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## APPENDIX A: GLOSSARY

### *Glossary of terms*

#### 1. Introduction

Table 24 provides a consolidated list of definitions for key terms that are relevant to this thesis. Although a number of definitions are available for each term, these definitions align to the way the term is used in this thesis, as a way of providing context and understanding for this thesis.

#### 2. Glossary of terms

**Table 24: Glossary of terms**

Term	Definition
Analytics	<p>Analytics is perceived in the same way as BI for the purpose of this thesis, i.e. as a series of exchange activities (or part thereof) that take place to enable actionable decision-making.</p> <p>A formal definition is: The extensive use of data, statistical and quantitative analysis, explanatory and predictive models, and fact-based management to drive decisions and actions. Analytics may be input for human decisions or may drive fully automated decisions (Davenport and Harris, 2007:7).</p>
Axiology	Theory of values. Provides direction, purpose, goals to guide actions, measure of value (Apostel and van der Veken, 1991).
Balanced scorecard	A strategic management system that connects activities to strategic goals and measures how they contribute to achieving those goals. Devised by management theorists Robert Kaplan and David Norton (Williams and Williams, 2007:200).
BI customer	Entities that seek to receive benefit (e.g. the ability to use actionable information/intelligence for decision-making) in exchange for reward, reimbursement or payment, through relationships they engage in with BI providers.
BI environment	All social, economic and technical resources and components that are directly or indirectly involved in the creation of data, information, knowledge and/or intelligence that is or may be used to inform and support decision-making. Although the BI environment may be contained within an organisation, it typically extends beyond the boundaries of the organisation, e.g. integrating external data, the organisa-

Term	Definition
	tion's environment as well as extending to include relationships with suppliers, customers, etc.
BI Guiding Principle (BI GP) (in terms of this thesis and S-D Logic)	A term used in the context of this thesis to refer to guidelines or values that can be applied to the practice of BI to assist BI to shift from an inherent G-D Logic to S-D Logic.
BI initiative (also see BI solution and BI project)	Also referred to by the researcher as a BI project or BI solution. See BI solution for definition.
BI market	Market (exchange) activities resulting in provision or acquisition of a solution, technology, process, tool, methodology, capability, etc. that enables an organisation to make decisions needed to conduct business. The BI market has BI customers (e.g. organisations purchasing BI solutions) and BI providers (e.g. vendors).
BI project (also see BI solution and BI initiative)	Also referred to by the researcher as a BI solution or BI initiative. See BI solution for definition.
BI provider	Entities that seek to receive reward, reimbursement or payment and aim to provide the BI customer with benefit.
BI solution (also see BI project and BI initiative)	<p>An integrated set of resources and components (social, economic and/or technical) that jointly can potentially offer the opportunity for someone or something that uses it (i.e. this integrated set of resources and components) to gain access to data or information or to co-create data, information, knowledge and/or intelligence that may be used to inform and support decision-making.</p> <p>A BI solution may be created as part of a BI project or initiative. It is therefore also referred to as a BI project or BI initiative in this thesis by the researcher.</p>
BI value coin	A concept based on Spohrer's (2008:17) "innovation coin" that is applied to BI in this thesis. In terms of this, "discover" and "use" are two sides of the same coin, both of which are necessary for the co-creation of BI value to be possible. Discover activities consist of any activities involved in acquiring, generating, processing data, information, intelligence, etc. or the activities involved in developing the applications, tools, etc. Use activities involve any activities that use this data, information, intelligence, etc. E.g. decision-making.
BI vendor landscape	A term often used to describe the technology landscape of BI, including, for example: the vendors and their characteristics, their products

Term	Definition
	and product packaging, etc. (InfoTech, 2012:3-9).
Big data	A term used to describe the massive volumes of structured, unstructured and semi-structured digital data that the organisation generates (McKinsey, 2011).
<p>Business Intelligence (BI)</p> <p>Note: Although the intention of this thesis is not to provide another definition for BI, it is important that BI is understood as it is used in the context of this thesis.</p>	<p>As discussed in the Literature Study, BI may be understood from one or a combination of perspectives. For example, it may be understood to be a technology, process, product or capability.</p> <p>This thesis suggests that a broader view is taken and that BI is perceived as a service. In accordance with this, BI is seen as a series of exchange activities (services) performed by various human and technological actors, for the purpose of enabling informed and actionable decision-making.</p> <p>In terms of this view, BI is seen to include the following, insofar as these are involved in or contribute towards the exchange of information and intelligence that enable decision-making needed for the conduct of business:</p> <ul style="list-style-type: none"> <li>• the full BI process (from data collection, ETL up to presentation and decision-making activities);</li> <li>• the various terms that are used to describe more or less the same concept, e.g. market intelligence (or marketing intelligence), competitive intelligence (as stated by Venter and Tustin, 2009:89), customer intelligence, product intelligence, etc. and;</li> <li>• the various solutions, technologies and methodologies that may be used interchangeably to refer to BI or subsets/over-arching concepts of BI, e.g. DSS, EIS, MIS, reporting, analytics, CI, IM, CPM, etc.</li> </ul> <p>Although it is recognised that there are various debates on the relationship between these terms, this debate is not entered within this thesis.</p>
Business Intelligence (BI)	As above (first definition in table).
Business Intelligence Competence Centre (BICC) (Also referred to as Centre of Excellence)	A specialised unit or corporate team of cross functional members with specialised competences in interrelated disciplines, established formally or informally to conduct and support BI solutions, connecting the business and technical worlds of BI (Baars <i>et al.</i> , 2009:2; Breddam and Day, 2008:6; Cognos, 2008:4; Eckerson, 2011; HP, 2009:5).

Term	Definition
(COE), Competency Centre or Centre of Knowledge)	
Centre of Excellence	See BICC.
Challenge	A new or difficult task that tests ability and skill (Hornby, 2005:231).
Competency Centre	See BICC.
Competitive Intelligence (CI)	<p>CI is perceived in the same way as BI for the purpose of this thesis, i.e. as a series of exchange activities (or part thereof) that take place to enable actionable decision-making.</p> <p>A formal definition is: Actionable recommendations arising from a systematic process involving planning, gathering, analysing and disseminating information on the organisation's external environment for opportunities, or developments that have the potential to affect the organisation's competitive situation (Pelsmacker <i>et al.</i>, 2005:607).</p>
Corporate Performance Management (CPM)	<p>CPM is seen to be part of the series of exchange activities that take place to enable actionable decision-making, as per the BI definition above.</p> <p>A formal definition is: All of the processes, methodologies, metrics and systems needed to measure and manage the performance of an organisation (Andersson, Franzén, Fries, 2008:2).</p>
Customer Relationship Management (CRM)  (Also referred to as Relationship Marketing)	<p>CRM is seen to be part of the series of exchange activities that take place to enable actionable decision-making, as per the BI definition above.</p> <p>A formal definition is: A strategic approach concerned with creating improved shareholder value through the development of appropriate relationships with key customers and customer segments. CRM unites the potential of relationship marketing strategies and IT to create profitable, long-term relationships with customers and other key stakeholders. CRM provides enhanced opportunities to use data and information to both understand customers and co-create value with them (Payne and Flow, 2005:168).</p>
Dashboard (also known as scoreboard)	A user interface that organises and presents information in an easy-to-read format – with visual similarities to a car's dashboard – by tracking and analysing key business metrics and goals. Dashboards and scoreboards enable proactive management via "what-if" analysis, customer segmentation, forecasting and analysing data from business

Term	Definition
	processes (Business Objects, 2008).
Data	<p>A set of discrete, objective facts about events. In an organisational context, data is most usefully described as structured records of transactions (Davenport and Prusak, 1998:2).</p> <p>Raw facts about people, places, events and things of importance in an organisation. On its own, each fact is relatively meaningless (Whitten and Bentley, 1998:21).</p>
Data cleansing	The removal of inconsistencies, errors, and gaps in source data prior to its incorporation into data warehouses or data marts. Data cleansing facilitates data integration and improves data quality (Williams and Williams, 2007:201).
Data mart	An architectural extension of the data warehouse (Inmon, 1996:50). It is a data structure optimised for access. It is designed to facilitate access, through a single analytic application, to a specific set of end users who need to analyse specific sets of data (Williams and Williams, 2007:201).
Data mining (Also see Data mining software)	The discovery of meaningful new patterns, relationships and trends in large volumes of data stored in a database or data mart by using pattern recognition technologies and statistical and mathematical techniques (Mattison, 2001:181).
Data mining software (Also see Data mining)	Data mining software uses technologies such as neural networks, rule induction and clustering to discover relationships in data and make predictions that are hidden, not apparent, or too complex to be extracted using statistical techniques (Machanick, 2005:11).
Data warehouse	A data structure that is optimised for distribution. It collects and stores integrated sets of historical data from multiple operational systems and feeds them to one or more data marts (Williams and Williams, 2007:201). It provides central storage of data to support decision-makers in decision-making processes (Andersson, Fries, Johansson, 2008:3).
Decision Support System (DSS)	<p>In terms of this thesis, DSS is perceived in the same way as BI, i.e. as a series of exchange activities (or part thereof) that take place to enable actionable decision-making.</p> <p>A formal definition is: A computer-based information system with the primary purpose of providing knowledge workers with information on which to base informed decisions (Mallach, 2000:13).</p>
Discover/knowledge	See BI value coin and Innovation coin.

Term	Definition
discovery	
End user query and reporting tools	<p>Tools that are designed specifically to support ad hoc data access and report building by even the most novice users (Machanick, 2005:11). These may refer to the collection of tools that analyse, query and present information targeted to support a business need (Kimball <i>et al.</i>, 1998:21).</p> <p>These seen to be part of the series of exchange activities that take place to enable actionable decision-making, as per the BI definition above.</p>
Epistemology	Theory of knowledge. Source of knowledge (Apostel and van der Veken, 1991).
Exchange	The act of giving and receiving (Hornby, 2005:506). The concept of exchange may be applied to the economic act of exchange, whereby exchange takes place for an economic purpose, e.g. an act of exchange in the market for financial gain. It may also be applied to a social exchange, e.g. within a family or group of friends – without financial gain or economic purpose.
Executive Information System (EIS)	<p>In terms of this thesis, EIS is perceived in the same way as BI, i.e. as a series of exchange activities (or part thereof) that take place to enable actionable decision-making.</p> <p>A formal definition is: Data access and analysis tools that employ drill down, trending, and exception reporting navigation and analysis features (Machanick, 2005:11).</p>
Extract, Transform, Load (ETL)	The process of extracting data from different sources, converting it into an appropriate format and loading the data into a data warehouse (Andersson, Fries, Johansson, 2008:3). This is seen to be part of the series of exchange activities that take place to enable actionable decision-making, as per the BI definition above.
Fact-based decision	Use of objective data, analysis and – wherever possible – scientific method to guide decision-making using a rational and fair-minded process that is not coloured by conventional wisdom or personal biases (Davenport <i>et al.</i> , 2010:176).
Foundational Premise (FP) (in terms of S-D Logic)	The ten FPs of S-D Logic are concepts that underpin the S-D Logic mindset by establishing a framework for a service-centred mindset (S-D Logic, 2012).
G-D Logic	G-D Logic is a lens, mindset, worldview or philosophy according to which the notion of exchange is viewed. It is a term brought about by



Term	Definition
	Vargo and Lusch in response to their perception that a shift is needed from traditional manufacturing-oriented (Lusch <i>et al.</i> , 2008:11) views of exchange. G-D Logic's focus is on production and distribution of saleable goods, embedded with utility and value during the production and distribution processes. It promotes value-in-exchange and a separation of producer and consumer (Gummesson, 1995:250; Vargo and Lusch, 2006:51; Normann, 2001:99; Vargo and Lusch, 2006:14). It focuses on the product (technology), means, producer and production (Vargo and Lusch, 2004a:8; Vargo and Lusch, 2006:18).
Guiding Principle (also see Principle and BI GP)	Any accepted principle or precept that guides an organisation throughout its life in all circumstances, irrespective of changes in its goals, strategies, type of work, or the top management (The Business Dictionary, 2012).
Information	Sets of data presented in a context. Information about the organisation and its environment (Williams and Williams, 2007:201). Data that has been processed or reorganised into a more meaningful form for someone. Information is formed from combinations of data that have meaning to the recipient (Whitten and Bently, 1998:21).
Information and Communication Technology (ICT)	Technologies that provide access to information through telecommunications. It is similar to Information Technology (IT), but focuses primarily on communication technologies. This includes the Internet, wireless networks, cell phones, and other communication mediums (Tech Terms, 2012).
Information Management (IM)	IM is perceived in the same way as BI for the purpose of this thesis, i.e. as a series of exchange activities (or part thereof) that take place to enable actionable decision-making. A formal definition is: IM consists of identifying what information is needed, how it should be gathered, how it should be organised, where it should be stored and who in the organisation should have access to it. The goal of IM is to maximise the usefulness of information resources and to assess these resources' value when making business decisions (Pirttimäki, 2007:3).
Information Systems (IS)	An integrated set of components for collecting, storing, and processing data and for delivering information, knowledge, and digital products (Encyclopedia Britannica, 2012). An IS may not necessarily include technology.
Information Technology (IT)	The technology used for the study, understanding, planning, design, construction, testing, distribution, support and operations of software, computers and computer related systems that exist for the purpose of

Term	Definition
	<p>Data, Information and Knowledge processing.</p> <p>The industry that has evolved to include the study, science, and solution sets for all aspects of Data, Information and Knowledge management and/or processing.</p> <p>The department in an organisation that is held responsible and accountable for the technology used for planning, design, construction, testing, distribution, support and operations of software, computers and computer related systems that exist for the purpose of Data, Information and Knowledge management and/or processing (The International Foundation for Information Technology, 2012).</p>
Information worker (also referred to as Knowledge worker)	Describes people with jobs that involve the creation, collection, processing, distribution and use of information (Whitten <i>et al.</i> 1986:40).
Innovation coin	Spohrer (2008a:417) explains that knowledge discovery (as part of the knowledge economy) and the application of knowledge to create value (as part of the service economy) are just two sides of the same coin (the innovation economy). He explains that activities on both sides have to take place for innovation to be possible – comparing these to two sides of a coin which he calls the “innovation coin”.
Intelligence	<p>Analysed information (Fuld, 1995:23). As an activity, it is the pursuit of a certain kind of knowledge. As a phenomenon, it is the resultant knowledge (Kent, 1966:vii).</p> <p>In terms of BI, various types of intelligence are identified. E.g. CI, market (or marketing) intelligence, customer intelligence, etc.</p>
Knowledge	<p>Experience, facts, rules, assertions and concepts about those subject areas that are crucial to the business (e.g. customers, markets, processes, regulations). Knowledge is a key resource in intelligent tasks such as decision-making, assessment, forecasting, design, planning, diagnosis and analysis (Parlby and Taylor, 2000).</p> <p>Data and information that are further refined based on facts, truths, beliefs, judgments, experiences and expertise of the recipient (Whitten and Bently, 1998:21).</p>
Knowledge management	The identification, optimisation and active management of intellectual assets, either in the form of explicit knowledge held in artifacts or as tacit knowledge possessed by individuals or communities (Snowden,

Term	Definition
	2000:8-9).
Knowledge worker (also referred to as Information worker)	See Information worker.
Management Infor- mation Systems (MIS)	<p>MIS is seen to be part of the series of exchange activities that take place to enable actionable decision-making, as per the BI definition above.</p> <p>A formal definition is: Information systems used to analyse and solve business and management problems (Andersson, Fries, Johansson, 2008:3; Laudon and Laudon, 2007:44).</p>
Marketing Intelli- gence (also may be referred to as Market Intelligence)	<p>Marketing Intelligence is seen to be part of the series of exchange activities that take place to enable actionable decision-making, as per the BI definition above.</p> <p>A formal definition is: The process of acquiring and analysing information in order to understand the market (both existing and potential customers); to determine the current and further needs and preferences, attitudes and behaviour of the market; and to assess changes in the business environment that may affect the size and nature of the market in the future (Cornish, 1997:147).</p>
Metadata	Data about data (Goede, 2005:140), i.e. data describing data or content. All the information in the data warehouse that is not the actual data itself (Kimball <i>et al.</i> , 1998:22).
Online Analytical Processing (OLAP)	<p>OLAP is seen to be part of the series of exchange activities that take place to enable actionable decision-making, as per the BI definition above. It specifically refers to the general activity of querying and presenting text and number data from data warehouses (Kimball <i>et al.</i>, 1998:21).</p> <p>Decision support software that allows the user to quickly analyse information that has been summarised into multidimensional views and hierarchies. OLAP tools are used to perform trend analysis on sales and financial information (PC Mag Encyclopedia, 2012).</p>
Ontology	Model of reality (what is/what's perceived) as a whole (Apostel and van der Veken, 1991).
Operand resource	Resources that are tangible, static and upon which action must be taken for them to be of use (e.g. coal) (Lusch and Vargo, 2005:91-92).
Operant resource	Resources that are typically intangible, are dynamic and typically par-

Term	Definition
	participate in the value co-creation process (e.g. knowledge) (Lusch and Vargo, 2005:91-92).
Praxeology	Theory of actions. General principles according to which actions should be organised (Apostel and van der Veken, 1991).
Principle	A rule or general standard adhered to in most areas of human conduct. A principle can be an ethical declaration, as in “do unto others as you would have them do unto you” (Friedman, 2007:521).
Process Intelligence (PI)	<p>PI is seen to be part of the series of exchange activities that take place to enable actionable decision-making, as per the BI definition above.</p> <p>A formal definition is: Analysis of data – through business process management and traditional BI techniques – to discover actionable business insights across business processes (Bosilj-Vuksic and Indihar-Stemberger, 2008:339).</p>
Product intelligence	Information or intelligence pertaining to an organisation’s products.
Relationship Marketing	See Customer Relationship Management (CRM).
Reporting	Electronic or physical documentation providing relevant information on a particular topic. Reports can be standard or ad hoc. For example, monthly financial reporting on the health of the organisation.
Scoreboard	See Dashboard.
Service	In terms of S-D Logic, service is defined as the application of competences (skills and knowledge) through deeds, processes and performances for the benefit of another entity or the entity itself (Vargo and Lusch, 2004b:324-335; Lusch, Vargo, 2008).
Service computing	A domain of computer science and engineering in establishment as the disciplines expand their curricula to incorporate services (Spohrer and Maglio, 2008:242). It may be considered to be an extension of the object-oriented approach that attempted to make computing more manageable, collaborative and its components reusable.
Service management	A cross-industry discipline that focuses on the organisational, quality and customer perspective of service. It examines the activities and interactions between customers and providers, the contribution service makes in the customer’s world from the customer perspective and how this can be improved. Its use within operations management, supply chain management and even IT is well-known. Within IT, where it is referred to as IT Service Management (ITSM), it structures the IT activities with technical and business users in the most optimal

Term	Definition
	way (Spohrer <i>et al.</i> , 2007:71; 2008:4)
Service orientation	The bridge between Service Management and Service Computing. It labels services as components with clearly defined behaviours and interactions. Service components are clearly defined, scoped, autonomous and decentralised so that they are able to interact with each of the other service components – at an agreed cost – through formal share schemas and contracts (Zhao, 2008:415).
Service science	A multidisciplinary research and education effort (some accredit this to IBM – e.g. Barile and Polese (2009:3)) to study the methodology and technology for service innovation, design and delivery (Lin and Chang, 2009:429). Service science studies the Service System.
Service system	Value co-creation configurations of people, technology, value propositions connecting internal and external systems and shared information (e.g. language, laws, measures and methods) (Maglio and Spohrer, 2008:18). Service systems are connected to each other in value networks, forming mutually-beneficial agreements with each other by means of value propositions (Spohrer <i>et al.</i> , 2008:9). Service systems exist in populations of Service Systems which, in turn, form part of a service ecology (also referred to as a service world or universe) (Spohrer and Kwan, 2009:3).
Service system entities	Dynamic configurations of resources, including at least one resource with rights (e.g. owned outright, leased/contracted, etc.) (Spohrer and Kwan, 2009:3). Service system entities may consist of people, technology, other internal and external Service Systems and shared information (Spohrer <i>et al.</i> , 2007:72; Spohrer and Kwan, 2009:2).
Service systems worldview	A view that the world consists of populations of normatively interacting Service System entities such as people, businesses, government agencies, nations, cities, hospitals, universities, etc. interacting via value propositions with the purpose to co-create value (although disputes do also frequently arise) (Spohrer and Kwan, 2009:2-4).
Service-Dominant (S-D) Logic	S-D Logic is a worldview, mindset or a lens through which exchange (service) can be viewed. It complements Service Systems theory and provides the philosophical foundation for Service Science. Its central tenet is that service is the basis of exchange. By this, what is meant is that when an exchange takes place, service is exchanged for service (Bastiat, 1848:161-162; Walras, 1894:225; Vargo, 2009b:374). S-D Logic perceives that exchange consists of a sequence of activities, i.e. a flow of service. Customer and supplier collaboratively interact with each other, and with other economic and social actors who are

Term	Definition
	also directly or indirectly involved in the exchange, to deliver a service (Vargo and Lusch, 2004b:324-335; Lusch and Vargo, 2008).
Spreadmart	A spreadsheet improperly used to house large amounts of important data (HP, 2009:7).
Structured Query Language (SQL)	Industry standard database access protocol introduced by researchers at IBM in the 1970s in the context of relational database management systems (Business Objects, 2008).
Use or knowledge application	See BI value coin and Innovation coin.
Value network	A connected community held together by competences, relationships and information (Lusch <i>et al.</i> , 2009:22). A value network may also be referred to as a value constellation, Service System network or value chain. A value network is much the same as a social network, except that a value network extends to include organisations (Lusch and Vargo, 2006).
Value proposition	A reciprocal promise of value (Ballantyne and Varey, 2006:334-5), that leads to value co-creation (a win-win outcome) or disputes (either a lose-lose or lose-win outcome) (Spohrer <i>et al.</i> , 2008:9; Spohrer and Kwan, 2009:4).
Worldview	<p>A set of images (structures or schemas) and assumptions about the world (Kearney, 1984:10; 47).</p> <p>A conceptual framework through which perceptions are screened (Meehan, 1968:41).</p>

## APPENDIX B: INTERVIEW QUESTIONS

*Interview questions used during Fortune Bank case study interviews*

### 1. Introduction

The following sections provide the broad outline that was used as a basis to interview Fortune Bank staff members as part of the case study. The researcher played the role of the interviewer, conducting all the interviews herself. Questions are applicable to all respondents, except where this is specifically indicated to be otherwise. The questions served to provide guidelines, rather than as a rigid structure which may have imposed on the flow of the interview. An indication of the questions asked during the 2012 follow-up discussions is provided at the end of the list of original interview questions.

Questions reflected in tables below, where the whole row is grayed-out, were answered by the researcher before or after the interview. Informal guidelines that the researcher prepared before conducting the interviews are indicated in italics within this Appendix.

The purpose of the interviews was to gain an understanding of the interviewee's viewpoints and opinions on the questions listed below, to assist to answer the main research questions of the thesis.

### 2. Interview questions

Section A: Background and administrative details	
1. Date and time:	
2. Place:	
3. Interview type:	
4. Role:	

Section B: Personal details	
1. Name:	<i>Anonymous. Recorded for further questioning, if needed.</i>
2. Email address for feedback:	<i>Anonymous. Recorded for further questioning, if needed.</i>
3. Job Title:	
4. Role:	<i>For example Strategic; Operational.</i>
5. Department:	
6. Educational background:	<i>For example: environmental studies, accounting, business management, statistics, etc.</i>
7. Years working at the	



Section B: Personal details	
bank:	
8. Years working in related field elsewhere:	
9. Summary of BI experience:	<i>For example: When did you first start using BI? What for? How? Were you ever involved in providing BI? Explain.</i>

Section C: BI definition and context	
1. How do you define Business Intelligence?	<i>Use interview tools.</i>
2. How would you describe the "Business Intelligence process"?	<i>Use interview tools.</i>
3. Please indicate the relationship between terms: knowledge management; information management; analytics; customer relationship management; corporate performance management; business process management; customer, market, competitor, product intelligence; Decision Support System (DSS); Executive Information System (EIS); Management Information System (MIS); and BI.	<i>Use interview tools.</i>

Section D: History of BI	
1. What triggered the establishment of your department?	<i>Source FBCBI information from video. Gather information on the Retail BICC and GIBS Management Branch.</i>
2. When was it set up?	
3. How was it set up?	

Section E: Future of BI	
1. What do you envision for BI in the future?	<i>Not just technologies, requirements, ideology, etc.</i>
2. Give me your BI wish list. I.e. what would you like to get out of BI in the next two years?	<i>Anything – not just technology.</i>
3. How would you like to use BI in the future?	<i>From requirements to delivery to use.</i>

Section F: BI values and purpose	
1. What are Fortune Bank's values?	<i>Source from intranet.</i>
2. How is value measured?	<i>Source from BSCs.</i>
3. What is the purpose of BI?	<i>Benefits, aims, etc.</i>
4. Who should be using BI within the bank?	<i>For example departments, people.</i>

**Section F: BI values and purpose**

5. How is BI used?	<i>Is it used as intended? How does your department use it?</i>
6. In your opinion, does BI achieve its purpose?	<i>Do you get the benefits out of BI that are promised?</i>
7. How high is BI on your score card or budget - i.e. what is its priority?	
8. What is currently more important than BI?	
9. Do you see this changing in the near future?	

**Section G: BI actions and guiding principles**

1. What activities do you perform that involve BI?	<i>If interviewee works in BI, use interview tools (BI process).</i>
2. What interactions do you have with others in these activities?	<i>If interviewee works in BI, use interview tools (BI process).</i>
3. How are the interaction points governed?	
4. What are the key processes your department performs for BI?	<i>If interviewee works in BI, use interview tools (BI process).</i>
5. What are the support processes your department performs?	<i>If interviewee works in BI, use interview tools (BI process).</i>
6. What frameworks, methodologies or guidelines (if any) do you use to perform your work?	

**Section H: Source of BI knowledge**

1. Where did the frameworks, methodologies and guidelines that you use originate?	<i>E.g. BI department head's framework, Kimball, etc.</i>
2. What minimum criteria (qualifications/skills) are applicable to new hires for your department?	
3. What characteristics do you specifically look for when hiring for your department?	

**Section I: BI challenges**

1. What are the main challenges you experience in BI?	
2. Are these the same/different to challenges you've experienced in other but non-BI IS projects or initiatives?	
3. What lessons have been learned?	
4. Do you discuss or document lessons learned after a project/initiative?	<i>What's the culture? What do the guiding principles or project methodologies dictate?</i>



<b>Section I: BI challenges</b>	
5. What do you base your business decisions on?	
6. In meetings where individuals or groups present figures that contradict each other, what are decisions based on?	<i>In other words, where you are not allowed the luxury of going back and reconciling.</i>
<b>Questions applicable to BI providers only:</b>	
7. In your day-to-day job, what takes up most of your time?	<i>Use interview tools.</i>

<b>Section J: Measures to overcome challenges</b>	
1. What has been done to overcome challenges?	<i>Read challenges identified by the participant back to them if necessary.</i>
2. What would you do differently if you could start again?	
3. What frameworks or guiding principles are referenced when challenges are faced?	

Check whether respondents are prepared to schedule more time or whether they are available via email for clarification if needed.

<b>Questions asked via email and telephonically in 2012 follow-up</b>	
1. In your opinion, what has changed significantly since the beginning of 2009?	
2. What major challenges do you face in 2012?	
3. How does this compare with 2008 and 2009?	
4. Are there any new measures that you apply to overcome these challenges?	

## APPENDIX C: INTERVIEW TOOLS

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*Examples of the tools used in the interviews in the Fortune Bank case study*

### 1. Introduction and explanation

The following sheets provide the interview tools which were used during the researcher's interviews with Fortune Bank staff members participating in the case study. The tools were used to answer questions by means of a landscaping technique. The researcher used these tools, rather than simply asking interviewees to answer the questions orally, as a means to stimulate thought and creativity. An example of an interviewee's response is also provided below in Figure 23.

The researcher provided the interviewee with a blank A3 laminated sheet of paper along with individually cut out bubbles, boxes, diagrams and arrows – reflected on the upcoming pages. The cut outs were then used, in conjunction with a marker and prestick, which the interviewee used to answer the questions. Interviewees were encouraged to “play around” with the cut outs and move them around the A3, thinking about their answer before committing to a final answer. Interviewees were not restricted to the options available here, but could fill in anything on the A3 – or on the blank cut outs, which were also provided.

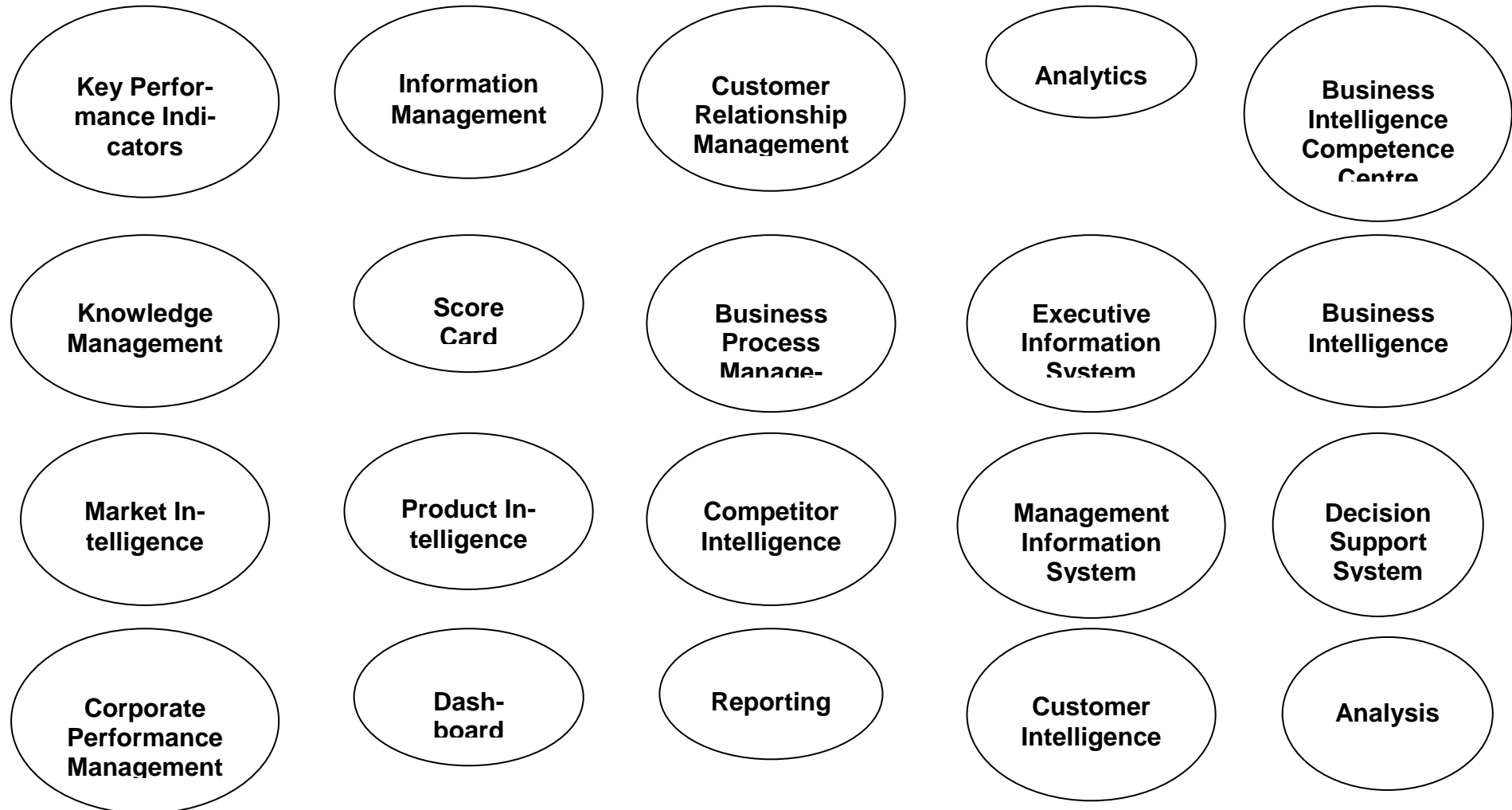
Responses (A3 with cut outs stuck with prestick to it and covered with highlighter markings and drawings) were photocopied by the interviewer after the interview so that the laminated cut outs and A3 could be used again after cleaning.

Figure 23 reflects one of the interviewee's responses to question two, “How would you describe the ‘Business Intelligence process?’” as an example. The researcher has written next to unclear or illegible text to ensure that the diagrams remain clear. Deductions were made from these based on the interviewee's explanation of their diagram during and after compilation thereof, which the researcher made notes of and captured electronically immediately after the interview.

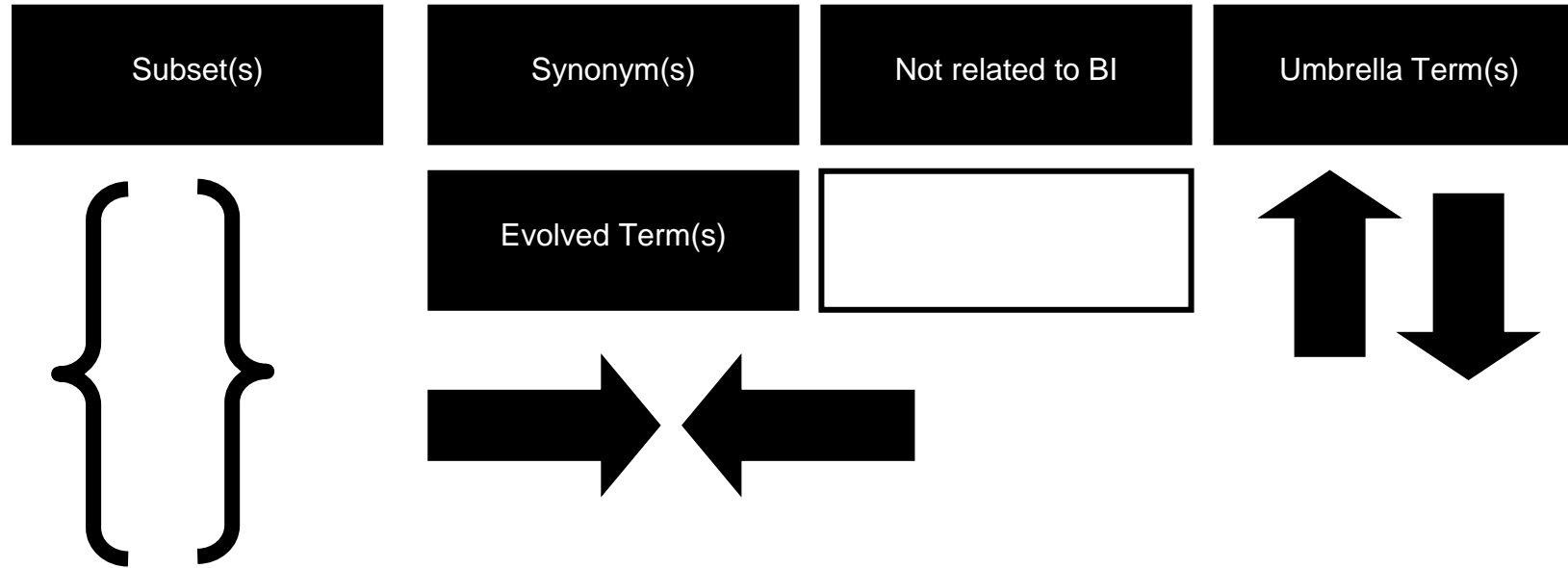
### 2. Examples of interview tools

The following sections reflect examples of the interview tools that were used. Take note that many of each of each type of cut-out were provided to interviewees, examples below just show one example of each type.

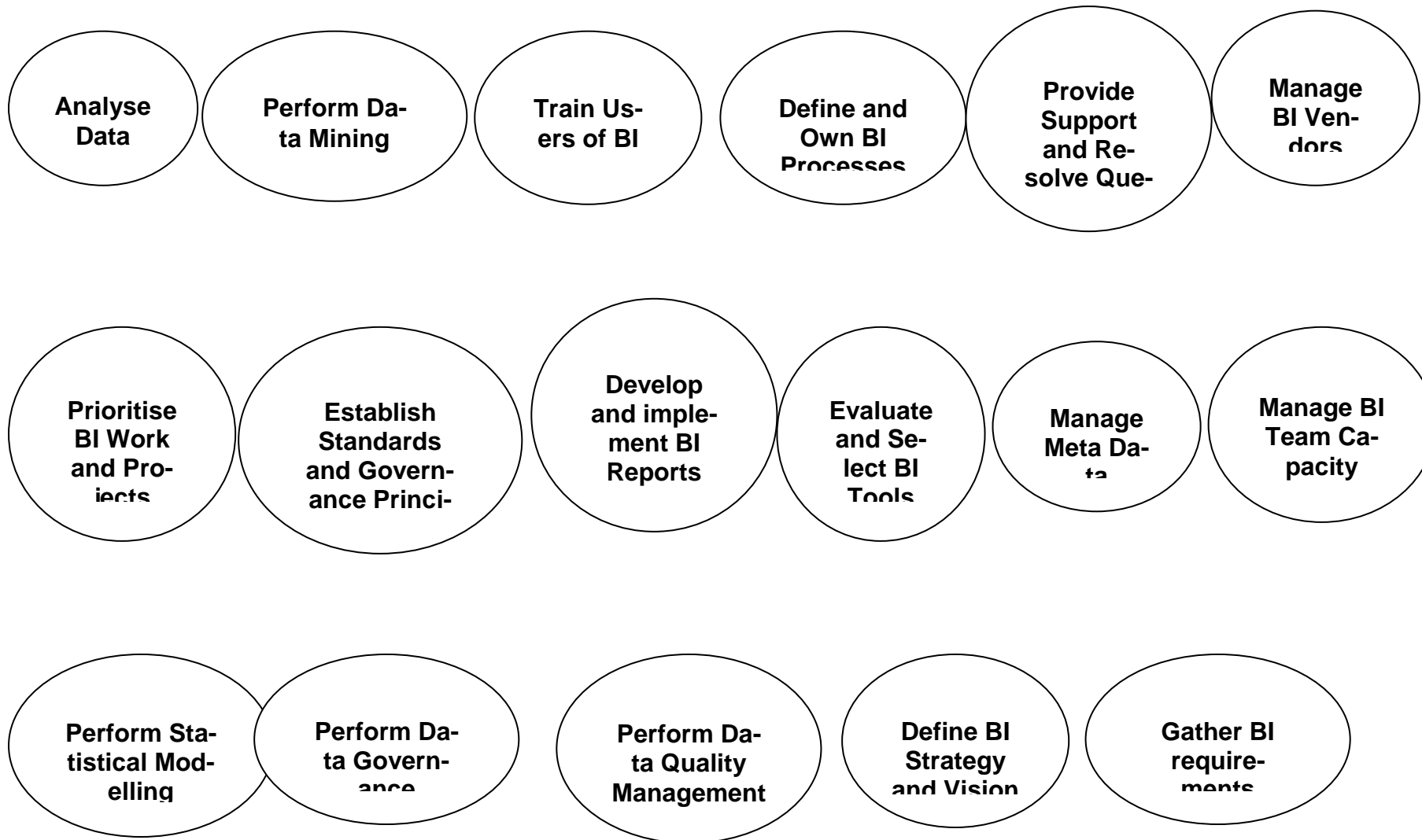
*How to define and scope BI*



*Terms in context*



*The BI process*





**Blank bubble and responsibilities for the BI process**



**Responsibilities for the BI processes**



Example of a response

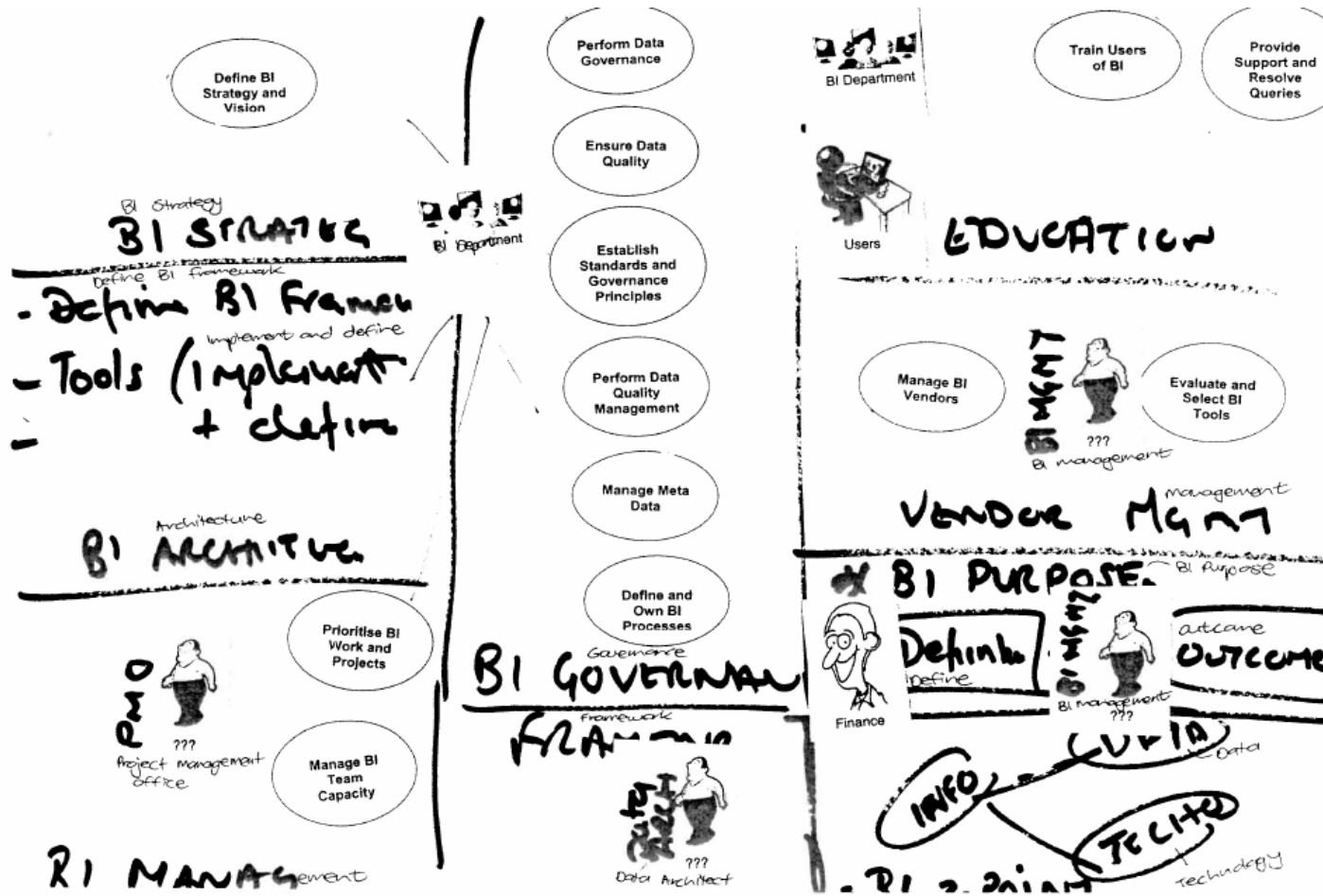


Figure 23: Example of interview response to a few questions using the landscaping interview technique

## APPENDIX D: LIST OF ARTIFACTS

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### *Artifacts used for the case study from Fortune Bank*

Fortune Bank documentation that was relevant to the case study was analysed. The following types of documents were analysed:

- Project documentation for the BI Portal, CMIS and EDW Projects. This consisted of:
  - Budgets and financials
  - Functional specifications
  - Implementation plans
  - Project Initiation Documents (PIDs)
  - Project schedules
  - Scope of Work (SOW) documents
  - Strategies
  - Technical specifications
  - Test plans
  - User manuals
  - Etc.
- BI outputs such as BI applications, tools and reports. This includes:
  - Screenshots of the BI Portal – FBCBI's intranet delivery mechanism for its BI applications, tools and reports
  - Screenshots of the CMIS front-end
  - BI cube and system usage statistics
- Performance agreements
  - Balanced Scorecards for individuals
  - Service Level Agreements (SLAs) between departments and third parties
  - Work package agreements between project managers and resources
  - Etc.

## APPENDIX E: INTERVIEWEE BACKGROUND AND PROFILE

*Background, personal details and BI experience of interviewees and researcher*

### 1. Introduction

Tables within this appendix reflect the details of the interview, interviewees and researcher. As the researcher was an observer and participant in the case study, she would have had an impact – both on the data gathered during the case study, as well as on the interpretation of this data before it is documented in this thesis. It is therefore necessary for the researcher's details also to be documented.

**Table 25: Interview details**

Interviewee identity:	A	B	C	D	E	F	G	H	I	J	K	L	M	N
<b>Date and time:</b>	03/11/08 15:00 to 17:30	05/11/08, 16:00 to 17:00	06/11/08, 13:30 to 14:30	06/11/08, 11:30 to 12:30	12/11/08, 16:00 to 18:20	10/11/08, 10:00 to 11:00	10/11/08, 13:00 to 15:00	10/11/08, 11:00 to 12:00	13/11/08, 12:30 to 13:30	13/11/08, 10:00 to 11:30	17/11/08, 11:30 to 12:30	17/11/08, 16:00 to 17:00	03/12/08, 12:00 to 13:30 and 17/11/08, 15:00 to 16:00	17/12/2008, 10:00 to 11:00
<b>Duration:</b>	2.5 hours	1 hour	1 hour	1 hour	2 hours, 20 min	1 hour	2 hours	1 hour	1.5 hours	1.5 hours	1 hour	1 hour	2.5 hours	1 hour
<b>Place:</b>	Fortune Bank Offices, Johannesburg													
<b>* Primary role during interview:</b>	BI pro- vider	BI cus- tomer	BI cus- tomer	BI cus- tomer	BI pro- vider	BI customer	BI provid- er	BI cus- tomer	BI pro- vider	BI pro- vider	BI cus- tomer	BI pro- vider	BI cus- tomer	BI provider
<b>2012 follow-up:</b>	Yes	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	No	No	Yes

\* The primary role reflects Scenario 2 (as per Chapter 4 Part 1). All interviewees also answered questions based on their role as a BI customer of the BI vendors as a BI provider – i.e. Scenario 1, as per Chapter 4 Part 1.

**Table 26: Interviewee and researcher fit within Fortune Bank**

Identity	Job title	Organisational level	Role	Department
A	Information Centre (IC)/ Enterprise Data Warehouse (EDW) Data Specialist	Specialist	Operational	FBCBI
B	Head: Finance and Strategy	Executive	Strategic and Operational	Transactional Banking
C	Financial Officer: Margin Management and MIS	Specialist	Strategic and Operational	Corporate Banking
D	Financial Officer: Margin Management and MIS	Specialist	Strategic and Operational	Corporate Banking
E	Head: BI - Fortune Bank Corporate	Executive	Strategic and Operational	FBCBI
F	Head: Client Value Management (CVM) and Transactional Banking Sales	Executive	Strategic and Operational	Business Banking
G	Executive: Enterprise Business Intelligence	Executive	Strategic and Operational	EDW Interim Project Dept.
H	Chief Operating Officer (COO): Business Banking	Executive	Strategic and Operational	Business Banking
I	FBCBI Senior Management	Senior manager	Strategic and Operational	FBCBI
J	FBCBI Senior Management	Senior manager	Strategic and Operational	FBCBI
K	Divisional Director: Finance	Executive	Strategic	Corporate Banking

Identity	Job title	Organisational level	Role	Department
L	Executive EDW Projects	Executive	Strategic and Operational	EDW Interim Project Dept.
M	Senior Manager - Integrated Solutions	Senior manager	Strategic	Transactional Banking
N	Retail Integration Manager	Senior manager	Strategic and Operational	Retail BICC
Re-researcher	Senior Manager: BI Analytics	Senior manager	Strategic and Operational	FBCBI

**Table 27: Interviewee and researcher educational and work experience details**

Identity	Educational background	Years working at Fortune Bank	Years working in a related field elsewhere	Summary of experience
A	BSC Degree, specialising in mathematics and statistics	12	19	Computer programming, software design and database analysis/design
B	Engineering, MBA	7	No previous BI or related work	Strategy, finance and MIS
C	Finance	3	10	Finance and MIS
D	Accounting	3	9	Accounting and MIS
E	Programming, Chartered Accounting, MBA	10	8	Every role involved in BI solutions, reporting and MIS
F	Theology, political science, MBA	6	3	IT/Telecommunications Research, lecturing, MIS, BI
G	Accounting	5	10	Finance, MIS/BI



Identity	Educational background	Years working at Fortune Bank	Years working in a related field elsewhere	Summary of experience
H	Chartered Accountant	11	3	Finance, Information Management, MIS
I	Aero-space engineering	10	5	Engineering, programming, MIS and reporting
J	Computer Science	4	2	Programming, MIS, BI, reporting
K	BCom (Honours) and Chartered Accounting	7.5	5	Auditing, finance, MIS, reporting
L	BSC in Computer Science and a Master's of Commerce in General Business Management	15	5	Data management and processing, BI
M	Medicine (specialist), business, business and IT (technical)	3	No previous BI or related work	Strategy, technology, innovation, BI
N	BCom (Legal)	7	4	Data and MIS
Re-searcher	MCom in Informatics	4	5	Business analysis, management consulting, project management, BI

## APPENDIX F: REQUEST FOR PROPOSAL

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*The RFP used by Fortune Bank and included in the case study (names have been changed and notes are added in italics)*

**Purpose:** Fortune Bank's Corporate Business Intelligence Department invites you to submit a Request for Proposal (RFP) to partner with them in assessing the viability of a Fortune Bank Business Intelligence Competency Centre (BICC).

**Submission Process:** Please submit RFPs, responding to the questions listed below (adding anything else that you may see as relevant), via email to [Lily@FortuneBank.co.za](mailto:Lily@FortuneBank.co.za) and [Julio@FortuneBank.co.za](mailto:Julio@FortuneBank.co.za). The following document types are acceptable: Word, PowerPoint, Excel, Visio, Adobe Acrobat PDF document.

**Due Date:** Submissions close on Friday, 27 February 2009 at 11:00 AM.

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**Background:** Fortune Bank Corporate Business Intelligence (FBCBI) is exploring the viability of setting up a Business Intelligence Competency Centre (BICC). Currently FBCBI performs strategic, operational and project work, servicing the whole of Fortune Bank's Corporate business unit, based within Fortune Bank's Business Banking business unit. With a staff complement of 22 people, we are experiencing overflow of requirements compared to capacity and a number of challenges within our BI environment. A possible solution to this is to establish a BICC that services Fortune Bank Corporate.

Fortune Bank consists of eight business units, namely: Business Banking, Corporate Banking, Transactional Banking, Fortune Bank Africa (including both Corporate and Retail banking in five African countries), Shared Services, Property Finance, Small Business Services and Investment Services.

BI user levels range from top-level executives to users needing information at a detailed and transactional level. Users have varying skill levels in addition to varying BI requirements (e.g. some need reports, others dashboards, others data dumps, etc.) and varying access needs. Users perform various functions, e.g. finance, HR, IT, marketing, sales, etc. A single-entry point has already been established for the provision of BI material (reporting, applications, calculators, training material, etc.) in the form of a BI Portal and a SharePoint site for related documentation and collaboration/discussion.

The need for this RFP is twofold. Firstly, FBCBI needs to explore the viability of partnering with a BI provider to set up a BICC within Fortune Bank. Secondly, qualitative studies are currently being performed within FBCBI for the purposes of research and input to the BICC solution and a doctoral thesis using Fortune Bank BI as a case study.

**Conditions:** Decisions on the acceptance of a proposal are the right and responsibility of the FBCBI Departmental Head. The information and responses provided in the proposals may be quoted in the doctoral research, with reference to your organisation (however, should you wish to remain anonymous if quot-



ed in the doctoral thesis please indicate this on your proposal).

**Please respond to all questions:**

<b>Section A: Vendor details</b>	
5. What is the name of your organisation?	
6. Do you operate nationally or internationally?	
7. Where is your head office located?	
8. How many staff members do you have in South Africa?	
9. How many people work at your organisation in total?	
10. What is your primary business?	
11. Do you have any partners who could assist you should you be selected as a result of this RFP?	

<b>Section B: BI definition and context</b>	
1. Please define the business intelligence process your organisation adopts.	
2. How do you define the term “business intelligence”?	<i>Question added by researcher</i>
3. What are the components of business intelligence?	
4. What “types of intelligence” does business intelligence consist of? I.e. what terms / subject areas do you include within the scope of business intelligence?	<i>Question added by researcher</i>
5. What are the main deliverables of business intelligence?	
6. Describe the relationship between the following: Decision Support System, Executive Information System, Management Information System and Business Intelligence.	<i>Question added by researcher</i>
7. Describe the overlap between the following and Business Intelligence: <ul style="list-style-type: none"> <li>• Analytics</li> <li>• Customer Relationship Management</li> <li>• Information Management</li> <li>• Knowledge Management</li> <li>• Corporate Performance Management</li> <li>• Business Process Management</li> <li>• Customer, marketing, competitor, product intelligence</li> </ul>	<i>Question added by researcher</i>

<b>Section C: Business Intelligence Competency Centre (BICC)</b>	
1. What is a Business Intelligence Competency Centre (BICC)?	
2. How would you set up a Business Intelligence Competency Cen-	

**Section C: Business Intelligence Competency Centre (BICC)**

<p>tre to service Fortune Bank? Please include the following in your response:</p> <ul style="list-style-type: none"> <li>• Product and service offering to Fortune Bank / main deliverables</li> <li>• Structure – including: resourcing, roles and responsibilities</li> <li>• Reporting lines (within BICC and within Fortune Bank)</li> <li>• Tools used to develop AND deploy BI (including technical partnerships)</li> <li>• Post implementation support strategy and mechanisms</li> <li>• Organisational culture changes</li> <li>• BICC interfaces with IT and the business</li> <li>• Self-service and BI delivery options for users</li> <li>• User community / user types that such a BICC would support</li> </ul>	
<p>3. Provide a high-level strategy to up skill and service BI super-users within the Business and ordinary BI report users within the business – ensuring acceptance and longevity of the BICC solution in the business. Both types of users are at various levels within Fortune Bank – from Executive, to Management, to Expert, etc.</p>	

**Section D: BI challenges**

<p>1. Does BI consistently achieve its purpose?</p>	<p><i>Question added by researcher</i></p>
<p>2. What are the main challenges of BI?</p>	<p><i>Question added by researcher</i></p>
<p>3. How do you propose these challenges are addressed?</p>	<p><i>Question added by researcher</i></p>

## APPENDIX G: VENDOR PROFILES AND RATINGS

### *Summary of vendor profiles and ratings*

#### 1. Introduction

A summary of the backgrounds and profiles of the vendors – also referred to as the RFP/questionnaire respondents - is first provided, followed by a view of ratings of their responses to the RFP. Ratings serve to provide insight into how the questions were answered. RFP results and analysis are then provided. Vendors are referred to as “V1, V2”, etc. in the text that follows.

#### 2. Summary of vendors' profiles

Table 28 reflects the vendors' profile information which has a bearing on the case study. Where vendors provided their profile summary in their responses, this was used. In other cases, the researcher gathered the information from the vendors' official websites.

**Table 28: Summary of vendors' profiles**

Key:	Ranges used:	• Staff complement
V: Vendor	• BI experience	• <=50
	• <= 0 to 5 years	• >=51 to 100
	• >= 6 to 10 years	• >=101 to 500
	• >= 11 to 20 years	• >= 500 to 1000
	> 21 years	> 1000

V	Local or international	BI experience	Staff complement	Vendor focus	Partners
1	Local	<= 0 to 5 years	<=50	Data integration, data warehousing, BI and performance management.	Lists two software vendors as partners.
2	Local and international	> 21 years	> 1000	A large organisation that has a department dedicated to BI. The organisation as a whole provides hardware, software and consulting.	Over 50 partners – classified as: niche players, database and data management, hardware and software partners.
3	Local	<= 0 to 5 years	<=50	IT (professional consulting and financial services), property, human resources and	Lists one hardware and one software vendor as partners.

V	Local or international	BI experience	Staff complement	Vendor focus	Partners
				recruiting.	
4	Local and international	> 21 years	> 1000	Although BI is not their core focus, the vendor states that all aspects of decision-making are catered for by their product offering. This is a large organisation that has a department dedicated to BI. The organisation as a whole provides software.	Over 50 partners – categorised as: niche players, database and data management, hardware and software partners.
5	Local and international	>= 11 to 20 years	> 1000	Focuses on BI, reporting, presentation (through dashboards) and Online Analytical Processing (OLAP).	Over 150 partners – categorised as: system integrators, technology companies, embedded solution companies and companies that sell their products.
6	Local and international	> 21 years	> 1000	Focuses on database management systems, however, does develop and market other enterprise software products.	Over 50 partners – categorised as: system integrators, vendors specialising in platform technologies, software vendors and companies that sell their products.
7	Local and international	> 21 years	> 1000	Offers Performance Management (PM) solutions amongst a variety of enterprise-wide solutions such as, amongst others, Customer Relationship Management (CRM), Product Lifecycle Management (PLM), supply chain, Supplier Relationship Management (SRM), governance, risk and compliance solutions and Enterprise Resource Planning (ERP).	Over 150 partners – categorised as: software solution providers, value-added resellers, distributors, technology and services partners.
8	Local and	> 21 years	> 1000	Core focus is BI and CRM.	Over 20 partners – category

V	Local or international	BI experience	Staff complement	Vendor focus	Partners
	international				rised as: technology, consulting, application and channel partners.

### 3. Ratings of vendor responses

**Table 29: FBCBI's ratings of vendor responses**

Key:

- V: Vendor
- ✓: Reflects that the vendor answered the question – completely, without being vague or ambiguous – but not necessarily that the answer is correct.
- X : Reflects a gap where the vendor did not provide an answer to the question.
- O: Reflects that the vendor provided an incomplete, vague or ambiguous answer.

#	Question	V1	V2	V3	V4	V5	V6	V7	V8
1	Please define the business intelligence process your organisation adopts.	✓	O	O	✓	✓	✓	X	✓
2	How do you define the term “business intelligence”?	✓	✓	✓	✓	✓	✓	O	✓
3	What are the components of business intelligence?	✓	✓	✓	✓	O	✓	X	✓
4	What “types of intelligence” does business intelligence consist of? I.e. what terms/subject areas do you include within the scope of business intelligence?	X	X	O	✓	O	✓	X	✓
5	What are the main deliverables of business intelligence?	✓	✓	✓	✓	✓	✓	X	✓
6	Describe the relationship between the following: Decision Support System, Executive Information System, Management Information System and Business Intelligence.	✓	✓	✓	✓	O	✓	X	✓
7	Describe the overlap between the following and Business Intelligence:								
	• Analytics	✓	✓	✓	✓	X	✓	X	✓
	• Customer Relationship Management	X	✓	✓	✓	O	✓	X	✓
	• Information Management	O	✓	✓	✓	X	✓	X	✓
	• Knowledge Management	✓	✓	✓	✓	X	✓	X	✓
	• Corporate Performance Management	O	✓	✓	✓	X	✓	X	O
	• Business Process Management	✓	✓	✓	✓	X	✓	X	O
	• Customer, marketing, competitor, product intelligence	X	O	O	O	X	✓	X	✓

#	Question	V1	V2	V3	V4	V5	V6	V7	V8
8	What is a Business Intelligence Competency Centre (BICC)?	✓	✓	X	X	✓	✓	X	✓
9	How would you set up a Business Intelligence Competency Centre to service Fortune Bank? Please include the following in your response:								
	• Product and service offering to Fortune Bank/main deliverables	✓	✓	✓	X	○	X	X	✓
	• Structure – including: resourcing, roles and responsibilities	✓	✓	○	X	○	✓	X	✓
	• Reporting lines (within BICC and within Fortune Bank)	✓	✓	✓	X	○	✓	X	✓
	• Tools used to develop AND deploy BI (including technical partnerships)	✓	✓	✓	X	✓	X	X	✓
	• Post implementation support strategy and mechanisms	X	✓	✓	X	X	X	X	✓
	• Organisational culture changes	X	✓	✓	X	X	X	X	✓
	• BICC interfaces with IT and the business	X	✓	○	X	X	✓	X	✓
	• Self-service and BI delivery options for users	✓	○	○	X	X	X	X	✓
	• User community/user types that such a BICC would support	X	○	✓	X	X	X	X	✓
10	Provide a high-level strategy to up skill and service BI super-users within the business and ordinary BI report users within the business – ensuring acceptance and longevity of the BICC solution in the business. Both types of users are at various levels within Fortune Bank – from Executive, to Management, to Expert, etc.	○	X	✓	X	○	✓	X	✓
11	What are the main challenges of BI?	✓	X	✓	✓	✓	○	X	✓
12	Does BI consistently serve its purpose?	✓	X	✓	✓	✓	✓	X	✓
13	What are the main challenges of BI?	✓	X	✓	✓	✓	✓	X	✓
14	How do you propose these challenges are addressed?	✓	X	✓	✓	✓	✓	X	✓

## APPENDIX H: THE G-D LOGIC EVIDENT IN BI'S WORLDVIEW AND CHALLENGES

*A summary of examples of G-D Logic characteristics evident in BI's worldview and challenges*

**Table 30: The G-D Logic inherent in BI's worldview characteristics**

<b>E</b>	<b>Worldview characteristic</b>	<b>G-D Logic characteristic</b>
<b>Ontology</b>	40. BI operates from an ambiguous and unstable model of reality, where BI is perceived as a: technology, process, product and capability (one or multiple of these perceptions).	<ul style="list-style-type: none"> <li>• Focus on means, production and producer (D)</li> </ul>
	41. Although there is much debate, few people express concern about BI's ambiguity.	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
	42. BI is defined as a technology by BI providers more than by BI customers.	<ul style="list-style-type: none"> <li>• Separation of customer and provider (C)</li> </ul>
	43. BI vendors' dominant perception is that BI is a technology. Fortune Bank BI departments (as BI providers) view BI mostly as a process and product, but also as a technology. BI customers see BI mostly as a process.	<ul style="list-style-type: none"> <li>• Focus on means, production and producer (D)</li> <li>• Compete through goods and their features (B)</li> </ul>
	44. A few individuals see BI as a process enabled by technology to understand the business, make informed business decisions and enable a strategic view.	<ul style="list-style-type: none"> <li>• Focus on means, production and producer (D)</li> <li>• Compete through goods and their features (B)</li> </ul>
	45. BI is generally understood (by BI providers and customers) to consist of a linear series of development or data processing activities up to the point of exchange (e.g. implementation/delivery), potentially including change management. Only a few individuals define BI beyond this point, these typically are BI customers.	<ul style="list-style-type: none"> <li>• Value-in-exchange (A)</li> <li>• Separation of customer and provider (C)</li> <li>• Focus on means, production and producer (D)</li> <li>• "Services" in the context of G-D Logic (E)</li> </ul>
	46. BI is generally understood by BI customers and BI providers in terms of the organisation's processes and rules (syntactically) rather than in terms of the organisation's environment and context (semantically).	<ul style="list-style-type: none"> <li>• Separation of customer and provider (C)</li> <li>• Focus on means, production and producer (D)</li> </ul>
<b>Past</b>	47. No definitive explanation for uncertainty in BI perceptions.	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
	48. BI emerged (to provide management and business support) from a hard (mechanistic, determin-	<ul style="list-style-type: none"> <li>• Separation of customer and provider (C)</li> </ul>

E	Worldview characteristic	G-D Logic characteristic
	<p>istic) systems and Engineering background.</p> <p>49. Fortune Bank BI departments were established by individuals with dominant IT backgrounds responding to business' need for information/intelligence.</p> <p>50. BI vendors were established with an IT focus or by an IT organisation.</p>	<ul style="list-style-type: none"> <li>• Focus on means, production and producer (D)</li> </ul>
Prediction	<p>51. Technological advances are envisioned for the future. E.g.: customisation, enhanced technology characteristics and improved delivery mechanisms.</p>	<ul style="list-style-type: none"> <li>• Compete through goods and their features (B)</li> <li>• Focus on means, production and producer (D)</li> </ul>
	<p>52. FBCBI demonstrated a renewed technology focus by changing its name to BITS.</p>	<ul style="list-style-type: none"> <li>• Compete through goods and their features (B)</li> <li>• Focus on means, production and producer (D)</li> </ul>
	<p>53. BI customers are concerned about future technology solution's features and functions.</p>	<ul style="list-style-type: none"> <li>• Compete through goods and their features (B)</li> <li>• Separation of customer and provider (C)</li> </ul>
	<p>54. BI providers are concerned with collecting and managing greater volumes of data, expanding their BI target market (audience) and improving delivery mechanisms.</p>	<ul style="list-style-type: none"> <li>• Separation of customer and provider (C)</li> <li>• Focus on means, production and producer (D)</li> </ul>
	<p>55. BI providers wish to reduce time spent on data processing to be able to spend more time developing and automating BI technologies.</p>	<ul style="list-style-type: none"> <li>• Compete through goods and their features (B)</li> <li>• Separation of customer and provider (C)</li> <li>• Focus on means, production and producer (D)</li> </ul>
	<p>56. Frustration is experienced due to customer "meddling", but there is a desire to close the BI customer-provider gap through, e.g.: conversations in business jargon; a new type of BI resource (with expertise in business and IT); longer support periods to equip user.</p>	<ul style="list-style-type: none"> <li>• Separation of customer and provider (C)</li> </ul>
	<p>57. A return to focus on decision-making is expected – enabled by analytics.</p>	<ul style="list-style-type: none"> <li>• Compete through goods and their features (B)</li> </ul>
	<p>58. Data (enabled by technology) is the new driver of BI.</p>	<ul style="list-style-type: none"> <li>• Compete through goods and their features (B)</li> <li>• Focus on means, production and producer (D)</li> </ul>
	<p>59. Collaboration and interconnected solutions receive attention.</p>	<ul style="list-style-type: none"> <li>• Compete through goods and their features (B)</li> </ul>



E	Worldview characteristic	G-D Logic characteristic
Axiology	60. Value is measured by the BI provider at the point of exchange of a tangible BI output.	<ul style="list-style-type: none"> <li>• Value-in-exchange (A)</li> <li>• Compete through goods and their features (B)</li> <li>• Separation of customer and provider (C)</li> <li>• Focus on means, production and producer (D)</li> </ul>
	61. BI's purpose is seen to be "inform decision-making" but value is measured according to cost, quality and schedule measures on the BI IT solution and implementation thereof. Furthermore, BI is aligned with marketing and banking strategies that target and acquire customers and markets.	<ul style="list-style-type: none"> <li>• Value-in-exchange (A)</li> <li>• Compete through goods and their features (B)</li> <li>• Focus on means, production and producer (D)</li> </ul>
	62. BI vendors don't typically receive feedback on use or performance of their BI solutions.	<ul style="list-style-type: none"> <li>• Value-in-exchange (A)</li> </ul>
	63. Fortune Bank targets customers, selling and marketing to them and optimises its processes to do this as efficiently as possible.	<ul style="list-style-type: none"> <li>• Focus on means, production and producer (D)</li> </ul>
	64. BI vendors promote and value intangible benefits or features of IT solutions, assuming "customer value" is the output of their software development process that takes place upon implementation (exchange) and can be defined unilaterally by vendor, upfront.	<ul style="list-style-type: none"> <li>• Value-in-exchange (A)</li> <li>• Compete through goods and their features (B)</li> <li>• Focus on means, production and producer (D)</li> </ul>
	65. BI values the BI environment and applications (neglecting use of BI).	<ul style="list-style-type: none"> <li>• Value-in-exchange (A)</li> <li>• Focus on means, production and producer (D)</li> </ul>
	66. BI's purposes are largely intangible, subjective and hard to measure (ROI).	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
Praxeology	67. BI is a top priority/value. BI is for all levels of the organisation ("everyone").	<ul style="list-style-type: none"> <li>• Focus on means, production and producer (D)</li> </ul>
	68. Various strategies, CSFs, frameworks, etc. (grounded in IT) are provided by BI providers to manage, govern and guide the BI environment and its technologies.	<ul style="list-style-type: none"> <li>• Separation of customer and provider (C)</li> <li>• Focus on means, production and producer (D)</li> <li>• "Services" in the context of G-D Logic (E)</li> </ul>

E	Worldview characteristic	G-D Logic characteristic
	69. BI's guiding principles are defined and implemented unilaterally by the BI provider, without interference or influence from the BI customer.	<ul style="list-style-type: none"> <li>• Separation of customer and provider (C)</li> <li>• Focus on means, production and producer (D)</li> </ul>
	70. BI consists of a linear series of activities in a software development process or a data warehousing process, guided by relevant IT/data methodologies.	<ul style="list-style-type: none"> <li>• Focus on means, production and producer (D)</li> </ul>
	71. The decision-making process is referred to, but not described. Focus is on delivery of BI technology solution and/or product and the activities to do this.	<ul style="list-style-type: none"> <li>• Value-in-exchange (A)</li> <li>• Focus on means, production and producer (D)</li> <li>• "Services" in the context of G-D Logic (E)</li> </ul>
	72. BI customers don't typically participate in BI solution development unless required to by BI provider e.g. for requirements gathering, UAT, training.	<ul style="list-style-type: none"> <li>• Separation of customer and provider (C)</li> <li>• Focus on means, production and producer (D)</li> </ul>
	73. Agile development approaches are strived towards to increase collaboration within BI departments and to increase the BI department's productivity and deliver BI requirements at faster response rates.	<ul style="list-style-type: none"> <li>• Focus on means, production and producer (D)</li> </ul>
Epistemology	74. BI is informed by various disciplines, Science and business functions, but focuses on BI's IT and IS aspects, causing an imbalance.	<ul style="list-style-type: none"> <li>• Separation of customer and provider (C)</li> <li>• Focus on means, production and producer (D)</li> </ul>
	75. BI providers (BI vendors and Fortune Bank BI departments) typically have a IT, Engineering and Science backgrounds while BI customers (excluding Fortune Bank BI departments) typically have Business, Finance and Accounting backgrounds.	<ul style="list-style-type: none"> <li>• Separation of customer and provider (C)</li> <li>• Focus on means, production and producer (D)</li> </ul>
	76. A limitation is identified in the gap between BI customer and provider competencies.	<ul style="list-style-type: none"> <li>• Separation of customer and provider (C)</li> </ul>
	77. When raising challenges, BI customers and providers restrictively focus on their lack of knowledge of the other's expertise rather than on sharing their expertise.	<ul style="list-style-type: none"> <li>• Separation of customer and provider (C)</li> </ul>
	78. BI flows across the organisation, irrespective of business function. BI providers and customers restrictively think of BI in terms of function, creating gaps where BI overlaps between business,	<ul style="list-style-type: none"> <li>• Separation of customer and provider (C)</li> </ul>

E	Worldview characteristic	G-D Logic characteristic
	BI and technical realm – e.g. business data ill-understood by all.	

**Table 31: The G-D Logic inherent in BI's prevailing challenges**

G-D Logic characteristics are based on the literature study in Chapter 3 Part 3. Sources include: Chesbrough and Spohrer, 2006:37; Edvardsson *et al.*, 2011:540; Grönroos, 2000:24-25; Gummesson, 1995:250; 1998:247; Lusch and Vargo, 2006:19; Lusch, *et al.*, 2008:6; Michel, *et al.*, 2008:152; Nam and Lee, 2010:1764; 6:37; Normann, 2001:99; Spohrer *et al.*, 2008:10; Vargo and Lusch, 2004a:5; 2006:18, 51; 2010:172a; Vargo, 2009a.

Ref	Challenge	G-D Logic characteristic
	Using BI optimally	
U1	<ul style="list-style-type: none"> <li>Volume of data that is processed is overwhelming</li> </ul>	<ul style="list-style-type: none"> <li>Focus on means, production and producer (D)</li> </ul> <p>The dominant focus on production, the means and the provider leads to increased data processing (productivity, mass output, technology automation).</p>
U2	<ul style="list-style-type: none"> <li>Unfamiliar territory for users</li> </ul>	<ul style="list-style-type: none"> <li>Value-in-exchange (A)</li> <li>Separation of customer and provider (C)</li> <li>Focus on means, production and producer (D)</li> </ul> <p>As customer and provider are separated, the customer does not learn the provider's "territory". Ensuring that the user can use the BI provided is not a high priority, the focus is on implementing a BI solution (the point of exchange).</p>
U3	<ul style="list-style-type: none"> <li>Poor or absent metadata and training</li> </ul>	<ul style="list-style-type: none"> <li>Separation of customer and provider (C)</li> <li>Focus on means, production and producer (D)</li> </ul> <p>The need for meta data and training are overlooked in favour of production of tangible outputs from the provider's viewpoint.</p>
U4	<ul style="list-style-type: none"> <li>A gap between the BI application or output and human decision-making</li> </ul>	<ul style="list-style-type: none"> <li>Value-in-exchange (A)</li> <li>Compete through goods and their features (B)</li> </ul>

Ref	Challenge	G-D Logic characteristic
		<ul style="list-style-type: none"> <li>• Focus on means, production and producer (D)</li> </ul> <p>It is assumed that exchange is the end-point of the BI value chain, there may be post-implementation training and support, but this is limited and is usually limited to how to use the BI technology solution. This creates a gap where the user does not know how to ask questions or make assumptions using the BI that is implemented.</p>
U5	<ul style="list-style-type: none"> <li>• Adapting to use BI to make decisions</li> </ul>	<ul style="list-style-type: none"> <li>• Value-in-exchange (A)</li> <li>• Compete through goods and their features (B)</li> </ul> <p>BI providers do not “test” value propositions by ensuring that BI customers are capable to use the BI that is provided. The BI application or data that is exchanged becomes the focus rather than the use thereof, i.e. decision-making. Focus is on the product exchanged, not on ensuring adaptation takes place.</p>
U6	<ul style="list-style-type: none"> <li>• Providing BI that is relevant, timeous and valued by the user</li> </ul>	<ul style="list-style-type: none"> <li>• Value-in-exchange (A)</li> <li>• Separation of customer and provider (C)</li> </ul> <p>The BI provider independently determines value upfront, embedding it in the BI product which he/she predetermines will be valuable to the user (BI customer).</p>
U7	<ul style="list-style-type: none"> <li>• Providing BI that is valued by and suited to the organisation's culture</li> </ul>	<ul style="list-style-type: none"> <li>• Value-in-exchange (A)</li> <li>• Compete through goods and their features (B)</li> </ul> <p>BI value is linked to the BI product that is exchanged and not to the creation of an operant resource that the customer can play a role in co-creating (i.e. making it more likely that the product is valuable to the customer).</p>
U8	<ul style="list-style-type: none"> <li>• Catering for different user needs across the organisation</li> </ul>	<ul style="list-style-type: none"> <li>• Compete through goods and their features (B)</li> <li>• Separation of customer and provider (C)</li> </ul> <p>Instead of inviting customers to co-create by customising their own BI, similar solu-</p>

Ref	Challenge	G-D Logic characteristic
		tions are often pushed down to all users – who actually have different needs.
U9	<ul style="list-style-type: none"> <li>• Dominant focus on data processing reduces time/capacity for use</li> </ul>	Same as U1.
CS U1	<ul style="list-style-type: none"> <li>• BI providers aim to evolve to focus on BI development, still neglecting capacity for use</li> </ul>	<ul style="list-style-type: none"> <li>• Value-in-exchange (A)</li> <li>• Focus on means, production and producer (D)</li> </ul> <p>The focus is on the discovery side of the BI value coin, not on use.</p>
U10	<ul style="list-style-type: none"> <li>• Low use overlooked as use is often measured according to volume of software applications and licences sold</li> </ul>	<ul style="list-style-type: none"> <li>• Value-in-exchange (A)</li> <li>• Compete through goods and their features (B)</li> </ul> <p>Value is measured at the point of exchange (sale) of licences and not use. Focus is on the product that is exchanged. BI providers aim to sell greater volumes of units (i.e. products) to compete/gain market share/"capture" customers.</p>
CS U2	<ul style="list-style-type: none"> <li>• Low use overlooked as use/BI success is measured according to successful implementation of IS project or completion of data processing</li> </ul>	<ul style="list-style-type: none"> <li>• Value-in-exchange (A)</li> <li>• Compete through goods and their features (B)</li> </ul> <p>Although the BI project/implementation is successful, there may be no or low use of it – but value is measured incorrectly at the point it is exchanged, leading to incorrect measurement/overlooking low use.</p>
	Managing "big data"	
D1	<ul style="list-style-type: none"> <li>• The advent of unprecedented "big data"</li> </ul>	Same as U1.
D2	<ul style="list-style-type: none"> <li>• Storing and accessing big data spread across the organisation in various formats/sources</li> </ul>	Same as U1. The dominant focus on producing mass volumes of data results in more data than can be used/managed.
D3	<ul style="list-style-type: none"> <li>• Absence of information management methods, governance and data quality</li> </ul>	<ul style="list-style-type: none"> <li>• Separation of customer and provider (C)</li> <li>• "Services" in the context of G-D Logic (E)</li> </ul> <p>The full service flow is not understood (information is not managed throughout its lifecycle that extends through the service flow). Customers see BI as the provider's</p>

Ref	Challenge	G-D Logic characteristic
		responsibility and domain, including data and data quality.
CS D1	<ul style="list-style-type: none"> <li>Managing customer demands for data from new and un-structured sources</li> </ul>	<ul style="list-style-type: none"> <li>Separation of customer and provider (C)</li> <li>Focus on means, production and producer (D)</li> <li>"Services" in the context of G-D Logic (E)</li> </ul> <p>Challenges arise as new requirements fit outside the typical scope of the provider's capability, changing the "production line".</p>
CS D2	<ul style="list-style-type: none"> <li>Ongoing data feeds and support long after deployment</li> </ul>	<ul style="list-style-type: none"> <li>Value-in-exchange (A)</li> <li>Focus on means, production and producer (D)</li> <li>"Services" in the context of G-D Logic (E)</li> </ul> <p>When deployment (exchange) takes place, it is assumed that the BI project is complete. However, this implies that the full service flow is not understood, as ongoing data feeds and support are in fact necessary.</p>
CS D3	<ul style="list-style-type: none"> <li>Gaps in ownership or responsibility for data or data quality</li> </ul>	<ul style="list-style-type: none"> <li>Focus on means, production and producer (D)</li> <li>"Services" in the context of G-D Logic (E)</li> </ul> <p>The joint responsibility to co-create a beneficial outcome is overlooked as BI is seen as the BI provider's responsibility; the full service flow is not understood.</p>
CS D4	<ul style="list-style-type: none"> <li>Skills and competence on data are largely missing within the organisation, appointed business representatives do not understand the data or know where to source it</li> </ul>	<ul style="list-style-type: none"> <li>Value-in-exchange (A)</li> <li>Compete through goods and their features (B)</li> <li>Focus on means, production and producer (D)</li> <li>"Services" in the context of G-D Logic (E)</li> </ul> <p>Focus is not on the competence and skill to co-create an operant resource, but rather on production. Data and business process competence needed are often not integrated into the full service flow of BI. Value propositions are not offered where the capability to co-create value is first established before BI initiatives are started.</p>

Ref	Challenge	G-D Logic characteristic
	Integrating BI across many complex technology, data and business layers	
I1	<ul style="list-style-type: none"> <li>Overlooking integration activities (BI fails to consider integration with organisation's ISs)</li> </ul>	Same as CSD3.
CSI 1	<ul style="list-style-type: none"> <li>Failure to consider integration with BI upfront when acquiring/developing organisation's ISs</li> </ul>	Same as CSD3.
I2	<ul style="list-style-type: none"> <li>Complexities related to the organisation's technology, data and business layers</li> </ul>	<ul style="list-style-type: none"> <li>Separation of customer and provider (C)</li> <li>Focus on means, production and producer (D)</li> <li>"Services" in the context of G-D Logic (E)</li> </ul> <p>More emphasis is placed on the actual BI product or output than on integration with underlying data, infrastructure and business processes.</p>
CSI 2	<ul style="list-style-type: none"> <li>Skills and competence on IS/IT architecture are largely missing within the organisation, appointed business representatives do not understand IS/IT architecture</li> </ul>	Same as CSD4.
I3	<ul style="list-style-type: none"> <li>Complexities resulting from organisation-wide issues</li> </ul>	Same as I2.
CSI 3	<ul style="list-style-type: none"> <li>More collaboration is needed than when implementing an IS/IT solution</li> </ul>	Same as CSD4 and I2.
	Aligning and balancing the needs of the various role players in BI	
A1	<ul style="list-style-type: none"> <li>Misalignment between BI, IT and the business, BI vendors and the organisation and between departments and levels</li> </ul>	<ul style="list-style-type: none"> <li>Separation of customer and provider (C)</li> <li>Focus on means, production and producer (D)</li> <li>"Services" in the context of G-D Logic (E)</li> </ul> <p>BI is perceived from the perspective of the BI provider as something that is delivered to a passive recipient, separated from the BI provider.</p>
A2	<ul style="list-style-type: none"> <li>BI infrastructure is complex, expensive, takes time and cannot be used until most of it has been completed</li> </ul>	<ul style="list-style-type: none"> <li>Compete through goods and their features (B)</li> <li>Separation of customer and provider (C)</li> </ul>

Ref	Challenge	G-D Logic characteristic
		<ul style="list-style-type: none"> <li>Focus on means, production and producer (D)</li> </ul> <p>Co-creation of value through use of a prototype as an operand resource (as input to value co-creation and source of competitive advantage (FP4)) is overlooked in favour of completing the BI production process quickly, which is seen to be more cost effective without customer interference. Value can be determined by the provider alone. The producer is able to independently make assumptions about the consumer's environment and how they will use/benefit from the BI product.</p>
CS A1	<ul style="list-style-type: none"> <li>BI customers (of BI vendors) have negative impressions whereby BI vendors are seen to: "lock" them in, offer expensive solutions with costly dependencies on specialists and too many/intimidating features</li> </ul>	<ul style="list-style-type: none"> <li>Value-in-exchange (A)</li> <li>Compete through goods and their features (B)</li> <li>Separation of customer and provider (C)</li> <li>Focus on means, production and producer (D)</li> </ul> <p>Producers often perceive that they "capture the market" by producing and selling more outputs than their competitors and, through the sale of these (even locking customers in) make a profit. The exchange and not the relationship is the objective.</p>
CS A2	<ul style="list-style-type: none"> <li>BI departments get frustrated with BI vendors who try to bypass them</li> </ul>	Same as CSD3.
CS A3	<ul style="list-style-type: none"> <li>BI provider and customer are separated.</li> </ul>	<ul style="list-style-type: none"> <li>Separation of customer and provider (C).</li> </ul>
CS A4	<ul style="list-style-type: none"> <li>BI vendors expect the organisation's departments to collaborate and consolidate their BI requirements (this fails to happen)</li> </ul>	<ul style="list-style-type: none"> <li>Separation of customer and provider (C)</li> <li>Focus on means, production and producer (D)</li> <li>"Services" in the context of G-D Logic (E)</li> </ul> <p>BI vendors see the organisation from their (the provider's) viewpoint rather than seeing the opportunity to assist the organisation to consolidate BI requirements. BI cus-</p>



Ref	Challenge	G-D Logic characteristic
		tomers see their requirements in terms of a BI solution rather than the full service flow of BI across the organisation.
CS A5	<ul style="list-style-type: none"> <li>BI vendors express frustration when BI departments obstruct direct relationships with users</li> </ul>	Same as CSA4.
CS A6	<ul style="list-style-type: none"> <li>Managing new customer demands (such as RTBI)</li> </ul>	<ul style="list-style-type: none"> <li>Separation of customer and provider (C)</li> <li>Focus on means, production and producer (D)</li> <li>"Services" in the context of G-D Logic (E)</li> </ul> <p>Challenges are experienced in meeting new requirements that involve changes to what is often an inflexible "production line".</p>
CS A7	<ul style="list-style-type: none"> <li>All role players needed in BI initiative are not successfully identified or brought in</li> </ul>	<ul style="list-style-type: none"> <li>Focus on means, production and producer (D)</li> <li>"Services" in the context of G-D Logic (E)</li> </ul> <p>The full service flow – including integration and use – is not understood. The focus is on producing a product or an output, rather than on the integration thereof.</p>
	Recruiting, retaining and using BI personnel and their skills effectively	
P1	<ul style="list-style-type: none"> <li>Specialist personnel are high in demand but short in supply</li> </ul>	N/A
P2	<ul style="list-style-type: none"> <li>A broad skill set is required</li> </ul>	<ul style="list-style-type: none"> <li>Compete through goods and their features (B)</li> <li>Focus on means, production and producer (D)</li> <li>"Services" in the context of G-D Logic (E)</li> </ul> <p>BI resources are highly specialised in a BI solution or part of the process as a result of "complication". When the BI department, as a BI provider, does not successfully integrate the correct skills and competence (service), the absence of a broad skill set in individual resources becomes apparent and a challenge.</p>
CS	<ul style="list-style-type: none"> <li>BI departments recruit IS and IT rather than BI profes-</li> </ul>	<ul style="list-style-type: none"> <li>Compete through goods and their features (B)</li> </ul>

Ref	Challenge	G-D Logic characteristic
P1	signals/experts	<ul style="list-style-type: none"> <li>• Focus on means, production and producer (D)</li> <li>• “Services” in the context of G-D Logic (E)</li> </ul> <p>Competence is sought in producing BI technology/data outputs (discovery side of the BI value coin) rather than in how to use BI (e.g. decision-making, statistical analysis, etc.) (the use side of the BI value coin).</p>
CS P2	<ul style="list-style-type: none"> <li>• Employee’s work-life balance is overlooked in favour of completing BI deliverables</li> </ul>	<ul style="list-style-type: none"> <li>• Focus on means, production and producer (D)</li> </ul> <p>The employee is seen as a means to produce BI. Productivity and optimised outputs are sought after rather than benefit for all entities involved in the service flow.</p>
CS P3	<ul style="list-style-type: none"> <li>• Skills and competence to assist BI departments are largely missing within the organisation, appointed business representatives are not able to assist</li> </ul>	<ul style="list-style-type: none"> <li>• Separation of customer and provider (C)</li> <li>• Focus on means, production and producer (D)</li> <li>• “Services” in the context of G-D Logic (E)</li> </ul> <p>BI customer and provider are separated and do not switch roles. BI customers play the role of passive recipients. This separation means that BI customer and provider lose out on contextual knowledge and understanding of each other’s environments and thereby lose the ability and willingness to assist each other in the full service flow.</p>
	Getting the right sponsor in place	
S1	<ul style="list-style-type: none"> <li>• Absence of a sponsor who understands BI</li> </ul>	<ul style="list-style-type: none"> <li>• Focus on means, production and producer (D)</li> </ul>
CS S1	<ul style="list-style-type: none"> <li>• Sponsors who are “mislead” by BI vendors into believing BI is a “quick and easy” endeavor</li> </ul>	<ul style="list-style-type: none"> <li>• “Services” in the context of G-D Logic (E)</li> </ul>
CS S2	<ul style="list-style-type: none"> <li>• Sponsors who expect BI IT solution to provide for full BI requirement</li> </ul>	<p>Focus is not on the service to co-create an operant resource, but on production, BI technology and its features. Production of an output or “deliverable” is seen as the end of the value chain rather than the full service flow. E.g. the sponsor thinks that BI is a “deliverable” that can be implemented and automatically results in use.</p>
01	Realising and measuring ROI	<ul style="list-style-type: none"> <li>• Value-in-exchange (A)</li> </ul>

Ref	Challenge	G-D Logic characteristic
CS 01	<ul style="list-style-type: none"> <li>Realising and measuring ROI</li> <li>BI success (value/return) is measured at point of delivery of BI project or data process, making ROI harder to calculate</li> </ul>	<ul style="list-style-type: none"> <li>Compete through goods and their features (B)</li> <li>Focus on means, production and producer (D)</li> </ul> <p>Value is measured at exchange and not upon use. Producer determines the value upfront. Value can be embedded in goods and is measured according to goods' intangible features.</p>
02	<p>Operating in an ambiguous environment</p> <ul style="list-style-type: none"> <li>BI is ill-defined and its environment is ambiguous</li> <li>Treating BI the same as an IT project</li> </ul> <p>Resultant challenges:</p> <ul style="list-style-type: none"> <li>Difficulties in raising BI specific challenges</li> </ul>	<ul style="list-style-type: none"> <li>Focus on means, production and producer (D)</li> <li>"Services" in the context of G-D Logic (E)</li> </ul> <p>BI is defined and scoped from the provider's point of view as an IS, as an IT component of an IS, or as an output of an IS (means, product and production). The focus is on BI technology and its features. The full service flow is not understood. The focus is on the BI IS/IT and not on the service flow involving different types of entities integrating many different types of resources.</p>
CS 02	<ul style="list-style-type: none"> <li>BI is perceived narrowly as an IS or even more narrowly as a data or IT solution. This results in further challenges (already raised above): <ul style="list-style-type: none"> <li>BI success is measured according to BI vendors' volumes of IT sales or IS project measures/data processing performance measures</li> <li>BI providers seek to recruit IS, IT and data professionals rather than BI experts</li> <li>More collaboration is needed than when implementing IS solutions, though this is not always acknowledged or performed</li> </ul> </li> </ul>	
CS 03	<ul style="list-style-type: none"> <li>Failure to recognise and address the fact that BI operates in an ambiguous environment results in further challenges (already raised above):</li> </ul>	

Ref	Challenge	G-D Logic characteristic
	<ul style="list-style-type: none"><li data-bbox="315 228 658 256">• Misaligned expectations</li><li data-bbox="315 272 976 352">• BI is defined and scoped narrowly as an IS solution (or more narrowly as data/IT)</li></ul>	