements. Informal discussions with a UK data architect about the results revealed that, in the UK, a possible explanation could be that employers are known to focus mainly on whether the applicant will fit into the team culture, is a fast learner and has industry-specific experience. The industry-specific experience requirements are supported by the findings shown in Appendix H, whilst the team culture and fast learner qualities can probably be determined in an interview. In addition, some agencies may not publish a detailed specification online because they would like to meet the applicants first and include their details in the agency database. Furthermore, the full specification of the job requirements may be revealed only upon application. Financial institutions are known to require qualifications and industry-specific skills and therefore it is unlikely that qualifications can be dismissed completely as a requirement. It is also possible that, in the UK, it is assumed that applicants will have a degree or diploma.

Qualification type	**No. of ads**	**% of ads**
Qualification: None	126	84%
Qualification: Degree/Diploma	21	14.00%
Qualification: Certification	3	2.00%
Total	**150**	**100%**

Table 9: UK Qualifications versus advertisements

5.2.2.3. UK Role Seniority

The role "seniority" versus the number of job advertisements is shown in Table 10. Only 9% of the job advertisements had a senior business analyst requirement and only 1% stipulated that a junior business analyst was required. The role seniority was not specified in 93% of the total sample of the UK advertisements. The role seniority could not even be established using job experience (12.67%) because most job advertisements collected did not cover job experience. Although no formal job experience was mentioned, the fact that knowledge and skills were included appears to indicate that there is a need for some form of job experience.

Role Seniority Type	No. of ads	% of ads
Senior: Other	140	93.33%
Seniority: Senior	9	6.00%
Seniority: Junior	1	0.67%
Total	**150**	**100%**

Table 10: UK Role seniority versus advertisements

5.2.3. SA and UK Basic Analysis Comparison

In both SA and the UK, the pure business analyst job title came out higher, 86% in SA and 90% in the UK. The statement that a business analyst is required to participate in the entire SDLC of a project (Evans, 2004) is therefore supported in the UK as well as in SA, especially in the UK where Agile methodology is used. During the manual coding process, when the job advertisement indicated a skill requirement for methodology, the type of methodology was noted. Surprising results emerged showing that in the UK Agile experience was needed more than in SA. For example, of the 50 job advertisements which specified methodology, 34 had Agile requirements and 16 had SDLC requirements. This means that where methodology was mentioned, 68% mentioned a requirement for Agile experience. In SA, on the other hand, of the 51 who were interested in methodology experience, 8 indicated Agile requirements versus 43 who indicated SDLC requirements. This means that 84% specified SDLC as the methodology of choice in SA. Furthermore, according to Mnkandla & Dwolatzky (2004), in SA few companies have tried the Agile methodology. Based on these results it appears that Agile is used more in the UK than in SA. In Agile methodology the business analyst is expected to be involved during the whole iteration process. The Agile process places an enormous emphasis on human involvement and interaction (Vinekar et al., 2006). Furthermore, the business analyst/systems analyst job title came second in both countries, with SA at 6% and the UK at 2%. These similarities emphasise that the same type of business analysis skills are required by employers in both countries.

In SA qualifications and job experience are both important when considering an applicant, as opposed to the UK where, based on the results, neither were a requirement. The job advertisements, however, did not provide information as to a possible reason for this. A

possible explanation for this may be that some agencies are not providing detailed job specifications upfront because they want to meet the applicants and include their details in the agencies' databases for future positions that may become available. The overall percentage requirement for senior and junior business analysts was 25,33% in SA and 6.67% in the UK. In the UK role seniority does not appear to play a major role in the pre-screening of applicants, as it does in SA. This can probably be explained by the lack of a skilled workforce in SA and it is necessary for unsuitable applicants to be excluded from applying at the outset.

5.3. Capabilities, Competencies and Practices Results and Findings

The main objective of this research was to answer the research questions presented in Chapter 2. These include determining the practices (research question1), competencies (research question 2) and capabilities (research question 3) of business analysts as perceived by employers, and presenting the final Business Analysis Capability Model. Figure 6 depicts the summarised items of the proposed theoretical business analysis capability model presented in Chapter 2 and Figure 7 provides a detailed view of the proposed model. These items are based on previous research by Evans (2004), Todd et al. (1995) and subsequently updated by Lee (2005), Vashist et al. (2010) & Vongsavanh & Campell (2008) and were discussed previously in Chapter 2. Furthermore, they assist in explaining how the results and findings of the business analysis capability model were derived in order to answer the research questions. The summarised picture of Figure 6 and the detailed items of the proposed theoretical business analysis capability model shown in Figure 7 are based on the RBV theory presented in Chapter 2. It explains how the business analyst's knowledge, skills and behaviours, together with practices categories, consolidate into competencies and how these competencies make up the business analyst capability. In determining which items fall under the practices, competencies and capabilities, the percentage of advertisements listing each item has been used and a 10% or above result is regarded as significant for the purposes of this research.

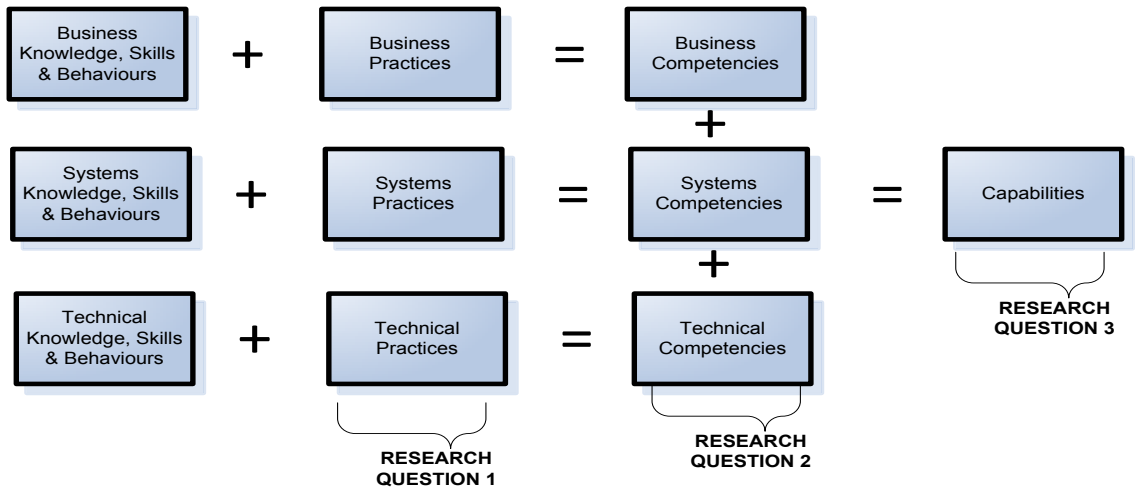

Figure 6: Capabilities, competencies, practices, knowledge, skills & behaviours - adapted from Ashurst et al. (2008)

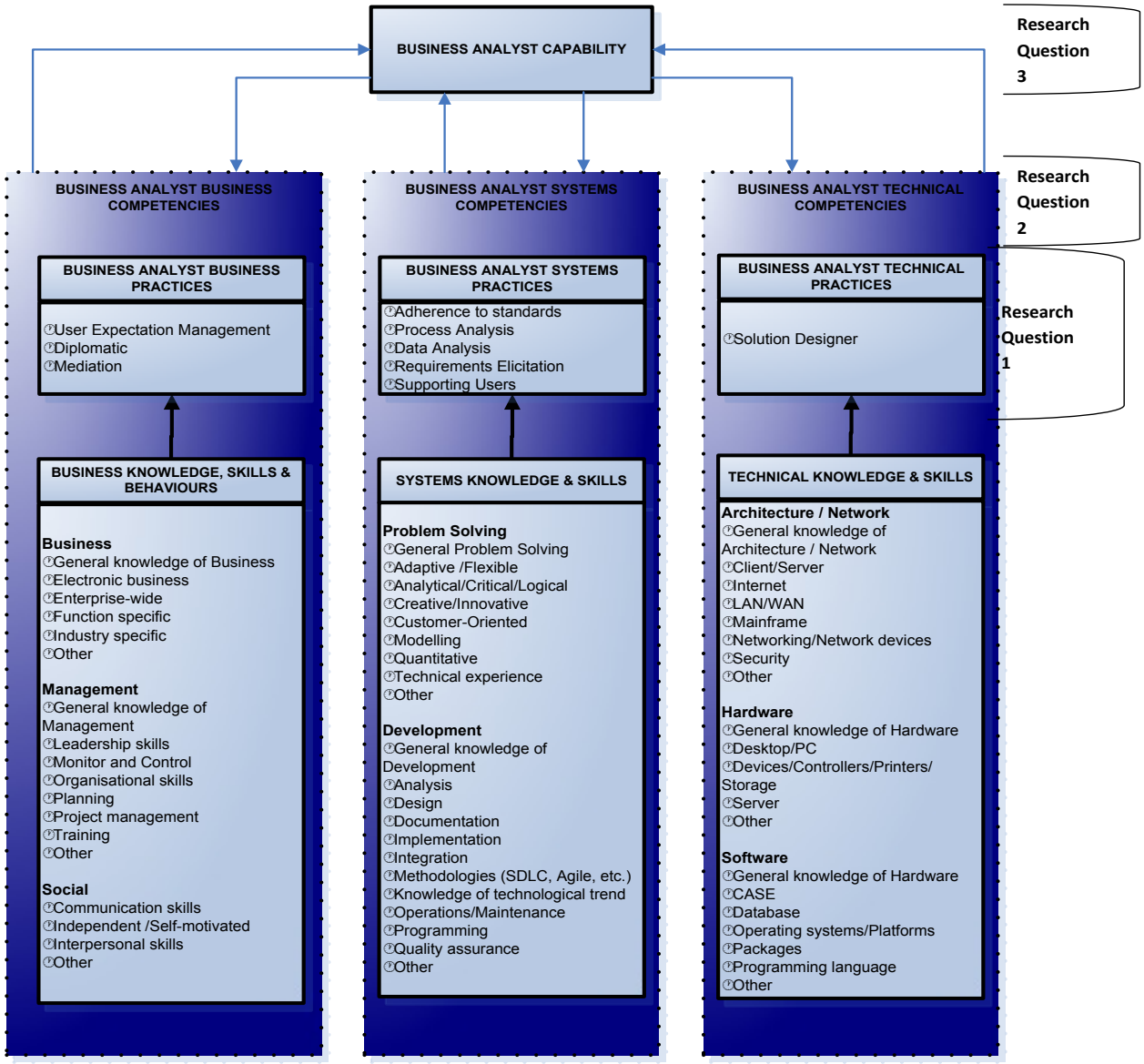

Figure 7: Proposed theoretical business analysis capability model - adapted from Ashurst et al. (2008)

5.3.1. SA Findings and Results

5.3.1.1. SA Knowledge, Skills and Behaviours

The complete list of skills requirements for SA business analysts can be found in Appendix G. The categorisation of the skills is as proposed by Todd et al (1995) and Lee (2005). These are systems, business and technical skills. Each category will be discussed in the following sections.

5.3.1.1. 1. SA Systems Knowledge and Skills

Table 11 shows the systems knowledge and skills and their results. Systems skills are problem-solving and systems development knowledge or skills (Todd et al., 1995). Overall, the results support the notion that systems knowledge or skills are the most highly demanded skills by employers. The highest percentages were for the development sub-category skills. The role of a business analyst forms an integral part in the different phases of the SDLC (Schreiner, 2007) and some of the responsibilities of the role are analysing business requirements and documenting them (Evans, 2004). Analysis skills requirements are the highest skills needed (71.33%), then design (60%), documentation (44%), quality assurance (40.67%), methodologies (36.67%) and implementation (27.33%). The results were as expected and satisfy the role of a business analyst which is involved in the core functions associated with systems development. The traditional SDLC is preferred by most organisations in SA with a few organisations using the Agile methodology. The adoption and use of the Agile methodology therefore appears to be in its infancy in SA. According to the results, the core skills of a business analyst consist of analysing the business requirements, systems design, documentation, quality assurance which includes testing, making use of systems development methodologies and being part of a systems implementation team.

SYSTEMS KNOWLEDGE & SKILLS	% of ads	No. of ads
Problem-Solving		
Modelling	38.005	57
Technical experience	24.00%	36
Analytical skills	20.00%	30
Research skills	14.67	22
Innovative	12.67%	19
General Problem solving	9.33%	14
Strategic thinking	5.33%	8
Customer-Oriented	2.67%	4
Quantitative	0.67%	1
Adaptive	0.00%	0
Other	0.00%	0
Development		
Analysis	71.33%	107
Design	60.67%	91
Documentation	44.00%	66
Quality assurance	40.67%	61
Methodologies	36.6%	55
Implementation	27.33%	41
Integration	10.00%	15

Operations/Maintenance	7.33%	11
General Development	5.33%	8
Programming	1.33%	2
Other	0.00%	0
Technological Trend	0.00%	0

Table 11: SA systems analysis and skills

Based on the results, problem-solving skills requirements are less critical than development skills (analysis, design, documentation, quality assurance, methodology, implementation and integration). This is reflected in the results set out in Table 11. The highest problem-solving skill was modelling (38%), then technical experience (24%), analytical skills (20%), research skills (14.67%) and being innovative (12.67%). Although business analysts are expected to have business and technical skills, it is not assumed that they will be subject matter experts in business and technical areas (Vashist et al., 2011). Business analysts normally work hand-in-hand with business experts and technical teams to get input from their domain of expertise. The limited technical proficiency required of a business analyst is generally in line with modelling business processes and translating business requirement specifications into functional specifications used by the technical team.

5.3.1.1. 2. SA Business Knowledge, Skills and Behaviours

Business or organisational (Basellier & Benbasat, 2004), management and social knowledge or skills, form part of the business knowledge or skills category. Whilst the current results show some requirements for business knowledge or skills, they are not required at the same level as systems knowledge or skills. Business and behavioural skills are constantly highlighted as important even though specific technical skills (such as programming, database and hardware) are still required from IS professionals in line with their specific roles (Basellier & Benbasat, 2004; Lee & Lee, 2006). Looking at Table 12, the results agree with this statement, that all IS professionals (including business analysts) still require some business and behavioural skills. In the business or organisational sub-category, industry-specific skills (22.67%) are demanded more by employers, they are not necessarily concerned about function-specific skills (8.67%). Given that a business analyst is required to perform various functions within the SDLC (Evans, 2004; Liu, 2011; Schreiner, 2007) and thus takes on different roles, a business analyst can be

regarded as a generalist. Consequently, function-specific requirements were not expected to be of high importance.

BUSIN ESS KNOWLEDGE & SKILLS	No. of ads	% of ads
Business		
Industry specific	34	22.67%
Function specific	13	8.67%
Enterprise-wide	11	7.33%
General Business knowledge	10	6.67%
Electronic business	9	6.00%
Other	0	0.00%
Management		
Project Management Skills	46	30.67%
Change Management	31	20.67%
Training	31	20.67%
Planning	30	20.00%
Leadership Skills	26	17.33%
Monitor & Control	12	8.00%
Organizational Skills	1	0.67%
Cost/Benefit Analysis	1	0.67%
General Management Knowledge	0	0.00%
Social		
Communication Skills	57	38.00%
Facilitation Skills	72	48.00%
Initiative	13	8.6%
Presentation Skills	12	8.00%
Team Player	10	6.67%
Work under pressure	10	6.67%
Interpersonal Skills	9	6.00%
Other	0	0.00%

Table 12: SA Business knowledge and skills

Project management skills are the most prominent requirement of the management sub-category skills at 30%. Although a business analyst is expected to have general business knowledge, the business analyst is also required to have general project management skills (Vashist et al., 2011). Other skills also demanded by employers are change management and training at 20,67% each, followed by planning at 20% and leadership skills at 17%. The leadership skills align to the role seniority requirement of a senior business analyst (19,33%). Change management skills are important to a business analyst because of their involvement in business process re-engineering (Vashist et al. 2011). In addition, the business analyst is expected to take the users through changes in current processes or systems functionality and therefore needs some basic change management skills.

Both facilitation (48%) and communication skills (38%) received more attention in the social skills sub-category. While facilitation skills are crucial during the requirement elicitation phase, communication skills are needed throughout the SDLC stages, from requirements elicitation, documentation, testing and implementation. They are therefore very important. Employers regard communication skills as an essential skill (Lee & Lee, 2006; Todd et al., 1995; Wade & Parent, 2002) for the various IS professions. Furthermore, weak communication may result in poor systems being developed, suggesting that communication ability is mandatory for business analysts. Other social skills identified were considered insignificant at less than 10% and these were initiative (8.67%), presentation skills (8%), being a team player (6,67%) and working under pressure (6,67%).

5.3.1.1. 3. SA Technical Knowledge and Skills

Results show that there are fewer requirements for technical skills when compared with systems and business knowledge or skills discussed in Sections 5.3.1.1.1 and 5.3.1.1.2. Within the technical skills category, there are three sub-categories, namely: architecture or network, hardware and software. Based on the results in Table 13, the only significant sub-category is the software skills, especially the database (29,33%) and packages (26%) skills. The main theme across the job advertisements was SQL database requirements. Furthermore, there was a requirement for packages' skills like MS Visio and other general Microsoft packages like Office, Excel and PowerPoint. This demonstrates that in the technical skills category, it is mainly the software skills sub-category that can be associated with business analysis.

TECHNICAL KNOWLEDGE & SKILLS	No. of ads	% of ads
Architecture/Network		
General Architecture Network	10	6.67%
Internet	9	6.00%
Security	1	0.67%
Client/server	0	0.00%
LAN/WAN	0	0.00%
Mainframe	0	0.00%
Networking devices	0	0.00%
Other Architecture/Network	0	0.00%
Hardware		

Server	6	4.00%
General Hardware	5	3.33%
Desktop/PC	2	1.33%
Hardware Devices	0	0.00%
Other Hardware	0	0.00%
Software		
Database	44	29.33%
Packages	39	26.00%
General Software Knowledge	4	2.67%
Programming Language	3	2.00%
CASE	1	0.67%
Operating Systems/Platforms	0	0.00%
Other Software	0	0.00%

Table 13: SA Technical knowledge and skills

While technical skills, business and behavioural skills are important for all IS professionals, business and behavioural skills will be more valuable in future (Basellier & Benbasat, 2004). According to the results, the requirements for technical skills are overshadowed by systems skills and not by business skills as predicted by the authors. Furthermore, business analysts are generally not considered technical. A business analyst is the bridge between the business and IT departments and is as a rule expected to produce non-technical documentation. The results show that technical aspects are expected to form a smaller part of the responsibilities of the business analyst than systems analysis skills.

The requirement for packages skills, which entails mainly MS Visio, is actually in line with modelling requirements (38%) under systems skills in Table 11. In order for a business analyst to do modelling, there are some technical skills required to use the tool itself. Furthermore, this is also supported by the requirement of technical experience (24%) under the systems category. In the database requirements, there are some discrepancies in that modelling does not correlate with data analysis (4.67%) under practices. Data analysis was coded on its own merits without considering that when there is an SQL database requirement it might also relate to data analysis, which the results seem to suggest. Nevertheless, there are some basic technical skills required of a business analyst and these are database and packages' skills.

5.3.1.2. SA Business Analysts Practices (Research Question 1a)

The practices are shown in Table 14. The results for practices supported process analysis (31.33%), adherence to standards (21.33%), requirements elicitation (17.33) and solution design (12.67%). Given that process improvement is one of the responsibilities of a business analyst (Evans, 2004), a business analyst is expected to analyse the current business processes and re-engineer these processes to new future processes in order to improve the current state of the business. This statement is supported by the high number of advertisements requiring process analysis. The adherence to standards (21.33%) did not come as a surprise as it is aligned with the methodologies (36.67%) requirements under the systems category. If the business analyst is required to follow systems development methodologies, there are requirements to comply with certain standards aligned to that methodology being followed. Furthermore, the methodology guides how the analysis, design, documentation, testing and implementation should be done.

Requirements elicitation forms part of the analysis phase which has by far the highest skills requirement (71.33%) of all the skills examined. This function is where the business analyst gets the business requirements from the business and analyses them. This is a crucial stage of the entire analysis phase because if the requirements are sourced incorrectly, the solution or final product will also be incorrect.

Although a business analyst is often seen to act as a mediator between business and IT (Feig, 2007; Hugos, 2007; Liu, 2011; Vashist et al., 2010), surprisingly, this was not supported by the results, which had mediation requirements at 1.33%. Since mediation forms part of a business practice, an explanation could be found in a statement by Todd et al (1995) that business skills are normally not included in job specifications because it is difficult to put them down. Rather, they are assessed in an interview. In the same way, business practices could be difficult to communicate in the form of a job advertisement and were therefore excluded. It may also be that employers expect this practice because it is inherently part of the role of a business analyst and therefore they do not see the need to specifically include it.

Even though IT users and IT practitioners believe strongly that business analysts should provide training and user support (Vashist et al., 2010), the practice of supporting users was not evidenced by the results. Business analysts are not expected to provide user

systems support. Rather, they are required to assist the system support team when there it is necessary to do so. In other words, they are expected to train the trainer or the support team. The results were, however, in line with operations or maintenance skills requirements (7.33%) which mean that the business analyst is expected to have minimal user support skills.

Practices are different in different organisations due to the organisational culture and job experience and therefore cannot be assumed to be the same across organisations (Ashurst et al., 2008). This may explain why some of the practices were reflected in a low number of job advertisements. They could be different in different organisations. Furthermore, the practices aligned to business skills (user expectation management, diplomatic and mediation) resulted in low scores. A possible explanation for this could be associated to a statement by Todd et al. (1995) that it is generally difficult to put business skills requirements on paper and that employers prefer to assess business skills requirements during the interviews.

PRACTICES	No. of ads	% of ads
Practice: Process Analysis	47	31.33%
Practice: Adherence to Standards	32	21.33%
Practice: Requirements Elicitation	26	17.33%
Practice: Solution Designer	19	12.67%
Practice: Data Analysis	7	4.67%
Practice: Managing User Expectations	4	2.67%
Practice: Supporting Users	4	2.67%
Practice: Mediation	2	1.33%
Practice: Diplomat	1	0.67%
Practice: Other	0	0.00%

Table 14: SA Business analyst practices versus advertisements

5.3.1.3. SA Business Analyst Competencies (Research Question 2a)

As depicted in Figures 6 and 7, knowledge, skills and behaviours underpin the practices which define competencies. Whilst at knowledge, skills and behaviours level certain skills are identified as important, from a competency and capability point of view, some skills are not regarded as being necessary. Table 15 presents the SA competencies. Based on the

results and the knowledge, skills and behaviours that underpin practices, there are two business analyst competencies required by employers in SA. These are systems competencies and technical competencies. A business analyst based in SA is required to have modelling and technical experience, knowledge or skills (analytical, research, innovative, analysis, design, documentation, quality assurance, methodologies, implementation and integration) and is expected to follow certain practices like process analysis, adherence to standards and requirements elicitation. On technical competencies, the results suggest that software skills (database and packages) and solution designing practices are most often required of a business analyst. While the results for business knowledge, skills and behaviours were fairly significant by themselves, when their related practices (user expectation management, diplomatic and mediation) were included, business competencies were not supported by the results. Therefore, business competencies are excluded. It is often difficult to include business skills requirements in job specifications and therefore employers may prefer to assess business skills during the interviews (Todd et al., 1995).

BUSINESS COMPETENCIES	SYSTEMS COMPETENCIES	TECHNICAL COMPETENCIES
Business Practices	**Systems Practices**	**Technical Practices**
	• Process Analysis • Adherence to standards • Requirements Elicitation	• Solution Designer
Business Knowledge & Skills	**Systems Knowledge & Skills**	**Technical Knowledge & Skills**
Business: • Industry specific **Management:** • Project Management • Change Management • Training • Planning • Leadership Skills **Social:** • Communication Skills • Facilitation Skills	**Problem-Solving:** • Modelling • Technical experience • Analytical Skills • Research Skills • Innovative **Development:** • Analysis • Design • Documentation • Quality Assurance • Methodologies • Implementation • Integration	**Software:** • Database • Packages

Table 15: SA Competencies

5.3.1.4. SA Business Analyst Capabilities (Research Question 3a)

Based on the results of this study, shown in Tables 16a and 16b, the business analysis capability expected in SA includes the combination of systems competencies and technical competencies which were discussed in Section 5.3.1.3. Organisational capability is achieved when a group of competencies is used and exploited (Ashurst et al., 2008) and Caldeira & Ward, 2001). While the capabilities are identified, it is the way they are deployed that will result in organisational capability.

SA BUSINESS ANALYSIS CAPABILITIES
• Systems competencies • Technical competencies

Table 16a: SA Capabilities

BUSINESS ANALYSIS CAPABILITY	
SYSTEMS COMPETENCIES	**TECHNICAL COMPETENCIES**
Systems Practices: • Process Analysis • Adherence to standards • Requirements Elicitation	**Technical Practices:** • Solution Designer
SYSTEMS KNOWLEDGE & SKILLS **Problem-Solving:** • Modelling • Technical experience • Analytical Skills • Research Skills • Innovative **Development:** • Analysis • Design • Documentation • Quality Assurance • Methodologies • Implementation • Integration	**TECHNICAL KNOWLEDGE & SKILLS** **Software:** • Database • Packages

Table 16b: SA Capabilities with details

5.3.2. UK Findings and Results

5.3.2.1. UK Knowledge, Skills and Behaviours

Appendix H contains the UK skills requirements in terms of business, systems and technical skills categories. The UK results, as well as the comparisons between the two countries, will be discussed in the following sections.

5.3.2.1. 1. UK Systems Knowledge and Skills

The results shown in Table 17 indicate that out of the business, systems and technical skills categories, systems skills are more often demanded by employers. Development skills are most often required, broken down as follows: analysis (61.33%), documentation (37.33%), design (33.33%), methodologies and quality assurance (24.67%) and implementation (19.33%). The key responsibilities of a business analyst form part of the entire systems development life cycle deliverables (Schreiner, 2007). The findings support the presumption that a business analyst is required to contribute mainly in the

systems development domain of projects from analysis, design, documentation, quality assurance and implementation. This requirement is the same regardless of whether the SDLC or Agile methodology is used, because the role of the business analyst still covers the analysis, design, documentation, quality assurance and implementation phases of the project. The main difference comes in involvement and interaction. The Agile methodology promotes collaboration (Paulk, 2001). Most organisations make use of the Agile methodology to develop systems in UK. A possible explanation for using Agile methodology is that this form of project organisation seems to promote an environment where IT works closely with business.

SYSTEMS KNOWLEDGE & SKILLS	No. of ads	% of ads
Problem-Solving		
Technical experience	41	27.33%
Modelling	30	20.00%
Analytical skills	21	14.00%
General Problem Solving	14	9.33%
Innovative	13	8.67%
Strategic Thinking	7	4.67%
Adaptive	5	3.33%
Quantitative	5	3.33%
Research skills	4	2.67%
Customer-Oriented	3	2.00%
Other	0	0.00%
Development		
Analysis	92	61.33%
Documentation	56	37.335
Design	50	33.33%
Methodologies	37	24.67%
Quality Assurance	37	24.67%
Implementation	29	19.33%
Operations/Maintenance	6	4.00%
Integration	5	3.33
General Development	2	1.33%
Other	0	0.00%
Programming	0	0.00%
Technological Trend	0	0.00%

Table 17: UK Systems knowledge and skills

While hardware and architectural or network skills may not be such an important skills requirement for a business analyst, general technical experience (27.33%) appears to be more important in the UK. There is however, also a strong requirement for modelling (20%) and, to a lesser extent, analytical skills (14%). Even though some technical

experience is expected of a business analyst, the analyst does not need to be a technical expert. The business analyst needs a certain level of technical knowledge and experience to be able to communicate the business requirements to the technical team. The technical team are the technical experts who are expected to provide the technical solution. The requirement for analytical skills did not come as a surprise because a business analyst is expected to be analytical and therefore spends more time on problem-solving.

5.3.2.1. 2. UK Business Knowledge, Skills and Behaviours

The results set out in Table 18 show that, in the UK, business skills are the second highest set of skills in demand out of the three categories (business, systems and technical). The business skills category consists of the business, management and social sub-categories. Under the business skills sub-category, the industry-specific skills (28.67%) were those most often required of the business analyst by employers. Industry-specific business skills are usually preferred over functional-specific skills for systems analysts (Todd et al., 1995). The results supported this.

BUSIN ESS KNOWLEDGE & SKILLS	**No. of ads**	**% of ads**
Business		
Industry specific	43	28.67%
Function specific	13	8.6%
Electronic business	12	8.00%
Enterprise-wide	5	3.33%
General Business Knowledge	2	1.33%
Other	0	0.00%
Management		
Change Management	30	20.00%
Planning	22	14.67%
Project Management Skills	22	14.67
Leadership Skills	16	10.67%
Monitor & Control	9	6.00%
Training	8	5.33%
Cost/Benefit Analysis	1	0.67%
General Management Knowledge	0	0.00%
Organizational Skills	0	0.00

Social		
Communication skills	62	41.33%
Facilitation Skills	8	5.33%
Initiative	8	5.33%
Presentation Skills	8	5.33%
Interpersonal Skills	7	4.67%
Team player	2	1.33%
Work under pressure	2	1.33%
Other	0	0.00%

Table 18: UK Business knowledge and skills

Of the management skills, change management (20%) was identified as most important. The other management skills higher than 10% were planning and project management (14.67%) and leadership skills (10.67%). A business analyst is expected to be knowledgeable in project management and also in change management skills, in order to guide users through the changes identified when conducting process improvements (Vashist et al., 2011). The key social skills requirements in the UK were communication skills (41.33%). Communication skills are highly required when employing the Agile iteration process during systems development. It is therefore not unforeseen that communication remains a highly sought after skill in the UK.

5.3.2.1. 3. UK Technical Knowledge and Skills

According to the results shown in Table 19, in the UK there are fewer requirements for technical skills as compared to systems and business knowledge or skills. Under the technical skills category, the software skills sub-category had a fairly high significance when compared with the other two sub-categories (architectural or network and hardware skills). The database skills under the technical skills and software knowledge sub-category were the only ones with higher significance, at 21.33%. The others were all less than 7%. The main database skills requirements were for SQL and Oracle. The results were unexpected because a business analyst is not normally required to be technical, but the results show otherwise. As a business analyst acts as a mediator between business and IT (Feig, 2007; Hugos, 2007; Liu, 2011; Vashist et al., 2010), it is not expected that the business analyst will be responsible for technical activities, but is rather required to focus on systems analysis which acts as input to the technical analysis. For example, a business analyst translates the business requirements into a technical specification that is used by the technical team.

TECHNICAL KNOWLEDGE & SKILLS	No. of ads	% of ads
Architecture/Network		
Internet	6	4.00%
General Architecture/Network	4	2.6%
Client/Server	1	0.67%
Security	0	0.00%
Other Architecture/Network	0	0.00%
LANW/WAN	0	0.00%
Mainframe	0	0.00%
Network Devices	0	0.00%
Hardware		
Server	7	4.67%
General Hardware Knowledge	2	1.33%
Desktop/PC	1	067%.
Hardware Devices	0	0.00%
Other Hardware	0	0.00%
Software		
Database	32	21.33%
Packages	10	6.67%
General Software Knowledge	4	2.67%
Operating Systems/Platforms	2	1.33%
CASE	1	0.67%
Other Software	0	0.00%
Programming Language	0.00%	

Table 19: UK Technical knowledge and skills

A business analyst is expected to have some understanding of the technical domain in order to guide users in designing the solution and translating documentation to the level that the technical team will understand, but does not need to be an expert. This was supported by the requirement of technical experience (27.33%) and modelling (20%) under the systems category. The database skills (21.33%) requirements do not correlate with the data analysis (4.67%) under practice. Whilst there was a specific requirement for database skills in the job advertisements, there were limited requirements specifically for data analysis. It was not specifically stated on the job advertisements that there was a need for data analysis, but, judging by the results, it seems that the requirement for database skills could be associated with data analysis. Architecture or network and hardware skills were not considered as crucial requirements. This was indicated with a weighting of less than 5%.

5.3.2.2. UK Business Analyst Practices (Research Question 1a)

The results of practices for business analysts based in the UK are shown in Table 20. The process analysis practices were identified as the ones most often required by employers at 15.33%, followed closely by requirements elicitation at 14.67%. Process improvements were identified as practice requirements for business analysts by Evans (2004) and the results support this finding. In understanding the business requirements, the business analyst is expected to document and analyse the current business processes and then provide solutions that will result in new business processes. The requirement for process analysis is therefore important.

Although a business analyst acts as a bridge between IT and business (Feig, 2007; Hugos, 2007; Liu, 2011; Vashist et al., 2010), the requirement for a mediation practice was not supported in the UK. Furthermore, mediation only becomes a requirement when there is weak communication between business and IT (Vongsavanh & Campell, 2008). If business is expected to work closely with IT, as is the case when using Agile methodology, the need for mediation diminishes. The mediation role of a business analyst is required in order to improve communication between business and IT by filtering the information into languages the team understands (Vashist et al., 2010). Based on the results, Agile methodology appears to be the methodology of choice for most UK organisations, which pushes business and IT departments into closer working relationships and thus blurs the boundaries between the two functions.

Practices are not expected to be the same in different organisations because of organisation culture and job experience and, therefore, cannot be assumed to have the same result in different organisations (Ashurst et al., 2008). The low score, therefore, reflects varying requirements in terms of practices in different organizations, which may be due to practices being different in different organisations. In addition, practices that were aligned to business skills (user expectation management, diplomatic and mediation) were not supported by the results. Documenting business skills requirements into a job specification is not easy and employers therefore prefer using interviews to assess an applicant's aptitude (Todd et al., 1995). This could possibly be why there was limited evidence for requirements of business practices.

PRACTICES	No. of ads	% of ads
Practice: Process Analysis	23	15.33%
Practice: Requirements Elicitation	22	14.67%
Practice: Managing User Expectations	12	8.00%
Practice: Adherence to standards	7	4.67%
Practice: Data Analysis	7	4.67%
Practice: Solution Designer	6	4.00%
Practice: Diplomat	1	0.67%
Practice: Mediation	1	0.67%
Practice: Supporting Users	1	0.67%
Practice: Other	0	0.00%

Table 20: UK Business analyst practices versus advertisements

5.3.2.3. UK Business Analyst Competencies (Research Question 2a)

If Figures 6 and 7 were used to identify the UK business analyst competencies, the results in Table 21 suggest the systems competencies required by employers based in the UK. As knowledge, skills, behaviours and practices together form competencies, the UK systems competencies of a business analyst includes technical experience, modelling, analytical skills, process analysis and requirements elicitation. The business and technical competencies were not supported by the results due to practices receiving a less than 10% significance score. The practices were not covered extensively in the UK job advertisements. According to Todd et al. (1995) employers prefer to assess the business skills requirements during the interviews because of the difficulty in including them as part of a job specification. The business practices may also be difficult to put on paper and therefore were excluded from the job specifications. On technical competencies, a business analyst generally acts as a mediator between business and IT (Feig, 2007; Hugos, 2007; Liu, 2011; Vashist et al., 2010) and therefore cannot be expected to be an expert in the technical and business domain.

BUSINESS COMPETENCIES	SYSTEMS COMPETENCIES	TECHNICAL COMPETENCIES
Business Practices	**Systems Practices**	**Technical Practices**
	• Process Analysis • Requirements Elicitation	
Business Knowledge & Skills	**Systems Knowledge & Skills**	**Technical Knowledge & Skills**
Business: • Industry specific **Management:** • Change Management • Planning • Project Management • Leadership Skills **Social:** • Communication Skills	**Problem-Solving:** • Modelling • Technical experience • Analytical Skills • Research Skills • Innovative **Development:** • Analysis • Documentation • Design • Methodologies • Quality Assurance • Implementation	**Software:** • Database

Table 21: UK Competencies

5.3.2.4. UK Business Analyst Capabilities (Research Question 3a)

In the UK, there was no evidence of business and technical competencies requirements. The results shown in Table 22a and 22b presented only the requirement for systems competencies. According to Ashurst et al. (2008) and Caldeira & Ward (2001), organizational capability is achieved when a group of competencies is deployed. The groups of systems competencies are therefore suggested as being the ones that can be used and exploited in order to achieve organizational capability.

UK CAPABILITIES
• Systems competencies

Table 22a: UK Capabilities

SYSTEMS COMPETENCIES
Systems Practices
• Process Analysis • Requirements Elicitation
Systems Knowledge & Skills
Problem-Solving: • Modelling • Technical experience • Analytical Skills • Research Skills • Innovative **Development:** • Analysis • Documentation • Design • Methodologies • Quality Assurance • Implementation

Table 22b: UK Capabilities with details

5.3.3. SA and UK Findings Comparison

5.3.3.1. SA and UK Knowledge, Skills & Behaviours

5.3.3.1. 1. SA and UK Technical Knowledge and Skills

In both countries, under the technical skills category, the database skills are the ones that are most often required by employers. The findings were unexpected because one would expect a developer or technical person to be required to perform this technical activity. A business analyst is expected to be the link between the business and the developer (Feig, 2007; Hugos, 2007; Liu, 2011; Vashist et al., 2010) and not required to be a technical expert. The main difference between SA and the UK is that package skills were not a requirement for the UK employers. Since package skills include MS Visio and in the UK Agile methodology is used, MS Visio might not be the tool preferred for use within this methodology. The Agile methodology does not support extensive detail documentation (Paulk, 2002). For example, whiteboard sketches and bullet points for what was discussed in a meeting are considered acceptable as a form of requirements.

5.3.3.1. 2. SA and UK Business Knowledge, Skills and Behaviours

The business skills category has three sub-categories (business or organisational, management and social). All the business skills requirements of a business analyst based in the UK were the same as in SA and these are industry-specific, project management, change management, planning, leadership skills and communication skills. However, in SA there were further skills requirements of a business analyst that were not supported in the UK. These were training and facilitation skills. In the UK, it could be that training is the responsibility of the trainers and not part of the role of a business analyst. Given that Agile methodology is used in the UK and there is a lot of interaction between business and IT, facilitation skills were expected to rank up high, but this was not the case. The facilitation skills requirement was only important in SA.

5.3.3.1. 3. SA and UK Systems Knowledge and Skills

Although there is a move towards a business-oriented business analyst role, currently it is still extremely IT-oriented (Manshani et al., 2010). According to the results, regardless of whether the business analyst is based in SA or the UK, the systems development skills requirements (analysis, design, documentation, methodologies, quality assurance and implementation) are perceived by employers as being crucial in assisting business analysts to contribute to achieving some competitive advantage. The business analyst is a core member of the systems development team, with responsibilities covering requirements elicitation, documenting the requirements and translating the document into functional specifications used by the development team, co-ordinating or even performing testing, and being involved in the actual implementation of the system by providing user training. This clearly indicates that the systems analysis functions, which are IT-related, are still regarded as being more important than all the other functions the business analyst performs in both SA and the UK.

The Agile methodology is fairly new and it is therefore understandable that most organisations in SA are not using it. This may be due to issues of experience and skills scarcity in the use of this type of methodology, hence the indication of a slow adoption of the Agile methodology. In the UK, on the other hand, skills may not be an issue, because the Agile methodology has been used for a while and a wealth of Agile experience has been acquired.

Whilst there were some requirements for programming in SA, technological trends and programming skills requirements had the least weighting in both countries. A possible reason could be that programming is a technical skill, which is not a high requirement for a business analyst who provides programmers with technical documentation, but does not perform the actual programming. The results support the assumption that business analysts are not expected to be technical experts, but are involved in systems development and therefore some systems skills are expected.

In both SA and the UK, the systems skills were clearly the most sought after skills for a business analyst. Technical experience, modelling and analytical skills were among the highest requirements by employers in both countries. General technical experience includes systems analysis and translating requirements into technical specifications. The requirement for analytical skills was expected, as a business analyst is expected to analyse business requirements (Evans, 2004), and the results supported it. The differences between the two countries lie in the requirements for research skills and innovation, which are required in SA, but are not a requirement in the UK. A possible reason could be that in the UK there is a research and innovation department that focuses on research and coming up with new solutions, while less emphasis is placed on research and innovation in SA.

5.3.3.2. SA and UK Practices Comparison (Research Question 1b)

SOUTH AFRICA			UNITED KINGDOM		
BUSINESS COMPETENCIES	**SYSTEMS COMPETENCIES**	**TECHNICAL COMPETENCIES**	**BUSINESS COMPETENCIES**	**SYSTEMS COMPETENCIES**	**TECHNICAL COMPETENCIES**
Business Practices	**Systems Practices**	**Technical Practices**	**Business Practices**	**Systems Practices**	**Technical Practices**
	• Process Analysis • Adherence to standards • Requirements Elicitation	• Solution Designer		• Process Analysis • Requirements Elicitation	

Table 23: SA and UK Practices Comparison

In both countries, the most needed business analyst practices were process analysis and requirements elicitation as displayed in Table 23. An example in SA: reference number 'CPT'

"The ideal candidate will be responsible for the analysis, improvement & support of business processes and system requirements in the Institutional Business"

In the UK, the following example was taken from job reference number 'JS-.0000000066',

"Designing and/or changing business processes to gain full value from technology solutions"

One of the key responsibilities of a business analyst is business process re-engineering (Evans, 2004). The process analysis requirement is understandable because a business analyst needs to analyse the current business processes before providing solutions which will lead to an improvement of those business processes. In addition to requirements elicitation, the business analyst needs to obtain the business requirements in order to understand what the business wants to achieve, before providing them with suggested solutions. The process analysis and requirements elicitation practices are therefore crucial in the planning phase of the SDLC or Agile methodology. It may be that the requirement for mediation is losing its importance as the development methodologies are becoming mature in making business and IT work more closely together, or that employers assume that mediation is inherently part of the role of a business analyst and therefore see no need to include it as a requirement. The difference between the SA and UK practice requirements lies in adherence to standards and solution design, which are required in SA, but not in the UK. The nature of SDLC methodology promotes adherence to standards from its top down approach, while the Agile methodology supports flexibility (Vinekar et al., 2006). Agile process places enormous emphasis on people involvement and interaction through its iteration process. This could be why there is a requirement for adherence to standards in SA and not in the UK. An SA example: reference number gz20764m,

"Ensure the technology and process solutions delivered and supported meet the business requirements without compromising the company's quality and risk standards"

A UK example: reference number JSDS3875,

"*You will need to capture business requirements and write user stories for agile development projects and write product requirement document".*

The same argument can be used for solution design in the UK, in that, through collaboration, solution design is performed by a team and not by an individual. On the

other hand, in SA there is still a need for a solution designer because of the traditional methodology being followed.

The impression portrayed by the presentation of short job specifications in the UK seems to reflect that UK advertisements do not dwell too much on practices. The most unexpected finding was the lack of a requirement for mediation. As a business analyst is required to be the link between business and the IT department (Feig, 2007; Hugo, 2007; Liu, 2011; Vashist et al., 2010), the expectation was that there would be a high requirement for mediation. However, the finding was consistent in both countries. The move towards the use of the Agile methodology requires that business and IT work closely together. A possible reason why the requirement for mediation is not supported by the results is that the requirement for mediation is losing its importance.

5.3.3.3. SA and UK Competencies Comparison (Research Question 2b)

Based on the results shown in Table 24, in SA it appears that there is a need for systems and technical competencies in a business analyst and in the UK only systems competencies are required of a business analyst. The practice that created the difference between the countries was adherence to standards and solution design. In the UK these practices are not a major requirement, but they are in SA. The suggested reasons for this were discussed in detail in Section 5.3.3.2 and are associated mainly with the type of development methodology employed by the organisations, that is, whether it supports collaboration or a traditional standardised method.

SOUTH AFRICA			UNITED KINGDOM		
BUSINESS COMPETENCIES	**SYSTEMS COMPETENCIES**	**TECHNICAL COMPETENCIES**	**BUSINESS COMPETENCIES**	**SYSTEMS COMPETENCIES**	**TECHNICAL COMPETENCIES**
Business Practices	**Systems Practices**	**Technical Practices**	**Business Practices**	**Systems Practices**	**Technical Practices**
	• Process Analysis • Adherence to standards • Requirements Elicitation	• Solution Designer		• Process Analysis • Requirements Elicitation	
Business Knowledge & Skills	**Systems Knowledge & Skills**	**Technical Knowledge & Skills**	**Business Knowledge & Skills**	**Systems Knowledge & Skills**	**Technical Knowledge & Skills**
Business: • Industry specific **Management:** • Project Management • Change Management • Training • Planning • Leadership Skills **Social:** • Communication Skills • Facilitation Skills	**Problem-Solving:** • Modelling • Technical experience • Analytical Skills • Research Skills • Innovative **Development:** • Analysis • Design • Documentation • Quality Assurance • Methodologies • Implementation • Integration	**Software:** • Database • Packages	**Business:** • Industry specific **Management:** • Change Management • Planning • Project Management • Leadership Skills **Social:** • Communication Skills	**Problem-Solving:** • Modelling • Technical experience • Analytical Skills • Research Skills • Innovative **Development:** • Analysis • Documentation • Design • Methodologies • Quality Assurance • Implementation	**Software:** • Database

Table 24: SA and UK Competencies Comparison

5.3.3.4. SA and UK Capabilities Comparison (Research Question 3b)

According to the results, in the UK, the capabilities of a business analyst are the same as the competencies. In SA, it is the consolidation of the systems and technical competencies that make up the capabilities of the business analyst. As depicted by the theoretical framework in Chapter 2 Section 2.5, the knowledge, skills and behaviours underpin the practices. These practices then define competencies, which further define the capability. The knowledge, skills and behaviours of a business analyst can be identified at skill level as important, but when the practice associated with the skill is taken into account, the less significant that skill becomes in defining competencies or capability. In the UK for example, some technical skills (database skills) were considered important, but when the solution designing practices were included, the competence lost is significance. Therefore, in SA the systems and technical competencies of the business analyst make up the business analysis capability and in the UK the systems competencies define the business analysis capability.

SA CAPABILITIES	UK CAPABILITIES
• Systems competencies • Technical competencies	• Systems competencies

Table 25: SA and UK Capabilities Comparison

In summary, the same skills, practices, competencies and capabilities of a business analyst are required in both countries. However, SA has additional requirements over and above those also identified for the UK. These include training, facilitation skills, research skills, innovation, integration, packages' skills, adherence to standards and solution design. This might mean that there is a requirement for a wider skill set in SA.

5.4. Gap Between Employers' Needs versus Educational Institutions

Certain gaps were identified between what employers wanted versus what educational institutions teach in relation to the IS2010 curriculum. Both SA and the UK employers and educational institutions are in agreement with regard to systems skills as a curriculum which covers systems analysis and design as part of its core significant course. However, both countries differ with the educational institutions when it comes to enterprise architecture and IS strategic management and acquisition. These courses were considered significant and part of the core IS courses by the IS2010 curriculum, but the employers appear not to agree. However, courses like project management, data mining and business process management that are covered sparingly by the educational institutions are emphasised by employers as being more significant. Clearly, it appears that there is a gap between what employers want versus what educational institutions teach.

5.5. Other General Findings

There were other general findings that were observed when coding the data. Firstly, all 300 business analyst job advertisements were collected in about 3 weeks for both countries. Even after identifying duplications, the replacement job advertisements were obtained quickly. There is clearly a high demand for business analysts in the job market. Furthermore, this demand was not affected by the financial crisis which has affected the demand for jobs in general.

Secondly, the UK job advertisements were found to be generally shorter than the SA job advertisements. Whilst the UK job advertisements are very short, they are focused and cover only what is required. Despite the fact that qualification and job experience are not used to pre-screen applicants, the advertisements are detailed in which skills are really required in the UK. This was even stated in advertisement number 55, reference number 'JS-MF/HQ000RETAIL':

"I appreciate that this advert is very 'to the point' however it's factual"

Thirdly, in South Africa, job advertisements reflected the same requirements under different sections of the same advertisement. The quality of the job specifications was also different per agency in SA. Some job advertisements were short and did not contain much information and others had detailed written requirements. In some instances the same agency would publish the exact specification even though the reference was different.

5.6. Final Business Analysis Capability Model

The final Business Analysis Capability Model is presented in Figure 8 below. The proposed model excludes the business competencies. This means that only the combined systems and technical competencies result in an organisational business analysis capability.

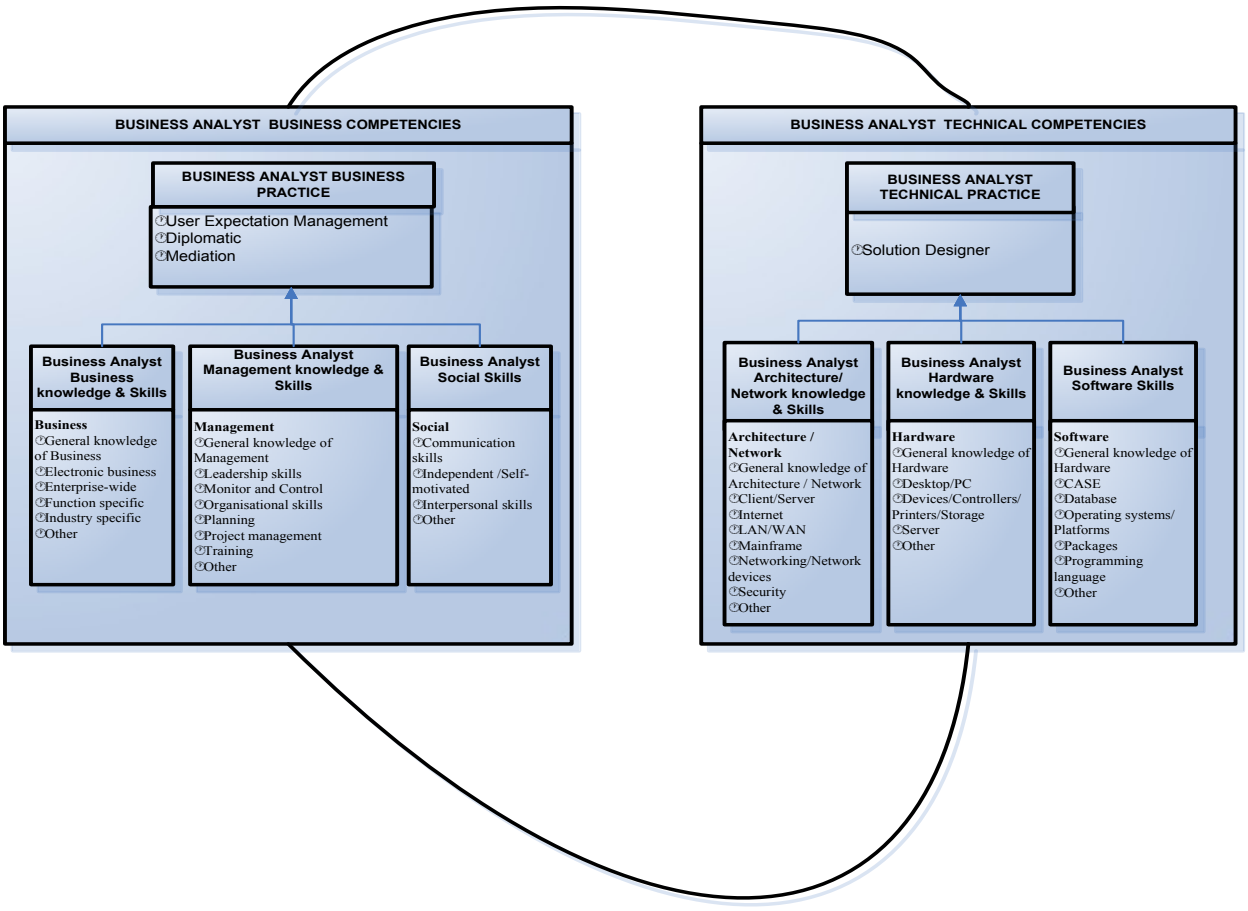

Figure 8: The Final Capability Model

5.7. Conclusion

This chapter presented the results and findings of this research. The process analysis, adherence to standards, requirements elicitation and solution designer were identified as SA business analyst practices. In the UK, the business analyst practices were process analysis and requirements elicitation. The competencies of the business analyst role in SA were systems and technical competencies, whereas in the UK only the systems competencies were supported. The overall business analyst capabilities derived were also presented.

Chapter 6: Conclusion

6.1. Introduction

Chapter 5 presented the results and findings of the business analysis capability model. It identified the skills, practices, competencies and capabilities of business analysts. This chapter concludes the research. Firstly, the structure of this chapter covers the main findings of this research. Secondly, it presents the implications of the research. Thirdly, it discusses the limitations of the study. Finally, it suggests the recommendations for future research.

6.2. Research Questions & Findings

The aim of the research report was mainly to determine the practices, competencies and capabilities of a business analyst. The research questions and their key findings are discussed below:

RESEARCH QUESTION	SA KEY FINDINGS	UK KEY FINDINGS
Research question 1a: What are the suggested practices for business analysts in SA and the UK as perceived by employers?	The suggested practices are systems practices (which include process analysis, adherence to standards and requirements elicitation) as well as technical practices (solution designer).	The systems practices (which include process analysis and requirements elicitation) were the suggested practices for a business analyst based in the UK.
Research question 1b: What are the business analyst's practice differences and similarities between SA and UK organisations of business analysts?	In SA, there is a requirement for systems and technical practice, but in the UK only the systems practice is expected. In both countries it was found that systems practices of process analysis and requirements elicitation are important. In the UK the adherence to standards was not considered as important as in SA.	
Research question 2a: What are the competencies required of business analysts in SA and the UK as perceived by employers?	The competencies required of business analysts in SA are firstly systems knowledge and skills together with systems practices (i.e. problem-	Systems knowledge and skills (i.e. problem-solving and development) together with systems practices (i.e. solution designer) are required of business analysts.

	solving and development) together with systems practices (i.e. process analysis, adherence to standards and requirements elicitation). Secondly, technical knowledge and skills (i.e. software) combined with technical practices (i.e. solution designer) are considered as the competencies required of business analysts.	
Research question 2b: What are the competency differences and similarities between SA and UK organisations of business analysts?	The systems knowledge and skills and practices as well as technical knowledge and skills and practices are identified as the business analysts' competencies in SA. The UK only identified systems knowledge and skills and practices as well as technical knowledge and skills and practices	
Research question 3a: What are the suggested business analysis capabilities that both employers in SA and the UK perceive as having the potential to achieve competitive advantage?	The combination of systems competencies and technical competencies are the suggested business analysis capabilities.	Systems Competencies
Research question 3b: What are the capability differences and similarities between SA and UK organisations of business analysts?	In SA, systems competencies and technical competencies when deployed together result in organisational capability. In the UK it was only the systems competencies.	

Table 26: Restated research questions and key results

6.3. Main Findings

The goal of the study was to identify practices, competencies and capabilities of business analysts as perceived by employers in SA and the UK and to compare the findings between the two countries. Overall, its aim was to come up with a business analysis

capability model. The research reviewed 300 job advertisements (150 from SA and 150 from the UK) across different industries. The Resource Based View (RBV) of the firm theory and the concept of practice were used to help identify the practices, competencies and capabilities of a business analyst. Based on the evidence presented, the study suggests that, together, the RBV and the concept of practice can be used to identify capabilities, competencies and practices of the business analyst and that only certain business analyst skills, practices and competencies could extend the capability of the firm to achieve competitive advantage.

The RBV of the firm theory provided the theoretical underpinning of the study and the findings of the study show that all the skills, practices, competencies and capabilities of a business analyst required by employers based in UK are also required by employers based in SA. SA, however, requires additional skills, practices, competencies and capabilities of a business analyst over and above those identified for the UK. A possible consequence of these findings is that a business analyst based in SA will be able to work in the UK without the acquisition of additional skills or practical experience (training, facilitation skills, research skills, innovative, integration, packages' skills, adherence to standards and solution designing). On the other hand, a business analyst from the UK might be expected to have these additional skills before they can be considered for a job in SA. It should also be noted however, that in the UK most organisations use mature systems development methodology like Agile methodology and therefore SA based business analysts might not have the relevant Agile experience. At a high-level point of view, it may seem that business analysts based in SA are highly skilled, but from a detail point of view, there may be differences in the knowledge or skill requirements. This can be exemplified by the Agile and SDLC methodology. At knowledge or skills category level they all fall under development methodologies. It is therefore important to drill down further to understand what is behind the knowledge or skills categories.

Overall, the study suggests that systems skills are required by employers more often than business skills in both SA and the UK. These systems skills underpin systems practices which further consolidate into systems competencies. The implication of this finding is that employers are focusing on the right skills because most of what business analysts do lies at the systems level. Another interesting finding is that education and job experience play an important role in the online pre-screening of applicants in SA, but not in the UK.

It seems that in the UK, qualifications and job experience are only looked at after the initial pre-screening has occurred. Whilst there are additional skills requirements identified in SA that were not identified in the UK, this does not mean that UK business analysts are not globally competent. In addition, different countries seem to prefer certain practices more than others. This is exemplified by the study of the role of a business analyst conducted in Australia by Vongsavanh & Campbell (2008) which found the requirements elicitation, solution designer, and technical specialist practice to be the same as is required in SA. In Australia, however, mediation is regarded as important. The study seems also to suggest that there are core knowledge, skills, competencies and practices of a business analyst that are required across countries, and that there are also specific ones needed in a specific country.

This study makes contributions to research and practice and these are discussed in the next section.

6.4. Research Implications

6.3.1. Research

In academia, the primary contribution of this research is to the IS body of knowledge. There is a conceptual contribution from developing the business analysis capability model using the RBV theory and concept of practice. Furthermore, the model is used to identify the practices, competencies and capabilities of a business analyst.

The study identifies the gaps that exist between what employers want versus what educational institutions teach. It can help educational institutions align their curriculum to cover subjects that are linked to the skills identified by employers and thereby prepare the students for the job market. Furthermore, it will provide entry level business analysts with the minimum requirements of what is expected of them in the job market.

6.3.2. Practice

IS Managers can use the model to identify the capabilities, competencies and practices of other IS professionals like, for example, business architects, IS project managers and so on. As this model was used by Ashurst et al (2008) to identify benefits realisation of IT

projects, it implies that the model is usable in other contexts within the IS field. The business analysis capability model provides guidelines for managers about the type of knowledge, skills and competencies of business analysts in different industries which are considered to assist an organisation achieve better business performance. In addition, it can be used to identify skills and training gaps for business analysts. This study thus further contributes to HR management in hiring practices. It identifies the knowledge or skills, practices and competencies required of business analysts which can be used in a job specification. Furthermore, this capability model can be used to identify skills gaps which can be included as part of an employee personal development plan.

The business analysis capability model can also contribute to the business analysis professional bodies, like IIBA and BCS. Currently, IIBA has a competency model and not a capability model. This model will provide them with an instrument which can assist them in determining the business analysts' competencies that can result in an organisational capability.

6.5. Limitations to the Study

Like any other research, the study has a number of limitations. Firstly, whilst the RBV of the firm theory was used to determine capabilities which can assist the organisation achieve better business performance, the capabilities were not measured on how they provide superior business performance. This is in line with the inherent limitation of the RBV theory which assumes that the identified resources are mainly used where they will derive competitive advantage, but it does not state how to do it (Nevo & Wade, 2010; Rivard et al., 2006). Secondly, the data collection method was based on secondary data. The secondary data analysis was used because it would have been too costly to interview employers or business analysts based in the UK. Although it would have been advantageous to obtain the practices, competencies and capabilities from the employers and business analyst themselves, job advertisements can also provide information as to what employers want. Furthermore, job specifications are the method by which organisations communicate to applicants what type of skills they need and who will best fit into their organisation (Lee & Lee, 2006).

Thirdly, another of the limitations for conducting this type of research is the difficulty in performing data analysis using the content analysis approach because of data coding inconsistency when applying meaning and categorisation of data, thereby raising the question of coding reliability (Todd et al., 1995). The coding scheme used was only set after a pre-test was conducted and the coding scheme was validated by assessing the inter-coder reliability which was achieved at 83.33%. The inter-coder reliability for the main analysis of the study was not calculated, but the same coding scheme and approach used to validate the pre-test reliability was used. An assumption was made that the coding instrument was reliable for the main analysis of this research as much as it was for the pre-study analysis.

6.6. Recommendations for Further Research

To validate the qualitative approach taken in this research, a quantitative research methodology can be used. Since, the research focused only on job advertisements to identify the practices, competencies and capabilities of business analysis as perceived by employers, a further suggestion would be to also interview the employers themselves to determine the type of skills, practices and competencies they want their business analysts to have. Business analysts can be interviewed to determine the business analysis practices followed by their organisations. Thus perceptions from both management and the business analysts themselves can be obtained and compared. As practices are different in different organisations due to experience and culture (Ashurst el al, 2008), the research can also focus on how experience and culture affect business analysis practices.

Based on the evidence obtained, it was difficult to determine the reason why employers based in the UK do not regard job experience and education as important requirements for the applicant to perform the job. Further research can be conducted to determine how education and job experience play a role in IS professions. In addition, future research can be undertaken to understand the impact of formal qualification and this might take the form of qualitative in-depth interviews with senior business analysts and management in the UK.

6.7. Conclusion

In conclusion, the RBV theory and the concept of practice were successfully used to determine the practices, competencies and capability of a business analyst as perceived by employers in SA and the UK. The research study not only presented a business capability model, but it also provided evidence through the use of the model that systems skills are more highly sought after than business skills by most organisations in SA and the UK. Additionally, an interesting finding from this research was that SA business analysts, despite operating in a country which is generally considered a country in development, can nevertheless compete globally.

References

Ambert, A., Adler, P.A., Adler, P. & Detzner, D.F. (1995), Understanding and evaluating qualitative research, *Journal of Marriage and the Family*, **57**(4), 879-893.

Armstrong, C. P. & Sambamurthy, V. (1999). Information technology assimilation in firms: the influence of senior leadership and IT infrastructures. I*nformation Systems Research*, *10*(4), 304-327.

Ashurst, C., Doherty, N.F. & Peppard, J. (2008), Improving the impact of IT development projects: the benefits realisation capability model, *European Journal of Information Systems*, **17**, 352-370.

Barney, J. (1991), Firm resources and sustained competitive advantage, *Journal of Management*, 17(1), 99-120.

Basellier, G. & Benbasat, I. (2004), Business competence of information technology professionals: conceptual development and influence on IT-business partnership1. *MIS Quarterly*, **28**(4), 673-695.

Basellier, G., Benbasat, I. & Reich, B.H. (2004), The influence of business managers' IT competence on championing IT, *Information Systems Research*, **14**(4): 317-336.

Bhatt, G. D. & Grover, V. (2005). Types of Information Technology Capabilities and Their Role in Competitive Advantage: An Empirical Study. *Journal of Management Information Systems*, 22 (2), pp.253-277.

Bhattacherjee, A. (2012), Social science research: principles, methods, and practices, 2nd ed. Florida: USA.

Bresnen, M., Edelman, L., Newell, S., Scarbrough, H. & Swan, J. (2003), Social practices and the management of knowledge in project environments, *International Journal of Project Management*, 21:157-166.

British Computer Society. About BCS: role and purpose. Available at: http://www.bcs.org/category/6988 (Accessed 4 March 2011).

Bryman, A. & Bell, E. (2007), Business research methods, 2nd ed. Oxford University Press. New York: USA.

Burla, L., Knierim, B., Barth, J., Liewald. K, Duetz, M. & Abel, T. (2008), From text to codings: inter-coder reliability assessment in qualitative content analysis, *Nursing Research*, **57**(2): 113-117.

Burton, B., Weiss, D. & Blechar, M. (2008), Q & A: business analyst and business architect roles are different. Gartner Group: ID G00156275.

Calderia, M.M. & Ward, J.M. (2003), Using resource-based theory to interpret the successful adoption and use of information systems and technology in manufacturing small and medium-sized enterprises, *European Journal of Information Systems*, **12**: 127–141

Caroll, J.M. & Swartman, P.A. (2000), Structured-case: a methodological framework for building theory in information systems research, *European Journal of Information Systems*, **9**,: 235-242.

Carr, N.G. (2003), IT doesn't matter, Harvard Business Review. (May 2003: R0305C)

Chen, A.N.K. & Edgington, T. M. (2005), Assessing value in organisational knowledge creation: considerations for knowledge workers, MIS Quarterly, **29**(2):2 79-309

Coll, R.K. & Zegwaard, K.E. (2006), Perceptions of desirable graduate competencies for science and technology new graduates, *Research in Science & Technological Education*, **24**(1): 29-58.

De Haes, S. & Van Grembergen, W. (2005), IT Governance Structures, Processes and Relational Mechanisms: Achieving IT/Business Alignment in a Major Belgian Financial Group, *Proceedings of the 38th Hawaii International Conference on System Sciences*,1-10. http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=1385726 (Accessed November 2011)

Dehning, B. & Stratopoulos, T. (2003) "Determinants of a Sustainable Competitive Advantage Due to an IT-Enabled Strategy", Journal of Strategic Information Systems, **12**, 7-28

Elo, S. & Kyngas, H. (2007), The qualitative content analysis process, *Journal of Advanced Nursing*, **62**(1):107-115.

Evans, N. (2004) The Need for an Analysis Body of Knowledge (ABOK) - Will the Real

Analyst Please Stand Up?*Journal of Issues in Informing Science and Information Technology*, 1: 313-330. http://proceedings.informingscience.org/InSITE2004/053evans.pdf , (Accessed August 2011).

Feig, N. (2007). The rise of the business: emerging roles at banks put business and IT on the same page. *Bank Systems & Technology*. **44**(1): 34

Forman, J. and Damschroder, L. (2008), Qualitative content analysis, Section II: Qualitative methods, pp. 39-62*,* In Siminoff, L.A. & Jacoby, L, Empirical methods for bioethics: a primer advances in bioethics, *Advances in Bioethics*, Volume 11.

Galliers, R. D. (2007), Strategizing for agility: confronting information systems Inflexibility in Dynamic Environments, Chapter 1, pp. 1-15, In Desouza, K. C. (ed), (2007), *Agile information systems, conceptualization, construction, and management*, Butterworth-Heinemann.

Gerhard, D., Brem, A., Baccarella, C. & Voigt, G. (2011), Innovation management and marketing in the high-tech sector: a content analysis of advertisements, *International Journal of Management*, **28**(1): 330-395

Golafshani, N. (2003), Understanding reliability and validity in qualitative research, *The Qualitative Report,* **8**(4): 597-607.

Grant, R. M. (2002), *Contemporary Strategy Analysis*, 4th ed., Blackwell, United Kingdom.

Green, G.I. (1989), 'Perceived importance of system analysts' job skills, roles, and non-salary incentives', *MI SQuarterly*, **13**(2): 114-133.

Havelka, D. & Merhout, J.W. (2009), Toward a theory of information technology professional competence, *The Journal of Computer Information Systems,* **50**(2): 106-116.

Hsieh, H.-F., & Shannon, S.E. (2005), Three approaches to qualitative content analysis, *Qualitative Health Research, **15***(9): 1277-1288.

Hugos, M.H. (2007), The rise of the business analyst – again, *Computerworld*, **41**(6):18

Humble, A.M. (2009), Technique triangulation for validation in directed content analysis, *International Journal of Qualitative Methods*, **8**(3): 34-51.

Hussey, J. and Hussey, R. (1997) Business Research, London: Macmillan Press Ltd.

International Institute of Business Analysis. (2011), Business Analysis Capability Model version 3.0, IIBA Website, Available at: http://www.theiiba.org/am/ (Accessed 06 June 2011)

International Institute of Business Analysis. (2010), A Guide to the Business Analysis Body of Knowledge (BABOK Guide) version 2, IIBA Website, Available at: http://www.theiiba.org/am/ (Accessed 06 December 2010)

International Institute of Business Analysis. (2010), About the IIBA, IIBA Website, Available at: http://www.theiiba.org/am/ (Accessed 06 December 2010)

JobServe. Available at:www.jobserve.co.uk. (Accessed 28 February 2010).

Johnston, K., Muganda, N. & Theys, K. 2007, Key issues for CIOs in South Africa, *The Electronic Journal on Information Systems in Developing Countries*, **30**(3): 1-11.

Kizior, R.J. & Hidding, G.J. (2010), Empha-sizing Business Analysis to Increase IS Enrollments, *Information Systems Educa-tion Journal,* 8(**47**): 1-8. http://isedj.org/8/47.

Klein, H.K. & Myers, M.D. (1999), A set of principles for conducting and evaluating interpretive field studies in information systems, *MIS Quarterly*, **23**(1): 67-94.

Kotlarsky, J. & Oshri, I. (2005), Social ties, knowledge sharing and successful collaboration in global distributed system development projects, *European Journal of Information Systems*, **14**: 37-48.

Lee, C.K. (2005), Analysis of skill requirements for systems analysts in fortune 500 organisations, *The Journal of Computer Information System,* **45**(4): 84-92.

Lee, D.M.S., Trauth, E.M. & Farewell, D. (1995), Critical skills and knowledge requirements of IS professionals: a joint academic/industry investigation, *MIS Quarterly*, **19**(3): 313-341.

Lee, S. & Xiang Fang, X. (2008), Perception gaps about skills requirement for entry-level IS professionals between recruiters and students: an exploratory study, I*nformation Resources Management Journal,* **21**(3): 39-63.

Lee, S.M. & Lee, C.K. (2006), IT manager's requisite skills: matching job seeker's qualifications with employers' skill requirements, *Communications of the ACM*, **49**(4): 111-114.

Leung, L. (2010), Top 10 skills in demand in 2010, Global Knowledge. Available at: http://www.globalknowledge.com/training/generic.asp?pageid=2568&country=United+States (Accessed 05 March 2011).

Liu, J. 2011, What is a business analyst? http://media.wiley.com/product_data/excerpt/01/11180760/1118076001-6.pdf. (Accessed 15 November 2011)

Ljungquist, U. (2007), Core competency beyond identification: presentation of a model, *Management Decision*, **45**(3): 393-402.

Lombard, M., Snyder-Duch, J. & Bracken, C.C. (2002), Content analysis in mass communication assessment and reporting of intercoder reliability, *Human Communication Research*, **28**(4): 587-604.

MacManus, J. & Wood–Harper, T. (2007), "Understanding the sources of information system project failure", *Management Services*, **51**(3): 38–43.

Maguire, S. & Redman, T. 2007. The role of human resource management in information systems development. *Management Decision*. **45**(2): 252-26

Manshani, P., Dhasmana, P. & Sylvest, L. 2010, The IT talent implications of the future of corporate IT: a guide to filling emerging IT skills gaps, *The Chief Information Office Executive Board*. Available at www.cio.executiveboard.com (Accessed 08 May 2011).

Mata, F., Fuerst, W., Barney, J. (1995). Information technology and sustainable competitive advantage: a resource-based analysis. MIS Quarterly **19**(4): 487–505.

McBurney, D.H. (2001), Research methods, 5th ed. Wardworth.

Merhout, J.W. & Buchman, S.E. (2007), Requisite skills and knowledge for entry-level IT auditors, *Journal of Information Systems Education,* **18**(4): 469-477.

Mitri**,** M. & Cole, C. 2007, A systems analysis role play case: We Sell Stuff, Inc., *Journal of Information Systems Education*.**18**(2): 163-168.

Mnkandla, E, & Dwolatzky, B. (2004), A survey of agile methodologies, The Transactions of the South African Institute of Electrical Engineers, **95**(4): 236-247. http://eepublishers.co.za/images/upload/Trans12p236-247.pdf (accessed 7 October 2012)

Morello, D. & Blechar, M. (2005), Business analyst placement, competencies and effectiveness. Gartner Group: ID G00126718

Nevo, S. & Wade, M.R. (2010), Formation and value of IT-enabled resources: antecedents and consequences of synergistic relationships, *MIS Quarterly*, **34**(1), 163-183.

Orlikowski, W.J. & Baroudi, J.J. (1991), Studying information technology in organisations: research approaches and assumptions, *Information Systems Research*, 2(1), 1-28.

Oyelere, R.U. 2007, Brain drain, waste or gain? What we know about the Kenyan case *Journal of Global Initiatives: Policy, Pedagogy, Perspective*, **2**(2): 113-129 http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1116701

Paulk, M.C. (2002), Agile Methodologies and Process Discipline*, Institute for Software Research.* Paper 3. http://repository.cmu.edu/isr/3 (Accessed 27 February 2012)

Pearce, J.A. & Robinson, R.B. (2003), Strategic management: formulation, implementation and control, 8th ed. USA.

Penrose, E.T., (1959), The Theory of the growth of the firm. Wiley, New York.

Peppard, J. & Ward, J. (2004), Beyond strategic information systems: towards an IS capability. *Journal of Strategic Information Systems*, 1**3**(2004): 167–194

Piccinno, D. 2004, What chance business analysis success in IT projects, *Management Services*, **48**(10): 14-17.

PNet. About us. Available at: http://www.pnet.co.za/?utm_source=google&utm_medium=cpc&utm_campaign=ppc&src=p#s=content&x=69 (Accessed 13 December 2010).

Ravichandran, T. & Lertwongsatien, C. 2005, Effect of information systems resources and capabilities on firm performance: a resource-based perspective, *Journal of Management Information Systems*, **21**(4):237-276.

Rivard, S., Raymond, L and Verreault, D. (2006), Resource-based view and competitive strategy: an integrated model of the contribution of information technology to the firm performance, *Journal of Strategic Information Systems*, **15**: 29-50.

Saldana, J. (2009), The coding manual for qualitative researchers, London: Sage publication.

Schreiner, K. (2007), The bridge and beyond: business analysis extends its role and reach, *IT Professional Magazine*, **9**(6): 50-54.

Spanos, Y.E. & Prastacos, G. (2004), Understanding organisational capabilities: towards a conceptual framework, *Journal of Knowledge Management*, **8**(3): 31-43.

Todd, P.A., McKeen, J.D. & Gallupe, R.B. (1995), The evolution of IS job skills: a content analysis of IS job advertisements from 1970 to 1990, *MIS Quarterly*, **19**(1): 1-27.

Topi, H., Valacich, J.S., Wright, R.T., Nunamaker Jr., J.F., Kaiser, K.M., Sipior, J.C. & de Vreede, G.J. (2010), IS2010 curriculum guidelines for undergraduate degree programs in information systems, *Association for Computing Machinery (ACM) & Association for Information Systems (AIS)*. Avaialble at: http://www.acm.org/education/curricula/IS%202010%20ACM%20final.pdf (Accessed 1 December 2010).

Vashist, R., McKay, J. & Marshall, P. (2010). The Roles and Practices of Business Analysts: A Boundary Practice Perspective. *Australasian Conference on Information Systems 2010 Proceedings.* Paper 50. http://aisel.aisnet.org/acis2010/50

Vashist, R., McKay, J. & Marshall, P. (2011). How well do we understand boundary practices? Empirical evidence from a practice of business analysts. *European Conference on Information Systems 2011 Proceedings.* Paper 158. http://aisel.aisnet.org/ecis2011/158.

Vinekar, V., Slinkman, C.W. & Nerur, S. (2006), Can agile and traditional systems development approaches coexist? An ambidextrous View, *Information Systems Management*, www.ism-journal.co (Accessed 27 February 2012).

Vongsavanh, A. & Campbell, B. 2008, The Roles and Skill Sets of Systems vs Business Analysts, *19th Australasian Conference on Information Systems*, 1059-1068. http://dev.modernanalyst.com/Portals/0/Public%20Uploads/Roles_and_Skills_Sets_of_Systems_vs_Business_Analysts.pdf (Accessed 2 August 2011).

Wade, M. R. & Parent, M. (2001-2002), Relationships between Job Skills and Performance: A Study of Webmasters, *Journal of Management Information Systems*, Vol. 18(3), pp.71-96.

Welman,C., Kruger, F. & Mitchell, B. (2005), Research methodology, 3rd ed. Oxford University Press: South Africa.

Wenger, E. C., McDermott, R., & Snyder, W.C. (2002), Cultivating communities of practice: a guide to managing knowledge, *Harvard Business School Press*, Boston.

Wenger, E.C. (2000). Communities of Practice and Social Learning Systems, *Organisations*, **7**(2): 225-246.
http://org.sagepub.com/cgi/content/abstract/7/2/225

Wenger, E.C. & Snyder, W.M. (2000), Communities of practice: the organisational frontier, *Harvard Business Review*, 139-145.

Wenger, E.(2004), Knowledge management as a doughnut: Shaping your knowledge strategy *through communities of practice. Ivey Business Journal Online*.

White, M.D. & Marsh, E.E (2006), content analysis: a flexible methodology, Library Trends, **55**(1): 22–45.

Wright, P.M., McMahan,G.C. & McWilliams, A. (1993), Center of effective communication. http://ceo.usc.edu/pdf/T9319239.pdf (Accessed 24 February 2011)

Wright, P.M., Dunford, B.B. & Snell, S.A. (2001), Human resources and the resource based view of the firm, *Journal of Management*, **27**(6): 701-721.

Zhang, P., Carey, J., Te'eni, D. & Tremaine, M. 2005, Integrating human-computer interaction development into the systems development life cycle: a methodology, *Communications of the Association for Information Systems*, **15**: 512-543.

Zhang, Y. & Wildemuth, B.M. (2009), Qualitative analysis of content. In B. Wildemuth (Ed). *Application of Social Research Methods to Questions in Information and Library*. http://ils.unc.edu/~yanz/Content_analysis.pdf (Accessed 31 August 2011).

Appendix A: Skills & Knowledge Classification

Category by Todd et al. (1995)	Skill Category by Lee (2005)	Skill Type
Hardware • Mainframe • Mini • Desktop • Other	**Architecture / Network** • General knowledge of Architecture / Network • Client/Server • Internet • LAN/WAN • Mainframe • Networking/Network devices • Security • Other **Hardware** • General knowledge of Hardware • Desktop/PC • Devices/Controllers/Printers/Storage • Server • Other	Technical skills
Software • 2GL • 3GL • 4GL • COBOL • Database • CASE • Operating systems • Packages • Other	**Software** • General knowledge of Hardware • CASE • Database • Operating systems/Platforms • Packages • Programming language • Other	
Business • Industry specific • Function specific • Other	**Business** • General knowledge of Business • Electronic business • Enterprise-wide • Function specific • Industry specific • Other	Business skills
Management • General management • Leadership skills • Organisational skills • Project management • Planning • Monitor and Control • Training • Other	**Management** • General knowledge of Management • Leadership skills • Monitor and Control • Organisational skills • Planning • Project management • Training • Other	
Social • Communication skills • Independent /Self-motivated • Interpersonal skills • Other	**Social** • Communication skills • Independent /Self-motivated • Interpersonal skills • Other	
Problem Solving	**Problem Solving**	Systems

• Quantitative/Logical • General problem solving • Technical experience • Creative/Innovative • Other	• General Problem Solving • Adaptive /Flexible • Analytical/Critical/Logical • Creative/Innovative • Customer-Oriented • Modelling • Quantitative • Technical experience • Other	skills
Development • Analysis • Design • Programming • Implementation • Operations/Maintenance • General development • General technology • Other	**Development** • General knowledge of Development • Analysis • Design • Documentation • Implementation • Integration • Knowledge of development methodologies • Knowledge of technological trend • Operations/Maintenance • Programming • Quality assurance • Other	

Appendix B: Specific Business Analyst Skills

Category by Evans (2004)	Skill Category by Evans (2004)
Knowledge • SDLC • Object-oriented analysis and development • Strategic thinking • Other	**Knowledge** • SDLC • Object-oriented analysis and development • Strategic thinking • Other
Personal Traits • Self motivated • Proactive • Initiative • Team player • Other	**Personal Traits** • Self motivated • Proactive • Initiative • Team player • Other

Appendix C: Business Analyst Practices

Category by Vashist, McKay, & Marshall (2010) & Vongsavanh & Campbell (2008)	Practice Category by Vashist, McKay, & Marshall (2010) & Vongsavanh & Campbell (2008)
Practice • Mediator between users and IT staff • Interaction with business and IT separately • Speaking 'two languages' - business and technical language • Being a diplomat • Supporting users • Managing user expectations • Understanding differences in user requirements • Dealing with lack of user engagement • Dealing with the attitude of IT people • Requirements Elicitation • Solution Designer (Business function/processes) • Miscellaneous tasks covering: • data analysis • process analysis • programming	**Practice** • Mediation • Requirements elicitation • Solution designer • Diplomatic • Supporting users • Managing user expectations • data analysis • process analysis

Appendix D: Coding Scheme

BUSINESS ANALYSIS CAPABILITY MODEL CODING SCHEME			
Technical skills	**Business skills**	**Systems skills**	**Practice**
Category **Knowledge & Skill Requirement**	**Category** **Knowledge & Skill Requirement**	**Category** **Knowledge & Skill Requirement**	**Category** **Practice Requirement**
Architecture / Network • General knowledge of Architecture / Network • Client/Server • Internet • LAN/WAN • Mainframe • Networking/Network devices • Security • Other **Hardware** • General knowledge of Hardware • Desktop/PC • Devices/Controllers/Printers/Storage • Server • Other **Software** • General knowledge of Hardware • CASE • Database • Operating systems/Platforms • Packages • Programming language • Other	**Business** • General knowledge of Business • Electronic business • Enterprise-wide • Function specific • Industry specific • Other **Management** • General knowledge of Management • Leadership skills • Monitor and Control • Organisational skills • Planning • Project management • Training • Other **Social** • Communication skills • Independent /Self-motivated • Interpersonal skills • Other	**Problem Solving** • General Problem Solving • Adaptive /Flexible • Analytical/Critical/Logical • Creative/Innovative • Customer-Oriented • Modelling • Quantitative • Technical experience • Other **Development** • General knowledge of Development • Analysis • Design • Documentation • Implementation • Integration • Knowledge of development methodologies (SDLC, etc.) • Knowledge of technological trend • Operations/Maintenance • Programming • Quality assurance • Other	**Practice** • Mediation • Requirements elicitation • Solution designer • Being a diplomat • Supporting users • Managing user expectations • data analysis • process analysis
Personal Traits			
• Personal Traits • Self motivated • Proactive • Initiative • Team player • Other			

Appendix E: Detail View Business Analysis Capability Model

