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An Investigation of the Role of Business Analysts in IS Development

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Full paper

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Abstract

Business analysis has developed since the early 1990s as an IS discipline that is concerned with understanding business problems, defining requirements and evaluating relevant solutions. However, this discipline has had limited recognition within the academic community and little research has been conducted into the practices and standards employed by business analysts. This paper reports on a study into business analysis that considered the activities conducted and the outcomes experienced on IS projects. Senior business analysts were interviewed in order to gain insights into the business analyst role and the techniques and approaches applied when conducting this work. The Context, Content, Process, Outcomes framework was adopted as a basis for developing the interview questions. The data collected was analysed using the template analysis technique and the template was based upon this framework. Additional themes concerning aspects of business analysis that may contribute to IS success emerged during data analysis. These included the key business analysis activities and the skills business analysts require to perform these activities. The organisational attitude was also identified as a key factor in enabling the use and contribution of business analysis.

Keywords: Business analysis, Business analyst, Requirements engineering, IS projects

Introduction

The Information Systems (IS) function has developed over the last few decades from a specialist area of expertise with its own language and high degree of autonomy, to an intrinsic part of the organisation. Research suggests that alignment between the needs of the business and delivered information systems is a key concern for many Chief Information Officers (CIOs) (Luftman and Derksen, 2012) however, IS project failure is an ongoing issue. The CHAOS summary (The Standish Group, 2010) reported in 2000 that only 28% of IS projects were categorised as 'successful' and, although subsequent surveys reported a small increase in the proportion of successful projects, this peaked at 35% in 2006 and fell back to 32% in 2008. Case study research into a UK public sector organisation found that an estimated 60% of completed projects had not met the original objectives (Pan et al., 2007) and Wright and Capps (2011) stated '20 – 30% of all IS development projects are perceived as overwhelming failures, while 30% to 60% are partial failures'.

Requirements definition is cited frequently as a major issue on IS projects (McManus and Wood-Harper, 2007, Nelson, 2007). Other key problems include a failure to understand the business system into which the IS will be deployed (Al-Ahmad et al., 2009) and the impact of a new IS on the organisation (Peffers et al., 2003). Much IS research focuses on software delivery rather than business improvement. The IS success model (DeLone and McLean, 2003) is widely cited but does not include the broader business dimensions that may be required to achieve the 'net benefits'.

There have been many initiatives aimed at improving the quality of information systems. A particular focus has been on bridging the communication gaps between the business and IT staff by introducing a

new role, that of the business analyst. Definitions of this role place it within the business context, having a focus on information systems but also taking a more holistic view which encompasses many aspects of a business system (Jakob, 1986, Sefyrin, 2012).

There are increasing numbers of business analysts; Lloyds Banking Group employs 2,925 business analysts (LBG, 2013); there are 130,000 IT Business Analysts employed across the US (CNN Money, 2010). BCS[1] recognises business analysis as a distinct job role, awarding professional certifications in business analysis and offering the following role definition:

'Business analysts provide the bridge between the business and IT systems, and are pivotal to organisational success' (BCS, 2013).

Similarly, IIBA[2] (2012) suggests:

'Business Analysis is the practice of enabling change in an organisational context, by defining needs and recommending solutions that deliver value to stakeholders'

However, with few exceptions (Cross et al., 1997; Feeny and Willcocks, 1998; Willcocks et al., 2007b) there is little academic research regarding business analysis work within an IS context. Given the gap between practice and theory, there is a need to research the work of the business analyst to improve the outcomes from IS projects. As such, the research aims to investigate the role played by business analysts and the ways in which they contribute to IS projects.

The scope of this study concerned the experiences and reflections of business analysts about their career paths, roles performed, skills applied and overall contribution to projects. This paper provides a review of the key literature, a summary of the research approach adopted, the data collected, the findings from the data analysis and the recognised limitations, and the potential for further research.

1 Literature Review

1.1 Introduction

This literature review was conducted in order to examine the available research concerning role of business analysis work in enabling the achievement of business objectives from the deployment of information systems. Three bodies of literature were investigated:

- The role and capabilities of the IS function.

- The process for the elicitation and definition of IS requirements.

- Measures of IS success and the evaluation of outcomes from information systems.

1.2 The role and capabilities of the IS function

The nature of the IS function has developed over several decades but questions remain about the contribution of IS to organisations (Hirschheim and Klein, 2012). IS staff who are able to work closely with the business staff, have been suggested as key enablers of business/IT alignment (Barki and Hartwick, 2001, Luftman and Brier, 1999, Tillquist, 2000). This alignment requires the IS function to provide capabilities such as the ability to develop effective IT-business relationships plus a 'human asset' which is able to provide 'rapid solutions to …business needs' (Ross et al., 1996).

The role taken by the IS function determines the extent of the organisational support and nature of the IS/business relationship. There is a stated need for the IS function to work in partnership with the business units (Gullemette and Pare, 2012) if the delivered systems are to support business needs. However,

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[1] The Chartered Institute for IT

[2] International Institute for Business Analysts

this cannot be achieved if the required capability is not available. To operate as a collaborative partner, the IS function will need to provide business, technical and interpersonal skills (Feeny and Willcocks, 1998, Gullemette and Pare, 2012, Lee et al., 1995).

The link between processes and information systems has been the subject of much research (Davenport and Short, 1990, Earl and Sampler, 1998, Hammer and Champy, 1993, Cha-Jan Chang and King, 2005). This is consistent with research indicating process innovation as a core IS activity (Willcoxson and Chatham, 2004). While there is evidence of the need to ensure IT and process alignment, the means of achieving this is less well defined.

The outsourcing business model has had a considerable impact on the IS function, redefining its relationship with the business and the required capabilities. Outsourced systems development requires enhanced communication and places additional responsibility on the internal IS staff to understand and specify the business requirements (Feeny and Willcocks, 1998). A later study (Willcocks et al., 2007) identified business systems thinking as a core competence when 'eliciting and delivering on business requirements'. In essence, to support the delivery of desired business outcomes a 'partner' IS function must offer the capability to investigate business needs or issues, and formulate feasible solutions, each of which may require changes to any combination of IT systems, processes and people. This aligns with the holistic, analytical approach which is central to business analysis work as defined by the professional bodies.

1.3 The elicitation and definition of IS requirements

The definition of requirements has been identified as a core aspect of business analysis work (SFIA Foundation, 2011). A requirement is defined as 'any externally observable characteristic of a desired system' (Hickey and Davis, 2004). However, this definition does not specify the nature of the 'system' under discussion, failing to clarify whether the focus is on an IT system or a business system and while the need to elicit the business requirements is recognised, the solutions envisaged are all based upon IT software; in effect, the nature of the solution has been determined before defining the requirements and without consideration of alternatives or more holistic solutions.

The development of structured systems analysis[3] methods in the 1970s and 1980s represented an attempt to formalise the documentation of requirements (De Marco, 1979). Recent literature suggests that such methods continue to focus exclusively on IT requirements and their application may result in disassociation from the business objectives and needs (Holmström and Sawyer, 2011). The Unified Modeling Language (UML) provides an alternative to the structured methods, offering techniques to model both the business context and IT systems (OMG, 2011) and capture a complete view of a system. Research suggests that the use of the UML may influence IS project success (Larsen et al., 2009).

Chakraborty et al (2010) explored the process of requirements elicitation and highlighted the importance of the analyst/end-user interaction, however, the focus was entirely on the definition of IT requirements. This is consistent across the literature, which seems predicated on an assumption that requirements are elicited and defined for the sole purpose of developing or enhancing software (Appan and Browne, 2012, Cox et al., 2009, Hickey and Davis, 2004, Holmström and Sawyer, 2011, Mathiassen et al., 2007, Pitts and Browne, 2007).

Hickey and Davis (2004) identified the relevance of understanding the problem, the business domain and the factors inherent in the particular business situation, but did not question the emphasis placed on a technological solution or consider if business problems may be resolved, or partially-resolved, by non-automated means. In many situations, a software system may not be the only possible solution, or may form only part of the solution, for the business needs to be met. The importance of positioning IS such

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[3] Systems analysis in the IS context, is sometimes referred to as IT systems analysis in order to distinguish it from the older discipline of systems analysis (CHECKLAND, P. 1981. *Systems Thinking, Systems Practice*, Wiley.). In this paper, and much academic literature, the term 'systems analysis' is used in the context of information systems.

that it supports and enables business success, is represented in the IS Strategy Triangle (Pearlson and Saunders, 2012) but there is a lack of extant literature that examines this perspective.

1.4   Measuring IS success

It has been commented that the mechanisms that determine IS success are 'elusive to define' (DeLone and McLean, 1992) and this is borne out by the range of measures considered by researchers. Success measures for project managers concern the delivery of projects within the triple constraint of 'time, cost and quality' (OGC, 2003), yet Nelson (2005) asserts that these 'process-related criteria' need to be supplemented by 'outcome-related criteria' of learning, value and use if the evaluation is to be comprehensive. Whereas timescale and budget are tangible elements to assess, the evaluation of outcomes is much more subjective. Jenkin and Chan (2009) commented that the project management approach to assessing project success is limited in that it does not attempt to ensure project and strategic alignment.

Research concerning benefits management also places IS firmly within the business context, highlighting the need for holistic analysis that encompasses both IS and organisational changes. The Benefits Dependency Network (BDN) (Peppard et al., 2007, Ward and Elvin, 1999) provides a taxonomy linking the IS/business changes with business objectives and emphasises the dependencies between the IS/IT changes and the related business changes. Business objectives may be achieved only if a holistic view is taken, where both IS/IT and business changes, and the dependencies between them, are defined. Research into measures of IS success has considered the executive or managerial viewpoint and there has been an absence of the business analyst viewpoint. Researching the views and experiences of business analysts offers an opportunity to consider several aspects including:

- Achieving 'functional fit' (Seddon et al., 2010).
- Information quality and user satisfaction defined in the I/S Success Model (DeLone and McLean, 2003).
- The link between the IS/IT and business changes (Peppard et al., 2007, Ward and Daniel, 2012).

2   Theoretical framework

Initially, this research project was intended to focus on the relationship between business analysis activities and the resultant outcomes. However, the literature review revealed further limitations than originally anticipated. Extant IS literature focused on requirements within the context of IT systems rather than the holistic business system, and there was insufficient research of the business analyst role as defined by BCS and IIBA. If it is the responsibility of business analysts to 'provide the bridge between the business and IT systems' (BCS, 2013), it may be inferred that they need to address the broader business context for IS (Pearlson and Saunders, 2012) rather than focus solely on the software requirements. Research into the antecedents of IS success (Petter et al., 2013) suggests that the achievement of desired organisational impacts and net benefits require this broader view.

In the light of these factors, the study was structured using a framework that enabled a broader perspective encompassing contextual aspects and the role across a range of business analysis projects.

The context, content, process dimensions identified by Pettigrew and Whipp (1991) were adapted by Ward and Elvin (1999) 'to match the particular nature of IT-enabled change'. The Ward and Elvin model considered the relationship between the content of a change specification, the process for enacting that change, and the delivery of an outcome that satisfies the original intent. Ward and Elvin's adapted model was selected as a framework for this research. Given the internal nature of business analysis work, the model was adapted further in order to focus on understanding the nature of business analysis work (what is done) within the internal organisational context, the processes adopted to do this (how the work is done) and the outcomes resulting from business analysis, This resulted in a four-dimensional theoretical framework to underpin the research activity. The framework was adapted to the research topic as follows:

- Context - the context within which the business analyst conducted the business analysis work, both organisational and personal, and the impact of this context.

- Content - the types and characteristics of business analysis projects.

- Process - the approaches, activities and techniques deployed in conducting business analysis work, plus the skills required to work effectively as a business analyst and the challenges experienced.

- Outcome - the impacts of business analysis, the risks that may accrue from a lack of business analysis and the contribution of business analysis to required outcomes from information systems.

This framework was used to structure the interviews with the expert business analysts, identify the questions to be posed and develop the questions for the template analysis (King, 2004) used to analyse the data.

3 Research design

The research topic required a detailed understanding of organisational processes and the collection of 'rich data in context' (Hartley, 2004). A case study approach was selected in order to conduct an 'in-depth contextual analysis of similar situations' (Sekaran and Bougie, 2009) across organisations facing the same problems and experiences.

The case study research was conducted using one-to-one interviews, the 'primary data source' for interpretive case studies (Walsham, 1995) and 'a key way of accessing the interpretations of informants in the field' (Walsham, 2006). The aim of qualitative interviews is to elicit data based on 'the social world from the participant's perspective' (Orlikowski and Baroudi, 1991). This is highly relevant when exploring business analysis as the practice is not well-supported by academic theory and insights from the practitioner experience are vital to inform theory development.

The area of concern is business analysis in an IS project context with an expert business analyst forming the unit of analysis. Multiple case design was adopted in order to study 'what is similar and what is different' about the selected cases (Stake, 2006) and enable cross-case analysis. The aim of this research is to uncover patterns of activity and outcomes from business analysis across different contexts and based on the experiences and reflections of expert business analysts across several organisations.

4 Case selection

The research objective was to explore experiences across organisations and projects in order to inductively generate theory. Theoretical sampling (Eisenhardt and Graebner, 2007) was used to identify relevant cases.

An 'expert' is defined in three dimensions - knowledge, decision-making role and experience (Abraham et al., 2013). Experience of 10 years or more is an indicator of expertise (Ericsson et al., 2007) as are knowledge and experience of factors specific to the specialist domain (Dutta et al., 2013). Therefore, business analysts were selected who have extensive business analysis experience, certified knowledge and have engaged with the wider business analysis community. The selection criteria used were:

- Business analysis experience; the analysts each had over ten years of business analysis experience.

- Certification; the analysts are all holders of the Diploma in Business Analysis[4]. Two of the analysts are holders of the Expert BA Award[5].

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[4] The International Diploma in Business Analysis is awarded by BCS, the Chartered Institute for IT and assesses knowledge, understanding and application of business analysis techniques and skills.

[5] The Expert BA Award is offered by the BA Manager Forum (BAMF). The Award is endorsed and supported by the Chartered Management Institute (CMI) and BCS, The Chartered Institute for IT.

- Members of the BA Manager Forum; the analysts are all members of the Forum.

The selection criteria were effective in identifying participants who were able to provide insights into business analysis within a range of organisational contexts.

5 Data collection

The data was collected using semi-structured interviews, conducted between October and December 2013. Each interview was conducted on a one-to-one basis and took approximately one hour. The interview questions were structured using the context, content, process and outcome framework outlined in section 3. Two of the interviewees were interviewed online using Skype; one interviewee was interviewed in person in an office environment.

Business analysis work often concerns strategically important projects and organisational confidentiality is very important. This issue requires particular consideration when using case studies as they are 'deeply embedded in rich empirical data' (Eisenhardt and Graebner, 2007). To ensure confidentiality was respected, no confidential information was requested during the interviews instead the analysts were asked to discuss their beliefs about business analysis practice. While some questions concerned project experiences, the participants were asked for generalised information, such as types of project and activities, rather than specific project details.

Each interview was recorded and transcribed to provide a basis for qualitative analysis of the data collected.

6 Data analysis

6.1 Approach

Template analysis was used as it enabled the development of themes to organise and analyse the data, and to explore interrelationships and hierarchies (King, 2004) .
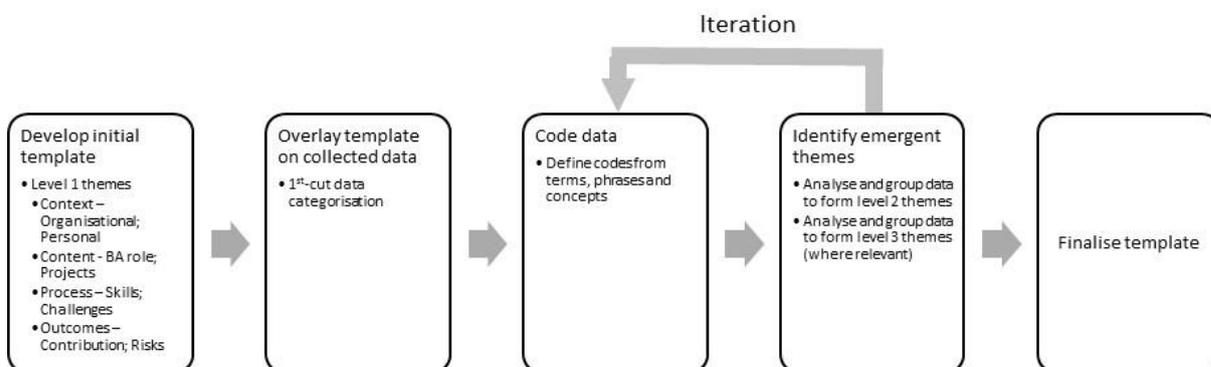

Figure 1: Template analysis process

The process followed is shown in figure 1 and involved the following steps:

1. Derive template of themes. The interview topic guide utilised during data collection was the basis for this activity. The initial template included a limited set of level one themes, sufficient to provide a direction and focus for the analysis.

2. Overlay the template on the data collected. The template was used as a means of analysing the data that emerged from the interviews. As the questioning structure applied in the interviews

had been used to develop the template, the data obtained from the interviews could be catego-rised into the template themes.

3. Code data using coding methods advocated by Miles et al (2013). Coding was applied to the data in order to identify concepts, terms and phrases with the potential to become themes. The structure and questions used for data collection elicited rich data for analysis. The data coding was recorded using Nvivo.

4. Analyse data to identify emergent themes. The codes applied to the data were analysed to es-tablish themes initially based on the template but also emerging from the data. For example, 'ability to challenge' emerged as a process/skills theme; 'qualifications' emerged as a con-text/personal theme. Some emergent themes did not fit within the original theme so were moved to where they were most relevant. The themes and codes are shown in table 1 below. The codes were further analysed to produce an additional level of groupings; these are shown as level two codes.

Model	Template themes	Codes (with level 2 codes if relevant)
Context	Organisation	Attitude
		Department
		Sector
	Personal	Career path
		Qualifications
		Years as BA
Content	BA role	BA lifecycle • Approaches • Entire process • Front end
		Bridging
		Business-Technical
		Definition
		Delivering value
		Key role
		Linked roles
		Managing stakeholders
	Projects	Data
		Integration
		Outsourced
		People
		Process
Process	Skills	Business • Business case • Engagement • Language • Political awareness
		Personal • Ability to challenge • Communication • Confidence

		• Negotiation
		• Problem-solving
		Range
		Techniques
		• Analysis
		• Investigation
		• Modelling
		• Traceability
		Tools
	Challenges	New developments
		Not solution
		Perspectives
		Politics
		Recognition
		Resistance
		Resourcing
Outcomes	Contribution	Challenging
		Change driver
		Journey
		Outcomes
		Support
	Risks	Competitive advantage
		Costs
		Decisions
		Lack of BA
		Regulation
		Technology

Table 1: Template and emergent themes

5. Repeat analysis of data and codes. The interview transcripts were revisited to ensure that all relevant section of text had been included in the analysis. An iterative approach was used to revisit the data and the coding; more sections of text were identified and coded, and subjected to further analysis. This approach resulted in the emergence of new themes and continued until all section of text considered relevant had been coded and analysed. The range of organisations and experiences represented provided insights into the nature of business analysis work and the potential contribution to IS projects. The final template contained themes that were categorised as follows:

- Context themes concerned the employing organisation and the interviewees' career paths. Example themes are organisational attitudes and career development paths.

- Content themes concerned the business analyst role and the interviewees' project experiences.

- Process themes concerned personal, technical and business skills, including the use of support tools.

- Outcome themes concerned the interviewees' perceptions regarding business analysis and its contribution to business change projects.

6.2 Findings

The themes that emerged from this study confirmed the contribution of business analysis to IS success within the organisations represented by the interviewees. Key findings are described below.

6.2.1 Context

The three business analysts worked in either the private or public sectors and represented organisations of different sizes. There was no consistency regarding the location of the business analysts within their organisations; they may be sited within business units, a business change function or within the IT department. Establishing credibility was deemed important and is affected by the attitude of the organisation and the level of recognition for business analysis. One analyst commented:

- o *I am quite lucky within my organisation in that they take business analysis seriously (interviewee 3)*

From an individual perspective, the route to becoming a business analyst is varied. Some may move into business analysis from working within a business unit while others start in technical IT roles. All of the interviewees are qualified to degree level and hold professional certifications but none had begun their careers with a desire to work in business analysis:

- o *I think I fell into it such as many of us do (interviewee 3)*

6.2.2 Content

The business analyst role is extensive, covers a range of activities and responsibilities and, as a result, is difficult to define.

- o *it's really difficult to give a definition that isn't really, really woolly (interviewee 1)*

- o *I think the biggest challenge for us is still continuing to define our role (interviewee 3)*

However, this is partly because business analysts work on a variety of projects, invariably involving business changes but not necessarily changes to IT systems.

- o *I do think it's an end to end role or should be an end to end role (interviewee 1)*

- o *a business analyst is really good at being impartial and being able to stand back and um, understand the problem that needs to be solved. And, that is irrelevant to whether that's a business problem, technical problem, organisation problem or people or process. (interviewee 2)*

- o *We try to get to basics and try to say, right, what are you trying to achieve? What, you know, is your success criteria for this and understand what the problem is before you start putting a solution that perhaps won't work around it (interviewee 3)*

6.2.3 Process

The skills required of a business analyst were felt to be extensive and varied:

- o *huge range depending upon the project (interviewee 3)*

The data enabled the identification of some key categories of skill.

Business skills identified included contributions to business case development, stakeholder engagement and management, political awareness and using the language and terminology of the business.

Interpersonal skills identified included communication, negotiation, ability to challenge and problem-solving:

- o *I also think the ability to negotiate conflict … is quite important (interviewee 1)*

- o *I think relationship management is a key one (interviewee 3)*

The ability to apply **professional analytical techniques** was also identified as important and covered a wide range including:

- investigation techniques, such as interviewing, workshops and prototyping

  - o *We also tend to use one-to-one interviewing techniques as well for some of the more senior stakeholders that we have to engage – we don't want to drag them into a room for a day so we go and conduct specific interviews with those (interviewee 3)*

  - o *I am a real fan of prototyping. Prototyping for elicitation and validation (interviewee 1)*

- analysis techniques, such as business environment and perspectives analysis

  - o *if you're talking to one of the financial directors or a marketing director, they'll have a very different perspectives so again I think you're looking at their perspectives and perhaps using that CATWOE technique helps as well because they're going to have very different views of what they want from a particular project and it's making sure that we meet the needs of everybody (interviewee 3)*

- modelling techniques, such as use case and entity relationship modelling

  - o *when I moved into Engineering did a lot of training in OO analysis and design, the Rational Unified Process, use cases, and those sorts of things (interviewee 2)*

- requirements management and traceability

  - o *requirements management, requirements elicitation, analysis …so I'd say requirements engineering was at the forefront of what I was doing (interviewee 2)*

The need for a wide-ranging set of skills was commented upon:

- o *if you tried to be a business analyst with no techniques, so you haven't got a tool kit, I think you'll struggle, and I don't think you can be a business analyst on domain knowledge alone either (interviewee 2)*

All of the analysts commented on the use of tools in order to enable the application of the modelling and analysis techniques. Particular tools mentioned were Visio, Excel and requirements gathering tools.

6.2.4 Outcomes

The participants were unanimous about the contribution business analysis can make to IS projects. They expressed strong beliefs about the contribution of business analysis to IS projects.

- o *I think it will be a fitter organisation so, you know, customers are more likely to get a better service (interviewee 1)*

- o *they bring a whole load of skills that provide… analysis skills that bring clarity to a problem (interviewee 2).*

- o *if you get business analysts involved you can actually lead to increased profitability in your organisation. (interviewee 2)*

The term 'success' was not used when questioning the participants in order to avoid introducing bias into the responses on outcomes. However, cross-case analysis (Stake, 2006) identified that all participants highlighted the contribution of business analysis to successful project outcomes:

o *I would say you will have fewer project failures and more project successes. (interviewee 1)*

o *with good business analysis in your organisation, you should have a high success rate for all your projects. (interviewee 2)*

o *a successful project outcome to a successful implementation and a successful understanding of customer – is all down to a successful BA team. (interviewee 3)*

This study did not explore the nature of success however, it was commented:

o *You should have a higher success rate in terms of delivering the right thing, um, at the right time for the business (interviewee 2)*

6.3 Conclusion, Limitations and future research

The role of the business analyst exists in organisations and plays a key role in resolving business problems through the use of technology but also through process and people change. The role is difficult to define because it is so wide-ranging and the nature of projects so diverse. However, there was unanimity that business analysts help to solve problems by using analysis to bring clarity. To work as a business analyst requires extensive knowledge and skills across business, interpersonal and professional areas. The business analysts participating in this study were clear in their beliefs that business analysis makes a significant contribution to IS success.

The limitations in this research study were as follows:

- The scope of the study was three individual business analysts. While they were carefully selected in order to provide in-depth understanding of business analysis work and its impacts across a range of organisations, this limits the generalizability of the findings.

- This study focused on business analysis work from the viewpoints of expert business analysts. These views reflected over ten years' experience for each analyst and encompassed the business analysis work conducted within several organisations. This approach enabled the examination of business analysis work across organisations and the identification of consistent themes.

- An interpretivist case study research approach was used for this study. While much IS research uses a positivist approach and quantitative data, the opportunity to explore experiences and consider different perspectives was more appropriate given my personal philosophy, the uncertainty surrounding business analysis and the lack of extant literature. Further research using quantitative analysis would enable greater understanding of business analysis work across a large population of analysts and organisations.

- One-to-one interviews were selected as the research method. While this resulted in detailed discussions regarding personal experiences and beliefs, it did not allow for group discussion and comparison of ideas. Methods such as workshops or focus group discussions would address this limitation and help triangulate the data.

The data analysis uncovered opportunities for further research:

- The level of recognition of business analysis may vary between organisations. However, as this was a sample of just three cases (individuals within organisations) this requires further investigation. Given the range of responses – and the acknowledged difficulty in defining the role of the business analyst – further research, across more analysts and organisations, is required to develop a definition of the business analyst role.

- Further research of perspectives from other project roles (for example, project manager, project sponsor) and longitudinal research within a specific organisation would help to triangulate the data.

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