Towards an Understanding of the Business Process Analyst: An Analysis of Competencies

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Executive Summary

The increase in adoption of business process management (BPM) and service oriented architecture (SOA) has created a high demand for qualified professionals with a plethora of skills. However, despite the growing amount of literature available on the topics of BPM and SOA, little research has been conducted around developing a detailed list of competencies required for SOA and BPM professionals. According to Gartner's 2011 predictions, by 2014 there will be a growing emphasis on process-related skills and competencies to create competitive advantage. The purpose of this paper is to provide an analysis of the required competencies of the business process analyst. The new business process analyst role is seen as indispensable to the success of BPM and SOA projects. This qualitative research used data collected through semi-structured interviews and through subsequent thematic analysis; a business process analyst competency framework emerged. The findings show that the business analyst competencies form a foundation for the business process analyst role. Even more than the business analyst role, the business process analyst requires strong interpersonal competencies and strengths as well as both left brain (statistical) and right brain (emotional) thinking. Business and organisational knowledge is seen as important while technical competencies were considered the least important. Although this research is positioned in South Africa, where the availability of skills is a major challenge facing the establishment of the business process analyst role, the resultant framework should be useful for any information systems educators designing curriculum for this new role and for organisations hoping to employ these professionals.

Keywords: Business process analyst, IS curriculum, BPM, business process management

Introduction

Business Process Management (BPM), a management practice, and service oriented architecture (SOA), an IT practice, share the goals of improving agility in their respective areas and are, thus, often depicted as going hand-in-hand. BPM provides a use case for SOA that can be understood by the business, whereas SOA provides the necessary agility and flexibility that is not available to BPM from non-SOA-enabled proprietary BPM tools (Inaganti & Behara, 2007; Kamoun, 2007; Malinverno & Hill, 2007).

The interest in BPM is rising, with one study citing 27 per cent of South African companies committing to BPM projects (Kayle, 2011), and 71 per cent of re-

spondents in a global Forrester survey reported the use of SOA or an initiative to use SOA (Kanaracus, 2011). However, regardless of the promising views offered by integrating BPM and SOA, numerous challenges persist (Abramowicz, Fensel, & Frank, 2010). One challenge is the high demand for qualified professionals with a plethora of skills in both SOA and BPM domains (Antonucci, 2010; Antonucci & Goeke, 2011; Watson, 2007). Several Chief Information Officers (CIOs) are concerned that their organisations lack the skill sets and competencies necessary to implement SOA and that transforming the current information technology (IT) employees to SOA is not a swift process (Graham, 2006). The industry and education sectors also lack a coherent description of the roles and responsibilities for the business process analyst (BPA) (Viering, Legner, & Ahlemann, 2009). According to Hammer (2007), organisations need to define BPM jobs more broadly and increase training to support those jobs.

The term competency refers to the "knowledge, skill, ability or characteristics associated with high performance on the job, such as problem solving, analytical thinking or leadership" (Mirabile, 1997, p. 75). Organisations are concerned with the lack of consensus on the competencies needed for these new process roles (Antonucci & Goeke, 2011; Antonucci et al., 2009). Research has been focussed on the technological aspects of BPM and SOA, and little effort has been devoted to the personnel aspect and the competencies required for SOA and BPM professionals or organisations (Ravensteyn & Batenburg, 2010). Hence, the purpose of this research is to contribute to research in BPM and SOA by investigating the required competencies of the business process analyst (BPA).

The BPA and the IS Curriculum

Process modelling and management related courses are rare and have predominantly been developed by information technology schools and/or management information systems (MIS) departments in business schools (Seethamraju, 2010). The emerging BPM field was stated as one of the drivers of a new information systems (IS) curriculum (Topi et al., 2010). Prior to that, there was little curriculum support for teaching business processes and the term business process was not listed as a course concept or included as a graduate capability in the 2005 Computing Curriculum (Seymour, Dawood, Mandengu, & Mokobori, 2006). In marked contrast, the IS 2010 curriculum (Topi et al., 2010) listed the BPA as a career track and BPM as an elective course, recommending that BPM content should have significant coverage in the curriculum for Business Analysts (BAs) and BPAs alike. This large shift has left academics grappling to develop courses. Consequently, BPM courses in higher education are rare and are faced with many challenges (Seethamraju, 2010). These challenges include having to move away from a functionality orientated curriculum to a cross-functional one, having to introduce new complex technologies such as SOA, and having to produce graduates with business knowledge as well as strong technical skills. These challenges are compounded by the lack of clarity on the BPA role itself. Hence a clearer understanding of this role should assist educators in curriculum design.

The Emerging Business Process Analyst Role

The BPA role recently emerged and has been tasked with supporting a holistic view of business processes and delivering the ability to transform the organisation swiftly (Antonucci, 2010; Morris, 2010). According to Olding and Hill (2008), the BPA role requires a combination of advanced technical skills (including process modelling, orchestration, simulation, and decomposition), in-depth understanding of the business, and strong interpersonal skills. A business process analyst is a person with a special skill, with the ability to deeply understand the business needs and then develop a solution in a way that empowers others, mitigates risk, and increases efficiency and quality of solutions (ten Vaanholt, 2008). In addition, Antonucci et al. (2009) define business process analysts as professionals who should have the ability to manage process change, lead

process redesign workshops, and educate business users who are responsible for executing processes. Lastly, Antonucci et al. (2009) highlight the importance of the business process analyst in monitoring, measuring, and providing feedback on the performance of a business process. Their role provides accountability to the management for the performance status of the process: what steps are carried out, what information is required, what deficiencies exist, and who is involved in the process (Rosemann, 2010).

Table 1: Framework of Business Process Analysts Activities and Tasks

BPM Cycle	Business Process Analyst	Knowledge indication Area	Citation
Administration and Shareholders	Demonstrate knowledge about the organisational strategy, vision and goals.	Understand the nature of the business Liaise with the business process owner, departments or business process architect and process consultants	Antonucci (2010); Hammer (2007); Harmon (2007)
Business Process Level – Design phase	Demonstrate knowledge of how the organisation's strategy is aligned to its goals and then to processes Knowledge of process modelling tools such as BPMN & EPC, BPEL etc. Interpersonal and communication skills Demonstrate the knowledge of process auditing	Perform process modelling of end to end business processes Show ability to communicate at a higher level of the organisation and communicate with the business users Liaise with the IT department together with the process owners Facilitate workshops with the process owners	Antonucci (2010), Antonucci & Goeke (2011)
Business Process Level – Business Process Analysis Phase	Perform gap analysis Implement continuous analysis to support process transformation with changing business environment.	Perform AS – IS and TO-BE analysis Document and present a business case Identify bottlenecks	ten Vaanholt, (2008); Antonucci (2010); Antonucci & Goeke (2011)
Business Process Level – Business Process Enactment and configuration Phase	Demonstrate knowledge in change management Provide support for day to day activities. Discover deficits in the process and provide solution. Make use of simulation tools for future outcome.	Ensures that changes to process orchestrations are carried out. Communicate changes to the process owner and liaise with the IT department.	Paim et al. (2009)
IT knowledge Area	Demonstrate knowledge on SOA (BPEL), loose-coupled services. Discover applicable (SOA) services to be integrated into applications Demonstrate deep knowledge of SOA infrastructure	Model process at the business service layer of SOA Understanding of ERP, CRM, SRM and BPM tools Knowledge of SOAP, WSDL, XML and other protocols	Jarrar, Al-Mudimigh, & Zairi (2000); Kajko-Mattsson Lewis, & Smith. (2007)

Table 1 summarises the tasks of the BPA position. Many of these are from the Antonucci and Goeke (2011) survey of the Association of Business Process Management Professionals (ABPMP). In their survey they listed 7 responsibilities of a BPA and got agreement that these responsibilities are valid. This paper proposes these findings in the BPM cycle, in order to show

what is performed at different stages. According to Weske (2007), the BPM life cycle is comprised of four phases: design and analysis, configuration, enactment, and evaluation.

The BPA in South Africa

Effective business processes are considered the key differentiators to compete globally (Seethamraju, 2010) and therefore are particularly critical in developing countries such as South Africa that are trying to extend their global trade. The shortage of skills in South Africa has been problematised in a number of articles (Grobler, 2010; Lotriet, Matthee, & Alexander, 2010; Mowson, 2010; Perry, 2008). The Bytes Technology Group identified BPAs amongst the top ten IT skills required in South Africa in 2011 (Grobler, 2010). Many CIOs are concerned that their organisations lack the skill sets and competencies necessary to implement SOA and that transforming the current IT employees to SOA will not happen quickly (Graham, 2006). Although the South African government has announced that it will allow immigrants with special skills to work in the country, the global skills shortage is seriously affecting the South African market (Marriott & Harris, 2010).

The Competency Model

The competency model is viewed as a technique for analysing skills, abilities, knowledge, and qualifications. Even with the substantial amount of literature available on the topics of BPM and SOA, there has been little research conducted offering a detailed list of competencies required for SOA and BPM professionals or organisations (Ravensteyn & Batenburg, 2010). According to Todd, McKeen, and Gallupe (1995) there are core competencies that are expected from employees, which include knowledge, skills and abilities together with the interpersonal skills or general skills. It involves individuals making judgements about the components of their job based on their knowledge. The results of individuals are then combined to develop the overall findings about the job (Morgeson, Delaney-Klinger, Mayfield, Ferrara, & Campion, 2004). The competency model can be used, decoupling the human judgements and understanding of their jobs into knowledge, skills, tasks, and abilities (Morgeson et al., 2004). The Viitala (2005) competency model (Figure 1) identifies six layers of competencies that organisations and researchers can use to assess the skills:

Technical competency - involves the ability to use technology tools.

Business competency - includes the knowledge about the organisation's business processes.

Knowledge management competency - involves the ability to solve complex problems.

Leadership and supervisory competency - involves the ability to lead people, communicate, and give direction.

Social Competency – includes the ability to create and maintain relationships with fellow team members, business users, IT departments, and managers.

Intrapersonal skills - includes the ability to self-manage, be assertive, and deliver projects in a timely manner.

However, this model contains generic competencies that are developed for a managerial role and the literature is lacking the BPA competencies. This lack of research is partly due to the emergence and changing nature of the BPM field and has also been attributed to the lack of a common vision and definition of BPM among researchers and practitioners (Bandara et al., 2010).

Figure 1: Pyramid Competency Model (Viitala, 2005)

Method

An interpretive philosophy and an inductive qualitative approach were applied to improve on the framework developed by Antonucci and Goeke (2011). While their work focused on job responsibilities, this study looked to the underlying competencies. Using a previous theory was useful for classification at a higher level. However, it can also suppress possible new issues and opportunities of exploration; therefore, it is desirable to preserve a considerable amount of openness to the data and a willingness to change initial bias towards the subject (Walsham, 1995).

Purposive sampling technique was used to identify BPA experts or managers of BPAs from various organisations such as banking, retail, and insurance industry across South Africa. BPM is regarded as an applied discipline and therefore practitioners' viewpoints and opinions are considered of high importance (vom Brocke et al., 2010). The researcher obtained approval from the University's Ethics Committee prior to contacting the organisation and participants. Interview guidelines were distributed to respondents prior to the semi-structured, face-to-face interviews. For the candidates who lived outside the geographic region of the Western Cape, interviews were conducted through Skype. According to Myers and Newman (2007), telephonic interviews are as appropriate and useful as face to face interviews. Table 2 provides the list of participants with their demographics. Prior to the start of the interview, permission was requested to record the conversation. The interviewees were then asked to sign a consent form. Nine open-ended questions were prepared to continuously discuss the key issues identified in the literature while still keeping an opportunity to uncover new insights from the participants. The length of the interview was approximately between 30 minutes to 1 hour. This allowed for in-depth discussion and hence follow up clarification was not required. At the end of the interview, participants were thanked for their contribution and participation.

Ten participants from five different organisations were interviewed, with one participant being an independent contractor. Four of the five organisations implemented BPM and SOA and one or-

ganisation was in the process of implementing them. Two of the participants from the retail industry were in an IT domain and looking after ERP business processes. Sample sizes in qualitative studies are generally smaller than in quantitative studies, as interviews tend to proceed until saturation (Cresswell & Miller, 2000). Because of the rich experience of early participants, this study was felt to have reached theoretical saturation within the South African BPM space.

Table 2: Demographics of Participants

Expert	Job Description	Industry	IT /Business Experience
Int1	Senior BPM consultant	Insurance Industry	+ 15 years business
Int2	Senior Business Process Analyst	Petroleum Industry	10 years business
Int3	Senior Business Process Engineer	Banking Sector	8 years business
Int4	Business Process Analyst	Banking Sector	2 years business
Int5	Business Process Engineer	Banking Sector	7 years business
Int6	Former Senior Business Process Analyst	Private	6 years business + 6 IT
Int7	Business Process Analyst	Retail Industry	5 years business
Int8	Business Process Analyst	Retail Industry	12 years IT
Int9	Business Process Manager	Retail Industry	9 years IT
Int10	Business Manager & Process Analysis	Financial Institution	+ 20 years IT & business

Data analysis commenced with the transcribing of interview recordings into Microsoft Word using the Express Scribe free tool. Through the lengthy transcription process, the researcher became immersed and familiar with the data. Transcription was followed by analysis using the Thomas (2006) general inductive approach which aims to:

- provide a précis of a substantial amount of raw text;
- provide a relationship between such précis and the objectives of the research, with such relationship being clearly supportable in terms of the data, and justifiable in terms of the research objectives; and
- develop a model about the underlying structure of experiences from the text data

This method is appropriate for the explorative objectives of this research as it aimed to identify and analyse emergent themes so as to describe the relevant competencies.

The Attride-Stirling (2001) thematic networks approach was used to group the emergent themes. In the beginning, the researcher had 154 themes which were grouped into basic, organizing, and global themes. After many iterations, a thematic network was formulated for competencies (Figure 2).
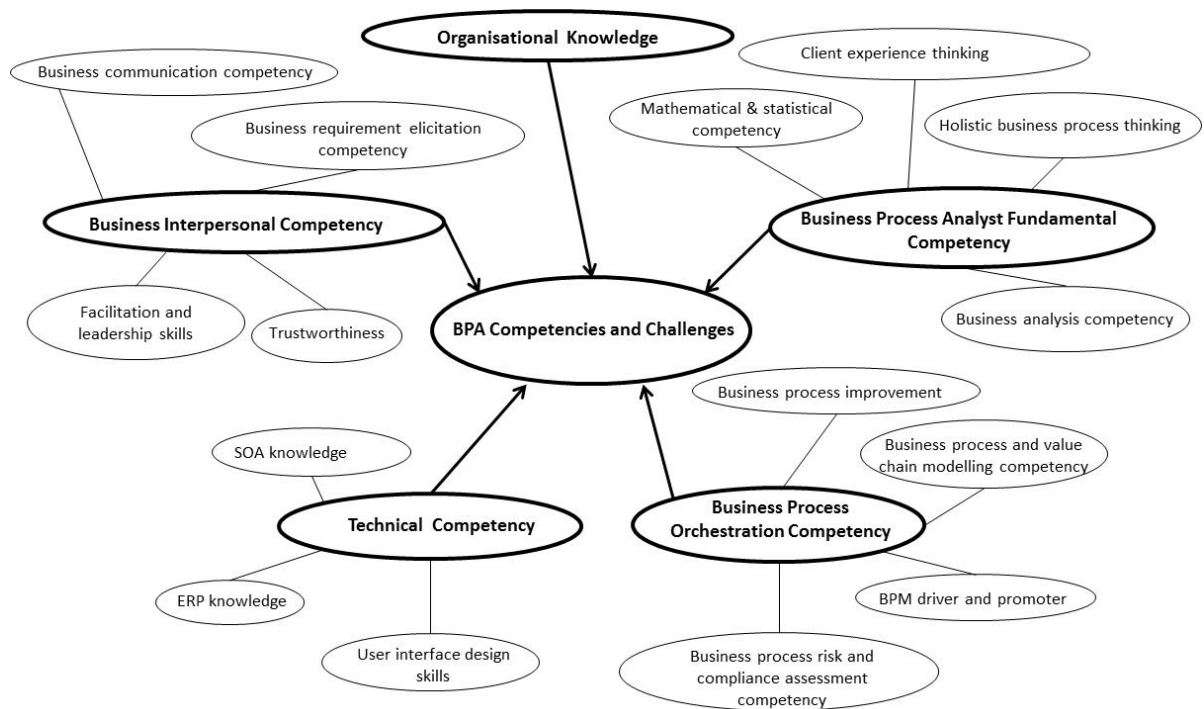
Figure 2: Final Thematic Networks with Competencies of a BPA.

A Discussion of BPA Competencies

The main objective of this research is to explore and understand the role and competencies of a BPA. This section discusses themes that emerged from the raw data, implications as well as the formulation of a model based on these findings. The sub-themes that emerged from the data are discussed under their main theme categories.

Business Process Analyst Fundamental Competency

According to Melenovsky and Hill (2006), the BPA deals with the day to day activities of discovering, testing, and documenting business process knowledge more than with communicating with business users. Through the use of modelling tools, they perform simulations and analyse an AS-IS (current business process state) and TO-BE (future business process state). This section has identified four sub-themes; when they are collectively put together, they formulate a concrete foundation for a BPA.

Business analysis competency

Literature contrasting BPA and BA competencies was not found. Prior to the BPA role emerging, BAs were simply given the process analyst responsibilities (Smith & Fingar, 2003). According to Antonucci and Goeke (2011), the BPA role has recently emerged from the BA role, with a need for additional skills.

The core BA competencies have been identified by the International Institute of Business Analysis (IIBA), namely (Venter, 2011):

- Business analysis planning and monitoring
- Elicitation
- Requirements management and communication
- Enterprise analysis

- Requirements analysis
- Solution assessment and validation

According to Schlegel (2011), in some organisations the business analyst role is considered as a requirements gatherer; however, they have an understanding of the business requirements, facilitate communication, and act as a bridge between the business and IT.

Most respondents commented that the BPA required a Business Analyst (BA) competency.

> *"they must have a basic of business analysis skills, it is very fundamental" (Int1).*

In trying to define the difference between the BA and the BPA, respondents felt that the BPA's role is considered more senior.

> *"We required our people to be first business analysts and above there are certain dimensions that they need to excel at in order to be a business process analyst" (Int1).*

> *"A business process analyst role is a senior position according to me, understanding the process and focussing on processes. It's not the same as a business analyst. They go a little bit further than elicitation. A BA will just understand the requirements of the system" (Int9).*

Holistic business process thinking

Additionally to being a business analyst, holistic process thinking was described as a way of thinking and an ability to think in process dimensions:

> *"The main thing they have to have is an ability to think in process dimensions. You see the world as a process. When I look at our work, I am automatically seeing it as a process, as a set of activities that are related and in my mind I am automatically seeing something" (Int1).*

> *"[b]eing able to structure large amounts of information into a process way of thinking" (Int6).*

Kokkonen and Bandara (2010) refer to this as the "Living system" expertise which comes from the Autopoiesis literature domain.

Client experience thinking

In addition to being a process ambassador, the BPA needs to have the ability to focus on the client's experience of a business process. A purpose of BPM is to align client's needs and strategic objectives of a business process. There are two types of clients: an external client, which is typically a customer buying goods from the business, and an internal client, which could be a manager, business users, or process owners. A BPA should be able to handle different feedback from clients and consider the emotional experience of external clients:

> *"You need to have good customer interaction, be good at giving feedback and getting feedback from the customers" (Int2).*

> *"We used to see the world in terms of a process, and optimised it in terms of the process. Improve lead times, assembly time and quality. Not paying attention to what our customers are experiencing in this process. You have to be in touch with people's emotion and experiences, what emotions are you allowed involving in a process and you need to understand when you design your process and improve it, do we handle different experiences? So now our business process analyst needs to understand this other world. And they are two different worlds. And one is left brain oriented as the process that is mathematical and stuff. And this client experience is right brain" (Int1).*

While deep understanding is mentioned by ten Vaanholt (2008), the emotional experience aspect is not often mentioned in the literature. The exception is the Kokkonen and Bandara (2010) reference to the importance of affective elements of behaviour.

Mathematical and statistical competency

The BPA needs to be able to use various process improvement methodologies. Venter (2011) refers to process design in terms of Lean, Six Sigma, and simulation as a core competency of a BPA. However, to use these, a statistical and mathematical background is a required competency. For example, Six Sigma focuses on decreasing and removing variation in processes by the application of a wide set of statistical technologies. Mathematical and statistical knowledge is required for interpreting surveys from customers that are logged in the management information systems (MIS). The information that is extracted from the MIS system can assist the BPAs when improving process as it contains data about what the customer needs and suggests.

> *"Preferably they need to understand various quality management issues. So once they have thoroughly built up a process they are used to optimising processes or optimising processes becomes a second nature to them" (Int6).*

> *"So they have to understand the lean and six sigma world and how that applies to how we go about optimising processes, because you have to be able to interpret MIS information that's coming out of your BPM suite… they need to have a statistical knowledge" (Int1).*

Discussion of BPA fundamental competencies

In this study, three core competencies in addition to the BA competency were identified, namely, holistic process thinking, client experience, and a mathematical and statistical competency. Harmon (2010) agrees with this, saying that the BPA requires a different way of thinking from the BA in order to contextualise a process that embraces the human and software element, to embrace business innovation, to understand BPM goals and strategies, and to be equipped with mathematical and statically knowledge to measure processes. According to ten Vaanholt (2008), this is not merely a development of a BA role since the skills needed for a BPA are more than the combined skills of a BA and implementation / application consultant. According to Klein, Gee, and Jones (1998) finding a balance between the right brain and left brain is very difficult, and this presents a challenge that was referred to by respondents. The mathematical and statistical competency requires logical (left brain) thinking, whereas the client thinking competency requires right brain, emotional considerations.

> *"[t]he view of process dynamics and client experience dynamics is so new, people don't necessary think in both dimensions simultaneously" (Int1).*

Strong Business Interpersonal Competency

Without good interpersonal skills, the success of IS projects would be heavily impacted (Jiang, Klein, Slyke, & Cheney, 2003). According to Szulanski (1996), an arduous relationship might create an additional barrier during the requirements elicitation period. Participants unanimously felt that it is vital for a BPA to have the ability to build strong relationships with business users, managers and IT people. The BPA needs to interact with business users regularly to gather information about business processes.

> *"[i]nterpersonal skills with an ability to engage with business people to get information out of them" (Int6). "you cannot survive this industry if you are not a people's person" (Int3).*

Trustworthiness

As part of building relationships, integrity, trust and honesty were considered important and, due to the nature and sensitivity of certain business processes, it is desirable for a BPA to be trusted to keep information in confidence.

> *"Be honest, if you promise to do something you must do it so that the business can treat you with respect because of the integrity that you have" (Int5).*

> *"You need to be seen as reliable, trustworthy and confidential, as a business process analyst you hear a lot of business secrets, if you do your job properly you should hear a lot of business secrets" (Int6).*

Kokkonen and Bandara (2010) refer to this "spirit" BPM expertise as a behavioural characteristic from the counselling literature domain.

Business communication competency

The BPA role requires working very closely with different stakeholders and process owners in various departments of the organisations. Hence, communication skills were considered critical and consist of an ability to communicate effectively in writing and verbally as well as at a level that business understands.

> *"One of the most important personal attributes is the ability to explain things at a level that a business will understand" (Int1).*

> *"Good communication and presentation skills, because a lot of time you going to be presenting to the business" (Int2).*

> *"[s]o you need to be able to communicate in writing for the business and various stake holders" (Int7).*

Effective communication with business users is core to the job. Yet, according to Schlegel (2011), it is possible to become a BPA without the ability to explain his or her world to the business verbally. However, this would be an extreme disadvantage. Concerns were expressed that BAs and general IT staff often lack the ability to communicate effectively with business:

> *"I have a business process analyst; she has fantastic business analysts ability. She often calls me to come and explain things to her business executives. She doesn't have that ability to explain her world in a way that a business understands" (Int1).*

> *"That is why I try to keep IT people as far away from the business as possible. Because of how their mind works, the business doesn't understand that and they are not able to communicate effectively with them due to the level of detail. The business works up here and IT down here. To take the concept and explain it there, which is a critical skill" (Int1).*

Business requirement elicitation competency

According to Chakraborty, Sarker, and Sarker (2010), requirements can be elicited from the clients, business users, or process owners. According to Schlegel (2011, p. 5), "this entails being able to find the story buried in every process and communicating it to a wider audience in either a written or oral context." A BPA gathers information from the business users or process owners who are knowledgeable about the business process during business process design or improvement projects. This could be in the form of conducting workshops with the business or in a one-on-one environment. Elicitation skills include the ability to understand what the business users

say they are doing and to translate it into a documented and often graphical solution. This was seen as a large percentage (up to 80%) of the role:

> *"We try to match what they need with what the current system has to offer we come up with the business requirements specification" (Int7).*

> *"Being able to take the information they give to you in a narrative form and then translate it into a model or a process structure" (Int6).*

> *"You have to be a good facilitator, because a lot of time you are going to be at workshops with a team that works with business process and they have the knowledge of how they work and they don't see it as a logical business world you have to extract how this process works" (Int1).*

> *"80% of the time you are busy with someone and only 20% you can document what you acquired from requirements gathering sessions" (Int3).*

This implies an ability to ask the correct questions and to be persistent. Often the knowledge about the business processes is held in business users' heads (Ko, Kirsch, & King, 2005). Particularly when there is insufficient buy-in from the organisation, business users will deliberately sabotage any requirement elicitation.

> *"...because the knowledge is sitting on people's head, they don't know what is important or what they are not telling you. Which might seem insignificant to them but it can make a huge difference to the solution" (Int7).*

> *"Persistence because if especially business people are withholding information; business people often reluctant to admit that they don't do something properly or that there are gaps in a process"(Int6).*

> *"There are very often cases where business people will deliberately hold information or deliberately give wrong information to a BPA" (Int6).*

Facilitation and leadership skills

According to Viitala (2005), leadership competency involves the ability to lead people, communicate, and give direction. This expertise is not explicitly mentioned in the literature, although Antonucci and Goeke (2011) describe the responsibilities of ensuring changes are carried out and ensuring co-ordination between IT and process owners. Arguably this would require leadership and facilitation. For some participants, the BPA was seen as a leadership role requiring an ability to work independently, to deliver under pressure, and have project and change management skills.

> *"There are a lot of personalities in these sessions, some other people think they know better than the others so you need to be calm, take control of the situation and steer people back to the discussion" (Int7).*

> *"They are the right people to know the effect of the change" (Int9).*

Organisational Knowledge

At a high level, knowledge of the organisation entails knowing the objectives and goals, core competencies, and critical success factors (Bassellier & Benbasat, 2004). According to zur Muehlen et al. (2008), organisational knowledge pertains to understanding the roles of the organisation with a full view of the business. A BPA needs to understand the business unit they work with and the organisational strategy as well as how it links to the process and what process improvement are taking place (zur Muehlen, Indulska, & Kittel, 2008). BPAs are not assigned to any specific domain, such as private companies, but apply to all sectors delivering value to the

customers, whether it is the government, private and public hospitals. or education (Bandara et al., 2010). Knowledge about the organisation and, in particular, its strategy and the goals of the various departments involved was seen as important as it provides an ability to understand the value of the processes to the organisation and how things fit together:

> *"They have to know the organisational strategy; they have to know the function of the departments. For example, if you are doing analysis in HR you need to know what is the role of HR, what is their function, what is the mandate, what is the strategy and how it relations to the organisational strategy… day to day functions of that department, how and what they do adds to the bottom line of the organisation or creates value for the organisation" (Int6).*

Obtaining a holistic overview of processes creates an advantage for orchestration and actively seeking solutions to problematic areas of the process. Hence the lack of organisational knowledge could impede the improvement of business processes.

Business Process Orchestration Competency

Antonucci et al. (2009) defines BPAs as professionals with knowledge of how a business process works, and who perform process analysis, have the ability to manage process change, lead process redesign workshops, and educate business users who are responsible for executing processes and monitoring, measuring, and providing feedback on the performance of a business process. Most of the BPA activities are derived from a BPM cycle as explained by a respondent:

> *"As a business process analyst we need to comply with business process management ways of working" (Int8).*

BPM driver and promoter

The BPA needs to promote BPM, drive and start up the BPM cycle and implement BPM organisationally.

> *"[t]o sell BPM to the GM (general manager) and to also implement it as the organisational strategy" (Int5).*

Business process and value chain modelling competency

Business process modelling tools are designed to make business process visible to the organisation. The BPA needs to know how to model business processes and use modelling tools:

> *"They alone need to know how to use modelling tools" (Int1).*

> *"What are the supporting artefacts, what are the supporting roles for every task in the process, not just a repository that contains artefacts but process objects, that contains applications, people objects so that it's all managed within a business analysis framework" (Int6).*

As part of process modelling, the BPA also needs to understand rules management and be able to document business rules:

> *"I go to the business and say… Let us go through your process and the decision that takes place at a point, what is the rule that is related to that decision? Then I document it in the business rule management system and I test the rules and look at the rules that conflict with each other and I get random through the process of the rules and make sure the process executes as I expect and the rules are correct" (Int1).*

Most of the participants mentioned that their organisation implemented the Software AG ARIS software. However, the knowledge and understanding of how to use modelling tools is based on the organisation's context which includes an understanding of the different layers of modelling in the organisation.

> *"[n]ot only modelling in ARIS per say but modelling in ARIS in the context of how we defined in this organisation so they have to understand my organisation's implementation of ARIS and how to work with that (Int1.)*

> *"They also have to have a good understanding of different layers for process modelling. What is a level 1, verses level 2 and verses level 3 models" (Int1).*

The knowledge of BPM and how the different level processes are linked into the value chain is needed when it comes to process mapping. Interviewee 6 felt that mapping processes is a waste of time if the value chain is not taken into consideration.

> *"They also need to be a person who can see the context and the bigger picture. That's very important. If they just mapping process for the sake of mapping process they aren't actually adding any value. They need to able to link what they doing to the value chain" (Int6). "Be able contextualised a set of tasks or a single process into the bigger process value chain and understand how that process fits into the value chain" (Int6).*

The business process models should incorporate four main features; they should be explicit (explained, visible and concrete), intuitive (business and IT can understand), real (mirror the actual process portrayed), and active (can be easier manipulated by implementing directory from the process metadata). Models are more easily shared amongst BPAs if they were stored in a repository.

> *"Process modelling tools and preferable one if BPM is done in the context of SOA that process modelling tool should link to a process repository and should link to a broader enterprise architecture repository" (Int6).*

Business process improvement competency

It is essential for a BPA to analytically examine complex problems and systems, break them apart into manageable components, understand how things connect together within systems, and provide solutions based on the results of a thorough analysis (Topi et al., 2010). Part of the process improvement competency is to analyse the "as-is" process and identify problems:

> *"Take a lot of smaller processes and being able to see where the gaps are so they need to have a broad understand of the business, and understanding of the process in general, to be able to spot gaps and redundancies" (Int6).*

> *"Analyse the AS - IS process for a redundancy also weakness and timing that are not realistic" (Int5)*

After tasks are broken down and the gaps are spotted, the next task involves designing an improved process in collaboration with relevant stakeholders.

> *"Based on that detail how those processes are could be optimised. And come up with a TO - Be … get an agreement from the stake holders on the TO BE or what the TO BE process should look like" (Int6).*

Business process risk and compliance assessment competency

Risk and compliance work was not found as a BPA responsibility in the literature. Yet, the increasing burden of legislation and regulatory situations imposed on organisations has forced

compliance management to become a priority for some organisations. This has resulted in BPAs getting involved in compliance work. Internal auditors do assist in compliance so an auditing background was not seen as necessary.

> "[a]t the current moment I am working on a project for Finance and it has to do with risks and compliance. You know that SOX implementation has been happening in Europe. I am busy implementing something like that" (Int2).

> "So right now I am looking at all our financial processes, looking at things like approvals, reconciliations, audit check on processes adding a little traffic light to that and identifying the risks and controls to mitigate that risks..... So I am working closely with the internal auditors" (Int2).

Overall, this is tied in to the understanding of how the business works, the legislation that is imposed on the business processes, and the relationship with the suppliers, competitors, and the business and social environment.

> "For example, there are rules that are part of the system you are designing. You need to make sure that those rules are taking call of the legislation in order to protect the company" (Int8).

Technical Competency

According to zur Muehlen et al. (2008), building BPM skills starts with the understanding of BPM terminology and culminates in a skillset to synthesise technical, methodical, and organizational concepts into a coherent BPM methodology. BPAs serve as mediators between the IT organisation and business to support the requirements of the business with IT infrastructure capabilities (Olding & Hill, 2008). Respondents felt that it was important that BPAs understood that business process changes impact on the underlining IT infrastructure. Participants expressed separate views when it came to the technological abilities. This could be due to the diversity of the BPA role or the organisational home of the BPA.

Some participants felt that their role was more focused on the business aspect side with limited technical details. In support, one participant felt that interfering with how IT works would test the relationship between IT and the business, develop friction and create a misunderstanding.

> "[a]s long as I know the services how to find them and how to consume them I don't need to know much about it, how IT goes by and does it is IT's domain" (Int1).

> "[y]ou don't need to know technical details" (Int2).

> "Otherwise we start crossing this boundary between IT and business and that is how friction evolves" (Int1).

Contrary to this, IT BPAs felt that IT knowledge was critical:

> "You are an interface with an organisation and IT. As a business process analyst you have to be very functional and sometimes you have to drill down and become technical. That is why you need your technology knowledge in the background" (Int8).

SOA knowledge

Kajko-Mattsson et al. (2007) refer to the Business Process task of modelling processes at the business service layer of SOA where organisations use the SOA approach. As organisations move into SOA, an understanding of how they support the business process is necessary to a BPA. Some respondents felt that SOA knowledge was needed by a BPA to understand their business process models, what services they are calling and how they impact on the overall infrastructure.

"People tend to, especially the business side, process analyst people, they like the lanes, because they've got the roles, they don't think about these things which actually is the heart of it [referring to SOA architecture], services and applications to them it's a picture, it's the flow. They don't understand that this becomes your application later, which is sad but it is true. Guys who are responsible for Six Sigma, they don't think about this SOA stuff" (Int10).

"Yes, I have worked in an environment where SOA was the overall concept for doing BPM. So when it came to structuring the process objects from level zero all the way down to level 4, the intention was all it will be linked to a SOA framework" (Int6).

ERP knowledge

Jarrar et al. (2000) refer to the need to train analysts with technology knowledge when the organisation has automated IT business processes using an ERP. They identified that ERP software design and methodology training was required. Respondents in organisations that were using ERP systems noted the requirement of knowledge of ERP business processes and ERP skills.

"*They have to have some training in PeopleSoft (Int9).*

"...processes executed in the ERP system are more industry standard. Whereas processes executed in a BPM are being specialised into area industry at the end of the day you still need a good business process analyst to go build process in SAP" (Int1).

User interface design skills

Screen design and screen navigation are often seen to be an IT role (Venter, 2011). Yet, user interface design skills were mentioned by one respondent who expressed the importance of BPAs designing systems that users find easy for task completion and navigation.

"You need people who understand software usability as well…. understand from the user's perspective what easy and usable software is and what not usable. In BPM how do I design my application screens? I can design it in 15 different ways and it will still function the same, but what is going to be more easy and gentle on the eye and less tiring to work and be pleasing for proposing" (Int1).

"If the users don't like the system it is not going to be used very well. At the end of the day we want a system that users can use" (Int9).

Resultant Model of BPA Competencies

The objective of this paper was to understand the competencies of a business process analyst. The resultant business process analyst competency framework is depicted in Figure 3. Following the Viitala (2005) competency model for managers (Figure 1), the framework takes a pyramid shape and uses similar layers for the high level categorisation. The business analyst position was found to be the foundation for a business process analyst. Harmon (2010) states that the high-level of business process management roles could be fulfilled by individuals who start their careers as business analysts. This was confirmed by the participants in that the fundamental requirement is to be a business analyst and, in addition, to have an ability to focus holistically on business processes, consider client experience, and apply mathematical and statistical skills when using process improvement methodologies.

The second level of the competency model represents strong business interpersonal competency. The findings suggest that strong business interpersonal competencies are essential in the following areas:

- To engage at a higher level of the organisation, create good relationships with the business users and process owners to uncover the real story about the business process.
- Guide the business towards a common goal and facilitate workshops, while demonstrating strong leadership skills.
- Demonstrate effective business communication competency to uncover the story that is buried under the business processes, excellent verbal and writing to present functional and business cases.
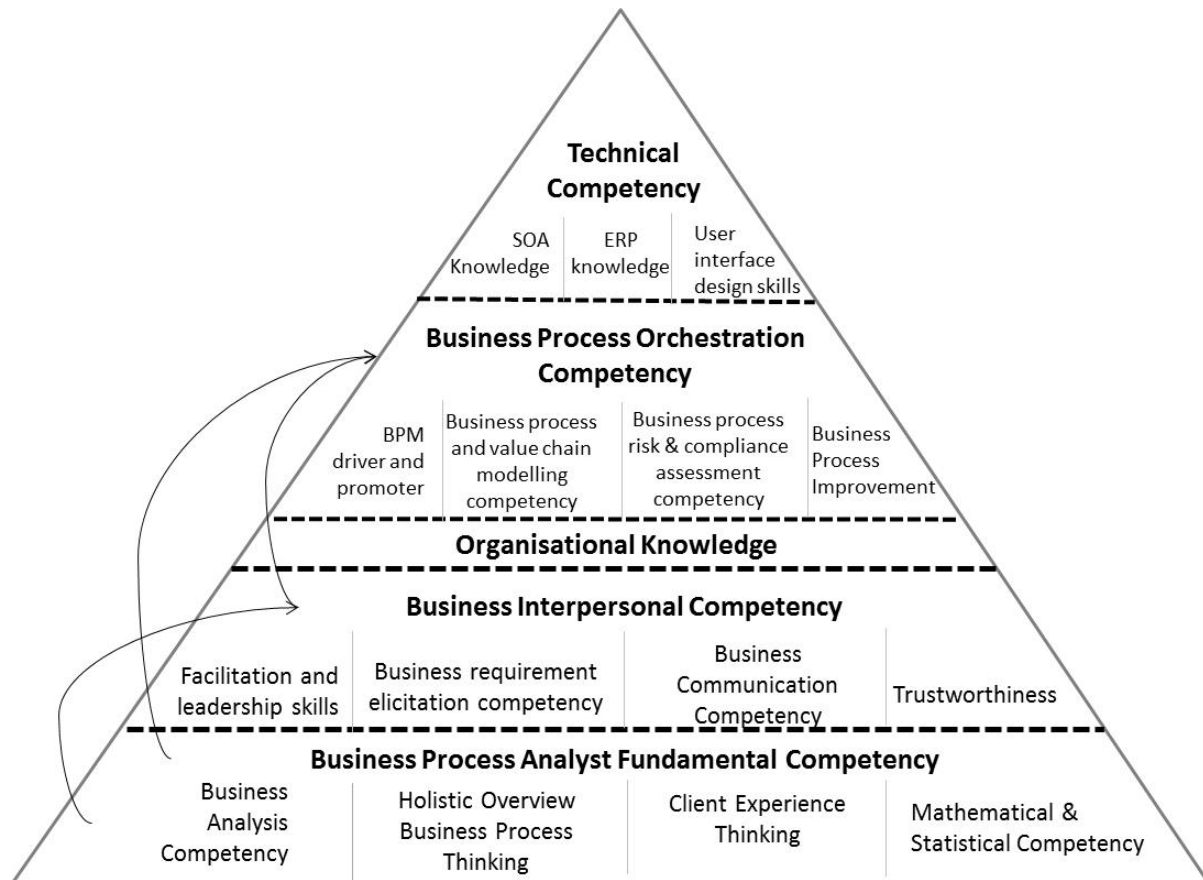

Figure 3: A Framework for Business Process Analyst Competencies

The third level represents organisational knowledge competencies; a critical ability is to understand the organisational strategy and how it is linked to the departments and filtered to its functions.

The business process orchestration competency level is the most important function of a business process analyst. All the other levels are building blocks that impact on this level. Lack of competencies in other levels such as communication and inability to gather requirements has an expensive impact on the business process orchestration competency level. This level includes:

- Demonstrate the ability to model business processes; understand different levels of modelling and contextualise the tasks through each modelling level into the organisational value chain.
- Demonstrate business process improvement competencies; an ability to perform an AS- IS analysis and design a significantly improved TO-BE process.

- Protect the organisation's business by using risk compliancy methodologies, proactively identifying potential risks and find means to mitigate those risks.

The top level represents enterprise technical competency. The participants felt that technical knowledge in SOA or ERP or user interface design was dependent on the current IT infrastructure. Therefore this is the layer of the competency model which would vary for dissimilar organizational types.

Implications for BPM Education

According to Dixon and Jones (2011), the development of BPM management disciplines should be given a higher priority than technological or tool selection concerns. Management disciplines are the domain of tertiary institutions and this has implications on the education that is given to the BPA. Still, the lack of a common vision and definition of BPM among researchers and practitioners is hindering the development of a consistent BPM body of knowledge that can be used for education by both professional certification bodies and universities around the world (Bandara et al., 2010). Universities have been criticised for delaying the implementation of BPM into the curriculum. While one author of this paper has been teaching BPM for many years, an interviewee felt that South African educational institutions were not teaching BPM or if they were, it was not well communicated.

> *"I don't think it is introduced at tertiary level and many organisations are very ignorant on BPM, so it's not that well communicated" (Int3).*

Conclusion

The purpose of this research was to contribute to the BPM and SOA body of knowledge by analysing the competencies and challenges in establishing the business process analyst role. The outcome of this research is based on the contributions of the participants who are working as business process analysts, engineers, or managers in companies using SOA or BPM in South Africa. The participants confirmed that the business process analyst is a specialised skill, requiring the ability to deeply understand the business needs and then develop an understanding in a way that empowers others, mitigates risk, and increases efficiency and quality of solutions. Based on the data analysis, a business process analyst competency framework was developed. While the framework has its context in South Africa, the findings are generic in nature and could be relevant in other countries. Firstly, this framework will be useful for IT and HR departments where BPAs are being employed and, secondly, it provides a useful demand side perspective for higher education institutions that are developing BPM curriculum. The development of BPM curriculum was seen as a pressing need. This model calls for further research and ideally validation within a broader global community.

It is interesting to note the emerging of the foundational business analyst role. In the short term, in order to tackle the limitation of skills, organisations can entrench process thinking into the business analyst who could be equipped with quality management and BPM training. However, it takes a certain mind-set to be a good business process analyst and organisations need to be very careful when hiring business analysts as not all can be business process analysts. There has been little research conducted with business analyst and business process analyst competencies. Based on the findings of this research, the business analyst role is still vague. There is potential duplication of responsibilities between a business analyst and business process analyst; hence, a more critical perspective into the relevant competencies within the organisational context would be of benefit to industry and is the subject of current work being done by the authors. Future research could also uncover the competencies of business analyst when SOA and BPM are implemented simultaneously and as SOA adoption becomes more prevalent.

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