

## CHAPTER 2: RESEARCH METHODOLOGY

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*A description of the research paradigm, philosophy, approach and techniques used in this thesis*

### 1. Introduction

Research is not conducted in a vacuum: it is framed within a research paradigm (Henning *et al.*, 2004:12), viewed through the lens of a particular mindset and constructed using specific approaches and techniques. This is referred to as the research methodology. It describes the way research is conducted. The aim of using these methods in consolidation is to deliver data, analysis and findings that suit the research purpose and answer the research questions.

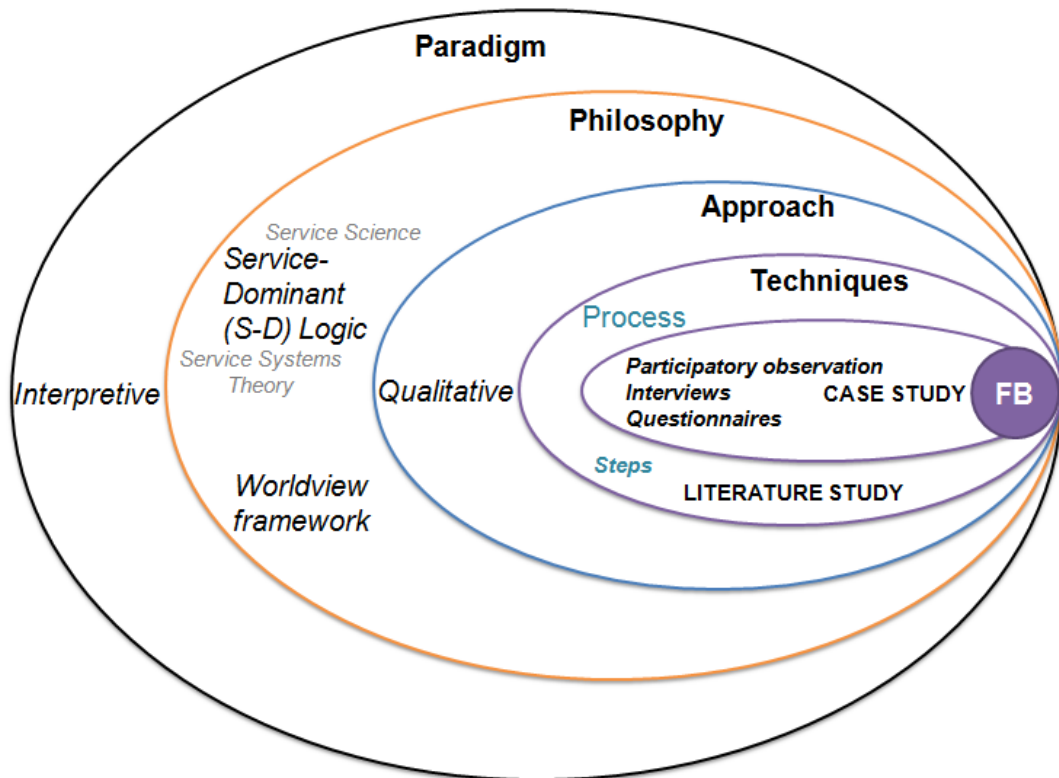
The research methodology provides an orientation that influences the research results and influences the results' standing in the different research communities. It is therefore the responsibility of the researcher to provide evidence of the research methods applied (Walsham, 1995) and justification for the choice of these methods. This reflects their understanding of the philosophy and theoretical underpinning (Henning and Gravett, 2001:1-5), proving that sufficient circumspection has been applied (Galliers, 1997:142) and providing a common basis for researcher and reader to work from.

This chapter provides such evidence by describing the context of the thesis in terms of IS research traditions, providing insight into how the research was performed, why it was performed this way and how the results were obtained. It starts with a high level view of the research methodology. This is followed by an explanation of the steps taken to conduct the research and then the components of the methodology are detailed.

### 2. High level view of research methodology

Figure 1 reflects the thesis' research methodology in the context of the "research onion" provided by Saunders *et al.* (2007:102). It reflects that literature and a case study are used to conduct a qualitative enquiry within the interpretive research paradigm. The focus of the case study is Fortune Bank, its vendors and its environment. Participatory observation, interviews and questionnaires have been used as techniques that are complemented by a literature study and performed through a series of steps in a planned research process. The underlying philosophy or the lens through which the research phenomena is examined is S-D Logic. S-D Logic is applied as a paradigm informing the discipline of Service Science, within the context of Service Systems Theory. Research data is analysed and presented within the framework of a worldview, where the worldview informs analysis and consideration of conceptual aspects of the research phenomena.

The steps of the research process are now detailed, followed by an explanation and justification of the other constructs of the research methodology.



*Key: FB – Fortune Bank, its vendors and environment*

**Figure 1: High level view of research methodology (adapted from Saunders *et al.* (2007:102) and Henning, *et al.* (2004:12))**

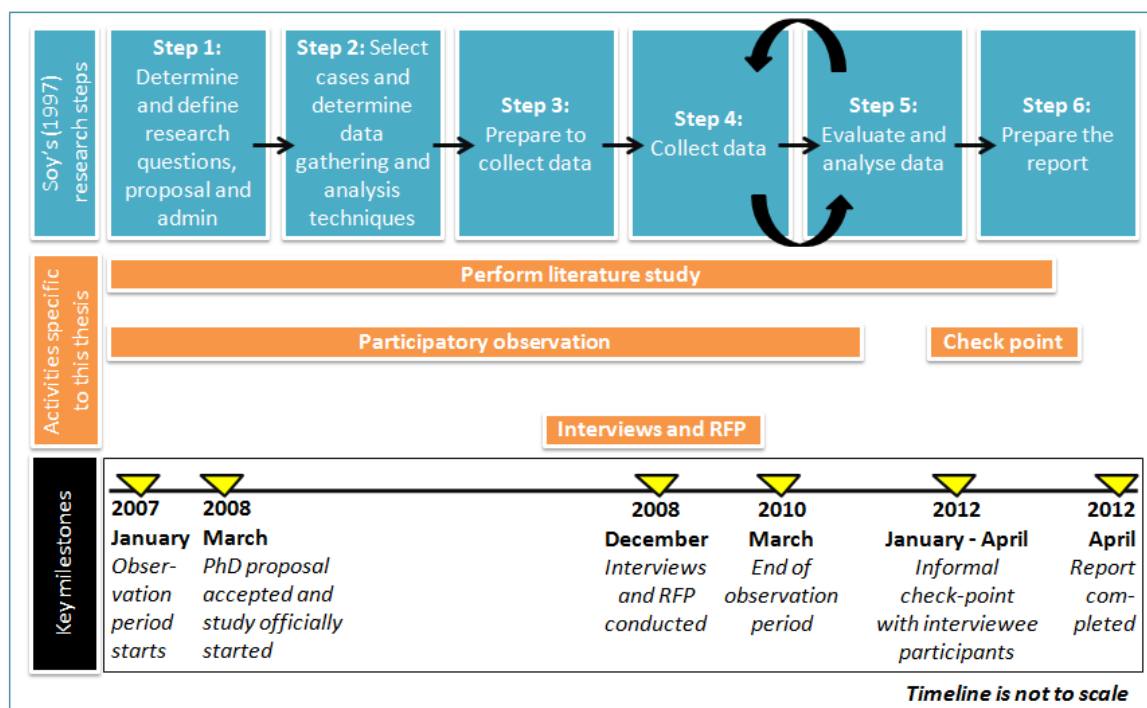
### 3. Research process

The research process broadly consisted of six steps based on the work of established case study researchers such as Robert E. Stake, Helen Simons, and Robert K. Yin as proposed by Soy (1997). During the course of performing these six steps, a literature study and case study have been performed where the case study consists of participatory observation, interviews and questionnaires. Figure 2 reflects the six steps alongside these activities which are specific to this thesis. It also reflects a high level timeline that indicates milestones. The research process is now discussed in context of this.

#### **Step 1: Determine and define research questions, complete proposal and administration**

When starting in the employ of Fortune Bank in 2007, the researcher identified that the BI department in which she worked (Fortune Bank Corporate Business Intelligence department (hereafter referred to as FBCBI) experienced recurrent challenges. This triggered her to ask questions such as “how can these challenges be solved?” and “what is the actual cause of these challenges?”. A need for research was therefore established and the researcher started a literature investigation and informal observation. In March 2008 she submitted her academic proposal for research, which was approved. The proposal established the validity and direction of the research, Fortune Bank as the unit of study and initial research questions – which were refined up until the point of

data collection. The necessary administrative activities were completed, such as submission of ethical clearance applications and signing of agreements, confidentiality and release forms. After this, initial contact was made with potential research participants – completing step one.



**Figure 2: Research process and milestones (Based on Soy, 1997)**

**Step 2: Select the cases and determine data gathering and analysis techniques**

Initial contact with potential research participants confirmed their willingness and ability to participate in interviews and their potential to contribute towards a rich and deep data set. Based on this, the prolonged period of participation and observation the researcher anticipated and the nature of the artifacts that she would have access to, she believed that Fortune Bank and the identified interviewees provided an adequate base from which to gather data. However, when the opportunity to leverage off of a Request for Proposal (RFP) arose, the researcher decided to broaden the case study scope to include this. Fortune Bank had decided to release an RFP in an effort to find a BI vendor to partner with them to assist FBCBI to mature into a Business Intelligence Competence Centre (BICC). The researcher was offered the opportunity to participate in the management of this RFP. This included opportunities to suggest research questions for the RFP.

Based on these opportunities and this research environment, the researcher established that open-ended questions would be likely to yield constructive results and identified a qualitative research approach as an appropriate technique. After contemplating the culture and characteristics of Fortune Bank and its potential BI vendors, the researcher adopted the interpretivist paradigm as an epistemological stance to gather and analyse data to answer the research questions. During this preparatory phase, she did not have a basis for identifying her underlying philosophy and, as a result, explored establishing an ontological basis grounded in Actor-Network-Theory (ANT),

Activity Theory (AT) and Structuration Theory (ST). She explored these theories with specific interest in their approach to relationships and interconnectivity between different types of actors. While these theories aligned with the qualitative approach and interpretivist paradigm, they did not spark the necessary insight in the researcher to justify one or a combination of these as her ontology. They did, however, assist the researcher to establish merit in using existing but unrelated research on worldviews to frame her enquiry. Only later – once having gathered and analysed the data that emerged – did she apply the philosophical lenses of G-D and S-D Logic.

***Step 3: Prepare to collect the data***

Having established a firm base with the specific research building blocks in place, the researcher planned the research collection process. She compiled interview and RFP questions; scheduled interviews; prepared templates and tools for the interviews; prepared herself and interviewees; confirmed her method for documenting field notes; participated in Fortune Bank's RFP process; identified additional Fortune Bank artifacts to use as data sources and; set up a systematic and organised process to store and retrieve research data. At this stage, the researcher was also granted ethical clearance for her research through the University of Pretoria's Committee for Research Ethics.

***Step 4: Collect data in the field***

Research data was formally collected during scheduled interviews (which took place at the end of 2008) and through the RFP process (conducted over the same period as the interviews). As is the norm during a qualitative study (Baxter *et al*, 2008:554), data collection and analysis took place concurrently in an iterative process. The researcher consistently engaged in the iterative process of researching and asking questions and then researching further. She engaged with Fortune Bank staff members and its documentation, processes and technologies in the course of her employment at Fortune Bank, all the while assimilating data and capturing field notes. The researcher also continuously performed literature searches and reviews, substantiating her findings and providing a platform from which to deepen her enquiry and data collection.

***Step 5: Evaluate and analyse the data***

Although much analysis had already taken place during the data collection step, the researcher performed analysis of the data as a distinct step when she codified her research notes, flagging and highlighting insights and establishing connections between concepts that emerged in the data. At this point, she applied G-D and S-D Logic lenses to analyse the data – seeking identification of the true underlying problem and insight into potential solutions. She considered the various perspectives that emerged in the research findings, analysed these through a philosophical lens and integrated research findings with those from the literature. Although she experienced that she had a rich data set reflecting the voices of the various participants, she performed a checkpoint after the observation period by informally contacting some of the research participants to enquire the status of the BI department.

### **Step 6: Prepare the report**

As a final step, findings and analysis were compiled into this thesis as the report.

## **4. Research paradigm**

IS research typically consists of research that is positivist, interpretivist or critical (Chau, 1986: 601-632). The choice of research paradigm is influenced by the context of the researcher (e.g. the country or university in which the researcher is based) as well as factors related to the characteristics of the research problem, the researcher and the research environment (Trauth, 2009:3172). As a result of this thesis' research problem and the context of the researcher and her environment, the choice was made to conduct research using the interpretive research paradigm. Understanding the research paradigm that is used assists in enabling an understanding of the researcher's underlying assumptions. It also contributes towards ascertaining the validity of research and whether appropriate research methods have been used (Myers, 2012). For this reason, the interpretivist paradigm – applied to this thesis' research – is now described.

### **4.1 Interpretivist paradigm**

In terms of social behaviour, the positivist belief that empirical investigation whereby systematic and rational investigation of general causal laws is sometimes referred to as “naïve realism” (Guba and Lincoln, 1994). As a result, to overcome this so-called naïve realism, the interpretivist paradigm is occupied with understanding what meaning and significance the social world has for people who live within it, thus seeing the world as socially constructed (Wilson, 2004:85). It seeks to understand social members' definitions and situations, following a communal process of examining various influences by means of a descriptive analysis. This emphasises a comprehensive and interpretive understanding of social phenomena, informed by participants (the insiders) and endorsed by other participants, thereby discarding the broadly applicable laws (Henning *et al*, 2004:20-21).

As such, interpretive research's focus is on the complexity of human sense making, as the situation unfolds (Trauth and Jessup, 2000:54). Its objective is to gain a rich understanding of reality – or the participants' life world/world-view – by piecing together participants' social constructions and the meaning participants assign to these. Social constructions include, for example: language (verbal and body), consciousness, shared meanings, symbols, documents, tools, inferences, observations, etc. They are expressed through the participants' voices, activities, beliefs and behaviour (Goede, 2005:15; Klein and Myers, 1999:69; Trauth and Jessup, 2000:54; Geertz, 1973). These social constructions may be intangible, but are used as data for interpretive research to identify deeper meaning and learning in social and organisational contexts. Interpretive researchers base their findings on insight gained from this and calls this their “truth”.

Interpretivism therefore has the epistemological stance that recognises the social aspect of research, does not see the world as orderly or quantifiable and recognises other influences (for example, the researcher's subjective understanding, views and voices of participants or insiders). In the interpretive world view, it is recognised that the researcher is inseparable from the research phenomenon and the researcher and subject are constantly influencing each other.

Interpretivism – being a younger paradigm in contrast to positivism – does not yet have the repertoire of familiar and un-refuted methodological principles that positivism has. There is also a lack of a broader understanding of what constitutes legitimate inquiry and valid knowledge within the interpretive realm (Pozzebon, 2004:275). However, despite this, interpretivist methods have been developed and are widely available, for example: unstructured observation, open interviewing, idiographic descriptions and qualitative data analysis as ways to capture insider knowledge (Henning, *et al*, 2004:20).

#### **4.2 Rationale for choice of the interpretivist research paradigm**

This thesis applies the interpretivist paradigm to the collection, analysis and interpretation of data. It is seen to be the most appropriate research paradigm resulting from the alignment between the nature of the thesis' subject matter, objectives, approach and techniques with the paradigm's foundation and principles (Klein and Myers, 1999:72). The choice of paradigm complements the approach and techniques, facilitates achievement of the research objectives and is appropriate for the environment and nature of the subject matter – as discussed next in Sections 4.2.1 to 4.2.3.

In contrast, positivist beliefs – e.g. that the world is orderly – are in conflict with the dynamic and often-ambiguous nature of this thesis' subject matter. The thesis' open-ended research questions, approach to data collection and need for context based on multiple subjective perspectives conflicts with positivist beliefs in empiricism and hypotheses. In contrast to the qualitative approach (used in this thesis) that complements interpretivism, positivism advocates methods which typically use quantifiable measures, verification or falsification of hypotheses, statistical analysis, etc. (Orlikowski and Baroudi, 1991; Henning *et al.*, 2004:18; Shanks and Parr, 2003:3).

Use of the critical paradigm offers opportunity for existing worldviews to be challenged and reconstructed (Avgerou, 2005:104-105), which is in line with the aim of this thesis. However, the gap in existing research on BI at a conceptual level (as identified in Chapter 1) – both from an interpretive and positive viewpoint – on this topic means that critical social theory has an inadequate base from which to challenge, contrast and question to provide a comprehensive critique. The interpretive enquiry conducted through this thesis does, however, provide a platform for future studies (outside the scope of this research) that can be conducted based on the critical paradigm. This thesis provides rich descriptions of the subject matter's environment, consolidates voices and perceptions within this environment and identifies imbalances and shifts that are required. This pro-



vides a platform for future critical studies to leverage critique. The rationale for use of the interpretive viewpoint is now elaborated on further in terms of the subject matter, aim and approach of the research.

#### **4.2.1 Alignment with subject matter**

Consider the subject matter of Fortune Bank, its BI vendors and its environment and the example of the ambiguity in the definition and scoping of BI (as described in Chapter 1). The researcher experiences and perceives BI as a complex and interconnected arrangement of social, economic and technical actors engaged in dynamic relationships and activities, each with their own goals in mind. For example, BI vendors aim to sell BI technologies and products, BI providers aim to develop reports, applications, etc. These actors create and share tangible and intangible social, organisational and economic meanings, experiences and interpretations which are, in fact, their subjective perceptions of reality. They thereby socially construct reality (Goede, 2005:26). They interact in communities with other subjective members, performing activities that potentially result in outcomes creating new realities which may or may not be accepted or endorsed, leading to clarification or ambiguity and further activities and outcomes.

In further alignment with the interpretive paradigm, communication and interaction within BI are dependent on descriptions, narrations, symbols and diagrams that are meaning-laden and context-dependent (Klein and Myers, 1999:73). As an example, consider how context-dependent and meaning-laden a report or data extract is. To one person at one point in time this may be valuable. To another or at another point in time, this is meaningless or the opportunity to take action will have passed (Gilad and Gilad, 1986).

#### **4.2.2 Alignment with research objectives**

In terms of the research objective – what it is that is desired to be understood or known – the thesis' research questions (listed in Chapter 1) align with the objectives of the interpretive paradigm as they reflect the need to understand the research environment, how it emerged, its context and the participants' life-view. The thesis' research questions are not quantifiable and cannot be answered in isolation: an understanding of the complex whole must first be achieved by understanding the parts, their relationships and the meanings previously ascribed to or inferred about these (Klein and Myers, 1999:71). By seeking to understand the complex whole by first understanding its parts and their relationships, the interpretive principle of the hermeneutic circle (Boland, 1989:369; Gadamer, 1975:250) is recognised.

As such, the interpretive paradigm complements this thesis' application of the worldview framework as a means to explore and interpret multiple participants' context-sensitive perceptions, the explanation of these perceptions (or misconceptions) and the underlying reasons (or prejudices)

for them (Gadamer, 1976:124). The social world of the participants is therefore examined in terms of its structures, interests and resources – looking beyond just understanding the research data. This aligns with the interpretive principle of suspicion.

#### **4.2.3 Alignment with research approach and techniques**

This thesis provides a descriptive analysis and interpretation of the social, organisational and economic world in which the research participants – BI vendors, Fortune Bank and the researcher as a research participant and instrument – interact, perform their activities and create meaning and outcomes. It interprets and seeks to understand the subject matter by looking beyond participants' answers into their worldviews – identifying and describing their beliefs, actions and examining the resultant consequences. It uses the worldview as a framework to perform this analysis, seeking to understand participants' perceptions of reality, how this emerged, what they predict for the future, their values, their actions, what guides their actions as well as the source of their knowledge and basis of their understanding. This aligns with the interpretive paradigm's principle of contextualisation in terms of explaining reality and how it emerged.

Application of the philosophical lenses of G-D and S-D Logic aligns with the interpretive paradigm's principle of abstraction and generalisation whereby social theories are applied to data discoveries (Klein and Myers, 1999:72). In sync with this, S-D Logic is used in this thesis as a basis from which to develop concepts, generate theory, draw implications and contribute insight based on the view of BI through a new lens (Walsham, 1995:77).

### **5. Research philosophy**

This thesis identifies that BI's challenges are currently addressed symptomatically and that, if the challenges are to be understood at the level at which they occur, conceptual analysis of BI is needed. The researcher therefore starts with analysis of BI at a conceptual level by analysing BI as a series of exchange processes. A dominant BI worldview emerges through this analysis. This dominant BI worldview is examined through G-D and S-D Logic lenses.

The philosophy of the worldview as well as G-D and S-D Logic are therefore applicable as research philosophies of this thesis. These are contextualised in Chapter 1. Further detail can be found in Parts Two and Three of the literature study (Chapter 3).

### **6. Research approach**

A qualitative research approach is used in this thesis. This aligns with the interpretive paradigm which seeks to gather descriptions and narrations from research participants – letting the results emerge, as already discussed above in Section 4.2. It also aligns with the choice of research



techniques, which are now discussed.

## **7. Research techniques**

A literature and a case study were employed as the main research techniques.

### **7.1 Literature study**

A review of the existing literature facilitates the research enquiry. It enables research progress by creating a firm foundation for advancing knowledge, based on the existing body of knowledge, including the opportunities created by the gaps that currently exist (Webster and Watson, 2002:xiii; Henning *et al* 2004:26-27).

The researcher performed an initial in-depth literature study for this thesis' proposal. The aim was to determine whether a case for the study existed, which did. Thereafter, she continued to re-search the literature as an ongoing process throughout the steps performed to complete this thesis, providing continuous input to the thesis as it progressed. The literature study represents the tangible result of the synthesis of the relevant information gleaned from the study of the existing body of knowledge on BI and SD-Logic. It identifies key findings and highlights relationships in concepts on these topics, allowing the researcher to put forward recommendations after considering these findings alongside the case study results.

Literature findings are reflected in Chapter 3 of this thesis. They represent a consolidated report of the in-depth literature study.

### **7.2 Case study**

#### **7.2.1 Grounds for a case study**

A case study is more than simply research of a single situation, group or individual (Baxter *et al*, 2008:556). It is an intensive narration, description and analysis of a single unit or bounded system such as an event, community, project, group or department. It is an inquiry using multiple sources of evidence as data on real-life behaviour, causes, speculations and treatments (Yin, 1984:23; Soy, 1997) as well as the connections and relationships that cause or result from these conditions (Stake, 1988:255). In addition, when using a case study, a researcher's interest lies in the process rather than the outcome, context rather than a specific variable, discovery rather than confirmation (Merriam, 1999:18-19). As a result of this as well as of the fact that the case study considers the influence of the research context and triangulates various real-life data sources, it enables the researcher to answer "how" and "why" type questions, providing immense insight into the subject material. It is a necessary and sufficient method for social science research and fares well when

compared to other methods within this realm (Flyvbjerg, 2004:432).

A case study has been used for this research with the aim of enabling the researcher to gain an in-depth understanding of the situation and meaning for the participants involved in the situation. The case study approach has been selected for this thesis as: firstly, the research questions are qualitative in nature (for example, “how” and “why” type of questions); secondly, the behaviour of the participants in the case study (interviewees, FBCBI and their clients/stakeholders/etc. who were observed and vendors participating in the RFP) could not be manipulated by the researcher; the context of the research phenomenon is vital to the understanding and evaluation thereof; and lastly, a clear distinction cannot be made between the research phenomenon and its context. According to Yin (2003), these provide clear reasons to make use of a case study approach.

### **7.2.2 The case**

The case is summarised as:

*BI at an abstract level, as perceived and understood by Fortune Bank and its typical BI vendors, including the series of interconnected exchange activities (taking place within Fortune Bank and with BI vendors) that are performed with the ultimate aim of providing actionable information and/or intelligence to decision-makers for the conduct of business.*

### **7.2.3 Case boundaries**

Employees of Fortune Bank and BI vendors that participated in Fortune Bank’s RFP are identified as the participants of the case study. The period of observation spans from January 2007 until March 2010, with additional informal checkpoints between January and April 2012.

The case study was conducted at Fortune Bank in Johannesburg in South Africa, but spans to include BI vendors who operate at national and international levels. The case study is based on international and South African literature. It extends to the examination of Fortune Bank’s context and environment which consists of its processes/activities, role players, stakeholders, vendors and the interactions and relationships between these entities.

### **7.2.4 Aim of case study**

The case study was conducted to gain an understanding of BI’s challenges and worldview as perceived by the research participants. The aim was to gather a data set on these topics to enable comparison with the literature study and a comparison of BI customer *versus* BI provider views. Fortune Bank was selected for the case study based on their BI challenges that the researcher

initially observed in 2007 and on the opportunity to gather data from an environment wherein active BI customer-provider exchanges were consistently taking place. The opportunity to conduct participatory observation including participation in the RFP process provided further motivation for selecting Fortune Bank for the case study. This also provided the opportunity to include BI vendors as BI providers, rather than just the BI department and its staff members as the BI providers.

### **7.2.5 Relevance of Fortune Bank as a case study to the research**

The opportunity to observe, conduct interviews and participate in the RFP at Fortune Bank provided an ideal opportunity and environment for the researcher to examine how participants experience and deal with BI challenges and how they perceive BI, thereby enabling her to gather sufficient data to answer her research questions. In addition, during an interdepartmental BI forum that turned into a heated debate on the topic of “what is BI?”, the researcher identified that Fortune Bank staff members had already recognised that different perceptions of BI exist, causing challenges within the bank. This stimulated their initial thought on the question of what the perception of BI is. Furthermore, Fortune Bank attempted to address its challenges in BI by investigating establishing a BICC, setting up BI frameworks and conducting lessons learned exercises after project completion, among other measures. This also presented data gathering opportunities which would assist in answering the research questions. Overall, the interviews, questionnaires and observation – including access to Fortune Bank’s documentation – provided the researcher with an opportunity to triangulate various research inputs, providing a rich and balanced data set.

## **8. Case study research techniques**

The case study was performed through participatory observation, interviews and questionnaires. Interviews were held with Fortune Bank employees in their roles of BI customer and BI provider, questionnaires were only aimed at BI vendors, external to Fortune Bank, as BI providers. Although observation took place within Fortune Bank, Fortune Bank’s interactions with BI vendors were also observed.

### **8.1 Participatory observation**

Observation took place over the period January 2007 to March 2010. The researcher observed the case study environment as a participant, working as a senior manager of BI analytics and business analysis in FBCBI. As a result, FBCBI is the focus of the case study. She was involved in strategic, project and operational work. Examples of strategic work are: providing input to FBCBI planning and direction and alignment of portfolio’s objectives with FBCBI and Fortune Bank objectives. Examples of project work are: development of BI applications and reports, sourcing of data and building of data marts, cubes and databases. Examples of operational work are: human resource management, capacity planning and oversight of the monthly data Extract Trans-

form Load (ETL) process. As a result of this work, the researcher was able to observe full lifecycles of Fortune Bank's BI activities as well as their relationships and interactions. In addition to being a participant in Fortune Bank's BI activities, the researcher became an "instrument of observation" who was able to see firsthand how people act in a specific setting and what that setting comprises (Henning, *et al*, 2004:81).

As a participant, the researcher was, by default, subjective. She mitigated her subjectivity – as far as this is possible – by compiling field notes during her observation and comparing results with the literature study. She separately noted facts and occurrences from judgments and reflections with the aim of maintaining neutral field notes.

Being a participant provided the researcher with certain benefits and opportunities that may not have been afforded to an outsider. The researcher was able to apply the approach of triangulation as she was afforded the opportunity to gather research data from several information sources, thereby contributing towards the validity of the research (Bonoma, 1985; Leonard-Barton, 1990; Green et al., 2009). For example, she was able to gather a rich data set over an extended period, through interviewees who opened up to her as they most likely would not have opened up to an outsider. She also had access to Fortune Bank documentation pertaining to the case study. A list of types of documents she accessed is available in Appendix D. Furthermore, she was privy to the RFP process and could even participate in this by adding questions to the RFP before it was released to the BI vendors. In terms of the research approach, another benefit of performing participatory observation is that it complements interpretive research: it focuses on language, symbols, documents, etc. (Henning, *et al*, 2004:82).

## 8.2 Interviews

### ***Location, dates, number and duration of interviews***

The researcher conducted 14 semi-structured interviews (excluding the pilot interview) with 14 Fortune Bank employees between the 3<sup>rd</sup> of November 2008 and the 17<sup>th</sup> of December 2008 in Johannesburg, South Africa. Interviewees signed consent forms and were informed that their names would not be disclosed. Interviews ranged from one hour to two and a half hours, with the researcher spending approximately eighteen hours conducting interviews.

### ***Pilot interview***

The researcher conducted a pilot interview with one of the participants, who later participated in a second interview as a *bona fide* participant. This tested the interview tools' and questions' effectiveness during an interview and potential to yield useful results afterwards. As a result, a few changes to the images and landscaping tools (discussed below) were made, some questions were reordered and some questions were clarified.

### ***Follow-up with interviewees***

Between January and April 2012, the researcher had telephonic and email discussions with four BI customers and three BI providers she had previously interviewed at Fortune Bank for the case study. She wanted to ascertain whether participants' views had changed from when she interviewed them at the end of 2008. The researcher was able to identify that there were no significant changes to their perceptions or the challenges they experienced. Based on this, the researcher did not re-interview all the participants. The aim of the follow-up interviews was not to gather new in-depth data or revalidate all existing research findings, but rather to gauge the validity of the data initially collected. The researcher confirmed the status of the projects referred to in the case study as well as structure and name changes at Fortune Bank, details regarding this have been captured and incorporated in the case study where relevant.

The researcher selected the BI customers and BI providers with whom she had follow-up discussions based on the fact that they still worked for Fortune Bank in the same context as BI customer/provider, in the same roles and were still contactable and willing to participate.

### ***Interviewee background***

Fortune Bank employees at various organisational levels – e.g. executive (director), senior management, specialist (non-management) – from various departments in Fortune Bank were interviewed. Seven interviewees involved in BI in the role of the BI customer and seven involved in the role of the BI provider were interviewed. Interviewees in the BI customer role were end-users or sponsors of a BI requirement, e.g. a once-off or a project requirement that is provided for either by a BI department or by a BI vendor (external to Fortune Bank) as the provider. Interviewees in the BI provider role consisted of Fortune Bank employees in a BI department in a position to provide a solution for the requirement.

Interviewees' experience in banking ranged from two to twenty eight years. The participant with two years' experience in banking had switched from the medical industry to banking. BI customers' work experience was within finance, accounting and sales industries, except for one BI customer who had worked as a minister (IH) and another who had worked as a surgeon (IM). BI providers' work experience was within engineering, IT development and IT and management consulting. Only one interviewee (IE) had experience in accounting and financial aspects of banking. Interviewees' educational background is reflected in Table 1. Most interviewees studied IT/Computer Science, followed by Finance/Accounting and then MBA/Business Management. Most BI customers are educated in Finance and Commerce and most BI providers in Science and Engineering.

### ***Type of work performed by interviewees***

All interviewees were involved in strategic, project and operational work except for three – one of these three was only involved in operational work and the other two only in project and strategic

work. Interviewees’ strategic work involved work such as strategic planning, forecasting and management at departmental and divisional level. Their operational work involved data and BI operations – such as routine data sourcing, monthly ETL processes, routine checking of financial data, etc. – as well as finance and management operations, involving routine activities in finance and management. Interviewees’ were all actively involved, either as BI customers or as BI providers, in one or more BI or MIS project at Fortune Bank.

Key projects that interviewees participated in from which examples are drawn in this thesis include: the Enterprise Data Warehouse (EDW) Project, the Corporate MIS (CMIS) Project and the BI Portal. Projects were identified by interviewees as examples of key BI projects in which were involved. These projects all involved some aspect of BI or MIS application or report development and data sourcing, integration and presentation and were in varying stages of completion at the time of the case study. Project documentation from all three projects has been analysed by the researcher as part of this research. The projects are described in more detail in the case study in Chapter 4.

**Table 1: Educational background of interviewees**

Key: Interviewee – IA, IB, etc. (I – interviewee; A, B, etc. – interviewee identity)

	Science and engineering (7)		Finance and commerce (11)		Other (4)	
	BI customer	BI provider	BI customer	BI provider	BI customer	BI provider
IT and Computer Science (5)	IM (1)	IA, IE, II, IL (4)				
Mathematics and Engineering (2)	IB (1)	II (1)				
Finance and Accounting (6)			IC, ID, IH, IK (4)	IE, IG (2)		
MBA and Business Management (5)			IB, IF, IM (3)	IE, IL (2)		
Legal (1)					(0)	IN (1)
Medicine (1)					IM (1)	(0)
Political Science (1)					IF (1)	(0)
Theology (1)					IF (1)	(0)

***Rationale for selecting the interviewees***

The researcher approached potential candidates to interview based on her belief that they could satisfy one or more of the following criteria: is involved in a key BI, MIS, data warehousing or analytics project or programme in a key role; has experience on a similar project, programme or environment; is able to offer insight based on experience in or exposure to BI, MIS, data warehousing or analytics; works in a BI, MIS, data warehousing or analytics department; is a user of BI, MIS, etc. All interviewees approached accepted the request for an interview. The researcher was also able to confirm that they met one or more of these criteria.

***Representation of the voice of BI customer and BI provider***

Reflecting on the interviewees’ background and personal details that emerged during the interviews, the researcher believes the research data gathered is sufficiently representative of the



voices of the BI customer and the BI provider in Fortune Bank. Where this is not the case, she believes that she has applied appropriately mitigating actions.

In terms of the interviewee role, interviewee responses indicate seven BI customers and seven BI providers – two balanced groups. In terms of interviewee level within the organisation, analysis of the research data reflects that more executives and managers were interviewed (seven executives, four managers and three specialists). This poses a risk of “elite bias” where interviews do not “represent various voices” (Myers and Newman, 2007:15-17). To mitigate this, the researcher made significant efforts to supplement the interview data with data gained through observation to include the voice of non-managerial employees. For example, she specifically observed a number of user group meetings attended by non-managerial users, regularly engaged with analysts, developers and project managers in non-managerial roles in her department as well as with non-managerial employees from other departments (e.g. from whom data or requirements were gathered, people involved in testing, etc.).

A third aspect of representation according to interviewee background is of the type of work the interviewees performed. All interviewees were involved in strategic, operational and project work, bar three – as discussed in the section above (“type of work”). The researcher believes that she was able to gain insight into all three types of work as, firstly, most interviewees were involved in all three types of work, secondly, she was also involved in all three types of work and, thirdly, she engaged with sufficient Fortune Bank employees involved all three types of work. Finally, although consistency emerged on the whole in educational background of BI customers on the one hand and of BI providers on the other, there were a few outliers in this category – contributing to the diversity in backgrounds which, in turn, contributed to the rich data set that was gathered.

A summary of interviewees’ background and administrative details can be found in Appendix E.

### ***Interview questions***

The researcher prepared a list of questions for the interviews (Appendix B). Using these as a guide assisted her in maintaining the necessary structure and flow in her interviews, while also maintaining an element of consistency in all the interviews. As the interviews were semi-structured, she did not let the questionnaires dictate the flow the interviews but rather was merely guided by the questions, and rather let the responses of the interviewees guide the interview. She therefore did not ask the questions in the same order in each interview.

### ***Interview approach – interpretive***

The interviews followed an interpretive approach, treating the interviewees as informants rather than subjects, as recommended by Spradley (1979). To do this, the researcher needed to let the results emerge rather than formulate and test a hypothesis. She focused on asking qualitative interview questions focused on the informants’ viewpoints of their culture, experiences, perceptions

and understanding of concepts.

In addition, the researcher followed qualitative interview guidelines laid out by Myers and Newman (2007:15-17). They (*Ibid*, 2007:2) advocate that the qualitative interview is the most important data gathering tool in qualitative research. Guidelines include, for example: provide context and situation before starting the interview; minimise any dissonance with the interviewee; interview a variety of people in the organisation; etc.

### ***Interview technique – landscaping***

The researcher used a landscaping interview technique to elicit some of the information from the interviewees. This technique involves interviewee participation whereby the interviewee is asked to diagrammatically reflect their answers, using props, images or icons provided in the session by the researcher. The researcher had prepared images and icons which she had printed out on paper, then cut out and laminated. During the interview, the researcher presented each interviewee, or group of interviewees, with a blank A3 sheet of laminated paper, a marker, prestick and the icons and images. Images and icons consisted of: bubbles containing text reflecting BI processes and BI terms; images of individual and groups of people representing different departments or roles; blank bubbles and boxes that the interviewee could fill in themselves; and sets of brackets and arrows. The blank bubbles were provided so that the interviewee was not restricted to a limited set of answers. Examples of these cut-outs are available in Appendix C, along with an example of a response using these tools. Interview questions in Appendix B are flagged to indicate whether the landscaping technique was used in interviewees' responses.

These results are included in this thesis as they triggered meaningful responses in the interviewees, which provided insight that the researcher found to be relevant. During the interviews the researcher experienced that the interview tools stimulated creativity and thought in responses and that the interviewees appeared to contemplate their answers. To mitigate the risk of limiting interviewees to responses within her world view, the researcher based interview questions on available literature and informed interviewees that they may answer questions in any way they saw fit and, if using the landscaping tools, may add or refrain from using certain icons, bubbles, etc. As a result, some interviewees added text and additional bubbles and some drew additional diagrams to substantiate their answers. All interviewees opted to use the tools to answer the questions.

### ***Value of the interviews***

The researcher found the interviews to be inspirational and stimulating. Each of the interviewees provided certain gems of information that the researcher would not otherwise have been privy to. The researcher therefore believes that the interviews can be considered to be quality qualitative interviews and has made use of the data obtained from these interviews.

### 8.3 Questionnaires

#### ***Rationale for use of questionnaires within qualitative and interpretive research***

Questionnaires using predetermined variables with an empirical base do not capture or yield data reflective of lived experience, deeply held beliefs or feelings or worldviews as expressed in the participant's language (Henning *et al*, 2004:34). As a result, they typically fit well within positivism and are unsuited to interpretivism. The questionnaires used to gather data for this thesis were not, however, set up using predetermined variables or an empirical base. Instead, as explained in Section 3 (Step 2) above, they were based on open-ended questions which yielded qualitative data that could be analysed from an interpretive viewpoint. Furthermore, the researcher saw the opportunity to bring in the voice of the BI vendor as a BI provider by means of leveraging off of Fortune Bank's RFP process – the interviews only captured the voice of Fortune Bank's BI departments as the BI provider.

#### ***Fortune Bank's rationale for performing the RFP***

FBCBI posted the RFP to elicit information from potential vendors in an effort to find a like-minded vendor to partner with them to establish a BICC. An RFP is normally posted to elicit bids from potential vendors for a product or service. One of the vendors questioned whether the FBCBI's RFP should not have been called a Request for Information (RFI) since the questions in the RFP did not divulge a specific product or a traditional service that was required. Upon hearing this, the FBCBI department agreed with the vendor's reasoning, however, they maintained the terminology RFP in accordance with their long-term view to partner with a BI vendor and not just gather information from vendors.

#### ***RFP process***

At the end of 2008, FBCBI embarked on a process to find a BI vendor to partner with them to assist them to move up a few maturity levels to become a BICC. As this process tied in with the research theme of this thesis, the researcher gained permission from Fortune Bank to play a role in the RFP process. As a result, she was able to add additional questions to the RFP that would assist FBCBI in its endeavor to find the right vendor partner and would also contribute to the data gathered as part of this thesis' case study. The researcher also discussed the RFP results with the rest of the rest of the senior management team and the BI department head.

The RFP was distributed electronically to BI vendors. More than half of the responding vendors requested to remain anonymous and for their responses not to be quoted verbatim, as a measure to protect their Intellectual Property (IP). The researcher complied with this, applying the same measure to all the vendors' responses. Although the content of the vendors' responses are referred to, it is not done verbatim and is done in such a way as to protect the vendors' IP.

RFP respondents answered the questions in an electronic format in response to the Request for

Proposal (RFP) using words (in the form of descriptive paragraphs) and diagrams. Responses ranged from four pages (e.g. in the case of the BI vendor that provided a poor quality response) to over 100 pages.

### **Questions in RFP**

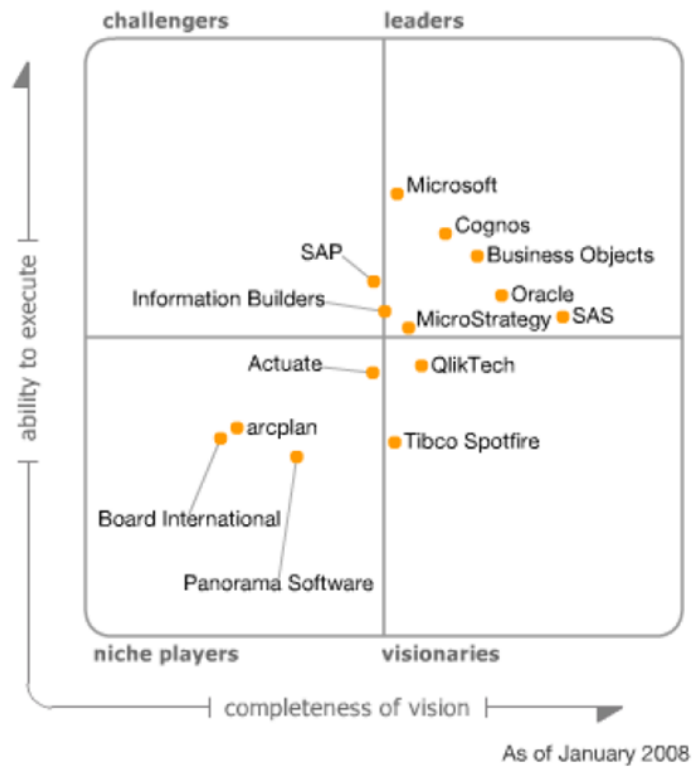
The RFP consisted of twenty questions. The majority of the questions listed in the RFP were compiled by FBCBI. The researcher added a few questions to the RFP, some of these were, however, vetoed by the rest of the senior management team. These are flagged accordingly in Appendix F, where the RFP is provided.

### **Audience and response rate**

FBCBI's senior management team identified vendors to whom to send the RFP to, based on Gartner's 2008 BI magic quadrant diagram (Richardson *et al.*, 2008:2) (Figure 3 below). Gartner's magic quadrant is a categorisation of Gartner's opinion of the main software vendors, globally, that organisations should consider when embarking on a BI initiative. The senior management team supplemented this list of vendors with those they had already established contact with who were not represented on the magic quadrant. The senior management team believed that their full list was representative of BI vendors active in the South African and international BI market.

FBCBI distributed the RFP to a list of thirty six vendors. There were eight responses out of this group, a 25% response rate. FBCBI believed that this was a good response, based on the fact that not all the vendors approached specialised directly in BI and many had a purely technology focus and were therefore unable to assist from an organisational design and culture point of view, which is what was expected in response to the RFP.

Should the researcher have distributed questionnaires independently of Fortune Bank's RFP process, she would have needed to conduct a pilot test and use a method to determine what a representative sample of vendors is. Although this may have been optimal for her study, the researcher does not believe that she would have had the same response rate as when FBCBI distributed the RFP. She therefore believes being able to leverage off the RFP process assisted her study, as she does not believe that there would have been as good a response, during the turbulent economic time of 2008/2009 (Burger, 2011), had vendors been requested to answer questions purely for academic purposes. The researcher also believes that, as the purpose of this study is not to present a representative or even a comprehensive view of all vendors, that the RFP process and response is adequate for this study. The intention of including data from the RFP responses is to be able to obtain an external viewpoint with which Fortune Bank case study participants' views could be contrasted.



**Figure 3: Gartner's 2008 BI magic quadrant (Richardson *et al.*, 2008:2)**

***Outcome of the RFP process for Fortune Bank***

FBCBI found that the vendors' responses were too focused on product and technology offerings, overlooking the aim of the RFP, which was to partner with them to establish a BICC. FBCBI had hoped to find a partner who shared their view of BI from whom they could leverage knowledge of lessons learned, specifically regarding softer organisational issues. As none of the vendors' proposals were viable, FBCBI could not motivate further action on the RFP, specifically given that in 2009 Fortune Bank entered a phase during which time costs were cut due to the impact of the global recession on banking.

***Value of the RFP responses***

The RFP responses were of a high quality, except for two. One of these omitted to answer some of the questions in the RFP but presented good quality in their other answers. The other one was of an exceptionally poor quality: it did not answer any of the questions, was poorly formatted and contained a number of formatting, spelling and content errors. The RFP responses of a high quality contributed towards this study. These responses are rich and detailed and, quite unexpectedly, reference much of the available literature on BI.

Before the decision was taken to stop the RFP process, the FBCBI senior management team analysed and rated the vendors' RFP responses based on how completely questions were answered – as a first high level step of analysis. A summary of ratings is provided in Appendix G. As this research is qualitative and not empirical in nature, the fact that a number of questions were not

answered or were answered poorly (as rated by the FBCBI senior managers) does not have an impact on the research. Sufficient insight emerged from the answers that were provided.

Vendors' profiles are detailed in the Case Study Introduction in Part 1 of Chapter 4 and in Appendix G.

## **9. Conclusion**

This chapter provides an explanation of the research methodology that has been used in this thesis. It summarises the approach taken to conduct the research, starting with an overview of the research methodology as a whole, going into detail on the research process and then elaborating on each of the components of the research methodology. This consists of the research paradigm, philosophy, approach and techniques.

The next chapter is the literature study.