TOWARDS A FRAMEWORK FOR UNDERSTANDING INFORMATION SYSTEMS OWNERSHIP

by

ADRIAAN JACOB SWANEPOEL

Submitted in partial fulfillment of the requirements for the PhD in Informatics in The Faculty of Economic and Management Sciences

UNIVERSITY OF PRETORIA

STUDY LEADERS: DR. J. VAN LOGGERENBERG

PROF. A. VAN DER MERWE

June 2015

ABSTRACT

Title: TOWARDS A FRAMEWORK FOR UNDERSTANDING INFORMATION SYSTEMS OWNERSHIP

Author: Adriaan Jacob Swanepoel

Supervisor: Doctor J van Loggerenberg

Co-Supervisor: Professor A van der Merwe

Faculty: Faculty of Economics and Management Sciences

University: University of Pretoria

Degree: PhD (Informatics)

June 2015

Organisations deploy information systems (IS) with the exclusive intention to pursue their business objectives. Executive managers assign ownership of IS to business leaders, expecting them to leverage the IS towards achieving the objectives of the business areas. Many business leaders are reluctant to take ownership of the IS in their business areas, placing the organisation at risk that IS may not be optimally utilised and that business areas may not achieve their objectives. Little guidance exists to assist organisations and business leaders to understand what "taking ownership of IS" entails.

This phenomenological study focuses on the experiences of staff members with respect to IS ownership to acquire an in-depth understanding of the phenomenon of IS ownership in a financial services organisation. The study develops a framework for understanding IS ownership through a process of induction.

The study views the relationship between IS ownership role-players through the lens of social exchange theory, with the relationship between IS ownership role-players as a focus area of IS ownership. In social exchange theory, the success of the relationship is based on reciprocity. The IS ownership framework discusses the different perspectives of the role-players with respect to defining IS ownership,

understanding why IS ownership is required, the criteria for having ownership, the rights, the obligations and the expectations associated with IS ownership.

The framework comprises the construct and the institutionalisation and application of IS ownership. The construct of IS ownership clarifies what IS ownership entails, what the rationale is for IS ownership and where IS ownership should reside. The institutionalisation and application of IS ownership explains the governance and management processes requiring that all assets, including IS, should have owners and that IS ownership should be assigned to identified individuals. Management of the resources to enable the successful application of IS in the organisation is needed to utilise IS ownership as a strategic resource in the organisation.

The framework offers an understanding of IS ownership and promotes IS ownership as a resource in the organisation to enhance the possibility of optimally leveraging the IS in the business areas in pursuit of their business objectives.

Keywords: Information systems, IS ownership, IS framework, Psychological IS ownership, Formal IS ownership.

ACKNOWLEDGEMENTS

I am dedicating this thesis to my wife, Maria.

Thank you for your support, caring, belief, love and late night reading to assist me with this research project. You supported me through tough times and good times and kept the passion for the study going. I love you with all my heart.

Cobus and Riaan, you are my heroes. You were always there for me, assisting with ideas, providing inspiration and doing many of my chores when I was busy with the research. Thank you very much.

Annatjie and Martha, you provided love and care and you prayed a lot when I needed it desperately. I kept your support and belief in my ability to complete the study close to my heart and I will treasure it for always.

My appreciation goes to my supervisors, Doctor Johan van Loggerenberg and Professor Alta van der Merwe. I appreciate your effort, patience and pieces of wisdom during and between our work-sessions at the university and at home. Thank you for your hospitality and for allowing me to share your private time while assisting me with the study. I apologise for overloading your Internet bandwidth with countless drafts of my thesis.

Thank you to Professor Hugo Lotriet that assisted Doctor van Loggerenberg in the first part of the journey when I went through the process to identify the problem of a lack of IS ownership in the organisation.

I would also like to thank my colleagues at work for your support, contributions and inspiration. A special thank you to my colleagues that participated in the interviews and the proof of concept of the framework for understanding IS ownership. Anica van der Merwe, I really appreciate your assistance with the word processing. Thank you for always being available for assistance when I asked you - even during your holidays. Eddie Smith, you were an inspiration to me and I thank you for your approach to make me believe in myself.

Thank you to my family and friends who supported my through this study.

Our Lord Jesus Christ: You kept your hand over our family during this journey. You provided strength during difficult times and enjoyed our joy during good times. Thank You for all your blessings and love.

Glory to God!

DECLARATION OF ORIGINALITY

UNIVERSITY OF PRETORIA

Full names of student: Adriaan Jacob Swanepoel

Student number: 76093965

Thesis: Towards a Framework for Understanding Information Systems Ownership

Declaration

1. I understand what plagiarism is and am aware of the University's policy in this regard.

2. I declare that this thesis is my own original work. Where other people's work has been used (either from a printed source, Internet or any other source), this has been properly acknowledged and referenced in accordance with departmental requirements.

3. I have not used work previously produced by another student or any other person to hand in as my own.

4. I have not allowed, and will not allow, anyone to copy my work with the intention of passing it off as his or her own work.

_____

Adri Swanepoel

Signed on the 25th day of June 2015, Pretoria, South Africa.

Table of Contents

List of Figures

List of Tables

Annexures of the thesis

Annexure A: Questions used in the semi-structured interviews

Annexure B: Codes, code categories and themes developed during the study

Annexure C: Proof of Concept – Focus Group discussion summary

Preface to Writing Style

1. Information and Communication Technology (ICT) is more commonly referred to as Information Technology (IT) and pertains to the technology deployed in the organisation. Information systems (IS) pertain to the way that the organisation applies technology, ICT-enabled applications, people and processes for gathering, storing, use and dissemination of information (UKAIS, 1999; Guarino, 1998) or stated more simply: "I.S. is I.T. in use" (Paul, 2010). In this thesis, ICT and IT are used as synonyms (used in Chapter 1 through Chapter 6).

2. In this study differentiation is made between stakeholders and role-players. Stakeholders are the individuals or groups that have an interest in and are affected by organisational activities. Role-players are stakeholders that perform these organisational activities (South African Qualifications Authority, n.d.) (used in Chapter 1 through Chapter 6).

3. Any reference to the male gender in this thesis also implies to the female gender, therefore "he" also implies "she" and "his" also implies "her" (used in Chapter 1 through Chapter 6).

4. This study uses terms as found in profit-driven companies and organisations, although they may also be valid with respect to non-profit-driven companies and organisations (used in Chapter 1 through Chapter 6).

5. The combined concepts of efficacy and effectance are also referred to as "self-efficacy" (Olckers and Du Plessis, 2012; Pierce et al., 2001), or "efficaciousness" (Brown et al., 2014) and are used interchangeably in this thesis (used in Chapter 2, Chapter 4, Chapter 5 and Chapter 6).

6. References were used from interviewees that were interviewed for the study. The interviewees' names were replaced by codes to ensure the anonymity of the interviewees. The codes used were R1 though R12 and the code may refer to an interviewee that is either an executive manager, an IS owner, or both (used in Chapter 4, Chapter 5 and Chapter 6).

List of Abbreviations and Acronyms

1. COBIT – Control Objectives for Information and related Technology (used in Chapter 2, Chapter 4, Chapter 5 and Chapter 6).

2. CEO – Chief Executive Officer (used in Chapter 4).

3. CIO – Chief Information Officer (used in Chapter 4 and Chapter 6).

4. EA – Enterprise Architecture (used in Chapter 4, Chapter 5 and Chapter 6).

5. IS – In this document, "IS" is used as the acronym for *Information Systems* in its plural form and also as acronym for *Information System* in its singular form (used in Chapter 1 through Chapter 6).

6. ISACA – Previously known as the Information Systems Audit and Control Association (used in Chapter 2, Chapter 4, Chapter 5 and Chapter 6).

7. ITIL – Information Technology Infrastructure Library (used in Chapter 2).

8. IT Plan – The IT plan pertains to the alignment of IS resources with the strategies of the organisation (ISACA, 2012a) (used in Chapter 4, Chapter 5 and Chapter 6).

9. RACI Chart – Indicates the responsibilities of the roles and the structures of stakeholders in the organisation (ISACA, 2012a) and may refer to organisational staff members in terms of *responsibility* and *accountability* and who have to be *consulted* and *informed* regarding activities and decisions made (used in Chapter 2, Chapter 4, Chapter 5 and Chapter 6).

10. TOGAF – The Open Group Architecture Framework (used in Chapter 2).

Chapter 1
Introduction

CHAPTER 1 - INTRODUCTION					
Background Section 1.1	Problem Statement Section 1.2	Research Objective Section 1.3	Research Questions Section 1.4	Research Design Section 1.5	Scope of the Study Section 1.6
Structure of the Thesis Section 1.7					
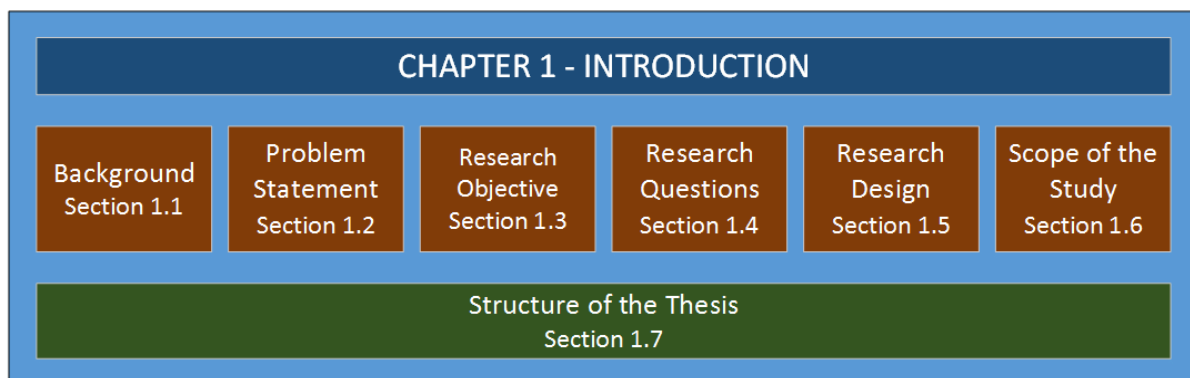
CHAPTER 1 - INTRODUCTION

The goal of the study is to investigate Information Systems (IS) ownership and to develop a framework for understanding IS ownership that can serve as a guide to apply it as a resource in the organisation. Chapter 1 provides the introduction into the study. Chapter 1 discusses the problem where organisations experience that some business leaders that are responsible to leverage IS towards achieving business objectives, are reluctant to "take ownership" of the IS in their business areas. By identifying the main components of "taking ownership of their information systems", it was identified that little guidance exists to assist organisations and business leaders to understand what "taking ownership of information systems" entails. Chapter 1 sets the scene for discussing "taking ownership of information systems in the business areas".

1.1 Background
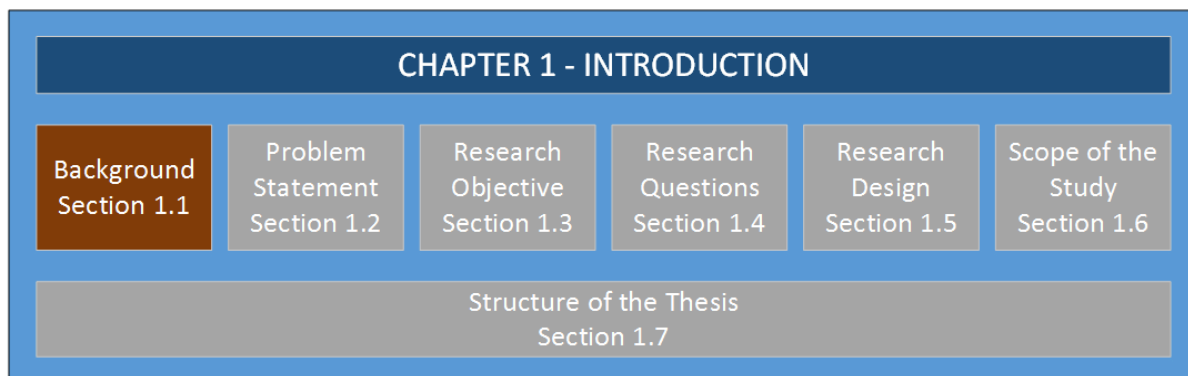
Organisations deploy processes to achieve business objectives in support of the mission of the organisation. Information and Communications Technology (ICT) - enabled business systems, or IS, enhance the ability of the organisation to achieve its business objectives. As with non-ICT business systems, organisations deploy IS with the exclusive aim of achieving business objectives in pursuit of its mission (Kilpeläinen and Nurminen, 2007; Machiraju et al., 2002; Symons, 2005; Teo and King, 1999). Organisations have different opinions of how to optimally select, deploy and utilise IS (Venkatraman, 1997).

IS change over time due to advancement in technologies, improvement of business processes and constant re-alignment with changing business strategies. The

deployed IS range from business specific systems used locally in the business, to commodity systems, which are used throughout and beyond the boundaries of the organisation (Dale, 2004). Selection and appropriation of IS in business areas need guidance from IS owners. The organisation's unique application and utilisation of the business-enabling IS can provide the organisation with a competitive advantage (Le Roux, 2006).

The automation caused by the industrial revolution removed much of the decision-making responsibility of workers. Technology gradually eroded the "ownership" that workers had over their jobs (Choppin, 1996) and with that, also the emotional bonds they had with the organisation. Ownership of business decision-making and other aspects of control moved to the executive managers of the business, resulting in workers becoming mere operators of technology. Low- and mid-level managers were seen as redundant and staff became disengaged from the objectives of the organisation (Choppin, 1996).

For the purpose of understanding, the following core definitions of concepts used in the thesis are provided:

- Information system (IS): An IS is defined as "an ensemble of technologies, processes, information and people applying their knowledge and skills, leveraging organisational resources to achieve some business objective(s)" (Fink and Neumann, 2009; Lehmann and Fernández, 2007; Melville et al., 2004; Orlikowski and Iacono, 2001; Orlikowski, 1992).

- Formal ownership: Formal ownership exists when ownership of a target is recognised by the organisation and the rights of the owner protected by law (or organisational policies) (Pierce et al., 2001).

- Psychological ownership: The sense of possession, i.e. where a psychological owner may feel and refer to the target as "my", "mine" or "ours", forms the core of psychological ownership (Erkmen and Esen, 2012; Furby, 1980, 1978; Olckers and Du Plessis, 2012; Pierce and Jussila, 2010; Pierce and Rodgers, 2004; Pierce et al., 2003, 2001).

- IS ownership: IS ownership is defined as "a relationship established by rights and obligations between an owner and an information system, where the owner becomes responsible and accountable to leverage the information system in pursuit of the objectives of the organisation" (Koiranen, 2007; Lohmeyer et al., 2002; Moffett and Sloman, 1991; Parker et al., 1997; Pierce et al., 2004, 2003, 2001).

1.1.1 Ownership

When competition called for organisations to focus more on the customer as the only source of income for the organisation, they realised that organisational success depends on achieving success in all parts of the business. All resources in the organisation have to contribute to the objectives of the organisation and staff should take "ownership" of their activities (Choppin, 1996; Lohmeyer et al., 2002).

Ownership is categorised by Pierce et al. (1991) into formal ownership and psychological ownership. Formal ownership is acknowledged by society and its associated rights are protected by law. Formal ownership in an organisation is found in ownership arrangements such as delegation of duties and rights, or in direct ownership (Pierce et al., 1991). Forms of formal ownership can also relate to some type of employee ownership sharing in the wealth of the organisation. This form of formal ownership includes social ownership, worker/producer cooperatives, direct ownership and employee stock ownership plans (ESOP) (Pierce et al., 1991).

Psychological ownership is an emotional experience of an individual and is a state of the mind where the owner may feel that the target is "mine". A group of owners may feel the target to be "ours" (Pierce et al., 2001). Psychological ownership draws from the disciplines of sociology, philosophy, psychology and human development (Furby, 1980, 1978; Ozler et al., 2008; Pierce et al., 2001).

Staff members taking psychological ownership of targets find it easier to accept responsibility and accountability, taking care of targets and are less critical of targets (Avey et al., 2009; Furby, 1978; Pierce et al., 2004). Staff members can also act as champions for the targets, promoting user acceptance of the target in the organisation (O'Driscoll et al., 2006). Psychological ownership brings a "*positive psychological*

resource" into the organisation, which can be managed for performance impact and a strategic advantage for the organisation (Avey et al., 2009).

Psychological ownership may decline over time (Pierce et al., 2003, 2001). Retention of psychological ownership depends on the situation, motivational factors, personal factors and changes in the environment. Organisational management should ensure that the conditions suitable to psychological ownership is maintained by addressing the changing factors that can hinder psychological ownership over time.

A combination of formal and psychological ownership provides the strongest form of ownership (Pierce et al., 2003). For the sake of simplicity in this study, "business areas taking ownership of a target" (such as an IS) implies that formal ownership has been offered and is available to the business, while psychological ownership has emerged from within the business. The relationship between formal and psychological ownership and the influence of ownership on the individual and the group is found in the phenomenon of IS ownership in an organisation. IS ownership is an instance of formal and psychological ownership in its generic form and is informed by this generic phenomenon.

1.1.2 IS in organisations

Historically, IS were deployed to automate business processes with the intention to save money, time and resources. A phase of integration between IS and the business processes followed the automation phase. Integration of IS resulted in IS becoming interwoven with the business processes of the organisation (Venkatraman, 1994). Information technologists were expected to ensure that the information technology-enabled processes could deliver on the expectations of stakeholders in the organisation. Furthermore, with the proliferation of IS through the organisation, once isolated business units were brought into the organisation through the commonality of IS deployed in the organisation (Lohmeyer et al., 2002).

IS provide the means for the organisation to, among other things, communicate and collaborate, automate and integrate business processes, process information, keep record of transactions and allow the linking of seemingly disconnected pieces of information with each other (CFO Research Services and PricewaterhouseCoopers, 2004; Gichoya, 2005; Venkatraman, 1997). Many of the mentioned enabling

processes such as the integration of business processes, communication and collaboration and business intelligence initiatives, afford better decision-making in the organisation. In short, businesses need IS to execute business strategies (CFO Research Services and PricewaterhouseCoopers, 2004; Symons, 2005).

IS in the organisation are composed of technology, business processes, business skills, business information and human resources (Fink and Neumann, 2009; Melville et al., 2004; Orlikowski and Iacono, 2001; Orlikowski, 1992). As this extensive view of an IS is wider than normally perceived by business staff, it may result in a change of business's perception of whom should have ownership of the IS. Business should accept that IS are implemented and deployed to enable achievement of business objectives and therefore form an inseparable part of their opportunities to achieve business objectives in the organisation (Kilpeläinen and Nurminen, 2007; Machiraju et al., 2002; Symons, 2005; Teo and King, 1999). Only when an IS proves valuable as a resource for the business (Pierce et al., 2001) and the business unit accepts ownership of the IS in their business area, may the business view the IS discipline as part of their business processes (Lohmeyer et al., 2002).

1.1.3 Role of the IS department

The perceived role of the IS department in the organisation can influence the business units in accepting responsibility for the IS in their business areas. Business areas may view the IS department (and the IS department may act this way) in the role of an independently-run business unit with its own objectives, standards and resources (Lohmeyer et al., 2002). Business units perceiving IS as mainly technology (hardware, applications and communication) and the IS department only as a technology service provider, may believe that the IS department should be the owners of the IS, based on IS department's technological expertise (Guillemette and Paré, 2012). Alternatively, business and the IS department may act in a partnership in pursuit of common objectives, sharing knowledge and resources (Avital and Vandenbosch, 2000; Gaines et al., 2012; Lohmeyer et al., 2002).

As the IS department traditionally served in a supporting capacity to the business, IS managers do not always focus on the same outcomes as business necessitates (Lohmeyer et al., 2002). Lohmeyer et al. (2002) and Parker et al. (1997) argue that

organisations have better chances to excel when employees from all areas in the organisation become more involved in wider aspects of the organisation. Staff members are expected to "feel responsible" for the business beyond their own job obligations and take "production ownership" in their contributions towards business objectives (Lohmeyer et al., 2002).

1.1.4 IS ownership

While a business unit may be quite willing to accept ownership of business processes, accepting ownership of the IS is not an accomplished fact. The IS department may be willing to hand over ownership of IS in certain business areas, but the organisation or the business area may not be ready and/or willing to accept the IS department's willingness to relinquish IS ownership. Unless one or more of the motivational factors for and the means to acquire ownership is present, business managers will be reluctant to take ownership of IS (Pierce et al., 2004). Co-creating business value is only possible if one party accepts the value proposition of investments and the risks of the other party (Spohrer et al., 2008).

IS ownership can be used by the business areas as a resource to ensure IS performance in their pursuit of business objectives (Avey et al., 2009; Lohmeyer et al., 2002). Organisations therefore need to change the way that they perceive and utilise IS. Organisations need to apply their business processes in a manner that allows organisational staff to improve the leverage from IS (Guillemette and Paré, 2012; Lohmeyer et al., 2002).

Lohmeyer et al. (2002) argue that organisations can only fully benefit from their investment in IS if business managers accept IS ownership in their business areas and they change or adapt their business processes to improve the leverage from IS. An IS is a resource that can render a strategic advantage to the organisation if appropriated in an optimal and innovative manner (Gaines et al., 2012). Even though the IS department and the business believe that IS ownership residing in the business may have benefits for the business, the business may be reluctant to accept the responsibility and accountability for the IS applied in the business unit.

Business leaders that do not accept ownership of the IS in their business areas, place the organisation at risk that the IS may not be optimally utilised, resulting in business

areas not achieving their organisational objectives. Organisations may miss the opportunity to optimally leverage the IS as a strategic asset in the organisation.

This study focuses on the phenomenon of IS ownership in the organisation. The concepts of formal and psychological ownership in general and that of IS ownership in particular, are examined in Chapter 2.

1.2 Problem statement
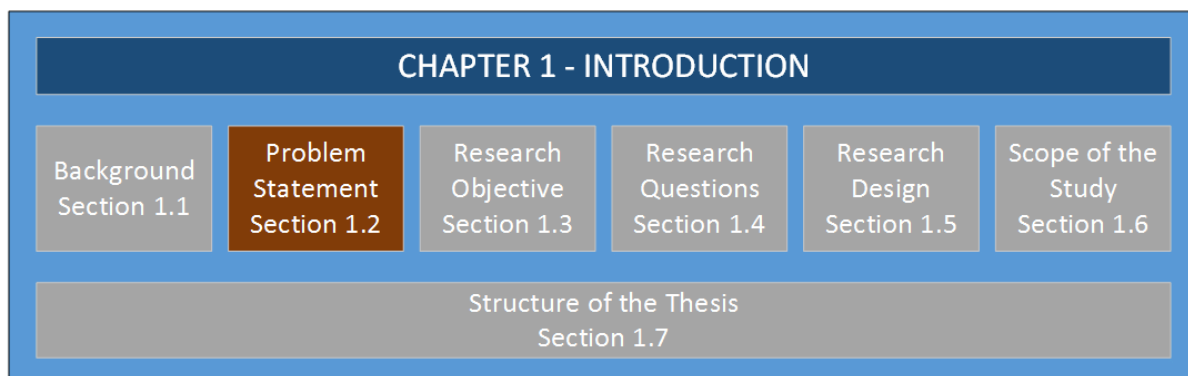
Little guidance exists about what can be owned psychologically (Pierce et al., 2001) and formally (Grover et al., 2007) and it is evident that business requires guidance to promote, enable and manage IS ownership in its various forms. Pierce et al. (2003) argue that a combination of formal and psychological ownership provides a stronger bond between the owner and the target. Although organisations may have processes or guidelines to assign formal ownership to business leaders and staff members, it is not the case with psychological ownership (Pierce et al., 2003). Psychological ownership is personal and affinity for ownership of the specific target depends on personal factors, target attributes, the organisational environment, culture and the situation wherein psychological ownership may be taken. Care should be taken not to create conditions where psychological ownership may be overdone and may lead to deviant staff behaviours (Pierce et al., 2001).

IS in an organisation remain complex in their composition and businesses rely on the speciality services from the IS department to assist with the technical aspects of the IS. This reliance places an obligation on the IS department that may have different objectives and expectations from the IS than the business unit. The objectives and expectations of the IS department depend on the accepted role of IS in the

organisation (Guillemette and Paré, 2012; Lohmeyer et al., 2002). The role of the IS department may for instance only be to provide technical support. In a more mature environment, the IS department may be expected to form part of the business solution through its knowledge and commitment to the business outcomes of the business area (CFO Research Services and PricewaterhouseCoopers, 2004; Venkatraman, 1997, 1994). To optimally leverage its IS in pursuit of business objectives, business and other stakeholders such as the IS department need to have at least some combination of formal and psychological ownership of the IS used in the business.

The research aims to gain a better understanding of IS ownership in the organisation and explores why some business leaders are reluctant to take psychological ownership of IS, even though they have formal ownership of an IS. Business leaders acknowledge that they are owners of the business processes of the organisation, but seem to lack the motivation taking ownership of IS in their business areas (Lohmeyer et al., 2002). The research problem is stated as: "*Many business leaders are reluctant to take ownership of the IS in their business areas, missing the opportunity to utilise IS optimally as resource in the organisation.*"

The other side of this argument is also evident and forms an integral part of the research problem: *IS departments are sometimes reluctant to part with the IS that they have developed and/or implemented.* Although the emphasis of this research is on the reluctance experienced by business leaders to accept ownership of IS, the reluctance of IS departments to hand over such ownership is neither under-estimated, nor ignored.

1.3 Research objective
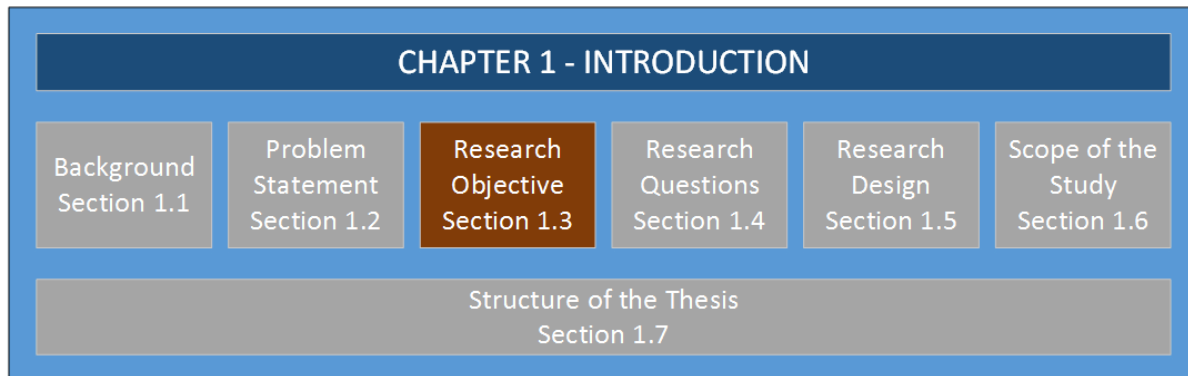
The study includes an investigation into what IS ownership means to the business areas and what they believe can be achieved by business leaders accepting IS ownership. Understanding what entices the business leaders to accept ownership of IS in the organisation contributes to the understanding of IS ownership in the organisation.

The levels of analysis of the study focus on the phenomenon of IS ownership at the levels of:

- An individual that is assigned an IS at the lowest level;

- A group or business unit where the executive manager has the authority to assign an IS to the business leader;

- The senior executive manager who is responsible for a group of business units at its highest level.

The results of the study are presented in a descriptive manner, enabling the organisation to use IS ownership as a resource in their challenge to achieve business objectives.

It has been argued earlier that IS ownership is required for business to successfully leverage the IS in pursuing business objectives (Machiraju et al., 2002; Symons, 2005; Teo and King, 1999). With (IS) ownership being a complex phenomenon (Orlikowski, 1992; Pierce et al., 2001) and in the absence of literature discussing all the aspects of IS ownership (formal ownership together with psychological ownership, existing and being applied in the organisation), it may be argued that IS ownership is not

comprehensively understood in the organisation. This lack of understanding IS ownership impedes on the opportunity to use IS ownership as a tool to leverage IS better in the business areas of the organisation. The objective of this research is therefore to contribute to the literature and the organisation by suggesting a "*framework for understanding IS ownership in the business environment.*"

The next section discusses a question-based approach to identify the manner in which the framework for understanding IS ownership can be structured.

1.4 Research question
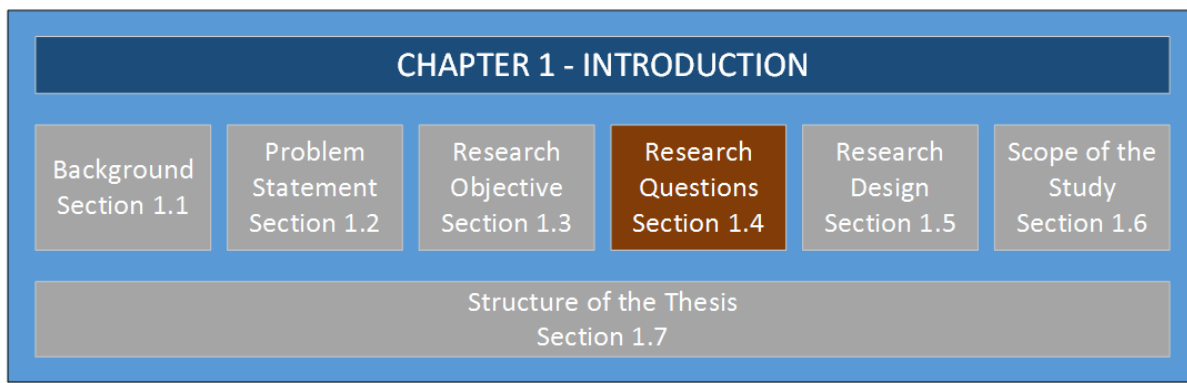
A study of IS ownership in a financial services organisation requires a better understanding of all forms of IS ownership in the organisation. As IS ownership is influenced by personal factors, target attributes, organisational factors and factors arising from the relationships between individuals in the organisation, the data is mainly qualitative in nature.

A research project originates with the identification of a problem that is expressed in terms of a question (Roode, 1993). The researcher should ask why he wants to conduct the research (Holden and Lynch, 2004; Maxwell, 2005). The researcher may argue that he wants to discover the truth about a specific phenomenon, wants to understand what are the reasons leading up to the occurrence of the phenomenon or why someone acts in a specific manner partaking in the phenomenon. The reasons why the study is undertaken, inform the design of the research strategy (Olckers, 2011).

To suggest a framework for understanding IS ownership in the organisation poses the research question of: "*What are the components of a framework for understanding IS ownership in the organisation?*"

To address the research question, a number of in-depth questions can now be asked

- What is IS ownership?
- Why do we need IS ownership in the organisation?
- Who should own the IS in the organisation?
- Why are some business leaders hesitant to take IS ownership?
- How should the organisation structure the IS-business alliance?
- How should IS ownership be managed to be a positive resource in the organisation?

Addressing the questions above necessitates a better understanding of IS ownership.

IS ownership is a complex phenomenon and is influenced by several factors including:

- The attributes of the ownership target;
- Organisational factors such as the structure and culture of the organisation;
- The perceived scope and role of IS in the organisation;
- The personalities of the employees offering (executive managers) and receiving (business leaders) IS ownership;
- The ability of the employee to optimally utilise IS, given the control afforded by the IS, the organisation and the job assignment;
- The timing and conditions wherein IS ownership is offered and accepted.

IS ownership is multifaceted and it is therefore necessary to approach the research from multiple angles. The research design reflects the multi-angled approach to study the concept of IS ownership (Roode, 1993). Approaching a research project from a specific philosophical stance and the view of the nature of society has a direct influence on the approach that the researcher will follow. Roode (1993) proposes a framework to approach a research study from multiple angles. The approach is informed by the type of questions that the researcher wants to be answered by the study. Researchers may ask "*What is?*", "*How does?*", "*Why is?*" and/or "*How should?*" questions, depending on their research intent (Roode, 1993).

Researchers asking a *"What is?"* type of question focus to explore the underlying nature of the research problem. The outcome of the study will enable the researcher to provide a "precise and unambiguous" description of the phenomenon being studied and "What is?" may be asked if the research approach is interpretive in nature. Researchers asking a *"How does?"* type of question have an objective focus. Researchers may observe the research phenomenon directly and describe its materialisation as it occurs. The *"Why is?"* type of question leads researchers to understand the characteristics of a phenomenon. These questions unveil relationships between entities in the research domain and enables generalisation of the problem domain. A functionalist may typically ask the "Why is?' question. Asking *"How should?"* enables the researcher to evaluate and seek understanding of the research phenomenon and may typically be asked by a pragmatist. The results can be used prescriptively or it can be used to improve the understanding of the phenomenon (Roode, 1993).

The four questions are mutually exclusive, as they each explores different aspects of the problem at hand. Roode (1993) argues that researchers should ask all four discussed questions in researching phenomena. Roode refers to the framework as "processed-based" to indicate the deliberate use of different sets of assumptions instead of the researcher's single point of view in her or his approach to the research. There is no linear relationship between the questions and the research situation will determine which questions are relevant to the research and in what order the questions should be asked (Roode, 1993).

The outcome of the study is a framework for understanding IS ownership that can be used to leverage IS optimally in pursuit of the objectives of the business areas. To understand the concept of IS ownership, the study approach can be focused by applying the processed-based framework (Roode, 1993). The following table depicts possible high-level questions to be asked. The table also provides motivations for asking the questions (based on Le Roux, 2006; Roode, 1993; Yin, 2003). Each high-level question is augmented by one or more in-depth questions:

Table 1 - Development of the research questions (Adapted from Le Roux, 2006, pp. 87 – 88; Yin, 2003; Roode, 1993).

High-level question	Low-level questions	Reason for question
Question 1: What is IS ownership? (See Chapter 2, section 2.4 and Chapter 5, section 5.2.2)	• What is business leaders' perception of IS ownership? • To what extent do business leaders perceive themselves to be responsible and accountable for the IS in their business areas? • How do business leaders experience IS ownership? • What are business leaders' concepts of IS?	Answering this question will render a common understanding of IS ownership in the organisation.
Question 2: Why do we need IS ownership in the organisation? (See Chapter 2, section 2.4.6.3, section 2.4.8.6 and Chapter 5, section 5.2.3)	• From an organisational perspective: Why should IS have owners? • From an individual perspective: Why should I accept or develop ownership?	Answering this question will provide a rationale for IS ownership.
Question 3: Who should own the IS in the organisation? (See Chapter 2, section 2.4.1 and Chapter 5, section 5.2.4	• Which business area is best suited to leverage IS in pursuit of business objectives? • Which individual (or group) is best placed to optimise the leveraging of the IS in the organisation?	Answering this question will assist in identifying the best area and candidates for placing the IS in the organisation.
Question 4: Why are some business leaders hesitant to take IS ownership? (See Chapter 5, section 5.5.3)	• What are the consequences if business leaders do not take ownership of the IS in their business environments? • What can the organisation do to assist business leaders to take IS ownership? • What are the contributors that promote or erode IS ownership?	Answering this question will assist to understand business's reluctance to "own" it's IS. This information is necessary to create a point of departure to create a common understanding of factors that cause IS ownership to remain in the business environment, or revert to the IS department
Question 5: How should the organisation structure the IS-business alliance?	• How should the IS support be structured to be compatible with the relevant IS-ownership structure?	It is imperative that the roles and responsibilities for IS owned by the business be clear and unambiguous. This will ensure

High-level question	Low-level questions	Reason for question
(See Chapter 5, section 5.4.3)	• How are decisions made with respect to the IS ownership structure? • What are owner-stakeholder responsibilities? • How should business retain the economies of scale, present in centralised ICT services, in the areas where IS ownership resides with the business? • How should standardisation and good practices be applied in the areas where IS ownership resides with the business?	that ownership is tied down to specific stakeholders.
Question 6: How should IS ownership be managed to be a positive resource in the organisation? (See Chapter 5, section 5.2.5)	• How should IS ownership be constructed? • How should IS ownership be managed?	This question addresses how the application of an IS in the organisation can be optimised.

Evaluating the research questions on a high level may indicate to the reader that ownership of IS in the organisation is not a matter of merely offering it to the business (delegation of authority/duty/responsibility). The attributes of the target, circumstances on an organisational, personal and environmental level, as well as other factors, play a role in taking psychological ownership of an offered target.

1.5 Research design

CHAPTER 1 - INTRODUCTION

Background Section 1.1	Problem Statement Section 1.2	Research Objective Section 1.3	Research Questions Section 1.4	Research Design Section 1.5	Scope of the Study Section 1.6

Structure of the Thesis
Section 1.7
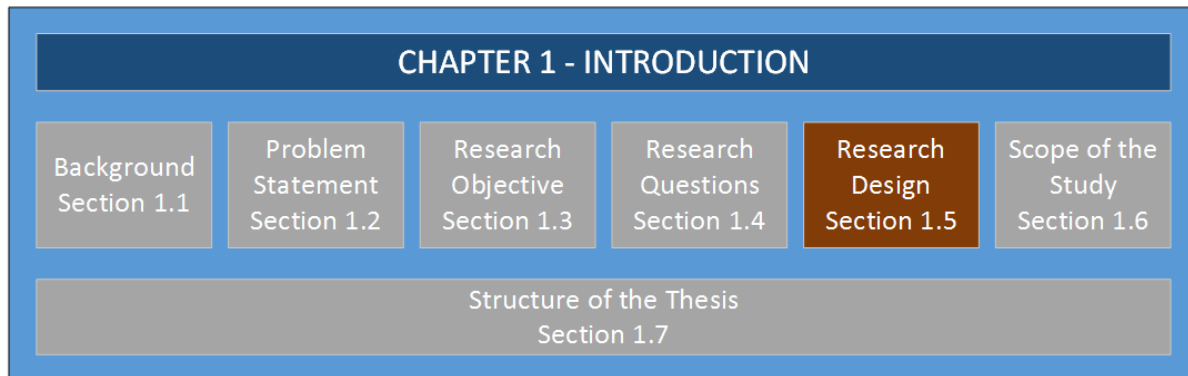
In this study of IS ownership, the researcher interprets data acquired from literature, organisational artefacts and interviews to make meaningful understanding of IS ownership in the organisation. The researcher uses phenomenology as a strategy to acquire an understanding of IS ownership. Data is collected from IS ownership stakeholders through semi-structured interviews. The cross-sectional study renders qualitative data. Interviews are recorded and transcribed using Microsoft Word. Atlas.ti is used to code and analyse the text acquired from the field to inductively develop an understanding of IS ownership in the organisation. Relationships between IS ownership stakeholders are identified and analysed through the lens of social exchange theory.

The study requires that the context wherein IS ownership is placed and managed, the perceptions and actions of the stakeholders in the business and the personal motivations or reservations for having IS ownership, are understood. The study follows a research approach structure proposed by Saunders et al. (2012). The composition of the research framework is as follows:

- The philosophical stance of the researcher is *interpretive*;

- The research is done *inductively*;

- A *phenomenological* research strategy is followed;

- The data of the study is *qualitative* in nature;

- The time horizon of the study is *cross-sectional*;

31

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

- The techniques to acquire data for the study are to conduct a *literature review*, to apply literature pertaining to generic ownership to IS ownership, to conduct *interviews* with IS ownership role-players in the financial services organisation and to *use existing organisational artefacts*;

- The acquired data are *coded* with the assistance of a text analysis tool. The data is viewed through the lens of *social exchange theory* to provide focus for the analysis;

- A *focus group* session is conducted to acquire an indication of the applicability of the framework for understanding IS ownership in the organisation.

The research process is depicted in Figure 1.
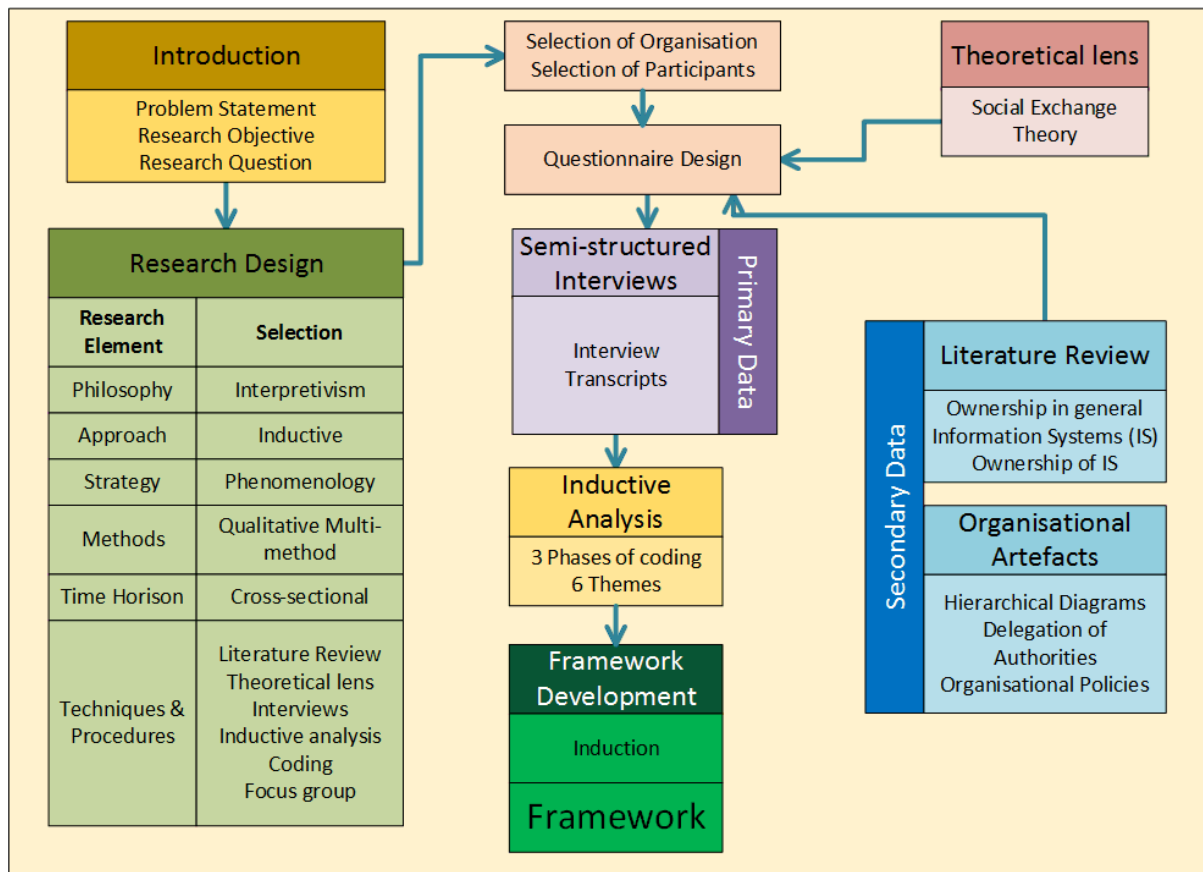
Figure 1 - Research Process

The design of the research approach is discussed in more detail in Chapter 3, section 3.2, which also provides reasons for the selection of the research framework components.

1.6 Scope of the study
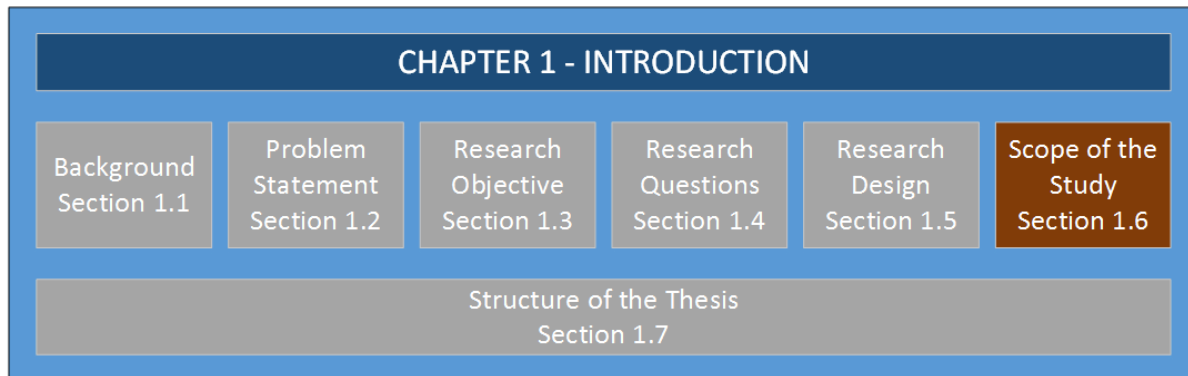
The concern of this study is the ownership that business leaders have of the IS in their business areas to achieve their business objectives. The conceptualisation of IS ownership by business leaders, executive managers, users and IS-departmental staff should provide an insight of how IS ownership is interpreted and how IS ownership functions in the organisation.

The study investigates the advantages and limitations of IS ownership and identifies influencing factors determining the placement of IS ownership within the organisation. The outcome of the study is a framework that provides an understanding of IS ownership in the organisation, which can assist organisation to manage IS ownership to the advantage of the organisation.

The study is conducted in a financial services organisation that have multiple and heterogeneous IS and performs multiple and heterogeneous functions, including the provision of research, oversight and regulatory services. Analysis of the data acquired from the organisation is done over mainly two levels, being that of IS owners at mid-level management and at the level of executive management that assigns the responsibility of the IS to the IS owners.

1.7 Structure of the thesis
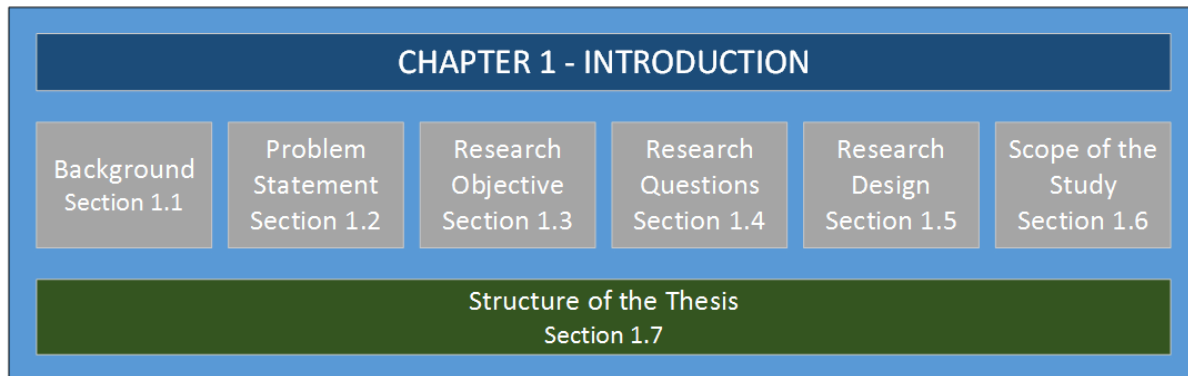
Chapter 1 – Introduction

The introduction of the thesis places the roles of Information Technology, IS and the IS department in the organisation into context. The description of IS ownership in the organisation provides a common ground for the business leaders of IS as users and the IS department as custodians of IS in the organisation. Chapter 1 introduces the concepts of ownership forms and discusses the emergence of psychological ownership. Questions related to the rationale, placement of IS ownership and the consequences of having IS ownership are posed in this chapter.

The problem statement, study objective and main research question are presented in this chapter. A short introduction to the research design, approach and the use of a phenomenological field study are provided.

Chapter 2 – Literature review

The literature review investigates what types of ownership can be found in the organisation and also discusses the special case of IS ownership in the organisation. Defining IS depends on the perceived scope and role of IS, which informs the type and level of ownership offered by management and perceived by employees. In the case of organisation-wide deployed IS, the ownership thereof may be shared between business units or owned by the IS department, while niche IS may be solely owned by the relevant business leaders.

Chapter 3 – The research approach

Chapter 3 provides more in-depth explanations about the research design, approach, epistemology and pragmatic issues of the design. The reasoning behind performing the study in a financial services organisation with a diversity of functions, IS and IS role-players functioning at multiple levels of seniority and roles is provided in this chapter.

Chapter 4 – Research setup and data acquisition and analysis

Chapter 4 documents the research setup, data collection process and the analysis of the data. This chapter informs the reader about the data sources used, the methods used to acquire the data and how the data relates to the research approach. Using a focus group session to acquire an indication of the contribution of the IS ownership framework is discussed as a data collection method.

In this chapter, the analysis of data acquired from IS owners and executive managers in the financial services organisation is documented. Analysis creates a better insight into the phenomenon of IS ownership in the organisation. Through interpretation, the researcher provides credible explanations on the researched phenomenon. The findings are discussed and reasons for interpretation provided.

Chapter 5 – The IS ownership framework

Chapter 5 commences with a preliminary question-based framework (section 1.4) that is developed from the business problem discussed in Chapter 1 (section 1.2). Relationships between data from the literature in Chapter 2 and data acquired from IS owners and executive managers in Chapter 4 provide the basis to expand on the question-based framework.

Being an interpretive study, data analysis provided information beyond the spoken word from the interviewees. Aggregating the data from various sources, using a social exchange lens and basing the resultant data on IT governance and management principles, the design of a framework to understand IS ownership is enabled.

Chapter 6 – Contribution and Conclusion

Chapter 6 discusses the contribution of the study to the field of IS research and the pragmatic contribution of the IS ownership framework as a valuable artefact in the organisation. To get an indication of the applicability of the framework in the organisation, the framework is submitted for discussion to participants in a focus group session. The group comprised of executive managers and IS owners from the business areas. The specific contribution of the framework within the organisation and the contribution made to IS research are also discussed in Chapter 6.

The chapter provides a summary of the study and verifies that all research questions were addressed. Chapter 6 also discusses the application of the IS ownership framework in the organisation. Limitations of the study, suggestions for future research and the conclusion of the study finalises the chapter.

Chapter 2
Literature Review

CHAPTER 2 – LITERATURE REVIEW			
Introduction Section 2.1	Ownership Section 2.2	Information Systems Section 2.3	Information Systems Ownership Section 2.4
Gaps in the Literature Section 2.5			
Summary Section 2.6			
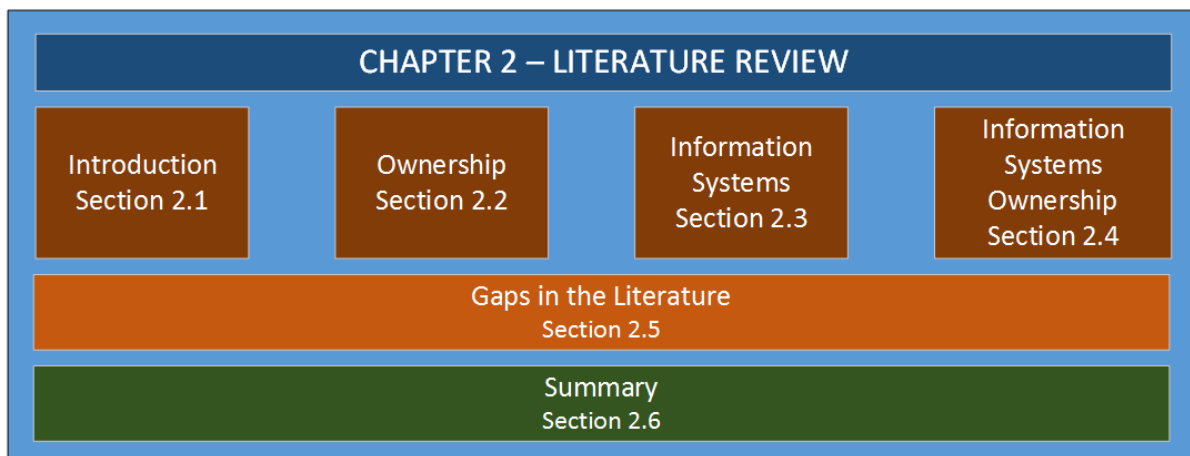
CHAPTER 2 – LITERATURE REVIEW

In Chapter 2, the literature review is presented, which provides a theoretical background for the creation of a framework to understand IS ownership. Chapter 2 as depicted in Figure 2 addresses Question 1 in Table 1 of Chapter 1: "What is IS ownership?" Question 2: "Why do we need IS ownership in the organisation?" Question 3: "Who should own the IS in the organisation?"
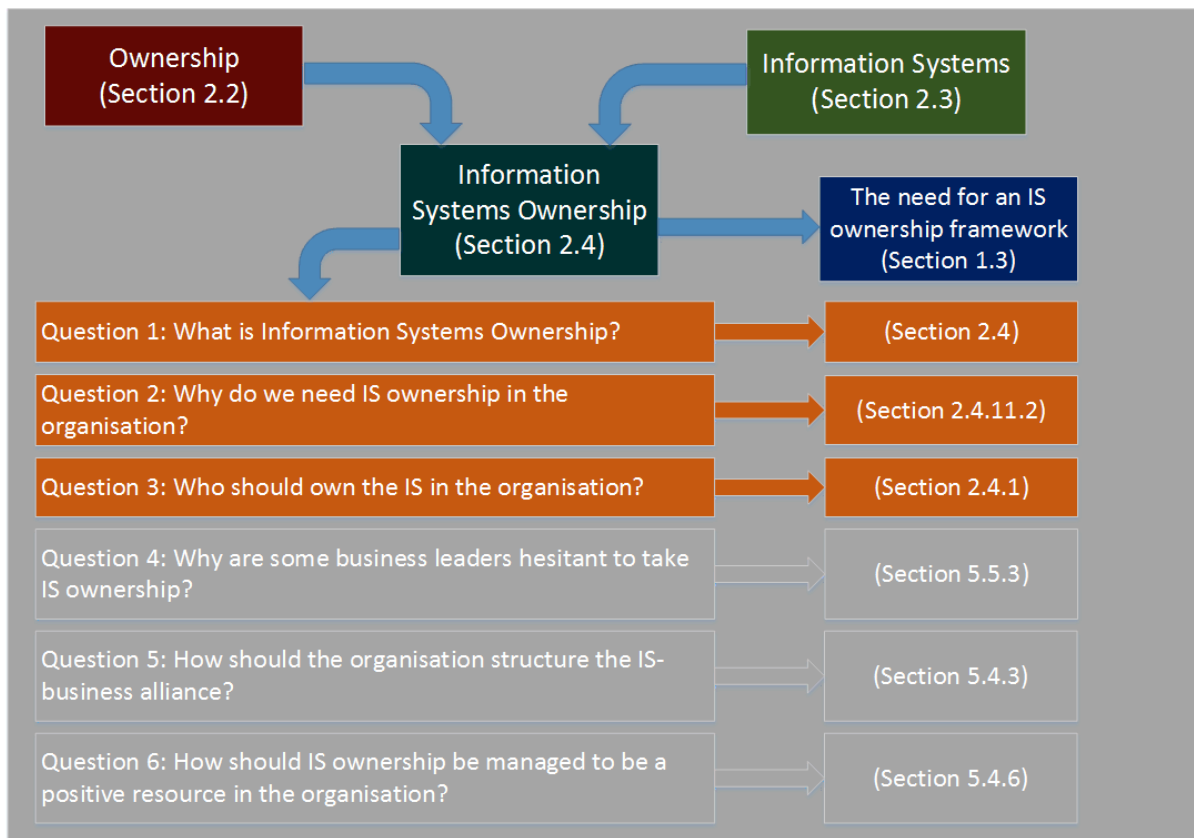
Figure 2 - Towards developing an understanding of IS ownership (part 1)

2.1 Introduction
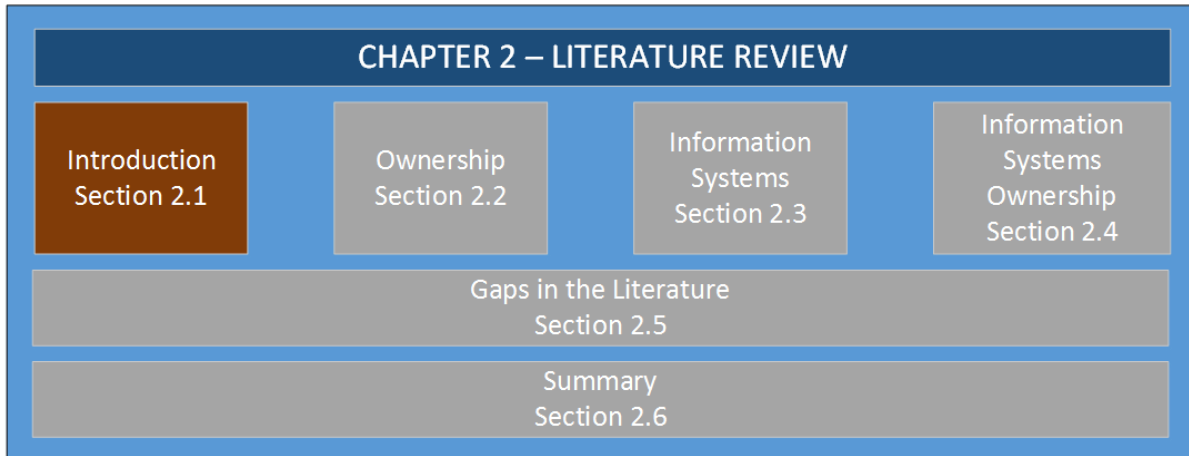
IS ownership as a phenomenon in the organisation has three main areas of concern, namely the generic concept of ownership (section 2.2), the concept of information systems (section 2.3) and the role of ownership in IS specifically (section 2.4). In section 1.3 in Chapter 1, the need for a framework to understand IS ownership is discussed as the objective of the study in order to address the research problem. The components that have been identified as the three main areas of concern of such a framework are depicted in Figure 3.
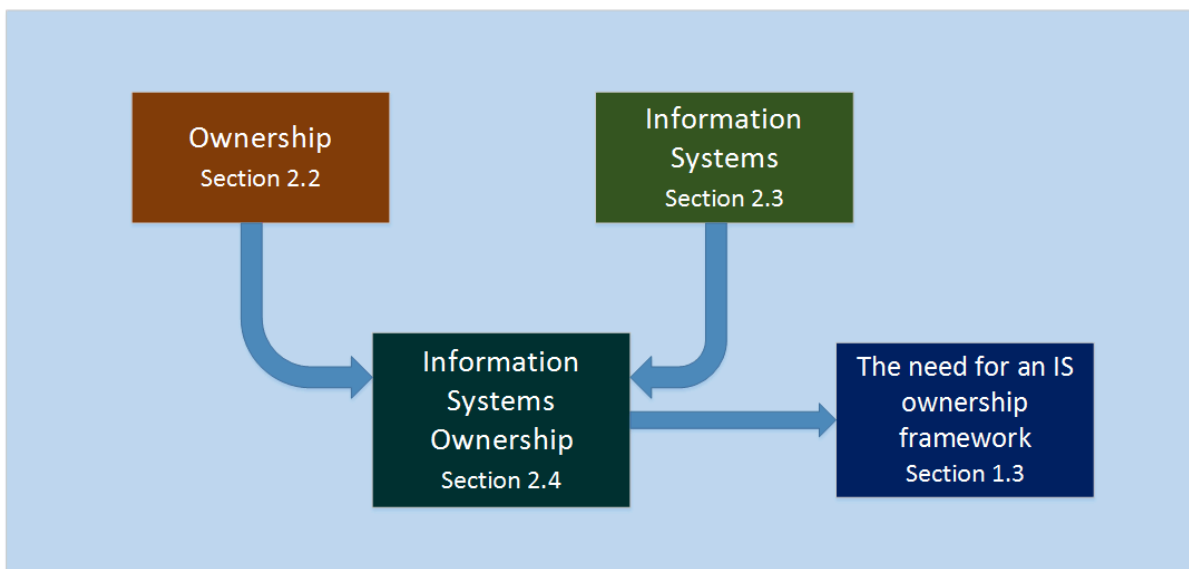
Figure 3 - Three main areas of concern of an IS ownership framework

The concept of ownership has not significantly changed over time. Veblen (1898, p. 352) posits that "the ground of ownership is commonly conceived to be the productive

labor [*sic*] of the owner." Veblen's idea has been accepted by socialist as well as capitalists. Capitalists had a more difficult task than socialists to convince others that one could also be deemed the "'producer' of the goods that pass into his possession…" and that new ownership may emerge through the "expenditure of productive force" (Veblen 1898, pp. 352-353). Accepting that something that was produced by one person could now be owned by another was the start of industry. Veblen (1898, p. 353) refers to the concept of industry by positing that "Production takes place only in society – only through the cooperation of an industrial community", while Le Roux (2006) states that companies exist to render service or produce to entities in the economic community.

Although it is traditionally accepted that owners have the right to use their belongings as they see fit, Veblen (1898) suggests a different form of ownership where one person may act as the owner of an object, while in fact it may belong to another. This ceded form of ownership is found in an organisation where control of an organisation is spread amongst a group of people where no one person has unlimited rights over ownership targets. Veblen (1898, p. 358) argues that corporate ownership only resembles ownership ("quasi-ownership"), as employees have only limited rights over organisational targets. Furby (1980) distinguishes between personal possessions where the owner has exclusive rights over using the target, *versus* collective or shared ownership where decision-rights are shared amongst multiple owners.

This study investigates the phenomenon of ownership and more specifically that of IS ownership in an organisation. This chapter firstly investigates literature pertaining to ownership as it is generally found and then ownership of IS as a specific phenomenon in a financial services organisation. Understanding ownership of a target in the organisation should be seen in the context where the target is owned by employees of the organisation.

Employees are expected to take care of and utilise ownership targets, which may include business processes, -objectives and -environments in the organisation. Owners of organisational properties need to acknowledge their rights, but also their obligations towards these targets. This study investigates whether "having ownership" of these targets addresses the concerns of the organisation as a "client" (receiving

services from the employees) and also as an employer of the staff members. The process where the organisation offers formal ownership to staff members and staff members accepting or rejecting the ownership (formally and/or psychologically) constitutes a transaction between two or more parties (Avey et al., 2009; Zhang et al., 2008). The study also inquires why employees may accept or reject ownership of a work-related ownership target. Ballantyne (2003) posits that ownership is "taken" rather than "given", which is a strong indication that ownership should not be forced onto an employee. Organisations should not expect that delegation of the ownership of a target is a simple matter of informing the staff member that "it was decided that" he is now responsible for the target and should take ownership thereof.

The intention of assigning ownership of a business-related target is not about the physical transferral of the ownership of the target, but rather a situation where employees feel and behave as if they own the target (Baines, 1998; Olckers and Du Plessis, 2012). To understand the phenomenon of ownership as it exists, emerges or diminishes in an organisation, requires an understanding of, among other things*:*

- The components of ownership;

- The nature of this phenomenon in the micro- and macro organisational environment;

- The causes and the implications thereof on all stakeholders in this environment.

Understanding the organic and functional nature of ownership within its technological, organisational, sociological, psychological and environmental contexts, renders a better understanding of ownership in an organisation.

Table 2 depicts the aspects that the literature review covers:

Table 2 - Literature review - Research Areas

Area of research	Reason for researching this area
Ownership	This research area describes the origins of ownership in general and the role that ownership plays in the sociological composition of the organisation, the influence thereof on the staff of the organisation and the interaction between entities within the ownership concept. (See section 2.2).

Area of research	Reason for researching this area
Forms of ownership: Formal ownership	Formal ownership is a form of ownership that can be acquired through delegation, inheritance, procurement or acquisition in other legal manners. This form of ownership defines the rights over and the obligations towards the entity. Researching formal ownership will afford the reader a better understanding of organisational structures and processes devised to position ownership of an own-able entity in the organisation. (See section 2.2.2.1).
Forms of ownership: Psychological ownership	Psychological ownership refers to the emotional attachment of a person or groups of people to an own-able target. Targets can be tangible or intangible, simple or complex, utilitarian or aesthetic, alive or inanimate, or of any form or nature. Understanding psychological ownership will enable the researcher to link the affinity for an own-able target to users' behaviour in their working environment. (See section 2.2.2.2).
Stakeholders and role-players in the organisation	The organisation's stakeholders comprise groups or individuals that can affect (or are affected by) the organisation or the reputation of the organisation. These stakeholders include shareholders, investors, customers and employees. (See section 2.2.3).
Expectations, rights and obligations of role-players	People have certain expectancies with regards to the ownership of own-able targets. The researcher reflects on the causality between ownership and organisational expectations, balanced and unbalanced rights and obligations and the affinity for taking ownership of a target. (See sections 2.2.4 and 2.2.9).
Distribution of ownership	Ownership of a target may be the seated in a single owner, or may be shared between multiple owners. Sole ownership is a stronger form of ownership than shared ownership, since decision-making powers is concentrated within the sole owner, while multiple owners may influence decision-making in shared ownership. (See section 2.2.5).
Influences on ownership	Several factors may influence a business leader to develop ownership of a target. The influences may be related to factors that relates to the attributes of the target, to factors relating the prospective owner, factors related to the

Area of research	Reason for researching this area
	assignment of the target or factors related to the environment wherein the ownership is offered. (See section 2.2.6).
Ownership targets	Own-able targets have certain attributes that promote the attractiveness to be owned. Researching this phenomenon informs the researcher how the target relates to ownership and what the organisation can do to improve the attractiveness of the target for the owner to promote ownership. (See section 2.2.7.2).
Transfer of ownership	When a business leader accepts ownership in a formal or psychological manner, the ownership may result in outcomes that may be to the satisfaction of one, both, or neither of the parties involved in the transaction of offering and accepting ownership. By studying the effects resulting from the ownership transaction, a better understanding and predictions of the outcomes of the transaction is acquired. (See section 2.2.8).
Information Systems	With IS ownership as a special case of an organisational target, acquiring a comprehensive view of IS creates a better understanding of IS ownership. (See section 2.3).
Information Systems as target for ownership	Clifford (2008) asks what is "own-able". According to Pierce et al. (2001), targets should be visible, available and attractive. IS are dispersed through the organisation and serve diverse areas such as base infrastructure deployed over several business areas, while niche applications may service a small group of specialised staff in a single business unit. Because of IS's wide application, identifying what IS targets are "own-able" by the business is a complex process. (See section 2.3.3).
Promotion of IS ownership	Managers could make IS more own-able by making the target more visible, attractive and accessible to employees. By addressing the determinants of psychological ownership, such as allowing more freedom in employees' jobs resulting in higher levels of control over IS, the development of psychological ownership is promoted (Pierce et al., 2001). Psychological ownership of IS may also lead to deviant behaviours, for example when employees become overzealous in owning an IS. Organisations need to

43

Area of research	Reason for researching this area
	understand the effects of ownership on individuals in order to manage the levels of IS ownership afforded to employees. (See section 2.4.7).
Outcomes of IS ownership	Business leaders and executive manager enter into an IS ownership agreement that is perceivably fair to both parties in terms of their expectations documented as rights and responsibilities. By comparing the outcomes of IS ownership, IS owners and the organisation evaluate whether their expectations were achieved. Should the expectations of both parties deem the outcome of IS ownership to be successful, the relationship between the parties will be strengthened. Where a party's expectations were not met, the party will attempt to change the IS ownership agreement or to get out of the IS ownership agreement. (See section 2.4.7).
IS ownership value for business	Users' and business' conceptions of IS determine what the business understands IS to be. The conception of IS in the organisation may influence the perceived value that business leaders believe they can derive from having increased control over IS (Dale, 2004; Feld and Stoddard, 2004). (See section 2.3.1).

2.2 Ownership in general
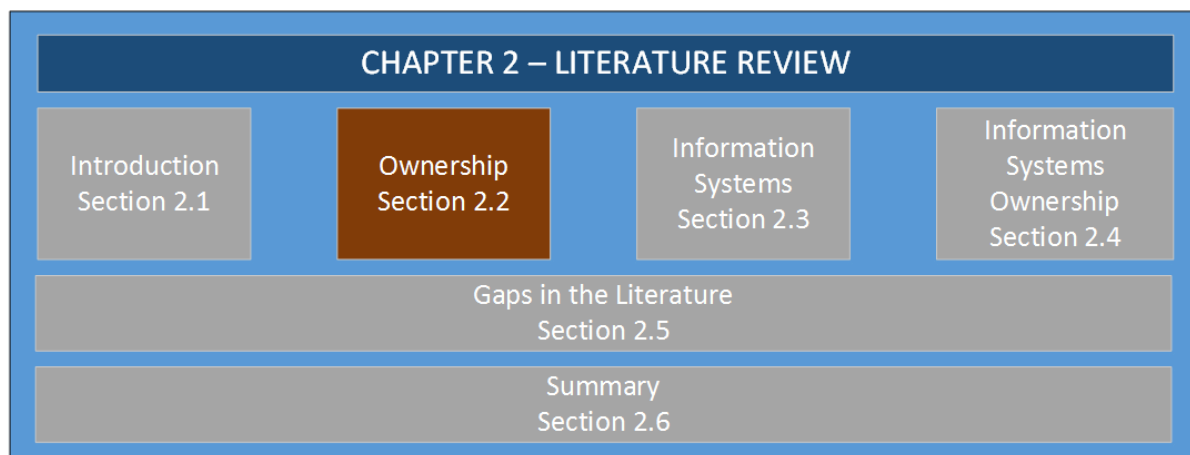
Mackin (1995) emphasises that many dissimilar theories exist about ownership. Ownership, as a concept, has been widely researched and its meaning discussed in disciplines like philosophy, law, finance, economics and psychology (Nordqvist, 2005).

Ownership within the context of an organisation with shareholders, management and employees forms the focus of this study.

Organisations typically assign responsibilities to business areas that specialise in specific disciplines to support the organisational strategy. For instance, the marketing department will not involve itself with litigation if the company has a dedicated legal department. Based on this diversity of responsibilities in the business areas, business units define objectives that support the overall organisational strategies. Pursuing organisational objectives may be linked to the business areas' reasons for existence, satisfying expectations of executive managers, reacting to pressures from the environment, organisational initiatives and/or other internal and external influences (Davies et al., 2005; Nordqvist, 2005).

Executive managers leading the business areas are held responsible by the shareholders for achieving business objectives. Within their powers of leading the business areas, executive managers delegate or assign part of their responsibilities to employees within the business area to assist with achieving these objectives (Huang et al., 2008; Zhang et al., 2008). The assigned responsibility may be linked to a management expectation that an employee should take care of and leverage one or more business system, task or resource to achieve specific business objectives. The type and level of responsibility for the target is formalised within the policies and norms of the organisation (Broadbent and Weill, 2003). Assigning responsibility to one or more employees can also be seen as bestowing ownership of the targets to these employee(s). The business unit will therefore assign formal ownership of a target to an owner to improve the opportunity to achieve business objectives.

Ownership of an object, concept, idea, in tacit or any other form is a complex phenomenon (Mackin, 1995; Pierce et al., 2003). Koiranen (2007) defines ownership as the relationship between an owner and the target for ownership. The relationship can be of a nature where it is recognised by society as formal ownership, or it can be of personal nature where the individual or group has an emotional bond with the target, referred to as psychological ownership (Pierce et al., 2003, 2001).

The prospective owner expects a balance of rights and obligations when taking ownership of the target (Demsetz, 2010; Olckers and Du Plessis, 2012). Rights may

45

include the right to the use of the target, deciding who may use the target, some financial returns linked to the target, acquiring information about the target, the status linked to owning the target, or other generic or specific rights afforded by ownership of the target. Obligations may require that the owner has to assume responsibility for the target, invest time and effort into the target, take care of the target, champion the target, leverage the target in pursuit of an objective, or other obligations linked to the target. The perceived balance between rights and obligations may in turn, influence the relationship between the owner and the target. Should the perceived obligations outweigh the associated rights, the owner may seek ways to end having ownership of the target. Conversely, if the rights exercised by the owner exceed the return of investment expected by the management, management may wish to demand higher outputs from the employee or may wish to remove ownership from the employee.

Organisations have been looking at employee ownership as a possible solution to improve the bonding between employees and the organisation (O'Reilly, 2002). Organisations can typically apply one or more employee ownership initiative(s) to promote employee-organisational bonding (Pierce et al., 1991). Employee ownership initiatives may be in the form of, among other things, co-operatives with joint ownership and democratic control, direct ownership where employees have shares in the organisation and indirect employee ownership, where shares are kept and managed in a trust for employees. Empirical research related to employee-ownership plans, however, shows no positive relationship between owning shares or financial equity in an organisation and an employee's bond with the organisation (O'Reilly, 2002; Pierce et al., 1991). Ownership initiatives that allow employees to participate in organisational decision-making show more positive results in bonding the employee with the organisation (Choppin, 1996). Psychological ownership is displayed in the positive reaction resulting from ownership initiatives (Pierce et al., 1991).

In the organisational setup, the organisation is able to task an agency in the organisation, whether it is an individual, group of employees, or one or more departments to perform specific activities to pursue organisational objectives. Through this action of assignment or delegation, the assignee is awarded the responsibility over the process, system and/or resources in order to pursue

46

organisational objectives. This delegation of responsibility over a target to pursue an objective can be construed as providing the employee or group with formal ownership of the target.

Both the concepts of formal and psychological ownership as different forms of ownership are explored in this research. Formal ownership in the organisation includes delegation of powers and task- and management assignments for specific initiatives, systems and resources, allowing certain levels of decision-making rights. Formal ownership also extends to the sharing of equity and access to information (Chi and Han, 2008; Pierce and Rodgers, 2004; Pierce et al., 1991). Psychological ownership is a perception experienced by an employee that the ownership target belongs to him. The idea of "it is mine or it is ours" is adopted by the employee taking psychological ownership (Avey et al., 2009; Olckers and Du Plessis, 2012; Pierce and Rodgers, 2004; Pierce et al., 2001).

The identification of own-able targets is not deterministic and depends on the person taking ownership and the situation wherein ownership is taken (Avey et al., 2009; Olckers and Du Plessis, 2012; Olckers, 2011; Pierce et al., 2001). Entities become own-able targets if they are visible, available, controllable, are of interest and attractive to the prospective owner (Pierce et al., 2003, 2001). An own-able target may be tangible or intangible in nature and may extend ownership to individuals, groups of people, communities or other entities in any form or combination (Avey et al., 2009; Furby, 1980; Liu et al., 2012; Olckers, 2011; Pierce et al., 2001).

2.2.1 Ownership within the context of the organisation

The existence of ownership as a phenomenon is not homogeneous across communities, cultures and environments, because of several factors that include the environment wherein ownership resides, the structure of the ownership and the method of target acquisition (Ballantyne, 2003; Liu et al., 2012; Olckers and Du Plessis, 2012). Ownership can exist within an organisation, department or community. Owners may have sole ownership or can share ownership with others (Pierce and Jussila, 2010). Ownership may have been acquired through procurement, leasing, assignment or other methods (Ballantyne, 2003; Pierce et al., 1991).

The research focuses on a contemporary organisation comprising shareholders, executive managers, management and non-managerial employees. This section describes ownership of organisational targets within the context of multiple stakeholders creating value for the shareholders of the organisation.

Companies exist to deliver services or products to another entity in the economy and/or society (Shackleton, 2007). Regardless of the products of the organisation, a main focus of the organisation's stakeholders is the sustainability of the business (Institute of Directors, 2009a).

Organisational ownership starts with the shareholders of the organisation. Shareholders invest in the organisation with the intention to derive benefit from the organisation. Benefits can be financial, reputational, or provide gratification or any other form of positive return on the shareholders' investment.

The owner may, by agreement, engage with skilled employees to activate resources to achieve some or other organisational objective(s). Managers are appointed to become agents of the owners of the organisation, implying that managers and employees do not acquire ownership of the organisation in the same sense as shareholders are owners of the organisation. When managers refer to ownership, they do not imply financial ownership, but a sense of responsibility (O'Reilly, 2002). Employees do not own the organisation, they only act as though they do (Baines, 1998).

Relationships between owners and own-able targets play an important role in ownership in the organisation (Asatryan and Oh, 2008; Koiranen, 2007; Pierce and Jussila, 2010). Owners of organisational targets enact different roles (Ballantyne, 2003) that are required for the organisation to function effectively and efficiently. The nature and extent of ownership of own-able targets differ according to the role of the employee within the structure of the organisation. The next section discusses the forms of ownership found in the organisation.

2.2.2 Forms of ownership

Ownership can be categorised into formal and psychological ownership. Formal ownership creates legal ties between the owner and the target, whereas psychological

ownership is based on emotional ties between the owner and the ownership target (Moon and Sanders, 2004; Pierce and Rodgers, 2004; Pierce et al., 2001).

Formal and psychological ownership are not mutually exclusive, implying that psychological and formal ownership can co-exist, but do not necessarily have to exist simultaneously. The situation where both forms of ownership reside in one target is preferable (Pierce et al., 2003).

2.2.2.1 Formal ownership

Formal ownership exists when ownership of a target is recognised by the organisation and the rights of the owner protected by law (or organisational policies) (Pierce et al., 2001).

Multiple sub-forms of formal ownership can be found in an organisation, including:

- Legitimate or legal ownership, which may be linked with profit sharing as in the case of shareholders of the organisation (Chi and Han, 2008; Pierce et al., 2004, 2001);
- Delegated or assigned ownership, which does not necessarily provide for the sharing of financial equity, but where owners are given the authority to have responsibility of and decision-making rights over the target (Bell and Martin, 2012);
- Sole and shared ownership, where sole ownership implies that one employee has decision-making rights according to her or his job description, while shared ownership requires more than one person to make decisions on par levels (Pierce and Jussila, 2010).

Basic rights associated with the ownership of a target include decision-making rights, rights to information and equity sharing (Bernerth and Walker, 2012; Chi and Han, 2008). Rights and obligations associated with ownership should be distributed through the organisation to enable the organisation to function effectively. Distributing ownership can be achieved through the delegation of ownership rights (including those mentioned above) to lower levels in the organisation.

Delegation implies exercising the option to transfer the authority, including responsibilities and decision-making power, over an ownership target to another

49

person or entity (Moffett and Sloman, 1991). Delegation can be applied vertically or horizontally (Krause and Bowman, 2001).

Vertical delegation implies centralised decision-making along a hierarchy of controls. Strategic decision-making are retained at executive levels, while operational decision-making resides with the supervisory levels of the organisation. Vertical delegation results in perceived "sole" ownership of an organisational target.

Horizontal delegation implies that decision-making is de-centralised on homogeneous levels of control (Krause and Bowman, 2001). Horizontal delegation results in shared or collective ownership in an organisation through its premise that more than one person at the same level have similar authority over the same target.

Delegated ownership is not mutually exclusive from psychological ownership (Furby, 1980; Pierce et al., 2004, 2003, 2001). Formal and psychological ownership have a strong bond. Peoples' expectations to achieve a specific goal will influence their success in achieving the goal as is described in Vroom's Expectancy-Value theory (in Koiranen, 2007). Owners accepting formal ownership have certain expectations of what this delegated ownership will lead to. The expectations can be negative if the owner sees the ownership as a burden (Olckers and Du Plessis, 2012; Pierce and Jussila, 2010), or positive, if the owner expects that some personal or community good can come out of receiving formal ownership of the target (Pierce et al., 1991; Wagner et al., 2003). For ownership to be effective, the owner needs to be empowered to exercise ownership over the target, needs to have access to resources enabling the target and needs the authority to make decisions required to appropriate the target.

Accepting formal ownership of a target as legal in the organisation, the following section explains the concept of psychological ownership of a target in the organisation.

2.2.2.2 Psychological ownership

Psychological ownership is based on an individual's beliefs, perceptions, experience and prevailing conditions and also on the nature of the individual's relationship with the own-able target. Organisations conduct formal ownership programs, such as stock ownership incentives, with the intention to enhance psychological bonding of employees with the organisation (Chi and Han, 2008). If successful, this psychological

bonding has the advantage of promoting staff loyalty, staff being more productive and committed and being less critical of the organisation (McIntyre et al., 2009; Wagner et al., 2003). Employees that have this psychological bond start to act like owners of the organisation (Wagner et al., 2003). Wagner et al. (2003) posit that if employees are also owners, the "agency problem" in organisations where principals (owners) are in conflict with agents (employees), can be addressed.

As with formal ownership, sub-forms of psychological ownership exist in the organisation, including:

- Promotion-oriented ownership, which is a form of psychological ownership where owners are willing to take risk and innovate to achieve their objectives (Avey et al., 2009);
- Prevention-oriented ownership, which is prevalent with owners focusing on safety (risk aversion) and prevention of punishment in their application of the ownership target (Avey et al., 2009; Olckers and Du Plessis, 2012);
- Production ownership, which relates to a feeling of responsibility to attain organisational goals and having a concern for work problems (Parker et al., 1997; Pierce et al., 2004).

Pierce and Rodgers (2004) and Han et al. (2010) posit that formal ownership is an antecedent of psychological ownership. Where formal ownership is objective in nature, psychological ownership is subjective and emotional (Chi and Han, 2008; Pierce et al., 2001). Owners may have an emotional claim to an entity such as an object, resource, process, right or obligation. Emotional attachment to a target develops when the user of the target takes psychological ownership thereof (Pierce et al., 2001). The sense of possession, *i.e.* where a psychological owner may feel and refer to the target as "my", "mine" or "ours", forms the core of psychological ownership (Erkmen and Esen, 2012; Furby, 1980, 1978; Olckers and Du Plessis, 2012; Pierce and Jussila, 2010; Pierce and Rodgers, 2004; Pierce et al., 2003, 2001). Feelings of ownership create a relationship between the owner and the target where the target is viewed to be an extension of the "self" of the owner. Based on its wide use in literature and extensive research done using this definition, this study also accepts the definition

of psychological ownership where the individual or group perceive the target as "mine" or "ours".

Employees feeling responsible for their working environment will develop feelings of ownership towards the working environment, to which Parker et al. (1997) refer to as "production ownership". Ownership creates feelings of concern for the target. Owners may feel obliged to contribute to the objective of the team or the organisation. "Concern for" and "feeling responsible for" motivates owners to produce outputs that are according to quality requirements and customer satisfaction and not producing outputs that result in "letting the team down" (Parker et al., 1997).

According to Pierce et al. (2004), feelings of responsibility are a consequence of, but do not imply psychological ownership as such. Investment of time, energy and other resources in the target may contribute to the development of psychological ownership (Pierce et al., 2003). The key identifier of psychological ownership is when the individual "takes" or "accepts" possession of the target, or "feels like owning" the target (Pierce et al., 2004).

Employees may experience and handle psychological ownership in different manners (Avey et al., 2009). Some employees may experience psychological ownership in a manner that affords them to pursue their goals and aspirations. This "positive" experience is referred to as promotion-oriented psychological ownership. Employees with promotion-focused ownership will try to make the most of their ownership by taking risks and being innovative (Avey et al., 2009). Contrary to this, employees may also experience anguish in dealing with ownership, which may also be found in a preventative-focused form of ownership. Employees with preventative-focused ownership prefer to focus on containing risks and prevent punishment (Avey et al., 2009). Prevention-focused ownership may, however, be preferable in some circumstances in the organisation, for instance where risk is to be avoided and stability is preferred.

Empirical proof exist that psychological ownership is measurable and can be managed in pursuit of organisational objectives (Avey et al., 2009; Erkmen and Esen, 2012; Olckers, 2011). Psychological ownership addresses the question of "How much do I feel this is mine?", implicitly implying the existence of variable levels of psychological

ownership (Pierce et al., 2004). The development of psychological ownership is further explained by Pierce et al. (2001) and Pierce et al. (2004) in their arguments regarding the motives ("roots") for ownership and the determinants ("routes") of psychological ownership.

2.2.2.2.1 Roots of psychological ownership

The motives for ownership relates to the control that the individual has over space, the "personalization [*sic*] of space as an assertion of identity..." and the "place" (or home) that ownership provides to the individual (Pierce et al., 2001, p. 300). The motives for ownership refer to the individual's need for efficacy and effectance, self-identity and having a place (Pierce et al., 2001). The motives for ownership should not be viewed as a cause of ownership but rather as facilitating ownership. The motives for ownership are described in more detail below:

Efficacy and effectance

Efficacy is defined as the power or capacity to produce a desired effect (TheFreeDictionary, 2014). Effectance is defined as having a motivation for competence (White, 1959; Izard, 1977; White in Sparks et al., 2012) while the Psychology Dictionary (2014) defines effectance as "the state of having a causal effect on an object". White (1959) explains that effectance is the inherent urge to act when "gently stimulated by the environment."

The motive of efficacy and effectance relates to the individual's need for control that can impact on the environment wherein the individual functions (efficacy) and the need to improve the effectiveness of functioning in the environment (effectance) (Olckers and Du Plessis, 2012; Pierce et al., 2001). Individuals have an innate need to be efficacious. Achieving the objective of controlling and improving the environment provides satisfaction and pleasure to the individual (Furby, 1978; Olckers and Du Plessis, 2012; Pierce et al., 2001). The quest for the satisfaction and pleasure derived from efficacy and effectance motivates the individual to take possession of a target (Pierce et al., 2001).

Self-identity

Interacting with possessions within the context of its use influences the way that an individual perceives himself. Projection of the self, or self-identity, is created, maintained and propagated through taking ownership of a target (Pierce et al., 2001). This self-identity communicates images of power, prestige, recognition, steadfastness, personal values or other attributes that the individual wants to portray (Olckers and Du Plessis, 2012). Self-identity tells others who you are, but more specifically how others perceive you.

Possessions also link the current self-identity of the individual to self-identities of the past, providing emotional continuity through time and space (Olckers and Du Plessis, 2012). Losing a possession may lead to erosion of the image of "self" and can be devastating for an individual (Olckers and Du Plessis, 2012). Taking ownership of a target provides the individual the opportunity to define and project the image of "self" to others.

Having a place

Possessions afford an individual a sense of belonging, or place or home in the organisation (Olckers and Du Plessis, 2012; Pierce et al., 2001). Individuals may refer to this home as "my place in the organisation", or "I am part of the group" (Porteous, 1976). A "home" in the organisation provides a central point in space and time upon which an individual can focus her or his territorial attention, eventually becoming their version of the "world".

Personal territory also provides physical and psychological security, identity and stimulation (Brown et al., 2014; Olckers and Du Plessis, 2012; Porteous, 1976). Porteous (1976) and Brown et al. (2014) expand on the three territorial conditions. Security reflects the level to which the individual is comfortable with the environment of the home as long as this space is not invaded by an intruder. Identity refers to the way that the individual arranges the space, reflecting the personality of the individual. The home is a reflection of how the individual sees her- or himself or likes to be seen by others (Jung in Porteous, 1976). Stimulation is needed for survival and is provided by interacting with the home. Interaction pertains to the making, changing or protection of the home. Defending personalisation of the home provides higher levels

54

of stimulation to the individual and may lead to ownership markers, which can be physical or communicative in nature (McCracken, 1986; Wang et al., 2006). The concept of personalisation and ownership markers is discussed in more depth in section 2.2.10.2 of this chapter.

Organisations can create favourable circumstances for employees to take ownership of targets. "Taking ownership" implies that the owner develops psychological ownership together with the assigned ownership of the target. Management cannot control the "roots" of ownership, but can compose targets that are acceptable as own-able targets for individuals or groups. Targets that are visible, attractive, flexible and accessible can create attractive conditions for ownership (Pierce et al., 2003, 2001).

Individuals and groups involved in the ownership transaction (managers and employees) have a direct influence on the conditions wherein ownership is accepted or declined. Psychological ownership develops through the "routes to ownership" (Pierce et al., 2001, 1991). These routes towards developing psychological ownership are explained in the next section.

2.2.2.2.2 Routes to psychological ownership

Psychological ownership is not perpetual and may diminish over time (Pierce et al., 2003). This may come about when the motives for ownership are removed or lessened. Pierce et al. (2001) identify three routes or mechanism through which psychological ownership can emerge or be reinforced. These "routes" to ownership pertain to the individual controlling the target, intimately knowing the target and immersing himself into the target.

Controlling the target

Rudmin and Berry (in Pierce et al., 2001) define ownership as the ability to use and control the use of targets. The level of control is linked to the magnitude of the individual's feelings towards ownership. Individuals have no possessive feelings towards targets that cannot be controlled or are controlled by someone else (Pierce et al., 2001). As a "route" towards psychological ownership, controlling the target does not constitutes ownership, nor is it caused by ownership, but rather leads to the development of psychological ownership (Furby, 1978; Pierce et al., 2001).

Organisations can manipulate the conditions of control for an individual or group. Centralising a task that used to be under the control of an individual will diminish the level of ownership that the individual feels for the target (Pierce et al., 2001). Contrary to centralising, making a job more self-directing, or providing higher levels of freedom to make decisions in her or his job will increase the individual's ownership feelings towards the job.

Coming to intimately know the target

Pierce et al. (2001, p. 301) posit that "an individual's association with an object gives rise to feelings of ownership". Having an active relationship with a target over a period of time creates an affinity for the target (James in Pierce et al., 2001). The relationship with the target causes familiarity with the target, which increases the information and knowledge that the individual acquires regarding the target. There is a positive relationship between the level of information and knowledge available and the feelings for ownership (Pierce et al., 2001). Pierce et al. (2001) also posit that organisations can promote this intimacy by making information regarding the target easier and cheaper to access.

Investing the self into the target

Being actively involved with the target requires time, energy and effort. This physical contribution of involvement from the individual represents part of who the individual is, what the individual does and what skills and experience are applied (Csikszentmihalyi and Rochberg-Halton in Pierce et al., 2001). Locke (in Pierce et al., 2001) argues that workers own their labour, which is also reflected in the feelings of ownership towards that what workers create, shape or produce.

The amount of the "self" that is invested in the target is reflected in the level of ownership feelings towards the target. Targets can be rendered more attractive for ownership when it requires more attention from the individual exercising discretion to control the target (Pierce et al., 2001).

2.2.2.3 Antecedents of psychological ownership

The consequences of having psychological ownership have been well covered in the literature, but little information exists regarding events leading to, or causes of

psychological ownership (Chi and Han, 2008; Liu et al., 2012; McIntyre et al., 2009). While formal ownership can enable an entity to perform a job or task, only psychological ownership can fulfil a human's needs (Pierce et al., 2003). Pierce et al. (2003) forward it that psychological ownership has its roots in in three human motives, being efficacy and effectance, self-identity and finding a home in the organisation. The roots of ownership explain why psychological ownership exists, while the routes towards ownership provides the means towards development of psychological ownership (Pierce et al., 2009). The routes toward ownership are to control the target, the opportunity to intimately know the target and to be able to immerse oneself into the target (Pierce et al., 2009).

If formal ownership can be constructed around the routes of psychological ownership, formal ownership can promote the development of psychological ownership in individuals or groups (Chi and Han, 2008; Pierce and Rodgers, 2004; Pierce et al., 2003). Formal ownership with its associated rights of equity, information and influence allows the employee control over the target, allows the employee to gain intimately knowledge of the target and allows the employee to immerse her- or himself into the target, which in turn corresponds with the "routes" towards developing psychological ownership over a target (Pierce et al., 2003, p. 19)

2.2.2.4 Non-exclusivity of formal and psychological ownership

Formal and psychological ownership are not mutually exclusive but ownership of a target where the owner has formal ownership and develops psychological ownership provides the strongest bond with the target (Hou, 2012; Koiranen, 2007; McIntyre et al., 2009; Pierce and Rodgers, 2004; Pierce et al., 2003). Having psychological, but not formal ownership may result in perceived ownership, such as where a toddler claims ownership of another child's toy. This may also be the case where IS departments are sometimes reluctant to part with the systems they have developed or implemented on behalf of the business leaders. In a similar fashion, having formal ownership without psychological ownership can also exist. For example, a group of employees may not develop psychological ownership of job responsibilities assigned to them (formal ownership) or they may deem the ownership of these responsibilities to be burdensome (Pierce et al., 2003). Emotional attraction (feelings of "this is

57

'mine'") to the target forms the core of psychological ownership of the target (Koiranen, 2007; Pierce et al., 2003).

Employees receiving formal ownership and who are allowed to develop psychological ownership are the most likely to satisfy the expectations of the organisation and the employee. Employees holding a combination of formal ownership and promotion-oriented psychological ownership are most likely to act innovatively and utilise the target optimally (Avey et al., 2009). Care should be taken that employees do not become overzealous in their psychological attachment to a target, as this can lead to deviant behaviours (Olckers and Du Plessis, 2012; Pierce et al., 2003).

2.2.2.5 Combining formal and psychological ownership

Formal ownership of a target does not ensure that the individual will leverage it in an optimal manner to create value for the organisation. Organisations need owners for their assets to ensure that the assets are cared for and leveraged to create value (De Haes et al., 2013; ISACA, 2012b). Individuals may question what benefits they can derive from owning the target and may select targets for ownership based on the value that they perceive to be associated with the target (Pierce et al., 2003, 2001). Individuals with formal ownership may develop feelings of ownership of the target, thereby creating a stronger level of ownership of the target.

2.2.3 Stakeholders and role-players in the organisation

The organisation's stakeholders comprise groups or individuals that can affect (or are affected by) the organisation or the reputation of the organisation. These stakeholders include shareholders, investors, customers and employees (Institute of Directors, 2009a).

It is accepted that shareholders own the company and that decision-making rights are limited to a number of stakeholders (Broadbent and Weill, 2003). Decision-making stakeholders have the authority to delegate certain rights to employees of the organisation. An "employee" is defined as an individual who is engaged for her or his services "for wages or salary and in a position below the executive level" (Merriam-Webster, 2013).

Delegation may include the authority to make decisions (Huang et al., 2008; Zhang et al., 2008; Puri and Sahay, 2007; Aghion and Tirole, 1997). Managers are appointed with the necessary authority to execute business activities according to the mandate of the organisation on the behalf of the shareholders (Nordqvist, 2005).

Control of the organisation is, in essence, transferred to the management of the organisation, but managers may not always act in the best interest of the shareholders of the organisation (Davies et al., 2005; Demsetz, 2010; Institute of Directors, 2009a). In pursuit of good governance, shareholders appoint a board of directors that is responsible to direct, control and govern the organisation (Institute of Directors, 2009a). The board is the starting point for delegating authority down an approved hierarchy.

Governance is accomplished through a framework guiding organisational processes such as the delegation of authority. The chosen governance style of the organisation dictates what tasks and authority may be delegated to managers and employees of the organisation (Broadbent and Weill, 2003). As managers are delegated the authority from the board to act on the behalf of the board and shareholders, they will engage more resources and delegate authorities down a hierarchy to contribute to the objectives of the organisation (Moffett and Sloman, 1991).

Unless ownership and control remain with the same person in the role of both a shareholder and manager, shareholders have little control over organisational resources (Davies et al., 2005; Demsetz, 2010; Berle and Means in Demsetz, 2010). Shareholders' limited control is due to the widely dispersed shareholder-ownership and a concentration of managers in the organisation.

In an organisation, the shareholders represent the "real" owners of the organisation, while the board guides and controls the organisation. Managers are mandated to act on behalf of the board and other stakeholders and employees receive delegated decision-making authority from the managers. Management are also deemed employees, albeit that they are on a higher hierarchical level in the organisational structure than non-managers. Managers, typically in senior positions, are also referred to as "business leaders" and/or "executive managers".

In this study, executive managers delegate the authority to make decisions related to a specific target of ownership, regardless of what the target may be, to one or more business leader with the intention to contribute to the objectives of the organisation. The business leader will then in effect become the "owner" of the assigned target.

The following section describes the expectations of owners of own-able organisational targets.

2.2.4 Expectations of role-players

The expectations of the rights and obligations associated with ownership are determinant factors in sustaining psychological ownership and in determining the success of delegating formal ownership to one or more employee. This section discusses the expectations of the organisation when executive managers assign ownership to employees and employees taking ownership of organisational targets. This section also investigates the expectations from the employee's point of view when they receive formal ownership of a target and when they develop psychological ownership of the target.

Ownership should be balanced in terms of rights and responsibilities and rewards and risks (Mackin, 1995). Unbalanced expectations can result in ownership issues. Mackin (1995) posits that, where management typically seeks the rights of the ownership, operational employees find themselves burdened with the responsibilities thereof. The following sections discuss ownership expectations of the employees and the management in the organisation.

2.2.4.1 Expectations of employees

Employees have the expectation that the ownership-rights of equity, influence and information will realise. Where employees seek the rewards of ownership, they may expect management to carry the risks related to the ownership. Viewing ownership in the way of self-enrichment is one-sided and may result in staff being disillusioned by their ownership expectations (Mackin, 1995). If they become disappointed in what they expected of ownership, this ownership may become a burden to dispose of, rather than an asset that can be beneficial to the owner.

60

In pursuit of effectance, employees may expect that ownership can afford them to master the target assigned to them, which will enable them to perform their work at higher levels and that they can improve their job performance (Higgins, 1997; Hou and Fan, 2010). Mastering the ownership target also enables employees to project their self-image, serving the motive of self-identity.

Employees may also expect that ownership can provide them with psychological empowerment enabling them to realise the value of their jobs, to attain personal mastery and having a sense of self-determination where they can enable actions having an organisational impact (Pierce et al., 2009).

Expectations of ownership may extent to the enhancement of social power and status. By having the authority to influence or impact areas of the working environment (efficacy) leads to social power, which may be construed as a status position in the organisation (Gaskin and Lyytinen, 2010).

2.2.4.2 Organisational expectations

Organisations promoting ownership of organisational targets with employees may expect a considerable return on their investment effort. Managers may expect employees to have increased levels of loyalty towards the organisation, which in turn lead to higher commitment towards organisational objectives, lower staff turnover and synergy acquired from the binding powers of ownership (Asatryan and Oh, 2008; Han et al., 2010; Olckers and Du Plessis, 2012; Pierce and Jussila, 2010; Pierce and Rodgers, 2004).

Failing to perform according to expectations may result in business objectives not being attained, or in unnecessary costs being incurred to resolve problems caused by this performance failure. Maintaining operational integrity may require interaction with support staff, training staff, users, vendors, developers or other stakeholders. Breakdown of interaction between stakeholders may result in a failing system. Mackin (1995, pp. 1-2) refers to the "*scales of justice*" in discussing the balance between rights and obligations. Expectations of rewards and expectations of risks should also be balanced. Employees may neglect this balance and view ownership from an egocentric perspective, implying that they will tend to expect rewards and rights

without obligation and risk. Similarly management may ignore the employees' rights and mainly focus on the obligations of ownership (Mackin, 1995). Any imbalance between rights and obligation and risk and reward may lead to parties' expectations not being realised. Unfulfilled expectancies may in turn have a negative effect on the outcomes of ownership of a target and if the expected rights of ownership do not realise, the level of ownership will diminish (Pierce et al., 2001).

2.2.5 Distribution of ownership

Distribution of ownership of an own-able target is largely dependent on the distribution of the stakeholders of the target and the purpose of applying the target in the organisation. This implies that the owner of the target should have a role in the domain where the target is deployed and used in the organisation. Organisational strategies may also determine the distribution of target ownership (Bennedsen et al., 2003; Moffett and Sloman, 1991). The following sections discuss the matter of sole and shared ownership.

2.2.5.1 Sole ownership

Levels of control and responsibility over a target depend on the number of owners assigned to the target. Formal sole ownership pertains to a target with one owner having responsibility and control of the target. Full ownership implies that the owners have sole discretion as to how to apply the target and decide who may utilise the target (Aghion and Tirole, 1997). Having unlimited control of a target is not realistic in an organisation. Some owners depend on other resources to leverage from the ownership of the target and some people may have ownership of the functions of the target and others of other components (Fernández, 2003; Han et al., 2003). In reality, the objective is not to give "ownership" to an employee, but rather to give the employee the "perception of having ownership" (Baines, 1998). The owner will then have the responsibility to care for and ensure sustainable functionality of the target.

2.2.5.2 Shared ownership

Formal shared-, co-ownership, or collective ownership describes an ownership relation where the own-able target is owned by a collective, such as a couple, group or category (Koiranen, 2007). Ownership that is shared offers a diluted form of

ownership to the employee (Aghion and Tirole, 1997; Bennedsen et al., 2003; Krause and Bowman, 2001).

A business system that is shared across groups or departments may become the responsibility of more than one individual. Shared ownership provides control via a consensus rule where all owners cooperate in controlling the target, or via a majority rule, where a majority vote of owners is needed to have control (Han et al., 2003). Where sole ownership affords the individual to have full control over the target, collective ownership only allows limited control (Bennedsen et al., 2003; Furby, 1980).

Shared targets require a social-identity motive as an additional attribute to make the targets desirable in a group of people (Pierce and Jussila, 2010). Prospective owners will evaluate the desirability of a target, not only from the individual's but also from the group's perspective. If the individual can use the target to create a self-definition of the group and project this identity to others, the target is a good candidate to be owned collectively (Pierce and Jussila, 2010).

2.2.6 Influences on ownership

Insofar as the attributes of targets are concerned, employees may ask how prominent this target features in the organisation, questioning the status level that the target affords to the owner (Gaskin and Lyytinen, 2010). The employee may also ask whether the target will assist the employee to do her or his job better (effectance) and whether the target will allow the employee to have some influence on the organisation when utilising the target (efficacy). Employees seek efficacy and effectance in taking ownership of the target (Pierce et al., 2001). The life-cycle status of the target may also influence the affinity for ownership, as targets that are about to be retired from the organisation may hamper the development of self-identity by the employee (Pierce et al., 2009).

Organisational factors may also influence the employee's psychological ownership levels of a target. The employee may ask whether the necessary support exist in the organisation to ensure that the target availability can be sustained (Ballantyne, 2003). An ownership culture or a culture where it is acceptable to make mistakes may improve the conditions for having an affinity for a target (Baines, 1998). Factors that may influence psychological ownership also include the organisational role of the users

63

(Baines, 1998; Druskat and Pescosolido, 2002) and the business objectives of the area where the users operate. Technological factors include the usability and ease of use of the IS, the level of control and the level of personalisation presented to users (Barki et al., 2008).

Circumstances at a specific point in time may influence the affinity for psychological ownership. The employee will ask her or himself whether they have the capacity to take ownership of the target. The employee may already have a great number of responsibilities and may find that another target to own may be a burden. Alternatively, the employee may view ownership of the new target as a challenge that may provide a certain level of satisfaction, which in turn may promote psychological ownership of a target.

From a personal point of view, the employee may ask whether this target will satisfy her or his personal needs. Personal factors influencing the development of ownership may include the users' levels of cognitive knowledge and personal values and goals. Prospective owners may ask how ownership of the target may influence her or his future in the organisation (Hou, 2012) or whether he will be comfortable with the moral circumstances surrounding the ownership of the target (Koiranen, 2007).

Pragmatically, users seeking improvement in their operational outcomes may question the capabilities afforded and constraints imposed by the target. These capabilities and constraints include opportunities presented by, or sanctions imposed by the technology, organisation, environment or colleagues when taking ownership of the target.

The next section discusses targets that can be owned by employees in the organisation.

2.2.7 Ownership targets

Whereas a target in terms of formal ownership normally comprises something material (tangible or significant), a target in terms of psychological ownership may be represented by whatever an individual or group may get emotionally attached to (Avey et al., 2009). Children may become psychologically attached to targets such as nursery rhymes, songs and toys and scientists to ideas or inventions (Furby, 1978;

Pierce et al., 2003). Employees may become psychological owners of the organisation, their jobs, or a project wherein they participate (Wagner et al., 2003). People may also experience an emotionally attachment to tools used at the work, relationships and other visible or invisible targets (Pierce et al., 2003).

2.2.7.1 Types of own-able targets

This study considers ownership of targets in the organisation that can be owned formally and psychologically. Targets that are objects of ownership may relate to work-related tasks, tools or resources used to do specific work-related tasks, employees' jobs, business systems, or a department in which an employee works. Other targets that can potentially contribute to achieve personal or job-related objectives are also considered in this study. Targets may include intangible targets, such as relationships between staff members (Olckers and Du Plessis, 2012), or of a more personal nature, such as: "These are my documents" or "This is my idea" (Pierce et al., 2003).

From the perspective of the management of an organisation, targets are offered to employees with the intention of assisting them to achieve business objectives. Avital and Vandenbosch (2000) argue that business objectives and processes should form part of the ownership portfolio of employees. Employees will, through owning business objectives and processes, acquire knowledge about and understand the business better, resulting in feelings of responsibility for the objectives of the organisation (Avital and Vandenbosch, 2000).

2.2.7.2 Attributes of the target

Pierce et al. (2003) argue that employees have a stronger affinity for targets that they control, such as their job outputs, than the overall outputs of the department or organisation. When a target such as a new tool or business system is offered to an individual, the prospective owner will evaluate the perceived value of the target when or before accepting the target psychologically (Turel et al., 2007). The perceived value can be utilitarian, socially desirable, financial or joyful in nature. Factors related to quality, value for money and ease of use are functional attributes, while factors influencing the self-concept of the employee pertain to factors such as status and

65

enjoyment (Turel et al., 2007). Where formal ownership of a target is bestowed upon an individual, psychological ownership develops from the individual's emotional relationship with the target (McIntyre et al., 2009). Individuals or groups that develop psychological ownership will have a tighter bond with the target than those having only formal ownership (Pierce et al., 2003). This section focuses on the attributes of the target that make it more, or less, attractive to potential psychological owners.

Targets that are visible, attractive, available for use and can capture the interest of an individual are good candidates for psychological ownership (Pierce et al., 2003). The target should offer good motivations for taking ownership, implying that it promotes effectance and efficacy, enables the owner to project the image of "self" to others (self-identity) and affords the individual a sense of belonging in the organisation (Pierce et al., 2003).

2.2.8 Assignment of ownership

Based on the non-mutual exclusivity of owning targets formally and psychologically, it is possible that a person may have psychological and/or formal ownership or none during a specific time and space (Pierce et al., 2003). Neither formal ownership, nor psychological ownership is limited to an individual (Furby, 1980; Hou, 2012; Ozler et al., 2008; Pierce and Jussila, 2010; Wang et al., 2006). A business unit may take psychological ownership of "their system".

Pierce et al. (2001) argue that the roots of ownership as the motives for psychological ownership are efficacy and effectance, self-identity and to have a place in the organisation. The routes towards the development of psychological ownership are allowing the employee to control the target, for the employee to become to intimately know the target and to allow the employee access and time to spend with the target (Pierce et al., 2001). The roots of and the routes towards developing psychological ownership have been discussed earlier in this chapter (see sections 2.2.2.2.1 and 2.2.2.2.2).

Individuals or groups of users perceive targets differently. Where the business may deem the target as a tool to achieve an organisational objective, support staff may experience the target as a specialist focus area and the stakeholders as an unavoidable resource drain (Gichoya, 2005; Markus, 2004; Mcdonald, 2010; UK

Academy for Information Systems, 1999). Prospective owners will evaluate the attributes of the target, organisational factors, current circumstances wherein the target is offered and also personal factors before psychological ownership may develop (Erkmen and Esen, 2012; Olckers and Du Plessis, 2012; Pierce and Jussila, 2010; Pierce et al., 2009).

The next section discusses the rights and obligations of owners.

2.2.9 Rights and obligations of owners in the organisation

Ownership benefits the owner with the basic rights of equity, influence and information (Chi and Han, 2008; Pierce et al., 2001, 1991; Wagner et al., 2003). The basic right of influence allows the owner to have control over the target (Chi and Han, 2008) and the right to information allows the owner to be kept informed about the status of the target (Pierce et al., 1991). The right of equity permits the owner to share in the physical properties of the target or share in the equities afforded by owning the target. Equity presented by the organisation does not have to be financial in nature. Non-monetary equity may include rewards such as the sharing of trust, confidentiality, goal setting and decision-making (Bell and Martin, 2012).

Ownership rights are applicable to formal and to psychological ownership (Pierce et al., 1991, p 126). Formal owners have certain expectancies regarding rights and obligations related to owning the target. The inherent rights and obligations of ownership need to be balanced for the ownership to remain sustainable. Owners expecting to benefit from the rights of ownership should respond with a comparable level of investment into the organisation (Cook and Rice, 2003; Mackin, 1995). If the expected rights of formal ownership do not realise, the level of psychological ownership will diminish (Pierce et al., 2001).

As employees expect to enjoy the benefits of owning an own-able target, so does the organisation expect the employees to reciprocate with a proportionate responsibility (Cook and Rice, 2003; Mackin, 1995). By offering ownership to employees, organisations may bestow benefits on employees that may be social, physical, psychological or monetary in nature. Organisations, in turn, expect value for their investment into the employee. It may therefore be argued that organisations have the right that employees act as though they traded their services for gaining ownership of

67

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

the target. The organisation may expect that employees either take responsibility of the target, or to take responsibility of the outcomes that the target allows them to produce.

Aghion and Tirole, (1997) posit that ownership bestows authority. Organisations, therefore, have the obligation to provide due authority to the employee to exercise some level of control over the target to achieve some organisational objective (Aghion and Tirole, 1997). Employees also believe that the organisation should allow them access to using the target, have information about the target and that the organisation should allow them to share in some equity raised by the target.

Psychological owners of organisational targets develop feelings of responsibility towards the targets (Druskat and Pescosolido, 2002). Feelings of responsibility and authority result in owners developing a promotion-oriented ownership of the target. Promotion-oriented owners will leverage the target to the benefit of the organisation (Avey et al., 2009; Druskat and Pescosolido, 2002). O'Reilly (2002) argues that feelings of responsibility relates to making long-term decisions benefitting the organisation.

2.2.10 Outcomes of ownership

Employees develop psychological ownership of own-able targets if the conditions in which the targets are owned are acceptable and the outcomes of the ownership satisfy the expectations of the owners of the targets. Making formal ownership a proviso for developing psychological ownership, outcomes of ownership may be as expected and intended by the parties involved in the transaction of ownership.

Having ownership of a target may result in a number of ownership outcomes as indicated in Table 3:

Table 3 - Outcomes of ownership (Pierce and Rodgers, 2004).

Outcomes of ownership	
Expected and intended outcomes of ownership.	Owners accept expected rights and presumed responsibilities.
	Owners are amenable to organisational change.
Expected, but unintended outcomes of having ownership.	Owners accept the responsibility to leverage the target towards achievement of business objectives.
	Owners accept the responsibility to manage the environment wherein the target resides.
	Owners take care of the target.
	Owners are less critical of the target.
	Owners are willing to champion or "sell" the target.
	Owners seek opportunities to improve the value of the target.
Unexpected and unintended (unwanted) outcomes of ownership. Owners may develop pathological effects when ownership creates anxiousness in the owner.	Owners may become power hungry.
	Owners may revert to retention of information.
	Owners may become resistant to change.
	Owners may apply tokenism through activities such as referring to "Tom's system". This outcome may not always be unwanted, as it also may imply that the owner accepts full responsibility for leveraging the target towards achievement of business objectives.
	Owners may attempt to stop other users from using the system.
	Owners may revert to sabotage.

Even though employees do not (normally) refuse formal ownership of targets, they may have or may develop an attitude of resistance towards using or owning the target (Gaskin and Lyytinen, 2010). Employees that do not fully embrace a target such as a new business system, may continue to use (if they are allowed and able to do so)

alternative (existing) business systems. Employees may also stop other users from using the new system, or may continue to criticise the new system (Gaskin and Lyytinen, 2010; Pierce and Rodgers, 2004). Criticism or sabotaging the implementation of the new target does not only impact on the use of the new target but results in conflict between employees and other employees or employees and management.

Organisations anticipating that the ownership of targets improves the possibility of achieving business objectives can benefit from managing the levels of ownership and early identification of unintended behaviours, such as employees developing high levels of territoriality.

2.2.10.1 Territoriality

Territoriality is the display of ownership of a target to others. High levels of territoriality may be harmful to the organisation, while territoriality at a moderate level indicates the person's willingness to take responsibility to leverage a target optimally in the organisation. Owners with high levels of territoriality may start hoarding information, skills, knowledge and resources, or may deny others to use the target. Owners may even become destructive so as not to allow other employees to benefit from the target in the same manner that they do (Avey et al., 2009). High levels of territoriality emerge when owners take their ownership to the extreme.

Territoriality in a moderate level may, however, be preferred in some circumstances, as territoriality can serve to minimise risks and avoid conflict (Brown et al., 2014). Individuals may communicate to others that they "own" an object and is responsible to care for that object. This communication of ownership is a display of territoriality, which is not necessarily an unwanted behaviour.

Individuals that show respect for the boundaries of the territories of others may fall into a "do not touch" mode. When territoriality is used commonly to create boundaries, organisations may suffer from "silo-ed" business activities, or lack of innovation and growth, which is counter-productive (Brown et al., 2014). It may be expected that owners can display some level of territoriality in the organisation.

2.2.10.2   *Personalisation and ownership markers*

Ownership of a target may result in owners displaying proof of ownership publicly. The display can be in the form of social tokenism or physical ownership markings (McCracken, 1986; Wang et al., 2006). Personalisation pertains to the tailoring of a target to the satisfaction of an individual or group through a process of filtering, customisation, adding, removing or other means (McCracken, 1986). Personalisation of an ownership target can take the form of adding artefacts to business systems that reflects the personality of the owner. Personalising a target assists in accepting ownership and also provides a token to society (other employees in the organisation) that this specific target or part thereof is owned by an individual or group (McCracken, 1986; Wang et al., 2006).

Indicating ownership is accomplished through the use of ownership markers that can be communicative or defensive (Wang et al., 2006). Wearing a wedding ring is a common display of ownership where the wearer shows his legal and emotional ties to a specific individual and indicating the he may not be available for another relationship. Although communicative markers do not prevent another person from accessing, using or changing the ownership target, it indicates that it belongs to someone and is spoken for (Wang et al., 2006). Owners discussing, comparing or displaying ownership targets are forms of showing communicative ownership markers (McCracken, 1986).

Defensive ownership markers are used to restrict or prevent others from accessing the ownership target and can be in the form of a lock to a gate or door, access controls on files and folders in an IS. Defensive ownership markers indicate to other employees that they do not have access to a specific module or portion of an IS. Owners may combine communicative and defensive ownership markers such as where an office door with the owner's name on it has restrictive access controls in place (Wang et al., 2006).

2.2.11 Promotion of ownership

Many of the factors affecting ownership mentioned in section 2.2.6 can be influenced by the management of the organisation. This section considers the role of the

71

organisation to create conditions that can raise the affinity for developing psychological ownership in employees.

The organisation has some control over the conditions wherein employees work. Conditions under the control of executive managers and non-executive managers include the culture and structural composition of the organisation, employees' job descriptions and remuneration, control over delegation of authority and the identification of organisational objectives in pursuit of its mission (Aghion and Tirole, 1997; Makhlouk and Shevchuk, 2008; Pierce and Jussila, 2010; Schein, 1985). Organisations can simplify the route for the employees to develop psychological ownership of a target by structuring the formal ownership assignment around information, influence and the equity or the benefits brought about by owning the target (Pierce and Rodgers, 2004). The organisation can, for example ensure that prospective owners are trained to use a new system, or that the owners' job descriptions allow them access, adequate control and decision-making powers over the target to have an influence in the organisation.

One factor that has a major influence over the working conditions of employees is the authority bestowed upon them. The level of control over a target can depend on the number of employees that have similar decision-making powers. Delegating authority to employees can be done vertically according to the organisational structure, or horizontally to employees acting on an equal structural level (Krause and Bowman, 2001). Vertically delegated ownership implies that employees play different ownership roles, such as where strategic planning may be done at a higher structural level and operational decision-making activities may be made at a lower structural level (Krause and Bowman, 2001). Vertically delegated ownership implies that each owner will experience sole control over the target within delegated guidelines. When ownership is delegated horizontally, responsibility and ownership are shared between peers, providing "diluted" levels of control to each owner (Bennedsen et al., 2003, p. 3; Krause and Bowman, 2001).

Understanding the balance between the rights and the obligations involved in accepting ownership is important in the development and sustainability of psychological ownership. If employees expect ownership with the intention to receive

certain ownership rights, they may be disappointed when these rights do not realise. When the owner realises that he has to reciprocate with an investment that balances these rights, the obligations expected by the organisation may overshadow the perceived rights of ownership. Perceived imbalances between rights and obligations may result in emotional withdrawal of the employee from the target, diminishing the development or sustainment of psychological ownership. The conditions for developing psychological ownership is therefore best done via a process where the owner better understand the balance between rights and obligations and actually experiences the rights associated with ownership.

Studying ownership of IS in the organisation warrants an unambiguous understanding of IS as it exists in the organisation. The following section discusses Information Systems in the organisation.

2.3 Information Systems
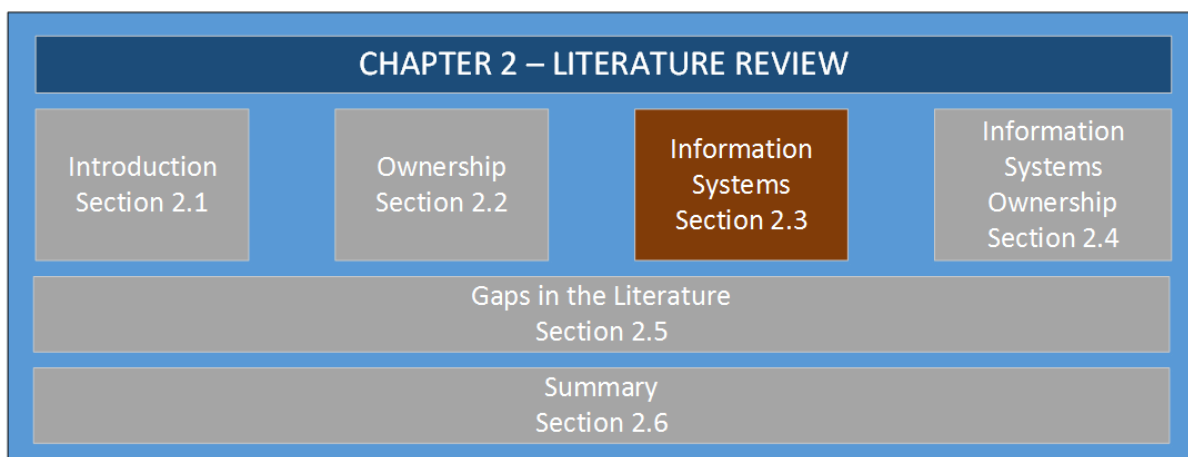
Organisations leverage business systems to achieve business objectives in pursuit of their strategies. A system is "an integrated combination of components and activities designed to follow a common purpose" (Towill, 1997, p. 56) and a business system delivers goods and services to customers of a business (BusinessDictionary, 2013; Sourcemaking, n.d.). A business system is therefore a mechanism used to achieve business objectives, which may pertain to the delivery of goods and services to stakeholders dealing with the organisation. Business systems may be augmented by technology to improve the possibility of achieving the business objectives (Barki et al., 2008; Lehmann, 2011; Letseka and Iyamu, 2011; Roberts and Steenstrup, 2010).

Orlikowski (1992, p. 398) argues that there is "little agreement on the definition and measurement of technology" and that "no compelling evidence on the precise role of technology in organisational affairs" exists. Earlier research on the conceptualisation of technology focuses only on certain aspects of technology "at the expense of others" (Orlikowski, 1992, p. 398), resulting in different ideas of what technology incorporates and what its role in the organisation comprises. The scope and role of IS in the organisation are discussed in more detail in sections 2.3.3.1 and 2.3.3.2.

Organisations that rely on information, place more emphasis on their technology-enabled capabilities (CFO Research Services and PricewaterhouseCoopers, 2004; Gaines et al., 2012; Venkatraman, 1997). In the context of a business system, technology is referred to as information technology (IT) and business systems that are augmented by IT are referred to as information systems (IS). Paul (2010, p. 98) states that "I.S. is I.T. in use". For the purposes of this study, an IS is defined as "*an ensemble of technologies, processes, information and people applying their knowledge and skills, leveraging organisational resources to achieve some business objective(s)*" (Fink and Neumann, 2009; Lehmann and Fernández, 2007; Melville et al., 2004; Orlikowski and Iacono, 2001; Orlikowski, 1992).

An IS has a similar conceptual purpose to that of any business system not supported by technology. IS in the organisation serve as delivery systems for goods and services (BusinessDictionary, 2013). Paul (2010) argues that IS are dynamic and change according to the situation and users' perceptions. No consistent and clear understanding exists of what an IS is. The different conceptualisations and roles of technology, IT and IS that contribute to the ambiguity of technology, are investigated in the following sections.

2.3.1 Conception of IS

People understand IS in different ways and individuals and groups build constructs of IS in their minds. This understanding or view of IS is referred to as the conception of IS. The conception of IS influences the value of IS perceived by the people (Orlikowski and Iacono, 2001).

Users' or business leaders' conceptions of IS can be where an IS is utilised as a tool or is seen as a proxy. An IS can be perceived as a tool when it is deemed to

accomplish specific objectives, which may extend to the improvement of processes, replacing of resources or creation of social networks. A proxy view of IS relates to IS as financially rewarding or as producing a specific number or value of deliverables.

According to its definition, an IS comprises technologies, business processes, information, skills and resources working together to achieve some business objectives (Fink and Neumann, 2009; Lehmann and Fernández, 2007; Melville et al., 2004; Orlikowski and Iacono, 2001; Orlikowski, 1992; Wallace, 2014; Zuppo, 2012). An IS can therefore be viewed as an aggregation of technology and people, processes, information and knowledge, which is referred to an ensemble view of IS (Orlikowski and Iacono, 2001). The reason for including people, skills and human interaction into this ensemble view is because this user-involvement provides ownership motivators in the form of immersing oneself in the target and becoming to know the target intimately (Pierce et al., 2001; Pierce et al., 2004).

The value of IS is also influenced by the scope and the role of IS, which dynamically change with the appropriation of an IS and users interacting with the IS (Dewett and Jones, 2001; Funchall, 2007; Mittal and Nault, 2009; Orlikowski, 1992).

2.3.2 Types of IS deployed in the organisation

IS are designed to serve a single or multiple roles and can be categorised into:

- *Infrastructure*, which is designed to be used over a widespread area of the organisation, single departments, or business units. Infrastructure systems may also be designed for single users;
- *Single-role systems*, which are used to perform one function only. An example of a single role system is a payroll system, which was designed only to calculate and output payments for employees;
- *Multiple-role systems*, which are used for more than one function. An example of a multiple-role system is a communications system that can be used to send and receive messages and documents, can be used as a calendar and scheduler and can also be used as a chronological archive of events.

IS infrastructure comprises technology, knowledge and skills and services and provides the foundation upon which IS-supporting business functions are built

(Drnevich and Croson, 2013; Fink and Neumann, 2009; Prasad et al., 2009). IS infrastructure is deployed and used throughout the organisation, but can also be deployed in localised areas of the organisation (Fink and Neumann, 2009; Peansupap, 2004; Ross and Weill, 2002). IS infrastructure is categorised into base infrastructure and shared infrastructure:

- *Base infrastructure* is used throughout and by all users in the organisation. IS are included in the base infrastructure and provide generic information technology capabilities such as electronic mailing, generic database platforms, productivity tools, operating systems and development languages to the organisation (Fink and Neumann, 2009). Base infrastructure includes components such as the network linking the IS, shared servers and mainframe and storage facilities.

- *Shared infrastructure* comprises technologies that specifically enable business at a local level such as business intelligence tools for specific businesses (Weill, 1992). This implies that shared infrastructure is not a pre-determined standard set of IS equipment, processes or services, but rather a composition of IS depending on the business that uses it.

  Weill (1992) argues that two factors distinguishing IS infrastructure from IS non-infrastructure is the share-ability of the IS infrastructure and the fact that IS infrastructure is budgeted for and provided by the IS department.

Business applications that are built on IS infrastructure may be shared by multiple business units, users, geographical areas and/or sub-enterprises in the organisation, or they may be used by departments, business units, or single users. Economies of scale imply that the wider an IS is shared, the more cost effective it can be. However, the wider an IS is shared the more generic the IS has to be. Generic IS may become IS commodities that can provide value to the organisation if they are managed for low risks and low costs (Dale, 2004).

Contrary to generic IS, a niche IS is built to be business specific and can provide a strategic advantage for the organisation (Du Toit, 2006). If measured on a per-head basis, a niche IS is more expensive than a shared IS or IS infrastructure (Ross and Weill, 2002). Where a niche IS fulfils the functions required by one or more specific

business units, a commoditised IS typically addresses the requirements of the wider organisation.

2.3.3 Attributes of IS

2.3.3.1 Scope of IS

The scope of IS refers to the composition of IS. Wallace (2014, p. 11) and Zuppo (2012, p. 16) describe IS comprising of people, technology, processes and data, presenting a "socio-technological" view that differs significantly from the earlier technology-view, or hardware-view of IS (Orlikowski, 1992). Orlikowski (1992) explains that the social-technology view was an attempt to include service-rendering organisations in the domain of technology.

Guillemette and Paré (2012, p. 532) forward it that the IS department can act as "partner, systems provider, architecture builder, technological leader, and project coordinator" in the organisation. Organisations may deem IS to be a support centre (Venkatraman, 1997), or a systems provider (Guillemette and Paré, 2012) where the IS department only cares about IT-related matters. To create optimal value for the business, business and the IS department need to collaborate to enhance the enabling capabilities of IS (Avital and Vandenbosch, 2000; Guillemette and Paré, 2012; Lohmeyer et al., 2002; Venkatraman, 1997). To enable business integration, business and the IS department need to view IS beyond mere hardware and applications. Taking an ensemble view of IS implies that an IS is seen as a combination of technologies and organisational social practices (Fink and Neumann, 2009; Melville et al., 2004; Orlikowski and Iacono, 2001; Orlikowski, 1992). Guillemette and Paré (2012, p. 533) describes the role of the partner as an active participant in "business transformation and innovation" and the technological leader as leveraging on "IT-based strategic opportunities". In the role of IS as the partner and technological leader, the scope of IS is seen as a composition of technologies and business and industry related skills and knowledge. The different scopes of IS are depicted in Figure 4.

77
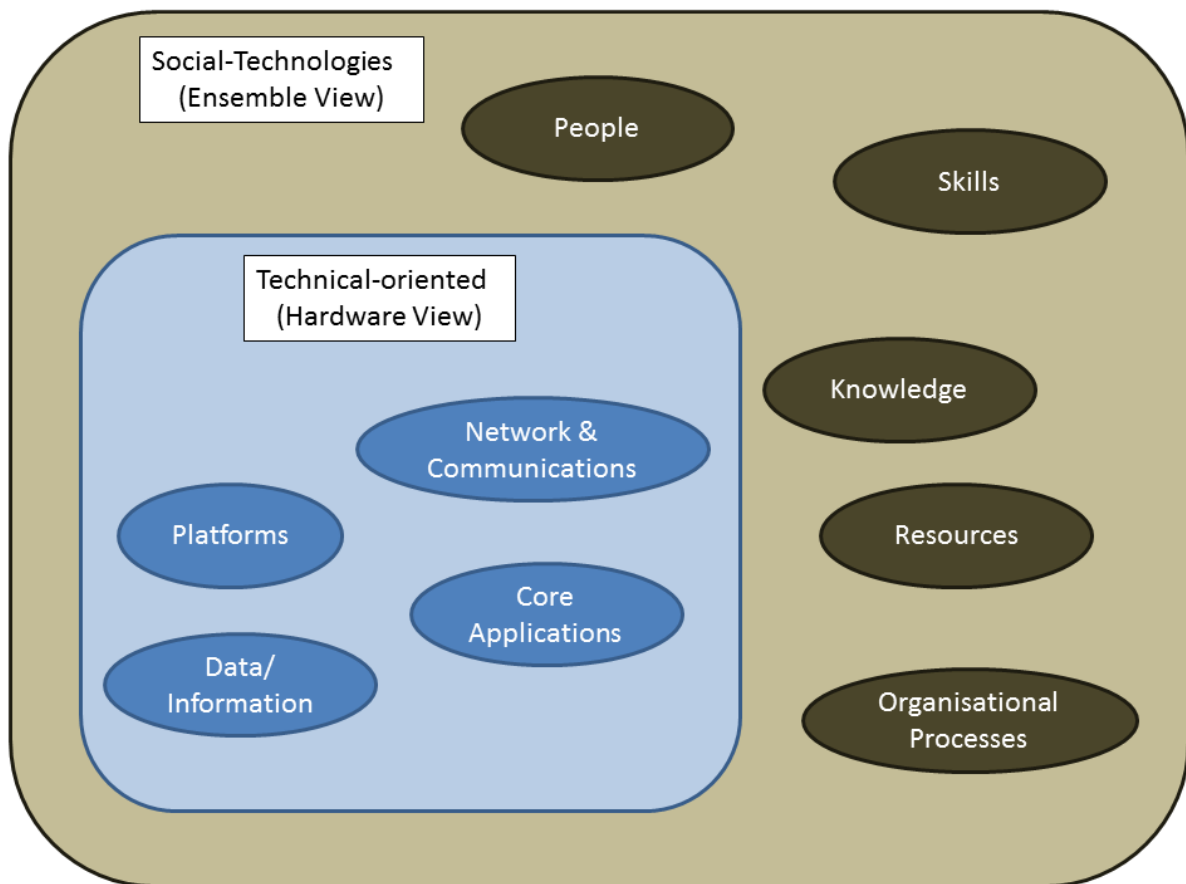
Figure 4 - Approaches to defining IS (Fink and Neumann, 2009; Guillemette and Paré, 2012; Lehmann and Fernández, 2007; Melville et al., 2004; Orlikowski and Iacono, 2001; Orlikowski, 1992; Wallace, 2014; Zuppo, 2012)

2.3.3.2 Role of IS

As was alluded to in the introduction of section 2.3, an IS can be viewed as a support mechanism to increase effectiveness and efficiency in the organisation, or it can be viewed as a business enabler and strategic partner of the business (Gaines et al., 2012; Guillemette and Paré, 2012). The role of IS is also related to the perceived scope of IS in the organisation (Guillemette and Paré, 2012) as is described in section 2.3.3.1.

Venkatraman (1994) asks whether an IS has become a commodity that needs to be managed for its efficiency alone and also whether organisations still view the IS in the same role as in the past. The perceived historical role of IS is not adequate to serve the current requirements of the organisation (Venkatraman, 1994). The IS role needs to be transformed from the level of localised exploitation to that of a mechanism that can enable the organisation to compete in the future.

The accessibility and availability of an IS have an impact on the attractiveness of an IS for the business and users to create value for the shareholders of the organisation.

2.3.3.3 Accessibility and availability of IS

Hodge (1997) refers to accessibility as "*good access*". For the purpose of this study IS accessibility is defined as an IS that has been deployed in the working environment of the user at reasonable costs, effort and speed. Wireless links to technology, for example may provide access to IS, but possibly at high costs and slow speeds, making this an inviable option for some users

Availability of IS implies that users may have access to IS when required and provide services that satisfy business requirements. As IS, its scope and its roles has evolved over time, so did the accessibility and availability of IS change. Where IS's collaboration function was limited to e-mail and store and forward capabilities, the IS landscape is ever-widening (Wallace, 2014). Mobile computing and the Internet became commodities, allowing individuals to communicate and collaborate at a wider scale than was previously possible (Zuppo, 2012).

Some barriers still exists and an IS that cannot satisfy business requirements may as well not be available. An internet page in Arabic, for example, may be accessible and available, but unusable for the English-speaking individual due to a lack of linguistic capabilities.

The willingness of an employee to take ownership of an IS depends on various factors that include the attributes of the IS. The following section discusses IS ownership in the organisation.

2.4 The role of ownership in Information Systems
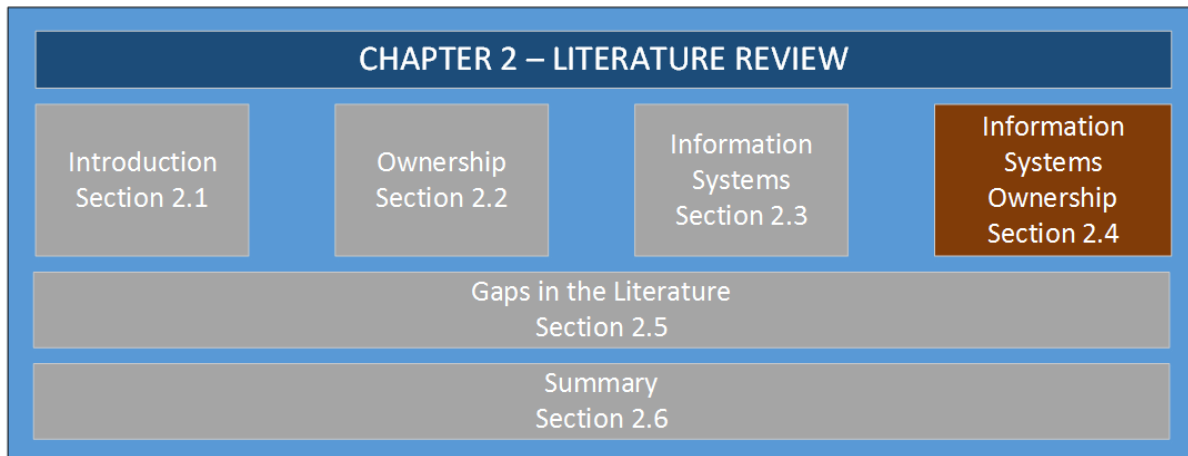
Limited information on the understanding of IS ownership is available in the literature (see section 2.5). Aspects of ownership in general (section 2.2) were applied to investigate IS ownership. By virtue of the fact that an IS is an asset in the organisation and that organisational assets must have owners (De Haes et al., 2013; ISACA, 2012b), an IS is an own-able target. Formal and psychological ownership applies to any type of own-able targets, including own-able targets in the organisation (Avey et al., 2009; Furby, 1978; Pierce et al., 2003). It therefore implies that an IS can also be owned formally and psychologically. Likewise, other aspects of generic ownership can be applied to IS ownership.

Having ownership of a target can be a strong motivator to satisfy professional or personal desires. A desire for ownership is found in everyday life where people acquire, or aspire to acquire something that may be needed as life supporting or to satisfy inner cravings. In an organisation, employees may aspire to be, or own, part of the business where they work (Chi and Han, 2008).

Organisations need resources to pursue organisational objectives (Funchall, 2007; Letseka and Iyamu, 2011; Prasad et al., 2009; Vitantonio et al., 2006). Assigning the responsibilities to business leaders to achieve business objectives implies that the business leaders should be duly empowered and should have the resources and means to do so. An IS is an asset that can be applied to pursue business objectives (Prasad et al., 2009; Vitantonio et al., 2006). The board of the organisation that represents the shareholders is held responsible and accountable for organisational

assets, including the availability and appropriate use of IS to support the strategic objectives of the organisation (Institute of Directors, 2009b). IS are assigned to employees, which in turn will leverage these assets to achieve business objectives (Funchall, 2007).

For the purpose of this study, IS ownership is defined as "*a relationship established by rights and obligations between an owner and an information system, where the owner becomes responsible and accountable to leverage the information system in pursuit of the objectives of the organisation*" (Koiranen, 2007; Lohmeyer et al., 2002; Moffett and Sloman, 1991; Parker et al., 1997; Pierce et al., 2004, 2003, 2001).

2.4.1 Forms of IS ownership

Similar to ownership in general, two main forms of IS ownership, namely formal IS ownership and psychological IS ownership are investigated in this study.

2.4.1.1 *Formal ownership of IS*

Delegation of authority implies that a person in the organisation authorises another person to perform certain functions that were the initial responsibility of the first person (Zhang et al., 2008). Delegation of authority is governed through a "framework for the delegation of authority" (Institute of Directors, 2009a). Ownership is regarded as the starting point of delegation and an entity (the original owner) may delegate only that what he or she "owns" to another entity (Moffett and Sloman, 1991). Time windows for delegation of authority may be temporary or more permanent and levels of delegation of authority may vary, affording limited or extensive control of the target (Zhang et al., 2008).

By delegating IS ownership, managers delegate authority to employees to perform certain functions related to the system(s) (Zhang et al., 2008). Delegated functions may include activities such as planning, building and providing support and maintenance of the IS. As delegation of authority follows the policies of the organisation, employees receiving responsibility and accountability of an IS are recognised as formal owners of the IS. Formal ownership may pertain to one employee or to multiple employees at one particular, or at different levels. Where ownership is shared and decisions related to the IS are made by multiple owners,

ownership is limited to the parts of the IS that were assigned to the respective owners (Bennedsen et al., 2003).

Based on the literature, it can now be construed that formal ownership of an IS may be regarded as necessary but it is not necessarily sufficient for IS owners to successfully pursue their business objectives. It is only when the IS is also owned on a psychological level that the optimum value of the IS in the organisation can be achieved.

2.4.1.2 Psychological ownership of IS

Psychological ownership of a target develops through the routes of ownership, addressing the motives or roots of ownership (Pierce et al., 2001). The routes to ownership refer to an individual having control, enable an individual to intimately know a target and enable the individual to immerse himself into the target (Pierce et al., 2001). An IS can satisfy an individual's motives for ownership, such as the need for efficacy and effectance, allowing the individual to develop self-identity and providing a home to the employee. An IS is therefore a good candidate to be owned psychologically.

Psychological ownership can be promotive or preventative in nature (Avey et al., 2009). Employees that develop psychological ownership perceive the IS or IS-related functions as theirs and display a demeanour of nurturing the IS. Promotion-oriented ownership causes the employee to use the IS optimally while tolerating some levels of risk. Prevention-oriented ownership is a form of ownership where the employee acts in safety and minimise punishment and risks related to owning the IS (Avey et al., 2009; Olckers and Du Plessis, 2012). The desired form of ownership depends on the situation, as the requirements for stability or alternatively for development and renewal, may change from time to time (Avey et al., 2009).

Psychological ownership is essential for utilising IS optimally in the environment. Ownership provides the business an opportunity to view an IS over a longer term and set a direction for the business area, enabling development and growth (Choppin, 1996).

2.4.1.3 Formal IS ownership as an antecedent of psychological IS ownership

A strong bond exists between having formal ownership of an IS and developing psychological ownership of the system. Formal ownership in organisations are found where employees have been assigned or delegated ownership of an IS or part thereof (Pierce et al., 2001). Hart and Moore (1990, p. 1120) state that "ownership confers residual rights of control", implying that the (legal) owner may decide who may utilise a target, how may it be used and for what cause it may be used. Having control of an IS allows users to have an impact on the organisation, addressing the efficacy motivator for psychological ownership of a target (Pierce et al., 2001).

Formal owners of IS, such as management, may allow a subordinate to use an IS in a manner that affords the user control over the outcome of the business process enabled by the IS. Control over a target, which is an outcome or consequential right of formal ownership, is a determinant for psychological ownership (Chi and Han, 2008; Pierce and Rodgers, 2004). Control of the target does not imply, nor is it a consequence of psychological ownership, but can lead to feelings of ownership (Pierce et al., 2001, 1991). Removing the rights to exercise control over an IS, may however, leave the user as a mere operator or "button pusher" of the IS, which will hinder the development of ownership of the target (Pierce et al., 1991).

Delegating formal ownership of IS to an employee with control of the IS allows the employee to apply skills and knowledge to use and enhance the outputs of the IS to the advantage of the organisation. Allowing use of the IS in a manner that affords control enables the employee to make an impact in the organisation. Control of the IS satisfies the motives of efficacy and effectance and allows the employee to establish self-identity and finding a "home" in the organisation. Formal ownership of the IS therefore created the conditions that allowed the promotion of psychological ownership of the IS (Chi and Han, 2008; Pierce and Rodgers, 2004; Pierce et al., 1991). Formal ownership as an antecedent of psychological ownership with respect to ownership in general is also discussed in section 2.2.2.3.

2.4.1.4 Non-exclusivity of psychological and formal IS ownership

Albeit that formal ownership is an antecedent of psychological ownership of IS, psychological ownership may also be present without formal ownership (Pierce et al., 2003; Van Dyne and Pierce, 2004). This may lead to an uneasy ownership, since the owner may have no legal rights to the target and control thereof can be removed at any time by the legal owner.

Software developers may develop psychological ownership of an IS and may not want to relinquish this ownership (Pierce et al., 2001). Developers may prefer to nurture and continually improve the developed application (a sub-unit of an IS), never completely finishing the product delivered to the business areas. Developers that do not relinquish control, hinder teamwork, while users are hindered in developing their own psychological ownership of the application (Pierce et al., 2001).

Employees may also develop psychological ownership of an application when temporary formal ownership of an IS is given to an employee. Access to use applications is given to employees during projects or other temporary initiatives in the organisation. The user is allowed to exercise the delegated controls over the system for a fixed duration, after which access is removed. Users can become emotionally attached to the rights afforded by using the IS and they may expect to continue having these rights. Once ownership (access) is removed, employees may become destructive and may resort to sabotaging the company. Loss of ownership may also result in employees experiencing a sense of loss, which can cause anguish and stress for the employee (Pierce et al., 2001).

Formal ownership and psychological ownership can exist separately, but having both forms of ownership (formal and psychological) result in a stronger form of ownership (Pierce et al., 2003). Assigning formal ownership with a balance between rights and responsibilities and promoting satisfactory levels of psychological ownership with the owners of the IS, should prove to have value for the business and the individual.

Pierce et al. (2001) argue that, although many conditions are hindrances towards psychological ownership, formal ownership can still be present without psychological ownership. Where an IS is implemented to replace a number of older systems, the user may be reluctant to use the new system. Users may experience using the new

84

system to be difficult and cumbersome to use and they perceive the ownership of the new system to be a burden rather than an asset (Koiranen, 2007; Pierce et al., 2009, 2003). Development of psychological ownership of the new system may not occur at all, or may take a long time to develop. Psychological ownership can be promoted by empowering employees through training, allowing participative decision-making, promoting self-managing teams, or redesigning of job responsibilities (Liu et al., 2012; O'Driscoll et al., 2006; Pierce et al., 2009, 2001).

In section 2.2.7.2 it is stated that a target for ownership should be visible, attractive, available for use and can capture the interest of an individual are good candidates for psychological ownership (Pierce et al., 2003). Clifford (2008) questions the extent to which an IS is own-able, based on the pervasiveness of IS in the organisation and the seemingly lack of visible attributes needed to be owned psychologically.

2.4.2   IS as target for ownership

If it is assumed that an IS can be own-able and guided by the definition of psychological ownership, it may be stated that an IS, or a part thereof, is own-able when the owner(s) perceive the IS as "mine" or "ours". Different business areas in the organisation may have different perceptions of IS, which are based on their specific role and "patterns of interaction" in the organisation (Orlikowski, 1992, p. 402). Business leaders' and other employees' perceptions of IS influence the perceived value and the affinity for ownership of IS (Barki et al., 2008; Orlikowski, 1992). This section investigates the own-ability of IS in its different dimensions in the organisation, namely the own-ability of IS in an ensemble view of IS. An ensemble view of IS includes the technologies, processes, business information and the resources that include the people with their knowledge and skills accompanying the application of the resources (Melville et al., 2004).

IS as own-able targets are evaluated from different perspectives, such as the perceived value (Allen and Ng, 1999) and the distribution of ownership of IS in the organisation (Bennedsen et al., 2003). The value of an IS is influenced by factors such as:

- The system's perceived scope and role (Dewett and Jones, 2001; Funchall, 2007; Mittal and Nault, 2009; Orlikowski, 1992);

- The investment made into the system (CFO Research Services and PricewaterhouseCoopers, 2004);
- The strategic contribution rendered by the system (CFO Research Services and PricewaterhouseCoopers, 2004; Venkatraman, 1997);
- The simplicity to use;
- The usefulness of the IS (Paré et al., 2006).

Delegation of responsibility (and hence formal ownership) of IS in an organisation may be based on the roles of employees (Huang et al., 2008) that best suit the needs of the organisation. Likewise, the distribution of IS ownership is, among other things, based on the diversity of skills, knowledge and tools required to develop, run and maintain an IS. Distributing ownership of the IS between peers inhibits sole ownership and may diminish the possibility of an employee developing psychological ownership of the IS. Diluted ownership may not necessarily be unwanted for managers or employees, as it results in risk sharing and role-division and serves as a controlling mechanism for good governance (Aghion and Tirole, 1997; Huang et al., 2008).

Once formal ownership of an IS has been assigned, the ownership can be augmented by the IS owner developing feelings of ownership for the IS. Developing psychological ownership of a target such as an IS differs from developing ownership of tangible targets with higher visible qualities (Allen and Ng, 1999; Pierce et al., 2003). An IS may be perceived as an intangible target with latent values. The time-span over which value is proven by IS with hidden values may differ from that of tangible targets with obvious value-features, such as an object of beauty or an object with explicit utilitarian value.

The perceived value of a target is influenced by the personality of the individual (Pierce et al., 2003; Richins, 1994). Value of a target can be "utilitarian, enjoyment, interpersonal, identity, financial and appearance-related" (Pierce et al., 2003, p. 6; Richins, 1994). The value of IS is evasive and business leaders and executive managers may perceive IS as an excessive spending with negative or low return on investment (Le Roux, 2006). The business value of IS should not necessarily be sought in the physical dimensions of IS, but also in the value perceived by individuals. Collaboration-efforts between business areas and the IS department are not always

successful and investments in ICT do not always satisfy the business's expectations (Le Roux, 2006; Lohmeyer et al., 2002).

As a target for ownership, IS should satisfy the needs of the prospective owner within the organisational context. Ownership of the target should thus place the owner in a better position than before taking ownership and should address the needs for efficacy and effectance, self-identity and providing a place to the prospective owner (Pierce et al., 2004, 2001; Wang et al., 2006).

In pursuing efficacy, the owner wants to make an impact in the organisation and owning IS should contribute to satisfy this need (Olckers and Du Plessis, 2012; Pierce et al., 2001). To enhance the possibility of efficacy, owners expect that the IS can add value, allowing them to create desirable outcomes in the organisation (Pierce et al., 2001). The business value of ICT-enabled business systems is dependent on various external factors impacting the business.   These factors include (Avital and Vandenbosch, 2000; Lohmeyer et al., 2002; Melville et al., 2004; Symons, 2005):

- Environmental conditions;
- Organisational culture;
- The cognitive experience of the users;
- The organisational risk appetite;
- Integration between the IS department and the business;
- The willingness to accept responsibility and accountability for elements, incidents and conditions impacting the business.

IS have a number of attributes that indicate the nature of the IS from the perspective of the user, being the IS landscape in the organisation and the accessibility, availability and usability of the IS in the organisation. The attributes of the IS targets serve to create the attractiveness of the target for the prospective owner. Traditionally, technological research was influenced by two dominant factors, namely the *scope* and the *role* of technology (Orlikowski, 1992). The research on the scope and role of technology can be related to that of IS. The attributes of IS as own-able targets revolves around user perceptions of what an IS comprises and how the business can leverage from an IS.

Being an ownership target IS needs to be attractive to the owner, while addressing the business requirements of the organisation (Pierce et al., 2003). As was argued earlier, formal owners of IS have a stronger bond with IS when they develop psychological ownership of the IS (Han et al., 2003; Pierce et al., 2001). Business leaders have a closer relationship with processes and people in the organisation than they have with technology that entails little user involvement and is provided by a separate business unit such as the IS department (Barki et al., 2008). Business leaders will therefore have a bigger affinity for psychological ownership if an IS includes business processes and people. It can therefore be argued that the perceived scope of IS will influence the affinity for psychological ownership by business.

Business viewing an IS as a support tool may not realise the potential of an IS to create a strategic advantage (Venkatraman, 1997, 1994) and business leaders may therefore not want to own the IS deployed in the business. Obligations linked with owning a target without leveraging on the rights associated with it, may render an IS unacceptable as an ownership target (Pierce et al., 2001; Mackin, 1996; Pierce et al., 1991). For business to find an IS attractive, the IS should address at least one of the roots of psychological ownership, efficacy and effectance, self-identity or finding a home, else it may not entice a business leader to take ownership of the IS (Pierce et al., 2001).

An IS as an asset in the organisation cannot be leveraged by the actions of only one person. An IS is in its nature a composition of various components that needs to be managed in a synchronised manner and therefore needs the collaboration of multiple resources acting in different roles to be appropriated optimally. The role players involved in leveraging an IS in the organisation are "owners" of their roles. IS ownership roles and role-players are discussed in the next section.

2.4.3 IS ownership role-players

When business leaders are unable to discriminate between the responsibilities of IS ownership role players, nobody may care to take ownership of the IS. The structure of the organisation influences the roles required for leveraging IS. A basic hierarchical structure of a typical organisation such as the financial services organisation is depicted in Figure 5.
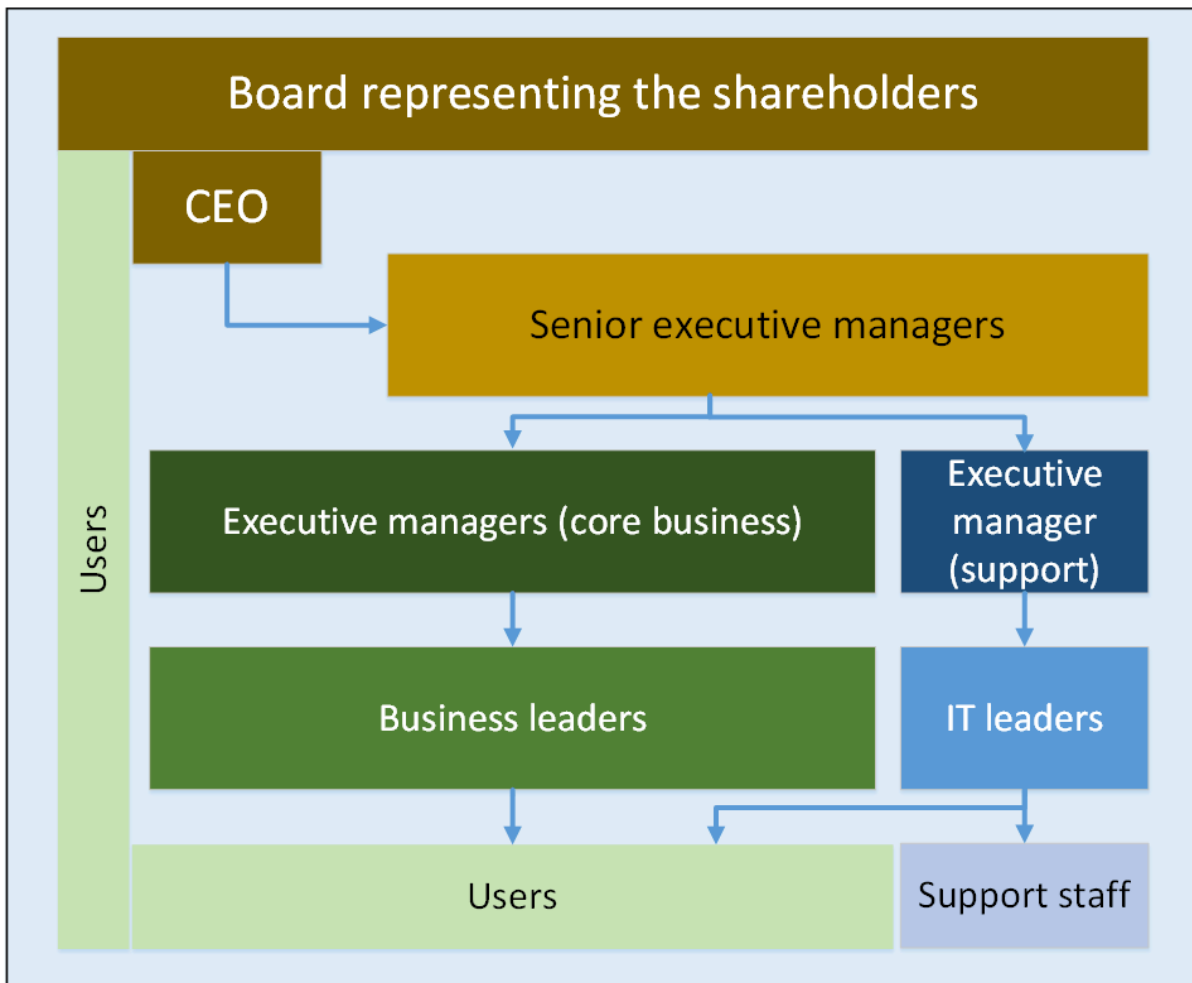
Figure 5 - Organisational structure wherein IS ownership role players exist

The main role players in the ownership of IS in the organisation are the employees of the organisation. The board represents the interests of the shareholders, while the senior executive managers and lower-level managers are responsible for the management of the organisation, with the intention to create value for the shareholders. IS are business enablers that are leveraged in pursuit of organisational objectives. Executive managers delegate IS ownership to business leaders. Business leaders, now IS owners, are responsible to manage the activities and resources, including the users of the IS, to leverage the IS in their respective business areas.

The roles of the IS ownership role-players should be distinguishable from another and ownership of the IS should reside with business (Lohmeyer et al., 2002). The roles of the executive managers, business leaders, the IS department and the users of the IS are discussed next.

2.4.3.1 The role of executive managers in IS ownership

According to the ISO 38500 Standard for Corporate Governance in IT (ISO and IEC, 2008), executive managers should govern the IS function in the organisation through the tasks of evaluation, directing and monitoring. Executive managers have the responsibility to evaluate the current and future state of the business environment and direct the business units towards a preferred future state. These executive managers are responsible to direct the business units to achieve their business objectives, which are aligned with the strategic plans and policies of the organisation (ISACA, 2012b; ISO and IEC, 2008). Executive managers are also responsible to oversee that the business units perform against the plans and comply with the policies of the organisation.

Executive managers involve business leaders in understanding the strategies of the organisation. Business leaders are then responsible to internalise the organisational strategies and to formulate business plans to guide the business unit towards a preferred future state. It is, however, the responsibility of executive management to assign the resources required by the business leaders to achieve the objectives of the business.

Executive managers assign IS to business leaders through an agreement where the business leader (now IS owner) renders specific services (such as leveraging the IS in pursuit of business objectives) in exchange for an appropriate reciprocal reward (Cook and Rice, 2003). It is also the responsibility of the executive manager that the IS owner is empowered by having the necessary skills, authority and resources to leverage the IS appropriately in order to perform his expected duties (Avital and Vandenbosch, 2000; Ballantyne, 2003; ISACA, 2012a). Resources required to run and maintain the IS should be made available to the IS owner. The IS owner should be adequately trained and be afforded the time to learn and understand the IS.

2.4.3.2 The role of business leaders in IS ownership

Business leaders have been assigned the responsibility to ensure that business units achieve their objectives that support the objectives of the overall organisation. Business leaders formulate plans that the business areas need to pursue to achieve

business objectives. The business leaders mobilise the assigned resources, direct the resources towards achieving the objectives and monitor and control the activities of the business unit's resources to verify that objectives have been met (ISACA, 2012a).

Business leaders are best placed to accept IS ownership of the IS in the business environment (Lohmeyer et al., 2002). Business leaders have control over the resources that are needed to leverage the IS, they have the business knowledge to align the use of the IS with the business processes and they have the authority to utilise the IS in an optimal manner in the business.

It is not necessary for the IS owners to have the technical skills and knowledge to maintain the IS in the business environment, nor to have the skills to implement an information security framework, as it is the obligation of the IS custodians to assist with these responsibilities (Bakari et al., 2007). The role of the IS department as the custodians for the IS is discussed in the next section.

2.4.3.3 The role of the IS department in IS ownership

The role of the IS department is that of custodianship of the IS deployed in the organisation. Custodianship can be viewed as a management function to facilitate the use of IS in the business units. Custodians are responsible to implement the rules of the organisation for the security of IS, availability and integrity of information created, stored, processed and distributed by the IS used in the organisation (Bakari et al., 2007). Custodianship includes complying with organisational IS-related standards, IS facility redundancies and data safeguarding, backups and restores (Queensland Government CIO, 2014; Shackleton, 2007; Markus, 2000). The IS department as custodian is also responsible for disaster recovery services to ensure data availability after major service breakages in the organisation.

In a supporting role, the IS department has to apply their technical expertise to direct the selection and acquisition of IS that best suit the business environment. The IS department is responsible to design, build, deploy and perform maintenance activities to ensure sustainability of the IS solutions in the business environment (Mittal and Nault, 2009).

91

Viewing the responsibilities and roles of IS ownership role-players through an IS governance lens may improve the understanding of these roles. A RACI-based table that was adapted from COBIT 5's Illustrative Governance and Management Processes (ISACA, 2012a, 2012b), provides more insight into the roles and responsibilities of IS ownership role players. An extracted adaptation of the COBIT 5 RACI chart is depicted in Table 15 in Chapter 15.

2.4.3.4 Users of the IS

Users of the IS are found at all hierarchies of the organisation. The majority of IS users report to business leaders to perform specific or general business activities in the business area wherein they reside. Users set about to appropriate IS in a manner that enable them to perform their job with efficiency and effectiveness, allow them to create a self-image that portray them in a way that they want others to perceive them and finding a "home" in the organisation (Avey et al., 2009; Pierce et al., 2003).

Users that can satisfy their personal and business needs by using an IS generally embraces the IS, whereas an IS that cannot satisfy their needs may be shunned as far as possible. Business areas using IS that satisfy users' business and personal requirements are more likely to be successful in achieving their business objectives than business areas with ill-suited IS that do not provide the capability to address the requirements of users.

Although IS ownership is normally not assigned to users of the IS, IS users may develop psychological ownership of the IS. Having psychological ownership implies that the user may be less critical about the IS and assume some of the responsibilities that the IS owner would allow them to, contributing to the optimal appropriation of the IS in the organisation. IS users are expected to accept (develop) ownership of their role as resources that should leverage the IS to the advantage of the organisation.

2.4.4 Distribution of IS ownership

IS or parts thereof that are deployed on various levels and with various breadths over the organisation may serve specific business units, a group of business units or the organisation as a whole (Fink and Neumann, 2009; Symons, 2005). Deployment of an IS that may appear unstructured, poses many questions with respect to what

components of the IS belongs to which business unit, who should take responsibility and pay for a specific IS, who should be blamed in cases where the IS deployment was less successful and other issues (Han et al., 2003; Symons, 2005).

From an organisational point of view, if an IS asset is custom-built or highly customised for a business, then the specific business area should own the asset. If an asset is complementary and used by multiple business areas, then the asset could be commonly owned (Han et al., 2003). It is also possible to have both centralised and decentralised IS, as may be found in a federated organisational structure (Symons, 2005).

IS ownership, shared by multiple owners, may give rise to conflict between the different owners, may lead to confusion about the appropriation of IS and, ultimately, impede on the value and the own-ability of IS. As an example we may find that one IS owner sharing ownership with another individual, may require that the IS provides high quality visual reporting. The other IS owners providing the data for the reports may require that the IS have better intelligence capabilities and can integrate information easier to produce high-quality technical reports, without concern for the visual quality thereof. The views required from the IS by the IS owners differ, which may lead to conflict, since the foci of the business leaders differ. Each owner may require that the capability of the IS addresses their preference best. In the case where the IS department enforces standardisation of technologies and processes, the business unit may perceive the solution not to be optimal for the specific business purposes.

IS ownership shared between peers results in diluted ownership in comparison with employees experiencing sole-ownership (Bennedsen et al., 2003). Decision-making of a shared target is typically done applying a consensus rule, or applying a majority rule (Han et al., 2003). Shared ownership may therefore be a viable option where the co-owners of a target have a common goal (Pierce and Jussila, 2010).

Employees sharing delegated ownership of an IS where his role and decisions are constantly criticised and challenged may not develop psychological ownership of the IS. Business leaders have a challenge to balance the delegation of formal ownership

93

of an IS with their requirements for employees to develop psychological ownership of the IS. Shared ownership is also discussed in section 2.2.5.2.

2.4.5 Assignment of IS ownership

When assigning formal ownership of IS, executive managers are expecting that business leaders, as owners of the IS, will leverage the IS to the benefit of the organisation (Huang et al., 2008; Zhang et al., 2008). The assignment of ownership to employees constitutes an agreement between managers and employees during which the employees will render specific services to the managers at an agreed-upon compensation.

Managers typically expect of employees to take responsibility for the caring and the leveraging of the target to bring value to the organisation and to achieve organisational objectives (Guillemette and Paré, 2012). Managers also expect that employees will develop psychological ownership of the IS assigned to them in a manner that best benefits the organisation.

Employees accept ownership of an IS with the expectation that this ownership will carry rights that balances or betters the obligations linked to the ownership. Therefore, the status, utilitarian benefits, or personal benefits of ownership should be the same or outrank the effort and investment into owning the IS.

Pierce et al. (1991) argue that ownership rights that have not been entered into an agreement, constitutes an incomplete contract. Whereas expectations are non-enforceable, rights and obligations are enforceable. It is therefore pertinent that expectations of IS owners and executive managers should be documented as a right for one party and a commitment for the other party. IS ownership transactions should include the expectations of the parties in the form of rights and obligations of the parties and key performance areas should be identified. These key performance areas will be evaluated to measure the performance of the parties (ISACA, 2012a; Madan et al., 2003; Vitantonio et al., 2006).

The rights and obligations related to IS ownership are discussed in the next section.

2.4.6 Rights and obligations of IS ownership

Rights and obligations with regards to IS ownership emanate from the expectations of IS owners and executive managers, representing the shareholder of the organisation. Organisations that expect that IS ownership will provide value to the organisation, qualify this expectation in terms of a right, while the responsibility to create this value becomes an obligation of the IS owner. Likewise, an expectation of the IS owner will be constituted as a right from his perspective and an obligation for the organisation's perspective.

For organisations to acquire optimal value from ICT investments, the business should involve itself with technology decisions (Lohmeyer et al., 2002). Avital and Vandenbosch (2000) argue that IS departmental staff and business staff should share responsibilities, not only for the business outcomes but also for the IS performance in the business environment. IS departmental staff should "feel responsible for the business processes and outcomes beyond their day-to-day duties" and business leaders in turn, should feel the "importance" and "relevance" of their IS (Avital and Vandenbosch, 2000). This model of co-ownership leads to the IS department and business units working in a partnership. Organisations can benefit on a strategic level when a partnership can leverage the value of IS in the organisation (Avital and Vandenbosch, 2000). Fixing ownership of an IS with the business may be challenging (Lohmeyer et al., 2002).

Lohmeyer et al. (2002) discuss the following challenges that may inhibit business employees (including business leaders or management) to retain or take ownership of IS:

- The difference in culture between the business and the IS department. Business does not understand technology in the same way as IS departmental staff, while IS departmental staff members do not understand the business well enough to have the same visions and objectives. This will result in divided interests.
- Collaboration structures are too complex and may introduce inefficiency and ineffectiveness. Too many and too large committees may inhibit decision-making and stifle agility.

- Complexity of relationships and processes may result in loss of control of activities, expenditures and investments. This may occur when the complexity of processes incites staff to use other than prescribed processes to speed up decision-making or reaching objectives.

- Decision-makers are not in the correct position in the structure. This leads to delays, incorrect or weak decisions due to lack of authority or lack of IS or business vision.

Having the responsibility to leverage the IS optimally in the business area, the business leader requires the necessary support and resources to do so. Should the business leader not have control over the resources to support and maintain the IS, the business leader may not be able to achieve the business objectives of the business area. The following sub-section discusses the control over the resources required for optimal application of the IS in the business area.

2.4.6.1 Control of resources

Resources providing maintenance and support services are not necessarily shared equally between stakeholders. Han et al. (2003) state that owners with control over a target also have control over the undocumented rights that are not stipulated in a contract or agreement. When ownership of an IS is delegated to a manager, the staff involved with the development, maintenance and support of the IS forms part of the ownership agreement in an implicit manner. This implies that the owner of the IS has priority of resources in comparison to the non-owner of the IS. Therefore, if IS ownership does not reside in the business area using the IS, the business area may not get the level of support that they would expect to get.

Owners of a target have stronger bargaining power than non-owners and may therefore have a greater control over the available support resources in the organisation (Han et al., 2003). Acquiring the rights and obligations of a target during a change in ownership will lead to a change in allegiance of employees, therefore the business area owning an IS will have control over the resources that maintain and optimise the system (Han et al., 2003; Hart and Moore, 1990; Pierce et al., 2001).

2.4.6.2 Balancing rights and obligations

Ownership rights and obligations, that constitute the expectations of the individual, need to balance the expectations of the organisation. A balance between rights and obligations ensures sustainability of the relationship created between the executive manager assigning the target to the individual and the individual receiving ownership of the target (Cook and Rice, 2003; Emerson, 1976; Homans, 1958). Employees that provide a service to the organisation expect the organisation to reciprocate with a reward comparable to the efforts made by the employee. IS owners may also reciprocate with positive behaviours such as a sense of responsibility when they develop psychological ownership of their IS (Avey et al., 2009).

Where expectations of either the manager or the employee do not realise, the unsatisfied party will seek ways to change the balance of the rights versus obligations to favour him. If that cannot be achieved, the party will seek alternatives such as negotiating a better deal with another party, or simply end the relationship (Cook and Rice, 2003; Emerson, 1976; Homans, 1958). If both parties are satisfied with the relationship, the relationship will grow and the IS owner will continue to render services according to, or better than the expectations of the manager, while the employee will be satisfied with the compensation associated with taking IS ownership (Cook and Rice, 2003; Emerson, 1976; Homans, 1958).

The balance between rights and obligations as elements of exchange in an agreement can be better investigated through the theory of social exchange. Social exchange is described in more detail in Chapter 3, section 3.1.6.1 and section 3.2.6.2.

To enable the organisation to assign IS ownership and IS owners to leverage IS optimally, the organisation subscribes to governance policies. The next section discusses governance and management activities in the organisation that are relevant to the optimal leveraging of IS and guides IS ownership in the organisation.

2.4.6.3 Governance and management

With the pervasiveness of IS in the organisation, governance of IS became the concern of the whole organisation (De Haes et al., 2013). The emergence of e-commerce and electronic communication increased the risks at various fronts for the

organisation. These risks need to be controlled and governed (Institute of Directors, 2009b). Governance with respect to IS should no longer only be left to operational managers, but is also the responsibility of senior executive managers (De Haes et al., 2013).

The roles of the executive managers with respect to governance

ISO/IEC Standard 38500:2008 (ISO and IEC, 2008), provides guidance to senior stakeholders in IS to apply governance in their management processes and provides principles to use IS optimally in the organisation. Executive managers are responsible to evaluate, direct and monitor that the IS in the organisation can render sustainable value to the shareholders of the organisation. Executive managers have to evaluate the current and future use of IS, taking environmental pressures and business needs into consideration. The executive managers have to ensure that plans and policies exist and then have to monitor that the organisation conforms to the plans and policies set forth by the organisation.

CobIT 5 (ISACA, 2012a) argues that organisations exist to create value for their shareholders and governance should focus on understanding and make decisions addressing the requirements of the shareholders or their representatives. Governance requires that executive managers and other employees need management activities to leverage IS. Organisations need governance to establish structures that can be managed to pursue organisational objectives (Institute of Directors, 2009b). One governance activity is to assign IS ownership to a business leader that can appropriate the IS to create value for their stakeholders in the organisation.

IT governance in the organisation

Assets need to be leveraged to ensure that organisations can create value for their shareholders (ISACA, 2011; ISO and IEC, 2008). Information and IT are key assets that organisations can utilise in their pursuit of organisational objectives (Institute of Directors, 2009b; ISACA, 2011). As information and technologies are integral parts of IS in the organisation, governance dictates that they should be leveraged to the benefit of the shareholders of the organisation. IT governance has a direct influence on IS ownership in the organisation. Executive managers use various techniques to instil good governance practices in the organisation. Governance structures in the

organisation evolve to align with organisational strategies, although these structures may not always be the best fit for all areas of the organisation at a specific point in time (Broadbent and Weill, 2003). Employees, including business leaders, may not understand, or be satisfied with the governance structures at any one point in time. Business leaders may be dissatisfied with the apparent usefulness of the governance structure if they believe that these structures question or delay their decision-making in the business environments.

Ballantyne (2003) defines ownership as the processes during which employees accept control and responsibility of an asset during its design, implementation and monitoring phases. Ballantyne's (2003) definition of ownership therefore implies that ownership can be the means through which the organisation can mobilise resources to leverage own-able targets to the better of the organisation. Prasad et al. (2009) argue that managing assets from a sound governance platform improves the leveraging of these assets in support of organisational objectives.

Governance relating to the application of an own-able target in the organisation includes:

- The delegation of authority to make decisions (Moffett and Sloman, 1991);
- Defining the roles of stakeholders;
- Practices of strategic planning;
- Management of assets,

and is supported by governance frameworks and standards such as COBIT (De Haes et al., 2013), ITIL (Susanti and Sembiring, 2011), TOGAF (Clarke, 2010) and others.

Governance and management with respect to IS ownership

ISO/IEC Standard 38500:2008 (ISO and IEC, 2008) differentiates between governance and management. Governance is described as the evaluation, direction and controlling of IS to move from the current state of IS in the organisation to a preferred future state. The cycle of executive managers evaluating, directing and monitoring as discussed in Chapter 5, section 5.4.6, is applied according to the principles for good governance of IT. Management pertains to the controls and processes that are applied to achieve the objectives set by the plans formulated during the governance process.

Symons (2005) states that IT governance guides decision-making in the organisation, the roles of organisational staff members and how decisions are measured and monitored. Ownership, in turn, is about controlling the own-able target, which in this case are one or more IS (Pierce et al., 2003). IS owners have the rights to make certain decisions associated with owning the IS. Other ownership rights are determined when the ownership is bestowed upon an employee, or may include intangible rights such as status or acceptance by a specific community inside, or even outside the organisation.

Rights of ownership are balanced by obligations such as where the owner has to render specific services or accept certain responsibilities for the IS. These ownership obligations are key to mobilising resources leveraging the IS in pursuit of organisational objectives (Mcfarlane, 2014). Mcfarlane (2014) emphasises the importance of the management role of the IS owners, as well as the requirement that they have an intimate understanding of the business processes and tools to optimally apply the IS for value creation.

2.4.7 Outcomes of IS ownership

Addressing the expectations of the organisation is the most common goal when management delegates responsibility and authority of an IS to an employee, while addressing their own expectations is prominent when employees accepts ownership of an IS. If employees with delegated formal responsibility and authority of an IS also develop psychological ownership of the IS, employees do not only have the authority to control but also have the inclination to leverage the IS to the advantage of the organisation (Avey et al., 2009). Organisations therefore expect that employees do not only apply an IS as designed but to apply the IS in new and innovative manners to provide the organisation with a competitive advantage (Venkatraman, 1997; Wallace, 2014, p. 8).

The organisation can contribute to assist IS owners to take ownership of the IS in their business environment. The promotion of IS ownership is discussed in the next section.

2.4.8 Promotion of IS ownership

Psychological ownership renders a relationship where the owner has a positive attitude toward the IS and has greater tolerances for inadequacies and faults in the systems (Avey et al., 2009; Hou and Fan, 2010; Van Dyne and Pierce, 2004). Organisations promoting collective ownership of technology, experience an increase of its use and adoption in the organisation (Hou and Fan, 2010). Employees having psychological and formal ownership contribute in a greater manner to organisational objectives than employees without psychological ownership of organisational targets (Crant, 2000; Han et al., 2010; Hou and Fan, 2010).

Organisations can improve the conditions for developing psychological ownership by tailoring the attributes of own-able targets (Avey et al., 2009; Pierce et al., 2001). Targets should be made visible, attractive, flexible and available to users. Organisations have the means to formally assign people in specific roles to become owners of the target. Users' jobs can be adjusted to allow them to have control over an IS, immerse themselves into the target and to become intimately knowledgeable with the target (Pierce et al., 2001).

Organisations can create conditions to promote specific forms of ownership (promotion-oriented ownership vs. prevention-oriented ownership) (Avey et al., 2009). Where promotion-oriented ownership focuses on innovative application of IS at higher levels of risks, prevention-oriented ownership focuses on safety and stability (Avey et al., 2009; Olckers and Du Plessis, 2012). Neither form of ownership is undesirable (Olckers and Du Plessis, 2012) and the organisational appetite for risk determines which form of ownership is preferred (Hardy, 2005; Institute of Directors, 2009a).

Similar to the promotion of IS ownership, executive managers should encourage the development of ownership of obligations for all the stakeholders in IS ownership. IS department staff members should take ownership of their custodianship-responsibilities in the same manner that the business leaders take ownership of the IS in their business areas. IS owners should have the assurance that their IS are safeguarded, available when required and that the data has integrity (Carroll, 2012, p. 217), enabling them to focus on leveraging the IS in innovative and optimal manners.

2.4.8.1 Having Control

Pierce et al. (2004) argue that staff having control over their activities and tools, form an important part of their emotional bond with the organisation. Ownership causes someone to believe that they are part of what they own (Pierce et al., 2001). This relationship can be found in the control that ownership provides to the user. Control is influenced by factors such as power-plays, politics and other social constructs.

Acquiring or giving control are not driven by simple rules, standards and norms and cannot be governed deterministically, but require a different lens of investigation (Orlikowski, 1992; Pierce et al., 2004). Factors such as the employee's job design, the empowerment levels, including access to and the cognitive ability of the employee enabling him to successfully appropriate the IS, also have an influence on the potential impact of the employee in the organisation.

2.4.8.2 Job Design

Job designing of sub-ordinates, or business leaders in this case, is an area where executive managers have much control over. Jobs that are repetitive and highly automated leave little room for innovation and control to appropriate IS and are not conducive for developing ownership. Jobs that are complex and not highly structured and routinised, allow employees to create organisational impact based on their ability, skills and experience. Executive managers can create jobs that allow freedom to business leaders that will satisfy the motivators of efficacy and effectance and self-identity. These jobs can, through their motivators for ownership and the control that they afford, serve to promote the levels of IS ownership in the organisation (Koiranen, 2007; Pierce et al., 2009; Spreitzer, 1996).

2.4.8.3 Empowerment

Delegating IS to an employee proves more successful when the employee is empowered to utilise the IS optimally. Empowerment using IS requires that users are, among other things, provided with access to the IS, perceive that they have control over the IS, get to know the IS intimately, can effect organisational impact leveraging the IS and enjoy using the IS (Gaskin and Lyytinen, 2010; Paré et al., 2006). Employees that are adequately trained and have appropriate decision-making

102

authority, using an IS that provides feelings of security and enjoyment in using, are likely to develop psychological ownership of the IS (Gaskin and Lyytinen, 2010).

2.4.8.4 Training and development

Jobs that are mentally challenging for an employee may produce the desired development of psychological ownership of the task objects (Pierce et al., 2009). Employees that master challenging tasks given to them, experience feelings of achievement and contribution (Koiranen, 2007; Pierce et al., 2009; Spreitzer, 1996). Empowered employees are able to perform according to, or above expectations when a target is handed to them. When employees are not adequately trained or do not have the skills and experience to perform to the requirements of the tasks, they may view the target as a burden (Pierce et al., 2009). Organisations can contribute to advance IS-related competences through assigning mentors or creating technology-related social networks (Carroll, 2004). Avey et al. (2009) state that the personal dimensions promoting psychological ownership (namely self-efficacy, accountability, a sense of belongingness and self-identity), can be developed through interventional training.

2.4.8.5 Participation in IS development

Barki et al. (2008) identify a positive relationship between employees participating in the development of an IS and their development of ownership of the system. Involvement in the development of an IS may be at levels of project participation, software development, analysis of business requirements, implementation of the IS, or other creational activities. There is a positive relationship between ownership of an IS and the perceived usefulness and ease of use of the system (Barki et al., 2008). Employees participating in the design of a system have the time to influence issues such as customisation, personalisation and ease of use. Being involved in the development of an IS renders the employee less critical about the system (Avey et al., 2009; Hou and Fan, 2010) and since the employee had significant exposure to the IS, reduces operational overheads.

2.4.8.6 IS ownership value for business

Taking responsibility and accountability imply that the business leaders and other employees are willing to accept ownership of the opportunities and risks affecting the business (Lohmeyer et al., 2002). IS in an organisation enables the business to leverage on technology, processes, people and innovation to create business benefits. Taking ownership of these IS or partial systems, allows the business to appreciate, understand and best utilise the systems (Lohmeyer et al., 2002).

If business leaders are held accountable for the successful leveraging of IS to the benefit of the organisation, they need to be in a position to make decisions related to technology investments, prioritise IS activities and integrate IS into the business (Lohmeyer et al., 2002). The distribution of IS ownership across the organisation, evaluation of performance and responsibility for technology, may influence the initiative to take ownership of IS in the organisation.

2.4.9 Reflecting on IS ownership

The following section summarises factors influencing the development of psychological ownership of IS in the individual, the expectations that the individual and the organisation have when the IS ownership transaction is established and the possible outcomes of IS ownership in the organisation.

2.4.9.1 Factors influencing the development of psychological ownership

A non-comprehensive summary of factors that influence the development of ownership of IS in employees is provided in Table 4:

Table 4 - Factors influencing development of psychological ownership of IS

Influencing factor	References
Roots of psychological ownership: Self-efficacy Self-identity Having a place	(Moon and Sanders, 2004; Olckers and Du Plessis, 2012; Olckers, 2011; Pierce et al., 2009, 2003, 2001, 1991)
Values and personal influences: Self-concept Attitude	(Erkmen and Esen, 2012; Furby, 1978; Hou and Fan, 2010; McIntyre et al., 2009; Van Dyne and Pierce, 2004; Wang et al., 2006)

104

Influencing factor	References

Locus of control
 	
    Sense of responsibility
 	
    Personal culture
 	
    Self-efficacy	

Individual needs:
 	
    Personal objectives
 	
    Expectations of the rights associated with
 	
    IS ownership
	(Chi and Han, 2008; Mackin, 1995)

Routes to psychological ownership:
 	
    Having control
 	
    Getting to intimately know the target
 	
    Investing the self into the target
	(Barki et al., 2008; Hou, 2012; Koiranen, 2007; Olckers and Du Plessis, 2012; Pierce et al., 2009, 1991)

Rights associated with IS ownership:
 	
    Equity sharing
 	
    Right to information
 	
    Empowered to make decisions
 	
    Ability to exercise influence
	(Avey et al., 2009; Chi and Han, 2008; Nordqvist, 2005; Pierce et al., 2001)

Target attributes:
 	
    Attractive
 	
    Accessible
 	
    Visible
 	
    Attract attention
 	
    Morally acceptable
 	
    Socially esteemed
 	
    Manipulable
	(Gaskin and Lyytinen, 2010; Olckers and Du Plessis, 2012; Pierce and Jussila, 2010; Wang et al., 2006)

Realisation of expectations: Expectations of the employee are manifested in the outcomes of the IS ownership. These expectations are indications whether psychological ownership has developed or not.	(Cook and Rice, 2003; Higgins, 1997)

2.4.9.2 Expectations of the owner and the organisation

A non-comprehensive summary of expectations of the employees' and from the organisational points of view when IS ownership is offered and accepted by an employee is provided in Table 5:

Table 5 - Expectations associated with IS ownership

Expectation	Reference

Personal expectations:
 	
    Achieving personal objectives
    Job satisfaction
    Increased self-esteem
    Positive and uplifting effect
    Security
    Identity
    Stimulation
	(Porteous, 1976; Pierce et al., 2003; Formanek, 1994; Han et al., 2010; Ozler et al., 2008)

Organisational expectations:
 	
    Taking responsibility
    Being responsible for
    Caring for the target
    Personal commitment
    Organisational bonding
	(Avey et al., 2009; O'Driscoll et al., 2006; Van Dyne and Pierce, 2004)

2.4.9.3 Outcomes of IS ownership

A non-comprehensive summary of literature related to ownership outcomes was compiled and depicted in the context of IS ownership in Table 6:

Table 6 - Outcomes of IS ownership

Outcome	Reference
Personal outcomes	

Positive outcomes:
 	
    Achieve personal objectives
    Job satisfaction
    Increased self-esteem
    Positive and uplifting effect
	(Pierce et al., 2003; Formanek, 1994; Heino and Jussila, 2010; Vandewalle et al., 1995)

Negative outcomes:
 	
    Responsibility burden
    Emotionally draining
	(Koiranen, 2007; Olckers, 2011; Pierce and Jussila, 2010)

Organisational outcomes	

Positive outcomes:
 	
    Taking responsibility of the target
    Caring for the target
    Assume the risks associated with the target
    Promote change
    Stewardship
    Willing to make personal sacrifices
    Organisational bonding
    Performance improvement
	(Avey et al., 2009; Hou, 2012; Pierce et al., 2003; Van Dyne and Pierce, 2004)
	
	Note:
	Van Dyne and Pierce (2004) did not find a significant relationship between ownership and performance improvement

Negative outcomes:
 	
    Resist change
    Information hoarding
    Deviant behaviour
    Self-serving
    Focus mainly on territory building
	(Brown et al., 2014; Fraser and Kemp, 2012; Olckers and Du Plessis, 2012; Pierce and Jussila, 2010)

2.5 Gaps in the literature
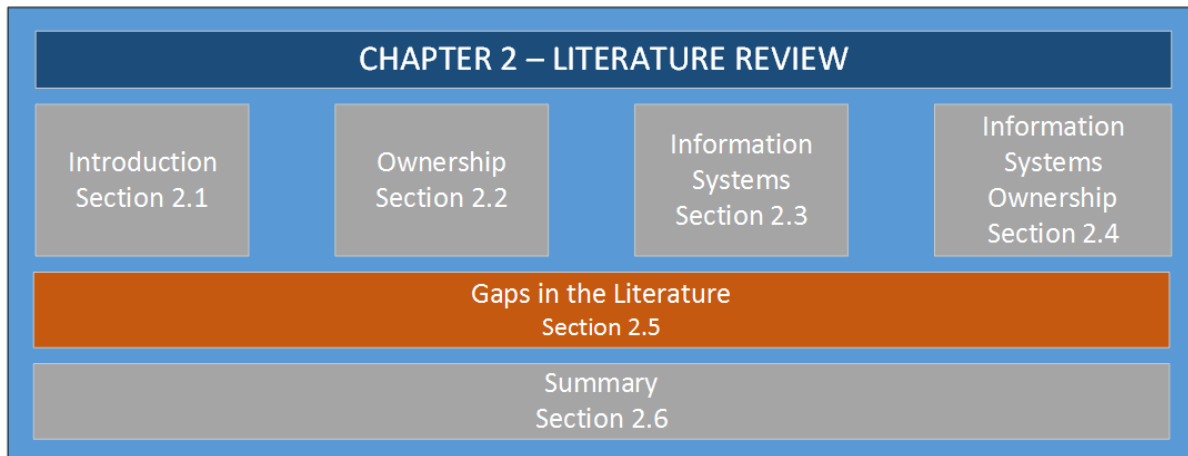
Studying an environment where human interaction plays a major role and inanimate objects influence human interaction, requires focus on multiple areas, including that of social interactions and the organisational environment wherein the interaction takes place. Ownership in an organisation comprises formal and psychological ownership (Pierce et al., 2003, 2001, 1991). Formal ownership affords the organisation to decide to whom its own-able targets should be assigned. Psychological ownership is personal and depends on the individual or group taking ownership.

Literature studies with some examples which have been comprehensively documented that relates to the problem statement of "*Why are some business-leaders reluctant to take ownership of Information Systems in an organisation*?" include:

- Ownership in general and the different forms of ownership including formal psychological ownership with their respective sub-forms of ownership (Chi and Han, 2008; Demsetz, 2010; McIntyre et al., 2009; Olckers and Du Plessis, 2012; Pierce and Jussila, 2010);

- The mutual non-exclusivity of psychological and formal ownership and the bond between formal and psychological ownership (Furby, 1980; Pierce et al., 2004);

- Organisations, focusing on ownership with the intention to bond employees to the organisation. O'Reilly (2002) posits that managers' intent in instilling ownership do not relate as much to financial ownership as to psychological ownership (O'Reilly, 2002; Ozler et al., 2008);

- Types of ownership targets, including the attributes of the targets and the factors that may influence organisations and employees to transfer formal ownership and the development of psychological ownership in employees (Avital and Vandenbosch, 2000; Olckers and Du Plessis, 2012; Pierce et al., 2003);

- The expectations, rights and obligations of stakeholders in the ownership transaction (Aghion and Tirole, 1997; Chi and Han, 2008; Mackin, 1995; Pierce et al., 2001; Wagner et al., 2003);

- The transfer of formal ownership in the organisation (Krause and Bowman, 2001; Moffett and Sloman, 1991; Zhang et al., 2008);

- The promotion of psychological ownership in the organisation and the development of psychological ownership in individuals and in groups (Furby, 1980, 1978; Krause and Bowman, 2001).

Chapter 2 focuses on ownership in general, comprising formal and psychological ownership of any organisational target. Section 2.3.3 focuses on the concept of IS as a specific kind of organisational target. Areas where the researcher could not find adequate information relating to the problem statement of "*Why are some business-leaders reluctant to take ownership of Information Systems in an organisation*?" are:

- Research combining formal and psychological ownership of own-able targets in organisations could not be found in the literature. Relationships between psychological and formal ownership has been documented and can be related to the combination of formal and psychological ownership (Chi and Han, 2008; Pierce and Rodgers, 2004);

- When positioning formal ownership with owners, executive managers should be aware that the environment, the target of ownership, the assignment of ownership and personal factors may influence the acceptance of ownership (Ballantyne, 2003; Druskat and Pescosolido, 2002; Gaskin and Lyytinen, 2010; Hou, 2012; Koiranen, 2007; Pierce et al., 2009) (section 2.2.6). However, no evidence of guidance in selecting specific individuals to own an IS could be found in the literature. The organisation should be able to identify employees or groups of employees that will accept formal ownership and potentially

develop psychological ownership to optimally apply or leverage IS as a target to achieve organisational objectives;

- Research focusing on the personal (psychological) influences and social (sociological) influences on employees developing psychological ownership of IS in the organisation (Pierce et al., 2001; Wagner et al., 2003) ;
- No evidence of a framework for understanding IS ownership in the organisation could be found.

Gaps in the literature related to the specific case of IS ownership in the organisation have been described in this section. Studying IS ownership as a phenomenon in the organisation creates a better understanding of IS ownership in the business, which may render new resolutions to address the problem that many IS owners are reluctant to take IS ownership of the IS in their business areas. This study focuses on the lack of a framework for understanding IS ownership in the organisation.

2.6 Summary
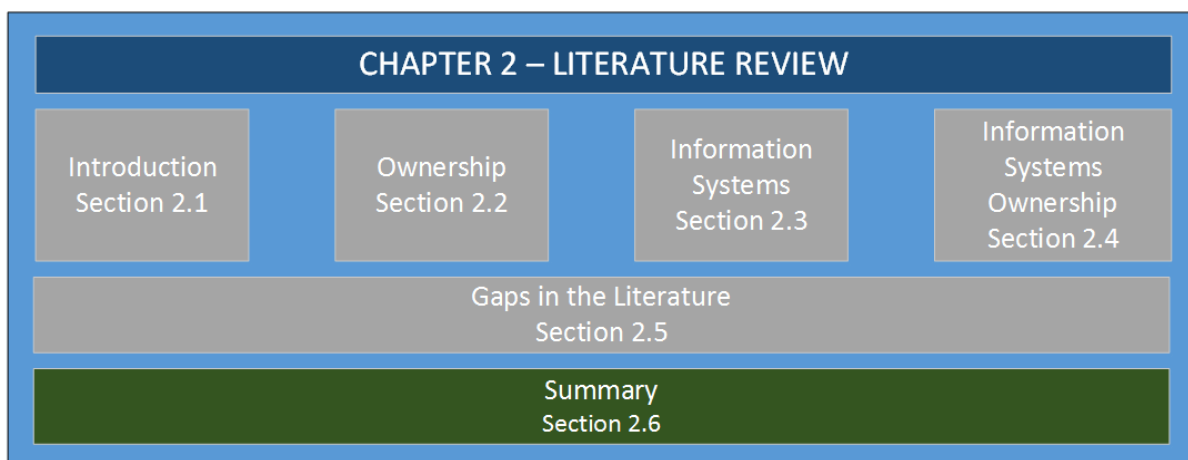
Chapter 2 discusses the generic forms of formal and psychological ownership (section 2.2). Formal ownership is acknowledged by the community in the organisation and the rights associated with it are protected by organisational policies. Psychological ownership is also referred to as emotional ownership and develops from within an owner.   Although formal and psychological ownership are non-exclusive, a combination of both forms of ownership provides the strongest form of ownership.

Section 2.3 discusses IS in the organisation. Section 2.3.1 explains the conceptual understanding of IS by stakeholders in IS ownership, as influenced by the perceived scope and role of IS in the organisation. Section 2.4 discusses IS ownership as a special instance of generic ownership with its forms of formal IS ownership (section 2.4.1.1) and psychological ownership (section 2.4.1.2) combining into IS ownership.

The roles of IS ownership stakeholders are discussed in section 2.4.3. Four parties were identified as IS ownership stakeholders, namely the executive managers assigning the IS ownership to business leaders, the business leaders that were identified to become IS owners, the IS departmental staff members as IS custodians and the users of the IS.

Distributing (section 2.4.4), assigning (section 2.4.5) and promoting IS ownership (section 2.4.8) are discussed in this chapter. Section 2.4.6 discusses the rights and obligations of IS owners and of the executive managers assigning IS ownership to the business leaders. Executive managers and IS owners have expectations that IS ownership will render specific outcomes. The outcomes of IS ownership are discussed in section 2.4.7. IS ownership stakeholders benchmark their expectations of IS ownership with the outcomes of IS ownership to establish whether their expectations were met.

Chapter 3 discusses possible approaches that can be followed to research the problem statement of "*Many business leaders are reluctant to take ownership of the IS in their business areas, missing the opportunity to utilise IS optimally as resource in the business organisation.*" The researcher describes the landscape and the scope of the study and selects a suitable approach and methodology to conduct the research towards the objective of the study, being "*To suggest a framework for understanding IS ownership in the business environment.*"

Chapter 3
The Research Approach and Design

CHAPTER 3 – THE RESEARCH APPROACH		
Introduction Section 3.1	Research Framework Section 3.2	Research Design Section 3.3
Summary Section 3.4		
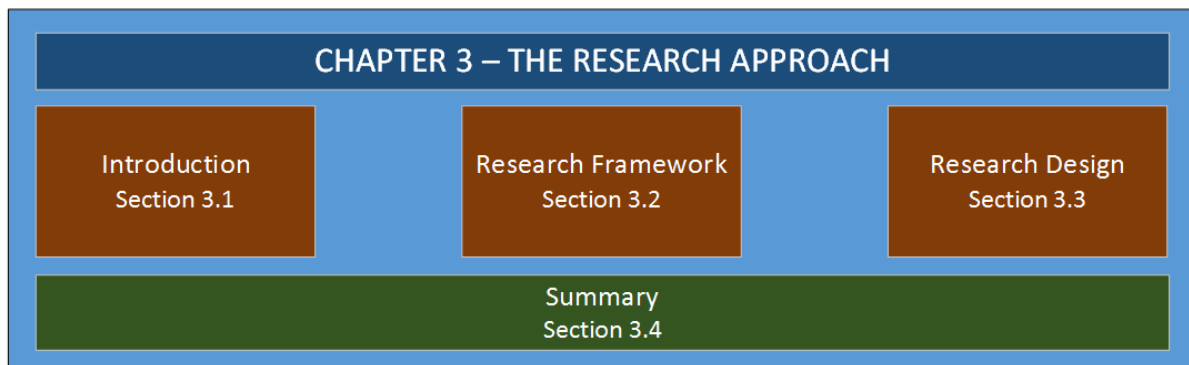
CHAPTER 3 – THE RESEARCH APPROACH AND DESIGN

Introduction
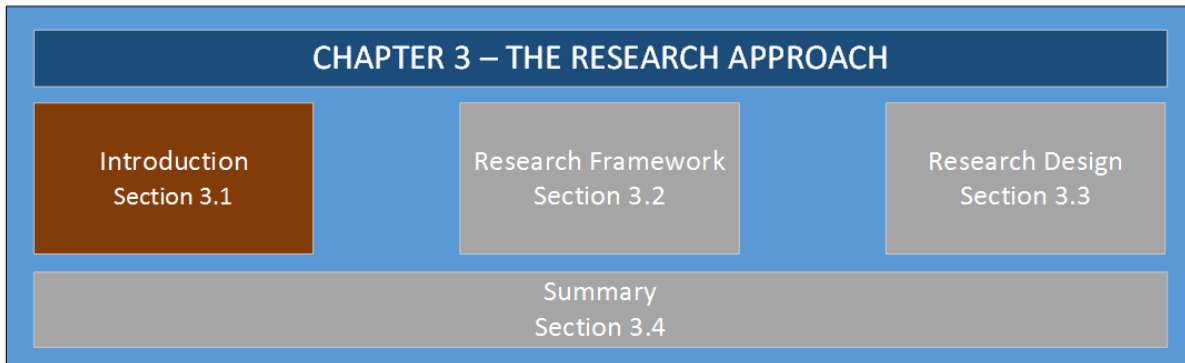
Conducting a study of IS ownership in the organisation without following a structured approach would not be efficient, or effective. Researchers typically design a framework to be followed in pursuit of their research objectives. Depending on their cognitive experience, preferences, personality, topic of research, research environment and other conditions, researchers have to make decisions regarding their approach to the research project. Decisions are documented in a research framework that serves as guide to the study (Creswell, 2009; Crotty, 1998).

This chapter provides an overview (section 3.1) of the framework guiding the research and then provides the specific research design (section 3.2) for this study. Section 3.3 summarises the chapter.

3.1   Research Framework
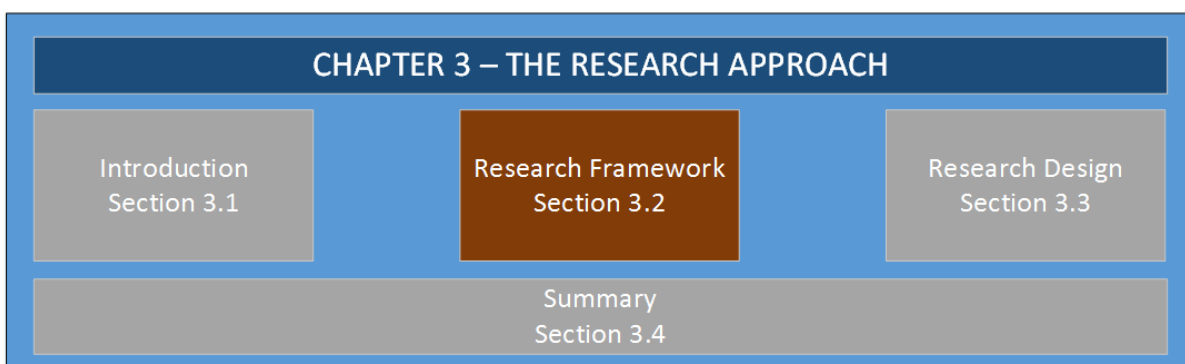
It is generally proposed that researchers take a specific stance with regards to their philosophies when selecting the elements of the research framework. The elements

of research, which are indicated as different focus areas in the research framework, are related and may inform each other. No common terminology exists between scholars' framework proposals where the same term may often have different meanings when used by different authors. Crotty (1998, p. 1) states that the researcher may often encounter an "array of methodologies and methods laid out before their gaze. These methodologies and methods are not usually laid out in a highly organised fashion and may appear more as a maze than as pathways to orderly research."

Researchers undertaking a study may ask the question "Why am I doing this study?" (Holden and Lynch, 2004; Maxwell, 2005). The researcher has to take a specific stance when providing her or his reason(s) for conducting a study. Reasons for the study may be given as "I am seeking the truth" or "I want to find out why someone act in a specific way" or "I want to determine what will happen if… ." The reason for doing the research has a direct influence on the research strategy (Olckers, 2011).

Designing a research framework requires a number of decisions, based on:

- The study to be conducted;
- The questions to be answered by the study;
- Personal preferences and cognitive experience;
- The environment wherein the research is conducted;
- Other influences on the researcher and the topic of research (Creswell, 2009; Holden and Lynch, 2004).

Galt (2009) adapted an idea of Creswell (2003; 2009), explaining the flow of designing and conducting a scientific study. This adaptation is depicted in Figure 6.
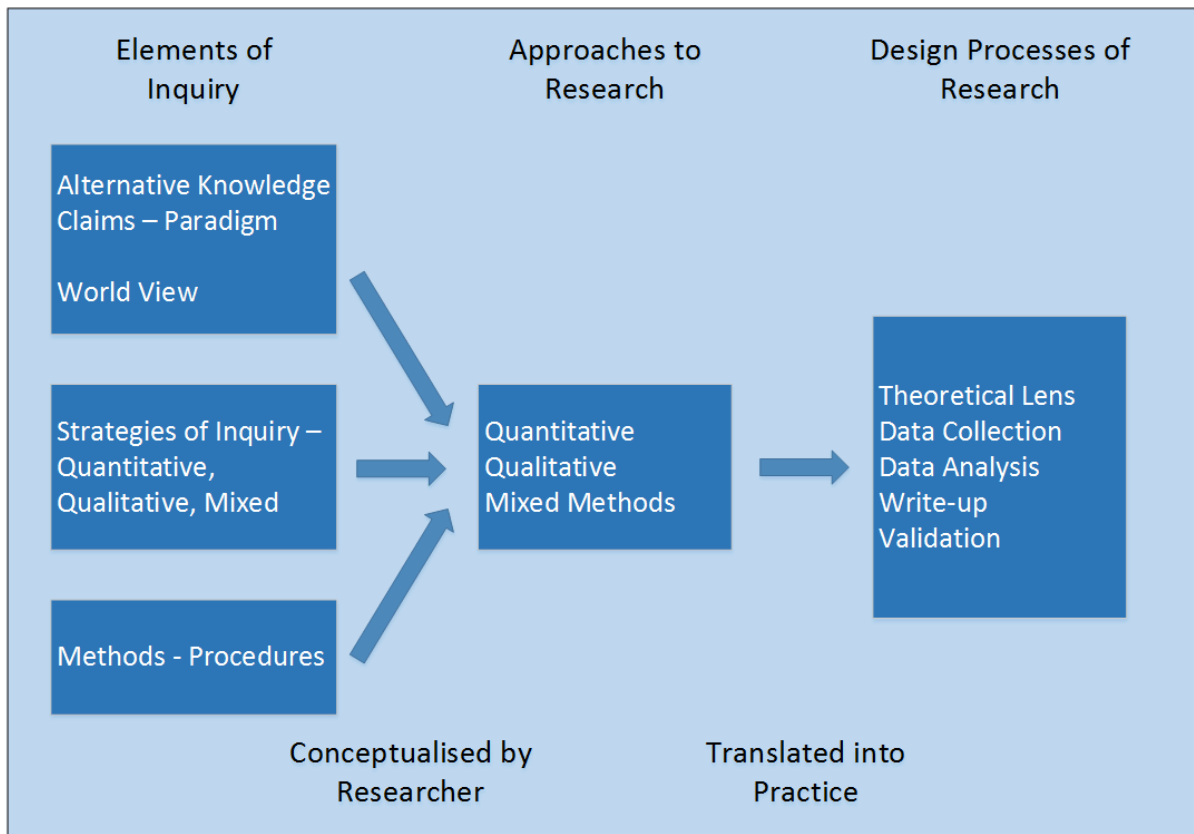
Figure 6 - Knowledge Claims, Strategies of Inquiry and Methods Leading to Approaches and the Design Process (Galt, 2009)

Alternative frameworks exist that can be used by researchers to suit their research (Ordanini and Rubera, 2010; Roode, 1993). Creating a research framework has to be addressed in a sequential manner, as one element of the framework may inform another (Crotty, 1998). A brief summary of some prominent research frameworks are listed next (Creswell, 2009; Crotty, 1998; Saunders et al., 2012), including:

- Crotty (1998) proposes that researchers follow a stack of research elements, comprising the epistemology, theoretical perspective, methodology and methods that the researcher plans to use in his study. Crotty (1998) proposes a bottom-up approach, starting with the methods, followed by the methodologies, theoretical perspective and finally confirming the epistemology or philosophical theory of knowledge that informs the research;
- Creswell (2009) proposes that the researcher uses pre-designed frameworks as an approach to his studies. Pre-designed or existing frameworks have structural integrity and the academic fraternity is familiar with these frameworks;

115

- Saunders et al. (2012, p. 128) use an "onion-skin" analogy of layers to describe the different focus areas of the framework and is referred to by researchers as the "research-onion" approach. The research onion is a top-down approach, starting by the researcher's philosophical stance with regards to the study, followed by the methodological choice to acquire and analyse the data in the study. Following the selection of methods, is the research strategy, the time-horizon of the study and the techniques and procedures of acquiring and analysing the data.

The research onion representation with its top-down approach proposed by Saunders et al. (2012, p. 128) was used in this study and is depicted in Figure 7.
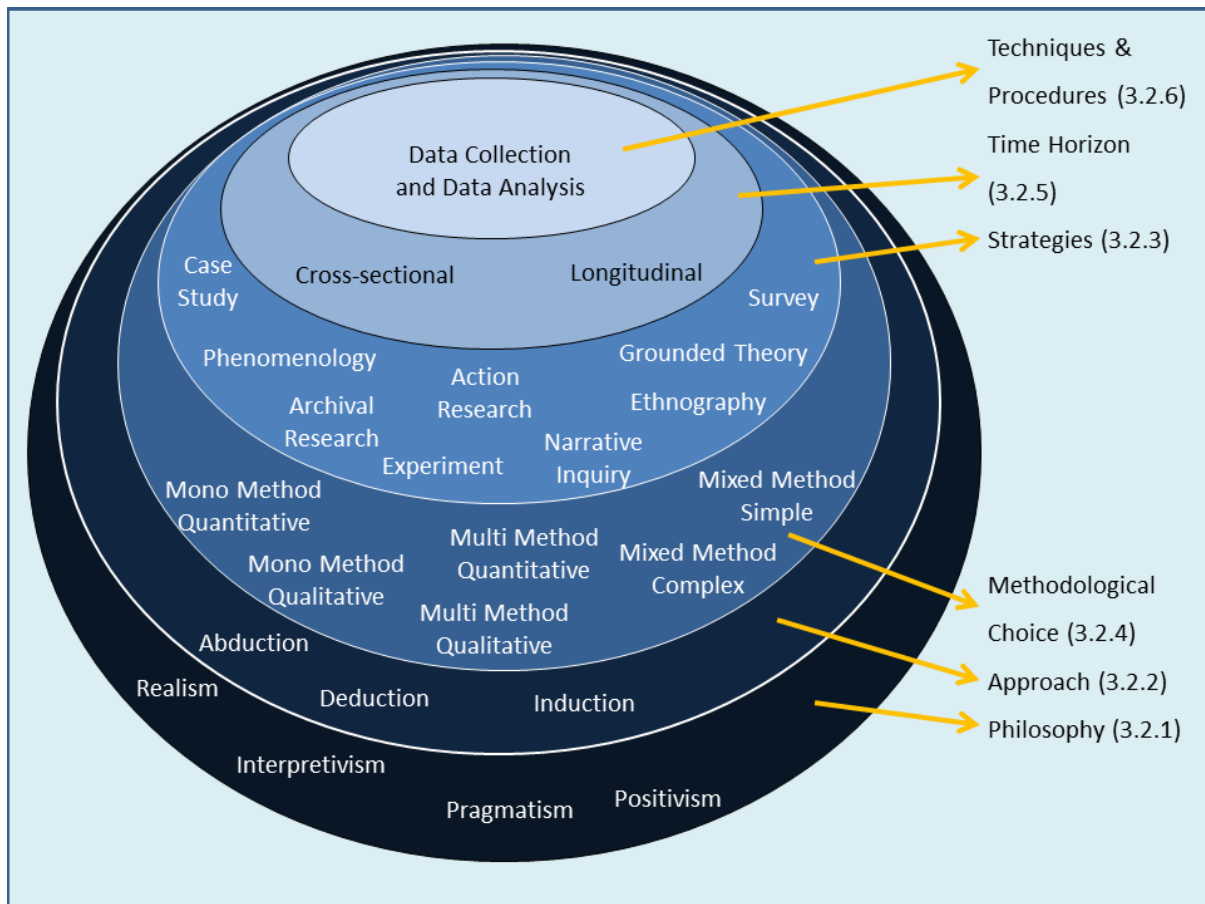
Figure 7 - Research Onion (based on Saunders et al., 2012, p. 128)

The components of a research framework are discussed next:

3.1.1 Philosophy

Philosophy pertains to the development and nature of knowledge within the environment of the study. The way in which the researcher views the world with regards to the study informs the research strategy and methods used within the strategy (Saunders et al., 2012). The philosophy of Saunders et al. (2012) can be viewed as a combination of Crotty's (1998) "epistemology" and "theoretical perspective". The research philosophy of Saunders et al. (2012) includes the elements of ontology, epistemology and axiology:

- *Ontology* - Pertains to what the researcher deems the nature of reality to be. Two main ontological stances, objectivism and subjectivism, are taken by researchers. Researchers with an objectivist view will approach the research environment without bias and take a stance that social phenomena can be researched through "rigorous, standard procedures" (Olckers, 2011). Subjectivism reflects a point of view that the researcher is involved in the social activities of the actor and have an influence on the outcome of social interaction being research (Holden and Lynch, 2004).

- *Epistemology* - Reflects what the researcher accepts as knowledge in the field of study (Carter and Little, 2007; Saunders et al., 2012). Epistemology also pertains to the relationship between the researcher and the researched (Fernández, 2003). Objectivists would view the research of a subjectivist as "social phenomena which have no external reality" (Saunders et al., 2012, p. 103). Subjectivists would view the research of objectivists external to social action (Saunders et al., 2012, p. 108) and therefore of little value when conducting research relying on social interaction.

- *Axiology* - Reflects the researcher's judgement of value. Values serve as the basis for decision-making in the research (Saunders et al., 2012). Researchers choosing interviews as data collection technique values personal interaction higher than non-personal interaction as found in electronic surveys (Saunders et al., 2012). Researchers' ethical values play an important role in the research. The results of study of similar nature may differ between researchers, due to the

difference in values viewed as important by the researchers (Carter and Little, 2007; Saunders et al., 2012).

A number of theoretical philosophies have been identified that are commonly used in research (Creswell, 2009; Crotty, 1998; Holden and Lynch, 2004; Lincoln and Guba, 2000; Ponterotto, 2005; Saunders et al., 2012; Schwandt, 2000). In qualitative IS research, three prominent philosophical perspectives exist, namely positivism, critical research and interpretivism (Myers, 1997; Orlikowski and Baroudi, 1991; Trauth, 2001) and are discussed next:

- *Positivism*

  Positivist studies are conducted primarily to test existing theories with the intention of improving the predictability of a phenomenon (Orlikowski and Baroudi, 1991). Researchers focus on facts and reports in an objective manner on the findings (Carroll, 2012; Orlikowski and Baroudi, 1991). Positivism assumes a single truth, renders measureable results and is generally used in quantitative research (Carroll, 2012; Myers, 1997; Orlikowski and Baroudi, 1991).

- *Critical research*

  Contrary to positivism and interpretivism that focus on the understanding of phenomena, critical research focuses on emancipation. Critical research follows a process of identifying phenomena with inadequacies, critiquing the existing assumptions related to the phenomena and to develop understandings that may lead to emancipation of the suppressed (Brooke, 2002a, 2002b; Oates, 2006). The research is focused on the shortcomings experienced by suppressed rather than focusing on the interests of the researcher (Brooke, 2002a).

  With specific focus on IS research, IS researchers focusing on emancipation would, as an example, challenge the belief that technology should dominate the relationship between people and machine. Critical researchers believe that the people in the organisation, instead of technology, should determine the role and appropriation of technology (Oates, 2006).

- *Interpretivism*

  Interpretive researchers have the stance that phenomena related to human actions and interactions have meaning behind them and differ materially from phenomena in the natural sciences (Schwandt, 2000). To understand the interactions between people it is necessary to understand the meanings behind the interactions. Interpretivism is an epistemology that acknowledges differences between people (Karley, 2013) and recognises that interactions between the researcher and individuals differ because of these differences.

  Unless actions from individuals carry explicit indications of their meaning, all actions are likely to be understood within the context wherein they occur (Schwandt, 2000). To understand what an action means, requires an interpretation thereof by another party. Actions may be misunderstood, in which case the action will have a different meaning than what actually happened, or what the actor wanted the observer to experience. The researcher should realise that individuals are unique and therefore do not always comply with "*laws*" of intention (Saunders et al., 2012).

3.1.2 Research approaches

Approaches to the research depend on the visibility or availability of a theory at the start of the research (Saunders et al., 2012). Deduction, induction and abduction are processes of reasoning to acquire new knowledge (Hyde, 2000; Saunders et al., 2012).

When a theory is used to substantiate, modify or apply the theory in the field of study, a deductive approach to conduct research is possible (Saunders et al., 2012). A researcher approaching the study deductively will explicitly state the rule, theory or pattern at the beginning of the study and move from that stated point into the applications of the adopted theorem. Deduction therefore implies that the researcher starts with a theorem to guide a study (Saunders et al., 2012).

In the case where no theory exists, the researcher can build an understanding, or theory of a phenomenon related to the study environment inductively (Saunders et al., 2012). An inductive approach implies that the researcher will use data to produce a theorem or rule through a process of discovery (Hyde, 2000). Induction therefore

implies that the researcher builds a theorem from data acquired during the study (Saunders et al., 2012).

In general, deductive processes of reasoning are linked to quantitative, while inductive processes of reasoning are linked to qualitative research. Positivism relies on deductive reasoning, while a methodology like grounded theory uses an inductive process of reasoning (Hyde, 2000).

Available literature and time influences the research approach. Ample literature can lead the researcher to form an idea of what may constitute the truth (Hart, 1998a), providing the researcher with a supporting theory on which the research can be based. Deductive approaches may prove more suitable in some studies and typically requires less time to complete. A major risk in deductive research relates to low levels of responses from participants (Saunders et al., 2012), but is less risky than inductive research, where it is possible that a theory may never emerge from acquired data.

Qualitative research is traditionally based on inductive reasoning, researching a phenomenon through the inductive construction of a theory from a case where the phenomenon can be observed (Hyde, 2000). If the logical implications of the theory reveal relationships between components in a phenomenon, the theory has "explanatory power" and if the logical implications can be used for predictions, the theory has "predictive power" (Langan, 2001).

Research approaches can also consist of a combination of inductive and deductive reasoning (Hyde, 2000; Saunders et al., 2012). A study may commence with an inductive building of a theory from acquired data, followed by a deductive phase where the built theory is tested to improve the credibility of the study (Hyde, 2000).

3.1.3 Methodological Choices

Studies can be quantitative or qualitative in nature and researchers have a choice of different data collection techniques and analysis procedures (Saunders et al., 2012). Quantitative techniques and procedures use and produce numerical data, while qualitative techniques and procedures use and produce non-numerical data (Saunders et al., 2012). Researchers have various options of selecting simple, or

combinations of data collection techniques and data analysis methods as depicted in Figure 8:
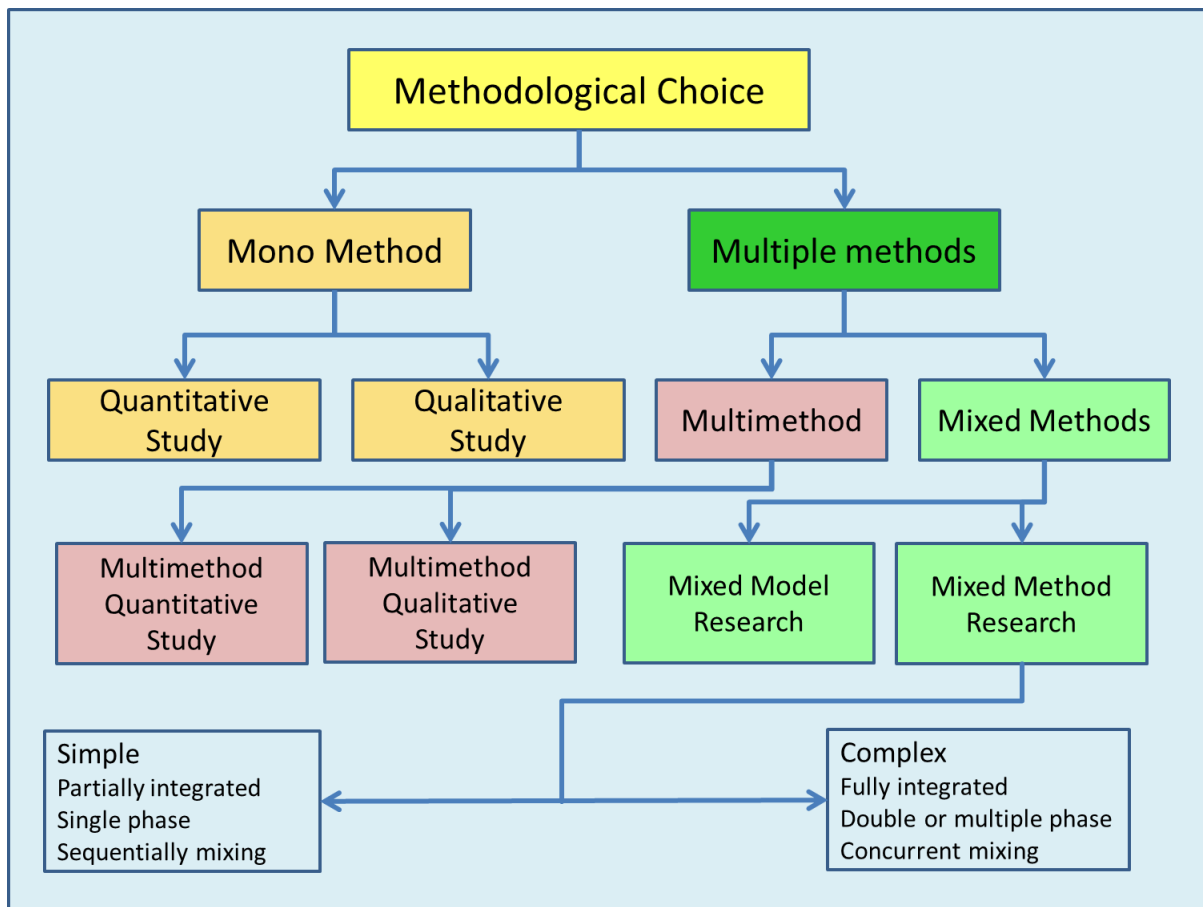
Figure 8 – Methodological Choice (Saunders et al., 2012, p. 165)

The categories of research methods are discussed below:

- Using a single data collection technique with corresponding data analysis is referred to as a *mono method* research approach. Examples of the mono method approach include data gathering using observation together with qualitative data analysis, or electronic questionnaires with quantitative data analysis.

- *Multiple methods* are used when researchers use more than one data collection technique and data analysis procedure in the study (Saunders et al., 2012). Multiple methods are combinations of multiple data collection techniques with their corresponding data analysis procedures.

- o *Multi-method* studies use either quantitative, or qualitative techniques and procedures as study method.
- o *Mixed-method* studies use combinations of quantitative and qualitative techniques and procedures (Saunders et al., 2012).
  - ▪ *Mixed-method research* uses quantitative and qualitative data collection techniques. Quantitative data is analysed via quantitative procedures, while qualitative data is analysed qualitatively (Saunders et al., 2012). Mixed-method research may be *Simple* where the qualitative and quantitative methodologies are used in one or during specific stages such as the collection data, but not during the analysis of the data. The mixed-method may also be *Complex* where qualitative and quantitative methodologies are used during all the stages (data collection, analysis and presentation) of the research (Saunders et al., 2012).
  - ▪ *Mixed-model research* combines the acquisition and analyses of quantitative and qualitative data, implying that researchers may analyse quantitative data qualitatively, or analyse qualitative data quantitatively (Saunders et al., 2012).

Qualitative frameworks for social science are designed to help researchers to understand the social world of people, groups, societies and cultures (Creswell, 2009; Lincoln and Guba, 2000; Myers, 1997). Creswell (2009) states that researchers are not confined in using either quantitative or qualitative approaches and they can mix these approaches into one framework. Quantitative and qualitative approaches can be viewed to be on the same axis of a graph allowing a choice of how much quantitative and how much qualitative research to be done.

3.1.4 Research strategies

Research strategies are used for exploratory, explanatory and/or descriptive research (Saunders et al., 2012; Yin, 2003). Some strategies may be more suitable to conduct deductive research, while others are more suitable to conduct inductive research. The selection of research strategy depends on the objectives of the research, the research questions to be answered and the researcher's cognitive experience (Saunders et al.,

2012). The following sub-sections discuss four research strategies that may be considered for the study of IS ownership in the organisation.

3.1.4.1 Case study

Case studies are best used when the researcher wants to do an empirical investigation within the context wherein a phenomenon is studied (Saunders et al., 2012). Case studies serve the researcher to answer "why?", "what?" and "how?" questions, albeit that the "what?" and "how?" questions may also be addressed by surveys. Based on the questions to be answered, case studies are suited for descriptive, explanatory or exploratory research (Saunders et al., 2012; Yin, 2003).

The researcher can use single or multiple cases for the study (Saunders et al., 2012; Yin, 2003). Single cases are used where the case may be a unique, extreme case which is rare and requires documenting, or a critical case in testing a "well-formulated" theory (Saunders et al., 2012, p 181; Yin, 2003, p. 40). Yin (2003) argues that single case studies are suited for a study if it can answer the research questions, thereby representing a typical case. Revelatory and longitudinal cases are also suitable and adequate to be used as single case studies. Single case studies may not be suitable if the researcher cannot acquire data that are rich enough to answer the research questions, in which case, the researcher may have to conduct multiple case studies (Yin, 2003).

Multiple case studies may render the study more robust, creating a rich theoretical framework, stating conditions wherein a phenomenon is likely to be found or conditions wherein the phenomenon is not likely to be found (Yin, 2003). Case studies can be objective or subjective in nature (Holden and Lynch, 2004). The objectivist accepts what he sees, hears or experiences as the truth, while the subjectivist needs to interpret what is told to him, what he sees or what he experiences, taking social interaction into consideration.

3.1.4.2 Action Research

Action research combines research with the application thereof in practice, thereby improving the value of the research in the organisation (Avison et al., 1999; Baskerville and Myers, 2004). Through action research, researchers conduct research, while

123

simultaneously effect change in the organisation. Researchers intervene in the study by applying the research in the area being researched in an iterative manner. The results of the intervention is then used in the next iteration of the research process.

As the researcher uses action research to solve practical problems in the environment (Baskerville and Myers, 2004) over a period of time, action research is well suited for use in longitudinal studies. Action research is a reseach strategy that is closely associated with pragmatism, believing that truth should be sought in practical applications (Baskerville and Myers, 2004).

3.1.4.3 Grounded theory research

Glaser and Strauss (1967) originally developed the grounded theory research methodology. Since then, other researchers have modified and adapted the grounded theory method to suit their needs. Two prominent approaches for conducting grounded theory research exist, namely the Glaserian or classical approach and the Straussian approach. Fernández (2003) argues that researchers should select the approach best suited to their studies.

Grounded theory research enables the researcher to identify patterns (concepts and categories) and individuals' ideas and perceptions related to the topic of research in the research environment. Unearthing these concepts and categories serve to guide the direction of the study (Fernández, 2003; Glaser and Strauss, 1967; Urquhart, 2000). The unpredictability of the acquired data from the field that guides the research opposes pre-conceived structures for conducting the study (Dey, 2012; Fernández, 2003; Glaser and Strauss, 1967; Urquhart, 2000).

3.1.4.4 Phenomenological research

The strategy of phenomenology pertains to understanding and describing the experiences of a number of people related to a specific phenomenon (Creswell, 2007). The intention of using phenomenology is to understand "what" people experienced and "how" they experienced it, enabling the researcher to become knowledgeable in the essence of the phenomenon as it exists in the organisation (Creswell, 2007). Phenomenology therefore studies the subjective views of people that experienced a phenomenon, but does not study the phenomenon itself (Willis, 2007). However, by

understanding how people experienced the phenomenon, much can be learned about the phenomenon (Campbell, 2011). Phenomenology focuses on multiple people sharing the experiences of a phenomenon.

The process of the phenomenological study commences by collecting data from people that experienced the phenomenon (Creswell, 2007). Selection of individuals to share their experiences of a phenomenon should be handled with care. Individuals should have experienced the same phenomenon and be demographically similar.

In this study of understanding IS ownership in the organisation, IS ownership is the phenomenon and the demographics of the individuals are similar in their roles as IS ownership stakeholders. The size of the sample should be large enough to render the research valid.

By interviewing people, their experiences with the phenomenon are discussed, while the interviewer sets about to view the phenomenon from their perspectives (Shackleton, 2007). Interviews are not positivistic in nature, but rather begin with a clean slate with some level of knowledge acquired from existing literature influencing the interviews. The responses of the interviewees lead the interview in a direction that can provide insight into the phenomenon.

Bias in a researcher's approach may render data that is meaningless and researchers are encouraged to "bracket" the researcher's interpretations of the phenomenon of the study to ensure that only the perception of the participants are taken into consideration (Campbell, 2011; Creswell, 2007). The questions used in the interviews should be structured in such a manner that research-bias is eliminated or limited.

The data from the research is then analysed by reducing the information through an iterative process of coding, searching for clusters of common data and then combining the data into themes (Creswell, 2007). The themes emerging from the data enable the researcher to build an understanding of the phenomenon through a process of induction (Creswell, 2007).

3.1.5 Time horizons

Time horizons provide an indication whether the research is done over a period of time, showing changes in the phenomena over the research period (*longitudinal*

studies), or whether the study reflects a static picture of the phenomena (*cross-sectional studies*) (Saunders et al., 2012). Cross-sectional studies have the advantage that they can be conducted in a shorter time period than longitudinal studies and are therefore more suited to studies that are time-constrained (Saunders et al., 2012).

3.1.6 Techniques and procedures

Techniques and procedures refer to the manner that the researcher gathers and analyses data to answer the questions of the study. Techniques available to the researcher depend on the nature of the data collected and the data collection method. Data can be primary or secondary in nature (Makhlouk and Shevchuk, 2008).

Secondary data refers to data that has been collected previously and is available as published data in journals, magazines, organisational artefacts and other recorded resources (Saunders et al., 2012). Primary data has never been collected and recorded before and is used when secondary data is insufficient as sources of information for the purposes of the study (Makhlouk and Shevchuk, 2008).

3.1.6.1 Theoretical lens

A theoretical lens provides a focus to guide the perspective of the researcher in the study and provides insight into areas that otherwise may have remained hidden (Creswell, 2009, 2007; Reeves et al., 2008). Several theories address various aspects concerning a study of this nature. Two prominent theories, namely structuration theory and social exchange theory that may concern IS ownership research are briefly discussed next.

Structuration Theory

Structuration theory is a suitable contender for the study of IS as a pervasive structural and social entity in the organisation (Giddens, 1984). Structuration theory holds a duality view that an agent re-enforces existing structures by acting according to the norm and rules of the structures. The agent also has the ability to change the structure if he or she decides to purposely do so (Giddens, 1984). Although structuration theory was developed with the focus on the social organisation and not on IS (Jones and Karsten, 2008), much evidence exist of IS research utilising structuration theory, some

derivative thereof (Turner, 1986; Orlikowski, 1992; Walsham, 2002; Poole and De Sanctis, 2000), or in combination with other theories (Naidoo, 2008).

Structuration theory can be applied to the study of IS ownership where users interact with other users, or where users interact with technology. Users are constraint by the rules of technology, while they are empowered (to various extents) to change technology or the application thereof in the organisation (Barley, 1986). Orlikowski (1992) refers to the duality of IS, where users are the agency within structure of technology and then also where technology is the agency within the structure of the organisation. This duality approach by Orlikowski is well suited to study IS ownership in the organisation, because of its dynamic approach of constant change in use and design. The approach may be limited by the reality that developers do not constantly change IS based on user requirements (Naidoo, 2008), specifically in the case of "commercial off-the-shelf" software, or by the inhibiting costs of continuous development.

Structuration theory has not been without critique, as is evident in the literature (Turner, 1986; Jones and Karsten, 2008; Naidoo, 2008; Rose, 1998). Rose (1998) argues that structuration theory is used mainly for theorising and empirical studies, but that there is no adequate guidance for researching IS in practice. This shortcoming is particular important, because "*IS is an applied field"* (Rose, 1998) and the high level abstraction of structuration theory inhibits research at empirical levels (Jones and Karsten, 2008; Turner, 1986; Pozzebon and Pinsonneault, 2005). One main area of concern is Giddens' position that structure exists "*as memory traces*" (Giddens, 1984), omitting the existence of structures within "*material artefacts, such as technology*" (Naidoo, 2008). The interaction between people and technology therefore needs to be augmented by other means, as emphasized by Orlikowski and Iacono (1991), who propose that students need to study technology beyond its constraining properties. Other areas of critique relate to the lack of guidance in the areas of power (Jones and Karsten, 2008); lack of sufficient elaboration on structure (Sewell, 1992); the complexity and difficulty of applying structuration theory (Poole and De Sanctis, 2000; Pozzebon and Pinsonneault, 2005).

127

The following section discusses social exchange theory as a theoretical lens through which relationships emanate, such as when an executive manager assigns an IS to a business leader.

Social Exchange Theory

Creating an understanding of IS ownership can be assisted by researching the relationships between principles and agents in the process of establishing IS ownership. Social exchange theory explains why and under which conditions some agents may be satisfied with a social exchange, while others may not (Cook and Rice, 2003; Cropanzano and Mitchell, 2005). Through an understanding of when and why an employee may accept formal ownership and develop psychological ownership of the IS, a better understanding of IS ownership can be acquired. Social exchange theory is a suitable lens to investigate IS ownership, as the ownership agreement is primarily built on the relationship between the executive manager and the IS owner.

Avey et al. (2009) argue that social exchange forms a basis from which ownership develops. Employees develop ownership and responsibility to reciprocate the organisation's actions to satisfy the needs of the employees (Avey et al., 2009). Other examples of scholars using social exchange theory investigating phenomena in the IS environment are depicted in Table 7.

Table 7 - Using of Social Exchange Theory in IS research

Topic	Author	Year	Citation
Borrowed theory – Applying exchange theories in information science research	Hall	2003	(Hall, 2003)
Exploring the Roles of Social Exchanges in Using Information Systems	Kwahk	2013	(Kwahk, 2013)
Can Social Exchange Theory Explain Individual Knowledge-Sharing Behavior? A Meta-Analysis	Liang, Liu and Wu	2008	(Liang et al., 2008)
Information Technology, Privacy and Power within Organizations: a view from Boundary Theory and Social Exchange perspectives	Stanton and Stam	2003	(Stanton and Stam, 2003)
Strategic flexibility in information technology alliances - The influence of transaction cost economics and social exchange theory	Young-Ybarra and Wiersema	1999	(Young-Ybarra and Wiersema, 1999)

Social exchange theory pertains to interactions where two or more individuals may exchange something of value for something else that may or may not be of approximately equal value (Cook and Rice, 2003). Homans (in Cook and Rice, 2003) forwards it that social behaviour are informed by rewards and punishment.

The exchange process is guided by norms that dictate what are involved in the exchange and how the exchange should take place. Exchange may take place under the norms of reciprocity or negotiation (Molm, 2003). A relationship between actors can be based on a series of social exchanges between the actors (Chibucos et al., 2005). Social exchange theory is based on a number of principles (Arrington, 2009; Cook and Rice, 2003; Witt, 2013):

- Reciprocity and equity – Reciprocity serves as a guide to what may seem to be a fair exchange for the original offering. Individuals perceiving that a social exchange has a balanced level of reciprocity, are generally satisfied in the exchange (Chibucos et al., 2005; Cropanzano and Mitchell, 2005). Both parties will continue to exchange their goods, services, or other commodities if they believe that they receive equal benefits from these exchanges.

- Value of outcome - The more a party benefits from a transaction, the more likely that party will perform the action that resulted in the benefit.

- Experience – If a party's actions were rewarded during a previous transaction, the party will repeat the same actions when similar conditions occur.

- Costs - Actors evaluate the rewards and the costs associated with the social exchange. Individuals will stay in an exchange relationship as long as they deem it to be profitable. The benefits or rewards acquired from the relationship is only a perception of value and can be different from one person to another. The parties may enter into a relationship with self-interest in mind and may ask "what is in it for me?"

- Rewards are related to benefits such as status, praise, remuneration and costs to obligations such as effort, time, money, punishment or forfeited rewards (Chibucos et al., 2005). If the rewards are balanced by the costs, the party will most likely accept the proposal, but if the costs are unacceptably higher than

the rewards, the party may decline the exchange or leave the relationship. Costs may entail effort and time put into the relationship.

- Comparison - Parties will benchmark their profits from exchanges with other options such as similar exchanges between the same or other parties and may leave the relationship when they find their perceived profits lower than other exchange relationships.

- Distributed justice - Actors will act emotionally when they do not receive the reward that they expected. When exchanges do not provide the expected benefits, parties will attempt to alter their own, or the other party's behaviour to acquire better profits. Alteration of the other party's behaviour can be in the form of punitive actions.

- Diminishing returns - Reward satiation occurs when a reward perceived of value are received on a regular basis. The perceived value may decrease the more frequent the reward is given.

- Least interest – Interest in a relationship may be the requirements for scarce resources, knowledge, affection or other commodities deemed highly desirable by the party with the most interest in the relationship. Exchanges may be governed where actors have negotiated exchange contracts (Molm, 2003). Power bases have a direct influence on the rewards and obligations of exchange contracts and actors with the greatest resources have an advantage in negotiating the contract (Chibucos et al., 2005). Actors with less dependence on the other party have more power dictating the terms of the contract.

- The more satisfied a party is with the outcomes of a relationship, the less likely the party will leave the relationship. Parties are likely to remain in the relationship if they believe that the outcomes of the relationship renders better outcomes than alternative relationships.

3.1.6.2 Data Collection

Data collection is the process of selecting data and applying the techniques of data collection and transcription. The process of data collection results in the construction of the data used in the study.

Data that describes or is narrative in nature is used by qualitative researchers (Creswell, 2009). Qualitative data is non-numerical and non-quantifiable and deals with meanings (Dey, 2012; Saunders et al., 2012). Qualitative data can also take the form of, among other things, sound, music, images, video, rhyming and live actions performed by actors. Qualitative data can be acquired through observation, interviews of individuals or groups, or material such as transcriptions, manuscripts, literature, pictures, audio and video recordings produced by the researcher or others (Dey, 2012). Generally, qualitative data has a freer format than quantitative data that may be pre-defined before the start of collecting the data (Dey, 2012).

Three forms of qualitative data collection, namely literature review, interviews and focus group sessions are described next.

Literature Review

Information that is relevant to the study and was published previously, is available by studying the literature (Olivier, 2004). A literature review provides the researcher with information that relates to the area of research and also provides the researcher with examples of similar research topics, approaches and research methodologies (Hart, 1998b).

A literature review assists the researcher to gain an understanding of the topic under study. The review guides the researcher with respect to existing knowledge, specialist and general views and tendencies in the field of research. The literature provides information of where the researcher's study fits into the existing body of knowledge.

Researchers have the obligation to thoroughly exhaust the literature and then to identify what information to use in their studies (Boote and Beile, 2005a). Ensuring that the literature is covered comprehensively in the study ensures that the study is unique and indicates where gaps exist in related studies. A comprehensive study of the literature on the area of study provides an indication where the current study can contribute to the existing body of knowledge (Oates, 2006; Hart, 1998a).

By evaluating literature as a combination of individual contributors to a field of study, the researcher is able to determine which studies are more relevant to the study at hand. The researcher should benefit by identifying which authors are eminent in the

field of study, as these author's arguments should be more authoritative than lesser known authors (Oates, 2006). Relationships between documents or themes in the literature provide new insights in addressing research problems (Boote and Beile, 2005b).

Interviews

A sound theoretical basis guides the development of questions used during interviews and enables the researcher to build an agenda regarding the issues that he wants to know more about (Oates, 2006). The researcher relies on the interviewee as the main source of data in the data acquisition process (Yin, 2003). The researcher has no hidden agenda and openly discusses the purpose of the interview and the interviewee agrees to contribute to the study. Where indicated by the interviewee, data that is confidential, or otherwise should not be used in the study, remains "off the record" (Oates, 2006, p. 187).

Interviews are structured, semi-structured or unstructured (Oates, 2006). Structured interviews use pre-set questions from which the interviewer does not deviate and the interviewer does not enter into a conversation with the interviewee to clarify or discuss questions or responses. The reason for the non-involvement of the interviewer is to avoid any interviewer biases into the interview. Semi-structured interviews revolve around themes of questions and subsequent questions are based on the response of the interviewee on the previous questions. During unstructured interviews, the interviewer will introduce an idea or topic, whereupon the interviewee will respond by a monologue, providing ideas, reflecting on experiences and events, or their stances or beliefs (Oates, 2006).

Focus Group Sessions

Focus groups sessions are comparable to brainstorming sessions where participants are encouraged to discuss current and new ideas based on their experiences (Olivier, 2004). The researcher acts as the main source of information.

The intention is to have individuals discuss and appraise the merits of an idea provided to them by the researcher (Barbour and Schostak, 2005). The participants, through their engagement, provide insights into the idea of the researcher that otherwise would

have been hidden. The use of a focus group session in this study can serve to acquire an indication of the applicability of the framework for understanding IS ownership in the organisation.

3.1.6.3 Data analysis

The researcher has the option of various qualitative analysis approaches, including grounded theory, phenomenology, discourse analysis, narrative text, inductive coding, chronology, textual descriptions and structural descriptions (Creswell et al., 2007; Thomas, 2003). In general, the process of inductive qualitative data analysis comprises extensive summarising of acquired data and the establishment of demonstrable and justifiable relations between research objectives and the summary findings from the data. The researcher then develops a theory or model based on the evidence from the acquired data (Thomas, 2003).

Inductive coding

Inductive coding uses transcribed data from interviews, which is imported into a software application to perform text coding and analysis. Thomas (2003) proposes an inductive analysis process for qualitative data, which is outlined as follows:

- Acquire and prepare the research data (raw data) in a format that is suitable for analysis and comparison. This requires consistency in terms of readability and content of data files.

- Read the files of text closely to acquire a good understanding of the data acquired from the data collection process. During this first round of understanding, the data is viewed literally, implying that no interpretation is done to uncover hidden meanings attached to the data (Thomas 2003, p.4).

- Using the objectives of the study as guideline, re-read the data, looking for text that may relate to the research objective, as well as other meaningful block of text (or other data) in terms of frequency, importance or relevance. Label the noticeable blocks of text as codes and group codes that are relevant to the core essence, into a category of codes.

- Compare the codes with secondary data acquired from literature and confirmed by the researcher's experience to ensure that the codes are relevant. Revise and combine codes and remove superfluous codes.
- Review the codes and categories with insight to identify high-level categories of codes ("uber" codes) or themes of codes and categories (Thomas, 2003).

3.1.7 Verification

Upon completion of a research project, the researcher is likely to acquire some verification that the result of the study is true, feasible for use, or of some value. While it may not be a simple matter to verify interpretations, verification is necessary to create confidence in the quality of the study (Morse et al., 2002). Researchers should also verify the quality of the research product during, rather than at the end of the project to ensure that improvements and rectifications can be applied, or "acting as a self-correcting mechanism" before the project is handed over (Morse et al., 2002, p. 3).

In the creation of a framework as the output of the research, the researcher needs validation that the framework appears in essence similar to the researcher and to other individuals. In this study of IS ownership validation can thus be sought by presenting the research to other individuals and determine whether the research outcome is understandable, valid and usable by the organisation (Jabareen, 2009). To present the framework and receive feedback from other staff members in the organisation is therefore a valid process to determine the quality of the research.

The research have several options to verify that the framework for understanding IS ownership is understandable, valid and usable in the organisation, such as by

- Presenting the framework to interested parties in the organisation and get feedback from the parties;
- Interviewing individuals regarding the quality of the framework; or
- Conducting a survey.

A focus group session offers an opportunity to present the framework for understanding IS to staff of the organisation as a proof of concept to demonstrate the understanding and the feasibility of using the framework in the organisation. The focus group session allows debate to identify shortcomings, errors, or misalignments of the

framework in the organisation, as well as identifying the strong points of the framework. Data acquired from the session can be applied to the framework to address identified issues.

During interviews, the researcher can discuss problems or practical issues regarding the framework for understanding IS ownership in the individual's business environment. Challenges that the individual may have regarding the framework can be identified and changes to the framework can be applied to rectify shortcomings.

Conducting a survey is an efficient method to engage a large number of individuals. By presenting the framework for understanding IS ownership to a large group of people, feedback can be acquired to determine the understanding and feasibility of using the framework in the organisation. A survey may influence the effectiveness of the verification, as a survey does not allow the researcher to interpret the meanings of the respondent to the survey. A survey may therefore not be suited to the "spirit" of this study.

The next section discusses the research design that is applied in the study by selecting the appropriate option that is available for use in the research framework.

3.2   Research design
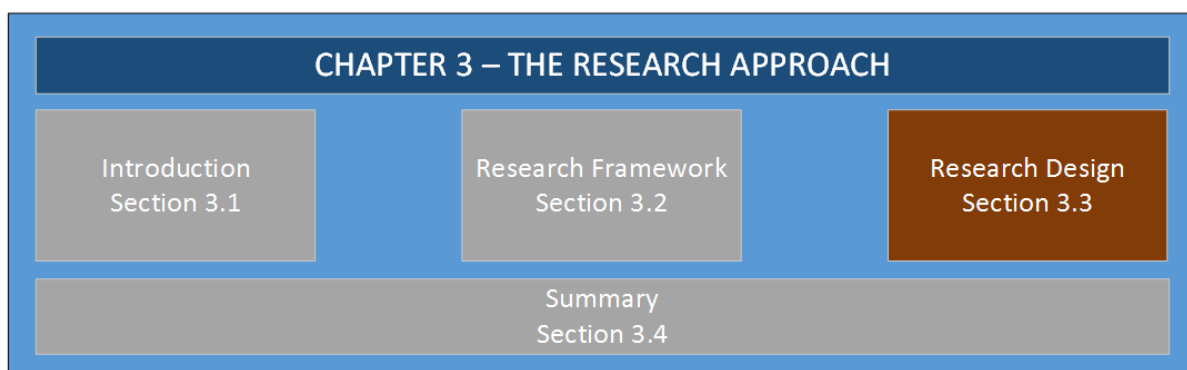
For the purposes of this study, the researcher selected components of the research elements from various authors. The research framework is designed using the top-down "research onion" approach proposed by Saunders et al. (2012) as is depicted in Figure 7. Figure 9 presents the outline of the study and is discussed together with the motivation for selecting the components in the next section.
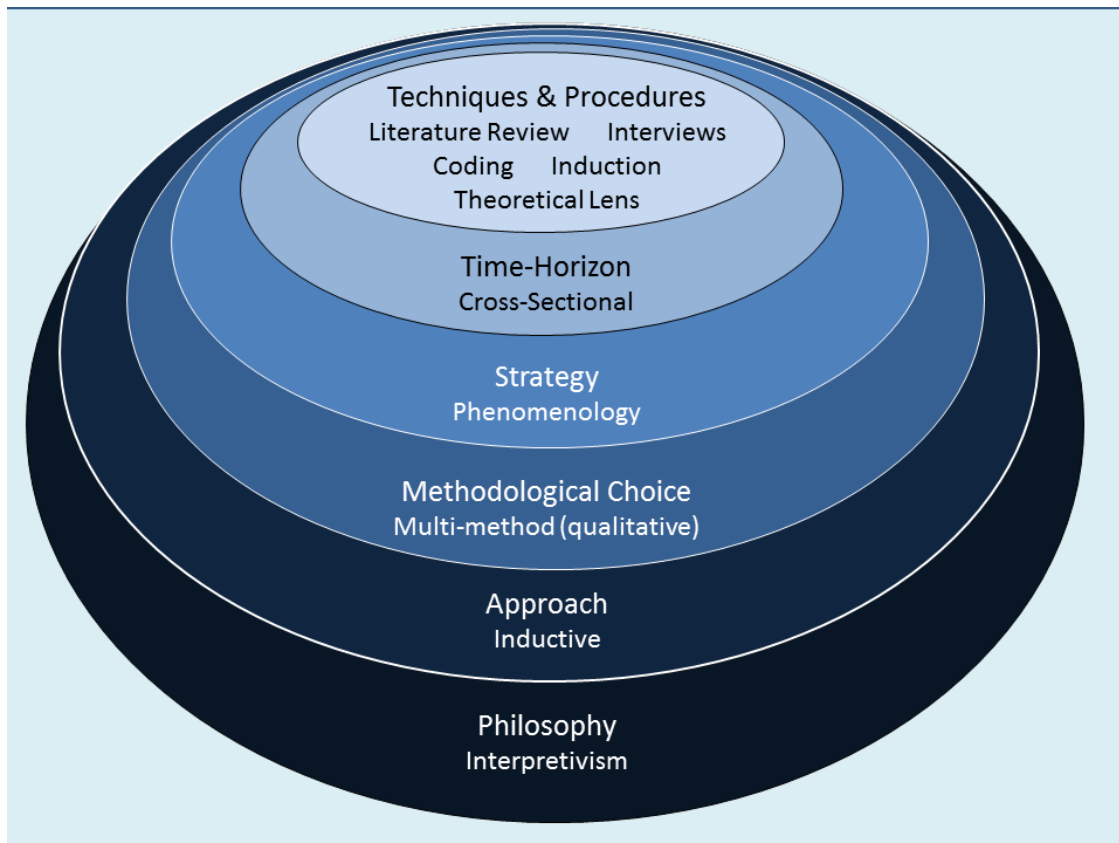
Figure 9 - Research Outline (based on Saunders et al., 2012, p. 128)

3.2.1 Philosophy - Interpretivism

The problem statement of "*Many business leaders are reluctant to take ownership of the IS in their business areas, missing the opportunity to utilise IS optimally as resource in the business organisation*" alludes thereto that some social interaction between business leaders and someone with the authority to negotiate IS ownership takes place. Business leaders may have business or personal reasons to accept or reject ownership of an IS in their business areas. Business leaders may also leverage IS ownership to achieve some business goals, implying that they, in turn, have to interact with employees in their business areas.

IS ownership comprises the assignment and acceptance of formal ownership, as well as the development of psychological ownership by the employee. The approach to create an understanding of IS ownership includes the study of:

- The social interactions during the negotiation of formal ownership;
- The interactions between users and technology;

- The realisation of expectations with regards to IS ownership;
- The fulfilling of motives for taking formal ownership and developing psychological ownership.

Employees, as human actors, act differently under different conditions when taking ownership of IS in the organisation. Factors that can influence the acceptance of IS ownership in business leaders include:

- Personal conditions such as cognitive experience, personality and ambitions;
- Environmental factors such as organisational culture, structure and history;
- The type and ownership structure of the ownership target can influence the development of ownership of the target and the subsequent outcomes of this ownership.

The study focused on employees' perception of ownership targets, the motivations for pursuing or accepting ownership, the expectations of having ownership, as well as the experience of "taking" ownership. This required that the researcher should interpret the "signals" sent out by the employee and build a picture of what is happening when IS ownership is offered by management and accepted by the employee. Therefore, interpretivism formed the underpinning of the study. Interpretivism calls for the researcher to take an empathetic stance by understanding the world from the viewpoint of the human actor (Saunders et al., 2012). Interpretivism assisted the researcher to understand the factors, problems and motivators that have an influence on IS ownership within the environment of the organisation.

3.2.2 Research approach – Inductive approach

No theory or research could be found that addresses both formal and psychological ownership of IS in the organisation (see Chapter 2, section 2.5). The researcher therefore used an inductive approach (Dey, 2012; Thomas, 2003) to create a framework for understanding ownership of an IS.

Using an inductive approach to the study, the researcher focuses to identify the essence of the research topic or objective from the raw data (Thomas, 2003). The researcher therefore:

- Summarises the raw data into concepts or codes, categories of codes and prominent and pervasive themes;

- Identify links between the codes and the research objective;

- Develop a model or theory related to the research objective as it is manifested in the raw data (Thomas, 2003).

In this study, data was acquired from literature, available organisational artefacts and field data in the form of interviews, to create a framework for understanding IS ownership. Secondary data was available from literature reviews and organisational artefacts such as documents related to the structure of the organisation and the delegation of authority. Primary data was acquired *via* face-to-face interviews with employees in their capacities as executive managers and IS owners. The researcher interpreted the data acquired from interviews and combined it with acquired secondary data to construct a framework to better understand IS ownership in a financial services organisation.

An overview of the research process aligned to the inductive approach to analyse the available data is depicted in Figure 10.
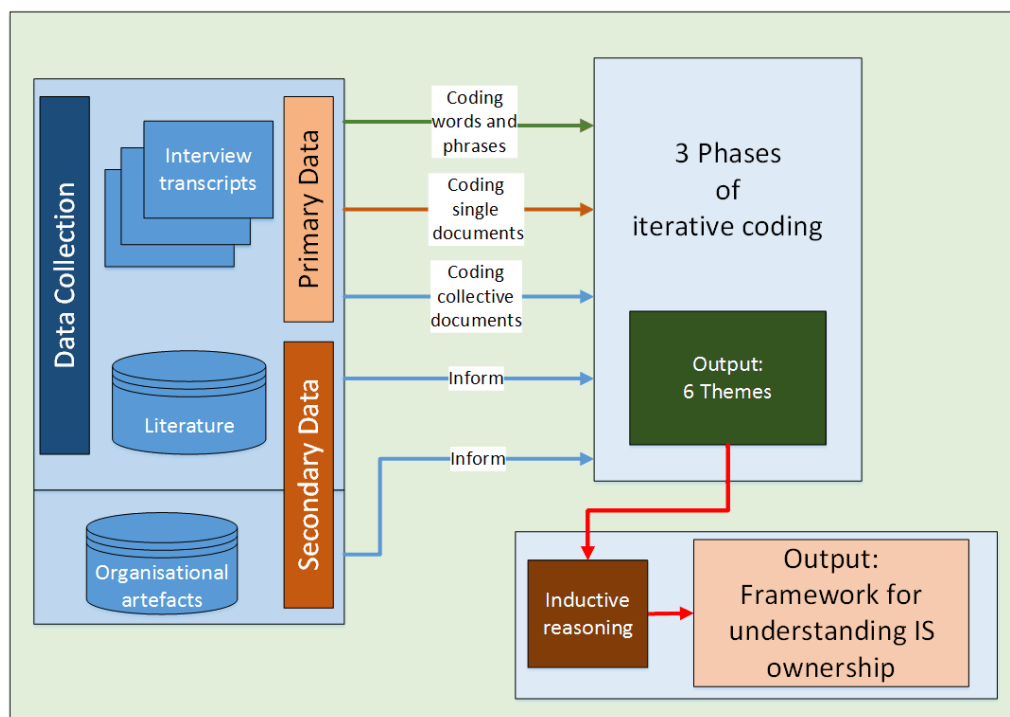
Figure 10 - Inductive data analysis process overview

Data is acquired from organisational artefacts, literature and also from interviews with staff members in the financial services organisation. The acquired data is analysed to determine the concepts that reflects the phenomenon of IS ownership in the organisation.

The concepts of IS ownership are produced as codes during a three-phased coding process. Two iterations of coding were done in each phase. The output of the coding process is six themes of IS ownership that are used to induce a framework for understanding IS ownership in the organisation. The inductive data analysis process is described in more detail in section 3.2.6.3.

3.2.3 Methodological Choice – Multimethod Qualitative study

Multimethods were used as the methodological choice. Data collection and analysis were done qualitatively (discussed in section 3.2.6.3). Data was collected via a literature review, using of organisational artefacts, conducting semi-structured face-to-face interviews with staff of the organisation and acquiring feedback from participants in a focus group session.

Inductive data analysis was performed by coding the interview transcripts through interpretation and consolidating of the codes into nine categories of codes, which were further reduced to six themes that were pervasive in the data. The themes were used as the basis for framework for understanding IS ownership in the organisation.

3.2.4 Research strategy - Phenomenology

Phenomenology was used as strategy in the study of IS ownership in the organisation. In this study, the experiences of staff with respect to IS ownership were collected. Conducting a phenomenological study of IS ownership in an organisation can lead to the researcher understanding the phenomenon of IS ownership, the situation wherein this phenomenon is placed and the perceptions and actions of the IS ownership role-players in the business (Campbell, 2011; Willis, 2007). The research was conducted in a financial services organisation as physical environment and at multiple levels of seniority within the organisation. The organisation has multiple and diverse functions in the economic and financial domains in the Republic of South Africa, which provides rich data to investigate IS ownership in the organisation.

139

In its diversity of activities, the financial services organisation fairly represents the market in which the organisation operates, ensuring that the study covered activities in similar markets comprehensively. The organisation and environment hosting the study for the study of IS ownership are discussed in more detail in Chapter 4, section 4.2.2.

The researcher investigated the experiences and perceptions of people related to IS ownership in the organisation, resulting in the acquired research data to be narrative rather than numerical. Narrative data is qualitative in nature and requires qualitative methods to acquire and analyse (Saunders et al., 2012) and therefore the researcher used qualitative data analysis to investigate IS ownership in the organisation (Dey, 2012; Thomas, 2003). Phenomenology is described in more detail in section 3.1.4.4.

3.2.5 Time horizon – Cross-sectional

The study was conducted within a fixed and limited time window, which was better served by doing a cross-sectional study (Creswell, 2009). Although a cross-sectional study denied the researcher the opportunity to observe the process of development of ownership and the outcomes of IS ownership as it unfolds, the inquiry strategy of face-to-face interviews with various role-players addressed the elements of IS ownership that happened over time. The study of understanding IS ownership in the organisation was conducted as a cross-sectional time study.

3.2.6 Techniques and procedures

The type of data that informed the study directly influenced the data collection method and the techniques used to analyse the data. In this research qualitative data was collected and analysed.

3.2.6.1 Theoretical lens – Social Exchange Theory

Social exchange theory was selected as a theoretical lens to investigate the phenomenon of IS ownership in the organisation. Studying IS ownership in the organisation, social exchange theory assisted the understanding of the assignment of an IS, the acceptance of formal ownership and the development of psychological ownership of the IS. The theory also assisted to understand the nature of the relationship between the IS owner and the executive manager offering the ownership.

Social exchange theory influenced the data collection and the data analysis processes. Interview questions were influenced by studying IS ownership through the social exchange theory as a lens. Questions related to the relationship between IS ownership role-players such as where psychological ownership develops, as well as the evaluation of the parties' expectations in IS ownership were also influenced by the social exchange theory. The analysis of the acquired data was influenced by social exchange theory where the theory assisted the understanding of the transfer of ownership of the IS to the employee and understanding the relationships between managers and employees involved in the IS ownership transaction.

The data collection techniques used in the study are discussed next.

3.2.6.2 Data collection techniques

3.2.6.2.1 Literature

In preparation for the field study, information for understanding IS ownership in the organisation was acquired through a literature review. In the literature review, ownership in general, comprising formal- and psychological ownership was discussed. Literature also provided information about the approaches to conduct the study of understanding IS ownership in the organisation. Literature as a data collection technique is discussed in more detail in section 3.1.6.2.

3.2.6.2.2 Applying aspects of general ownership to IS ownership

Limited information on the understanding of IS ownership was available in the literature (Chapter 2, section 2.5), therefore aspects of ownership in general (Chapter 2, section 2.2) were applied to investigate IS ownership. Identifying the aspects of general ownership that are applicable to IS ownership was done through a process of logical reasoning (see section 2.4 in Chapter 2).

3.2.6.2.3 Semi-structured interviews

Primary data collection was done via semi-structured, face-to-face interviews, providing field data. Information acquired from the literature review through the lens of social exchange theory and using information available as organisational artefacts influenced the interview questions. The interviews were conducted in a financial

services organisation with heterogeneous functions. Interviewees represented various levels of seniority in the organisation.

Selection of the organisation

To study the phenomenon of IS ownership in an organisation, the organisation should provide data that is rich. For this purpose, a financial services institution was selected that has a diversity of functions, stakeholders, a variety of information systems and a number of business units. The organisation fulfills the activities of a research institution, regulator and supervisor. The organisation also renders business services to communities, as well as to the central government of South Africa. The organisational structure afforded the study to be conducted at multiple levels of seniority with respect to the stakeholders in IS ownership. The IS ownership stakeholders comprised senior-executive managers, executive managers, IS owners and IS departmental staff.

Selection of the interviewees

With the intention to acquire data that is rich enough to acquire an understanding of IS ownership in a financial services organisation, the selection of the participants in the study was an important element that had to be taken into consideration. The phenomenon of ownership is documented in literature and a number of factors emerged that impacted on the selection of the interviewees:

Factor 1: Ownership is the result of one party presenting ownership to another party with the expectation that the other party will appropriate the target of ownership to the benefit of the shareholders of the organisation (Huang et al., 2008; Zhang et al., 2008). For the study, multiple levels of owners and managers delegating ownership to owners on lower hierarchical levels had to be interviewed.

Factor 2: Ownership is influenced by the working environment of the owner; hence ownership had to be investigated in different working areas.

Factor 3: The target of ownership influences the development of ownership; hence different targets of ownership had to be investigated. Since the study pertains to IS ownership, the systems that serve as the target had to be heterogeneous.

Factor 4: Different role-players in the organisation collaborate to pursue organisational objectives; therefore the interviewees had to represent the different role-players in IS ownership.

The optimum selection of the interviewees was therefore based on the requirements that different hierarchical levels of IS ownership role-players are represented (Factors 1 and 4), that participants represent different business areas in the organisation (Factor 2) and that different information systems are included in the study of IS ownership (Factor 3). By selecting a population performing heterogeneous functions, the possibility of including a variety of IS in the study was enhanced.

Interviews were conducted with twelve employees, who included four executive managers and eight business leaders (see Figure 5 in Chapter 2). Two of the executive managers that were interviewed operate at director-level (senior executive managers) and two are heads of their departments (executive managers). Two interviewees were IS departmental staff members (Figure 12). A number of business units with diverse functions, including research, supervisory, regulatory and support activities were represented by IS owners in the interviews.

The study focused at the levels of executive managers assigning IS ownership to business leaders, but also included senior executive management to acquire an understanding of their experiences related to IS ownership in the organisation. The interview questions that guided the field study to contribute to the construction of a framework to understand IS ownership in the organisation are described in Table 9.

Questions asked during the interviews

The questions used during the interviews were guided by a number of question categories, which were informed by organisational artefacts, literature and the questions posed in Chapter 1, Table 1. The following question categories in Table 8 were used as guideline during the interview to keep the discussion flowing.

Table 8 - Question categories used as guidelines during the interviews

Question Category	Section	Purpose
1	Introduction	To set the scene for the rest of the questions and to determine the interviewees' awareness of IS ownership.
2	The Role of the IS department	To determine the interviewees' perception of the role of the IS department in the organisation.
3	Psychological Ownership	To establish if psychological ownership of IS exists with the interviewees.
4	IS ownership in business	To establish the perception of IS ownership existence in the business areas of the organisation.
5	Shared ownership	To determine how the organisation handles shared IS and to determine to what extent the interviewees developed psychological ownership for shared IS.
6	Value of IS	To determine the dependency on IS and the value that the business derives from IS in their business environments.
7	Value of IS ownership	To determine whether the interviewees find any value in having IS ownership.
8	Relationship	To determine the openness of the relationships between IS owners, executive managers and the IS department and whether it can be adjusted to the needs of the parties and also to identify whether there are power imbalances in the relationships.
9	IS ownership expectations	To determine the interviewees' IS ownership expectations, whether their expectations have been

Question Category	Section	Purpose
		met and whether the IS owners get as much out of owning IS than they put into the IS ownership.
10	Conclusion	To determine which factors can promote or erode IS ownership, what are the challenges with respect to IS and IS ownership in the organisation and to close out with an open-ended question related to IS ownership that the interviewee wants to discuss.

The question categories in Table 8 were posed as questions with their sub-questions focused on the interviewee's IS ownership role in Table 9. The head of the IS department warranted some questions that were not asked from other interviewees.

Table 9 - Refined guiding questions for the interviews, reasons and targets for the questions

Question	Target
Question 1: Introduction – Sets the scene for the rest of the questions and determines respondent's awareness of IS ownership.	
1.1 Please describe your working situation with respect to IS 1.2 Within this context, do you ever think of IS in terms of ownership? 1.3 What is your concept of IS ownership?	Senior Executive Manager, Executive Manager, IS Owner, Head of the IS Department
1.4 What is your mandate with respect to providing IS to the business areas of the organisation?	Head of the IS Department
Question 2: The Role of the IS department – Determine the perception of the interviewees of the role of the IS department in the organisation.	
2.1 In your opinion, what does business perceive the role of [the IS department] in the organisation to be? 2.2 What would you like this role to be? 2.3 What is your opinion about the dependency that business have on [the IS department] to execute on their (the business's) mandate?	Senior Executive Manager, Head of the IS Department, Executive Manager

Question	Target
2.4 Who do you believe should "own" business-related IS?	
2.5 Why do you say so?	
2.6 With respect to IS ownership, what do you believe is the IS department's current role in achieving your business objectives?	Executive Manager, IS Owner
2.7 What do you believe this role should be?	
2.8 What do you believe are the biggest IS challenges in the organisation?	Head of the IS Department
2.9 What are your biggest challenges providing IS services to business?	
Question 3: Psychological Ownership – Establish if psychological ownership of IS exists with the interviewee.	
3.1 To what extent do you feel responsible and accountable for the IS in your business area?	Executive Manager, IS Owner
3.2 What is the scope of control you have over the IS?	
3.3 What is your opinion regarding the available scope of control?	
3.4 What parts of the IS do you believe should be owned by your business and to which extent?	
Question 4: IS ownership in business – Establish the perception of IS ownership existence in the business areas of the organisation.	
4.1 Do you believe that there are different levels of IS ownership in the business?	Senior Executive Manager
4.2 What is your perception of the levels of IS ownership currently taken by business owners?	
4.3 Why do you say so?	
4.4 What is your opinion of the scope of control business owners currently have over IS in their areas?	
4.5 What do you believe their scope of control should be?	
Question 5: Shared ownership – Determine how the organisation handles shared IS and to what extent the respondent developed psychological ownership for shared IS.	
5.1 What IS does your area currently share with other business owners?	Executive Manager, IS Owner

Question	Target
5.2 Do you share control with other business managers?	
5.3 What is your experience of sharing IS with other business units in the organisation?	
5.4 Who do you believe should take ownership of shared IS?	
5.5 Why do you say so?	
5.6 Who do you believe should own an organisation-wide IS?	
Question 6: Value of IS – To determine the dependency on IS and the value that the business derives from IS in their business environments.	
6.1 To which extent do you believe the IS supports your business objectives?	Executive Manager, IS Owner
Question 7: Value of IS ownership – To determine whether the interviewees find any value in having IS ownership.	
7.1 How does owning an IS make you feel?	Executive Manager, IS Owner
7.2 What are your expectations with respect to "owning" an IS?	
7.3 Did owning the IS satisfy your expectations?	
7.4 Why do you say so?	
7.5 What is your opinion of using IS ownership as a tool or resource to achieve organisational and/or personal success?	
7.6 Please elaborate.	
7.7 Do you perceive a difference between owning an IS in your capacity as executive and owning an IS in your personal capacity?	Executive Manager
7.8 Please elaborate.	
7.9 How do you go about assigning or delegating IS ownership to your managers?	
Question 8: Relationship – To determine the openness of the relationships between IS owners, executive managers and the IS department and whether it can be adjusted to the needs of the parties and also to identify whether there are power imbalances in the relationships.	
8.1 Do you believe that the IS department satisfy the expectations that business have with respect to owning IS?	Senior Executive Manager

147

Question	Target
8.2 Why do you say so?	
8.3 What is your opinion about the IS department's capability to focus on supporting business objectives?	
8.4 What is your opinion regarding the ICT "voice" of the business managers on the floor?	
8.5 Do you feel that business concerns can be raised and addressed adequately through the current measures?	
8.6 What pro-active measures could the IS department implement to facilitate IS ownership in business areas?	Head of IS department
8.7 Tell me about your relationship with your executive manager	IS Owner
Question 9: IS ownership expectations – To determine the interviewee's IS ownership expectations, whether their expectations have been met and whether the IS owners get as much out of owning IS as they put into the IS ownership.	
9.1 Tell me about your expectations related to IS ownership?	Senior Executive Manager,
9.2 Have you ever had an experience where managers were not satisfied with the returns on owning an IS, based on their expectations not being fulfilled?	Executive Manager, IS Owner
9.3 Why do you say so?	
9.4 Is there a fair balance between the expectations of IS owners in terms of their responsibilities and the returns they get from owning IS?	
9.5 Why do you say so?	
9.6 Will you accept ownership of another IS if given the opportunity?	Executive Manager, IS Owner
9.7 Why do you say so?	
9.8 Do you believe that the IS department satisfy the expectations that business have with respect to owning IS?	Head of IS department
9.9 Why do you say so?	
9.10 Does the business satisfy your expectations with respect to owning their IS?	
9.11 Why do you say so?	

Question	Target
9.12 Do you believe that there is a fair balance between what businesses expect from the IS department and what effort they put into the relationship with the IS department? 9.13 Tell me about it.	
Question 10: Conclusion – To determine which factors can promote or erode IS ownership, what are the challenges with respect to IS and IS ownership in the organisation and to close out with an open-ended question related to IS ownership that the interviewee wanted to discuss.	
10.1 Which factors do you feel can promote or erode IS ownership? 10.2 Is there anything else that we have not discussed that you want to talk about regarding IS ownership in the organisation? 10.3 What do you believe are the biggest IS challenges in the organisation? 10.4 What pro-active measures could the IS department implement to facilitate IS ownership in business areas?	Senior Executive Manager, Head of IS department, Executive Manager, IS Owner

A theoretical lens serves to focus the perspective of the researcher in the study and provides insight into areas that otherwise may have remained hidden (Creswell, 2009, 2007; Reeves et al., 2008). The influence of social exchange theory on the questions used during the interviews is discussed next.

Influence of Social Exchange theory on the interview questions

A social exchange lens investigates the relationship between two parties from the viewpoint of each party and creates an understanding of why participants in the relationship behave in the manner that they do. The attributes of reciprocity and equity, value of outcome, experience, costs, comparison and distributed justice relate to IS ownership:

- Reciprocity and equity relate to IS ownership, where a balanced level of reciprocity results in parties being generally satisfied in the exchange;

- Value and outcome relate to IS ownership, where IS owners may indicate their willingness to enter into a similar agreement of IS ownership if given the opportunity;

- Experience of IS ownership benefitting IS ownership parties may result in the parties' willingness to repeat the actions that resulted in the benefit.

- Costs relate to IS ownership in that individuals will stay in an exchange relationship as long as they deem it to be profitable and they may view the IS ownership relations with self-interest in mind, asking "what is in it for me?"

- IS ownerships role-players may compare their IS relationship with comparable exchanges and may be willing to remain in the relationship or prefer to leave the relationship when they find their perceived profits lower than what is available in other exchange relationships.

- Distributed justice relates to IS ownership where parties may act emotionally when they do not receive the reward that they expected. When exchanges do not provide the expected benefits, parties will attempt to alter their own or the other party's behaviour to acquire better profits.

In this study, the attributes of social exchange theory discussed above, were included in the questions, as per the following examples from Table 9:

Question 9.4

"Is there a fair balance between the expectations of IS owners in terms of their responsibilities and the returns they get from owning IS?"

The question determines the perceived reciprocity and equity in the IS ownership relationship.

Question 10.4

"What pro-active measures could the IS department implement to facilitate IS ownership in business areas?"

The question determines how executive managers address reciprocity and equity in the IS ownership relationship.

Collection of the data

The interviews held with staff members in a financial services organisation to investigate the phenomenon of IS ownership, were recorded on an audio-recording device and then transcribed into Microsoft Word. Transcribed text was imported into Atlas.ti, an analysis tool that enables the researcher to do textual coding.

Secondary data for understanding IS ownership in the organisation was acquired through a literature review describing IS, generic formal- and psychological ownership and IS-specific formal- and psychological ownership. Literature provided information about possible approaches to conduct the study of understanding IS ownership in the organisation. Another source of secondary data was documentation of organisation-specific practices such as governance structures, central decision-making, organisational structures and other organisational artefacts.

To acquire an indication of the value of the framework to understand IS ownership and an indication of the applicability of the framework in the organisation, a focus group session was used as a proof of concept.

The background for the data collection techniques used in this study is discussed in more detail in section 3.1.6.1.

3.2.6.3 Data analysis – Inductive analysis

Data acquired from the interviews and literature review and organisational artefacts was analysed inductively. The inductive approach to a study pertains to the construction of a theory or framework reflecting the essence of the research objective from raw data that was collected for the study (Evans, 2004). Inductive analysis is the identification of concepts, existing in the collected raw data and the relationships between the concepts and the research objective. Using the concepts and the identified relationships between them and the research objective, a theory or framework describing the topic of the research is constructed through a process of inductive reasoning.

Data from literature that is relevant to IS ownership in the organisation was identified and selected to be used in the study. Interview data was compared and combined with data acquired from the literature review and data acquired from organisational

artefacts and analysed using an inductive analysis process (Thomas, 2003). The inductive analysis process commences by acquiring data from organisational artefacts, literature and interviews with staff members in the financial services organisation. The process of data collection is followed by a coding process. The coding process is explained in more detail next and is also depicted in Figure 11.
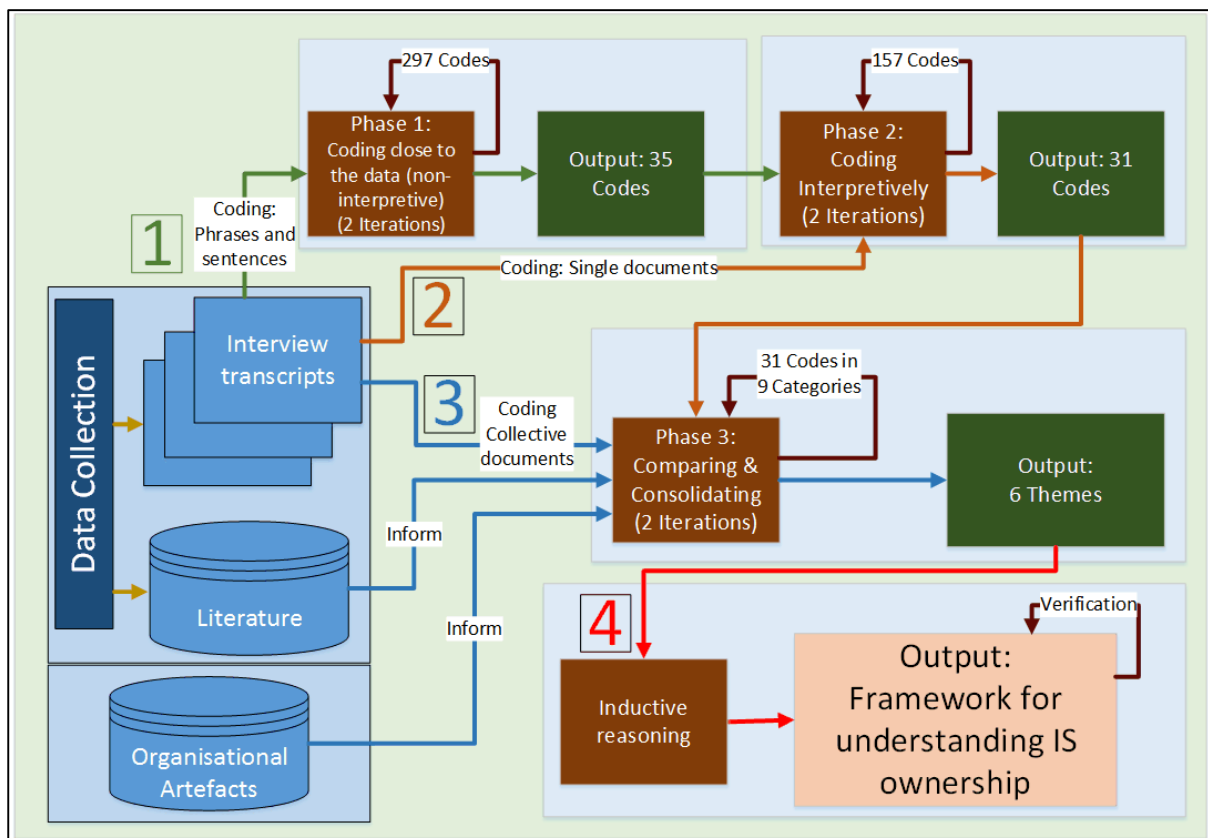
Figure 11 - Inductive data analysis process details

The coding process

Data from the transcripts of the interview (input 1 in Figure 11) provides the input for Phase 1 of a coding process. Phase 1 coding is done "close to the data" (Thomas, 2003, p.4) implying that words, phrases of text and sentences are coded literally and without attempting to find hidden meanings beyond the text. The acquired codes are concepts of IS ownership found in the organisation. Using the output from Phase 1 and by re-coding the interview transcripts as single documents (input 2 in Figure 11); Phase 2 coding is done interpretively, using larger clusters of text than in Phase 1. The intention of Phase 2 coding is to interpret the meanings of the interviewees regarding IS ownership. The output from Phase 2 coding, organisational artefacts,

literature and viewing the interview transcripts in a collective manner, provide the inputs for Phase 3 coding. During Phase 3, codes are combined into concepts of codes and compared to all available data for consistency. The output of Phase 3 is six themes of IS ownership. The themes of IS ownership are used to induce a framework for understanding IS ownership in the organisation. The themes are arranged to provide a sequential build-up from the concepts of what IS ownership entails, the rationale for IS ownership in the organisation and with individuals, who should have IS ownership and how should IS ownership be implemented and applied in the organisation.

Applying Atlas.ti as coding tool

Atlas.ti is a qualitative analysis software application that allows researchers to manage large quantities of data during the analysis process, allowing coding and annotation of unstructured data. For this study, Atlas.ti was used to code the interview transcripts. Data to be analysed can be textual, graphical, or it can be audio or video data (Muhr and Friese, 2004). Analysis of interview transcript data in this study commenced with the importing of transcripts into Atlas.ti as primary documents (PD) for analysis. The documents forming part of the study for understanding IS ownership that was imported into Atlas.ti, formed part of an analysis project and is referred to as a hermeneutic unit (HU). An HU allows sharing of quotations from interviewees and codes and annotations between the documents in the HU.

Coding implies the identifying of a concept in a word, sentence or a segment of text in a PD, marking the text and assigning a code to the identified concept in the segment of text. Concepts associated with specific text segments can then be clustered and categorised for all the documents in the project (HU). The researcher can create networks of codes and categories of codes based on the relationships between the codes and the code categories (Muhr and Friese, 2004). The manipulation of codes, categorisation of codes and finding relationship between them can reveal information that may normally be hidden to the researcher. Using the embedded tools of Atlas.ti enables data queries, search and retrieval of data.

Atlas.ti allows the researcher to attach memos and comments to data segments. By commenting on data segments during the coding process, the researcher can attach

ideas, observations and opinions to an interviewee quotation or a code. Memos are used to link personal discussions to a passage of text or quotation. The use of comments and memos enables the researcher to introduce information gathered from literature into the coding process, serving to compare field data with literature.

Development of themes

Codes forming part of 9 code categories appeared in one or more interview transcript. Tendencies or themes emerged by perusing all the interviews collectively and searching for:

- The pervasiveness of codes through the interview transcripts;

- The frequency of appearance of the codes during the interviews;

- The interviewee's reactions when discussing the topic from where the codes were derived;

- How the interviewees express the topic of the codes during the interviews (Ryan and Bernard, 2003).

Using the themes to induce a framework

Through generalisation, comparing the themes with codes from specific individuals as well as other available data (from the interviews, literature and organisational artefacts) (see Figure 10), an initial framework was developed (see Chapter 5, Figure 37). Using a focus group session a proof of concept was conducted to determine the viability of using the framework in the organisation.

3.2.7 Verification – Proof of concept

The framework for understanding IS was submitted for discussion to a panel participating in a focus group session, to acquire an indication of the applicability of the framework in the organisation. Four IS owners and executive managers participated in a focus group meeting of 90 minutes. Participants were briefed before the meeting and the IS ownership framework was explained. The participants were provided with the presentation as well as a background of the framework, which is also available as section 5.4 in Chapter 5 of this document. The presentation used during the focus group session is attached as Annexure C to this document.

Data relating to the framework, its applicability in the organisation and its shortcomings was collected during the session. The session commenced with a presentation describing the framework as depicted in Chapter 5, Figure 39. The feedback from the participants was taken into consideration and where necessary, the framework was augmented to address material issues that arose from the focus group meeting.

Data acquired from the focus group session was analysed according to the concept of understanding and applicability of the "framework for understanding Information Systems ownership" in the organisation.

The concept of understanding and applicability

Data acquired from the focus group session was analysed based on the understanding that the participants had of the IS ownership framework. The perceived applicability of the framework in the business areas of the participants as well as in the wider financial services organisation was also taken into consideration. "Understanding" in this context is defined as "helpful", "new insight" and "different perspective". "Applicability" in this context is defined as "applicable in my business environment" and "applicable in other business environments of the organisation". "Applicability" may extend to "other targets of ownership such as 'tasks' or 'responsibilities'.

The research process addressing the research objective to suggest a framework for understanding IS ownership, commenced with the collection of secondary data and primary data. Secondary data comprised of organisational artefacts and a literature review. Primary data was acquired by conducting interviews with 12 business leaders, executive managers and senior executive managers in the organisation (Chapter 4, section 4.3.2). The interviews were transcribed by using Microsoft Word.

Data analysis comprised of the coding of the interview transcripts, comparing the codes with secondary data and the development of nine categories of codes with a number of sub-codes. By taking an overall view of all interviews six themes emerged that were present in all the interviews (see Chapter 5, section 5.2). The themes were identified by focusing on the nine code categories, their frequency, prominence given by the interviewees and literature, including literature pertaining social exchange theory and information available from organisational artefacts.

Using induction and utilising all separate components from the themes, information acquired from specific interviews, literature, organisational artefacts and guidance from social exchange theory, a preliminary question-based framework was developed (Figure 37). This framework was refined and submitted for verification of its value in practice in the organisation during a focus group session. Feedback from the participants in the focus group session was evaluated and where applicable, applied to the framework to render the final framework for understanding IS ownership in the organisation (Figure 39).

3.3 Summary

Chapter 3 discusses the research approach to acquire an understanding of IS ownership in the organisation. The framework for the study follows the top-down research-onion approach proposed by Saunders et al. (2012).

The study of IS ownership is subjective in nature and the researcher interprets the acquired data to make meaningful understanding thereof. Since no framework for understanding IS ownership in the organisation could be identified, a framework is developed inductively. An understanding of IS ownership is acquired through a phenomenological study, focusing on the experiences of IS ownership in IS owners and executive managers. By understanding how individuals experience IS ownership, an understanding of the phenomenon of IS ownership is acquired.

The study takes place in a financial services organisation, which is a company with diverse functions and has the potential to render rich data on at least two levels of analysis. Social exchange theory is used as lens to investigate the relationships between principals and agents in the transaction of transferring IS ownership from

executive management to business leaders. Data is qualitative and is acquired from literature, organisational artefacts and from semi-structured interviews with business managers in the organisation. A cross-sectional time horizon provides a snap-shot of the IS ownership phenomenon, but information of psychological ownership over time was acquired through the feedback received from interviewees during the interviews.

Chapter 3 also includes the selection and reasoning for the selection of the population of the study and the questions posed to executive managers and business leaders during interviews. Conducting five iterations of coding, the text acquired from the interviews with executive managers and IS owners, literature and organisational artefacts, six themes emerged that reflect the essence of IS ownership in the organisation. The themes formed the basis of the framework for understanding IS ownership.

Chapter 4
Research Setup and Data Acquisition and Analysis

CHAPTER 4 – RESEARCH SETUP AND PROCESS		
Introduction Section 4.1	Research Setup Section 4.2	Research Process Section 4.3
Summary Section 4.4		
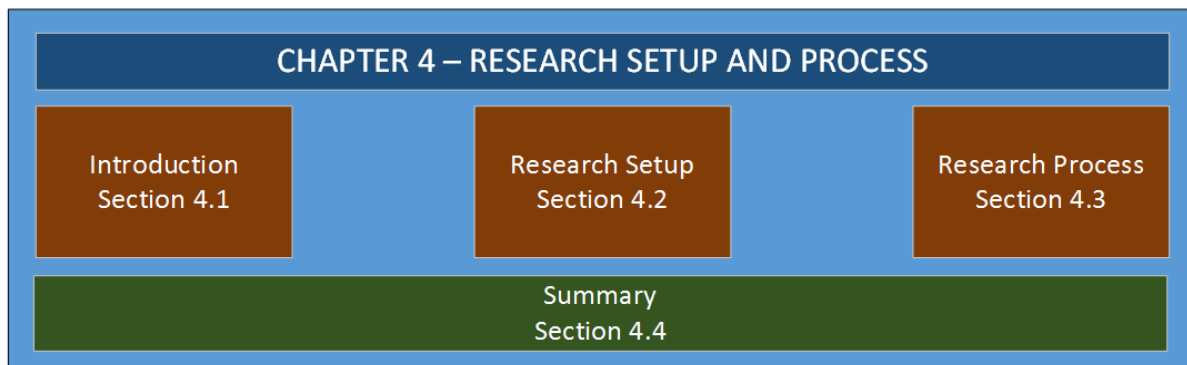
CHAPTER 4 – RESEARCH SETUP AND PROCESS

4.1 Introduction
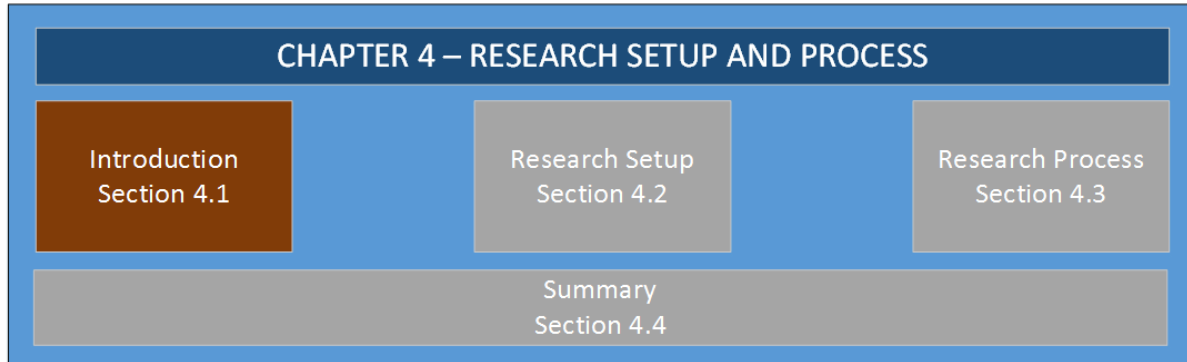
Organisations deploy IS with the exclusive aim of achieving business objectives in pursuit of its mission (Institute of Directors, 2009b; Kilpeläinen and Nurminen, 2007; Machiraju et al., 2002; Symons, 2005; Teo and King, 1999). The utilisation and deployment of IS need leadership to achieve business objectives (Le Roux, 2006). When business leaders prefer not to get involved with IS, it may result in (their) business areas having limited control over IS and cause the areas to forfeit the opportunity to leverage IS optimally in the business environment (Lohmeyer et al., 2002).

The research problem in focus is: "*Many business leaders are reluctant to take ownership of the IS in their business areas, missing the opportunity to utilise IS optimally as resource in the business organisation.*" The objective of the study is to "*suggest a framework for understanding IS ownership in the organisation.*"

To address the objective to develop a framework for understanding IS ownership, the researcher had to identify the sources of primary and secondary data that were to be used for the study. To provide a sound background for the study, secondary data was acquired from a literature review pertaining to ownership, IS and IS ownership. Organisational artefacts also rendered secondary data. Organisational artefacts used in this study pertained to:

- Organisational hierarchical diagrams that depict the hierarchical structure of the staff of the organisation;

159

- The delegation of authorities that documents the decision-making authorities of the role-players in IS ownership in the organisation;

- Organisational policies that guide the decision-making and operational activities of the organisation.

To acquire the necessary empirical data for the study, primary data was collected by conducting interviews with staff employed in the financial services organisation.

In Chapter 1, section 1.2 it is argued that a main contributor to the reluctance of business leaders to take IS ownership is a lack of understanding IS ownership. To achieve a better understanding of IS ownership, a study was conducted in a financial services organisation with a diversity of functions, objectives and technologies. Ownership of an object, concept, idea, in tacit or any other form and therefore also ownership of IS in an organisation, is complex (Mackin, 1995; Pierce et al., 2003). Those organisations that understand IS ownership in terms of why IS ownership is needed (De Haes et al., 2013), what IS ownership entails (Pierce et al., 2001), who should be IS owners (Han et al., 2003; Lohmeyer et al., 2002) and how IS ownership can assist the organisation to better leverage their IS, should be in a better position to meet their business objectives (Guillemette and Paré, 2012; Lohmeyer et al., 2002). In reality, it was found that some business leaders are reluctant to assume the role of owner of an IS. Following the argument above that IS ownership is not understood, the objective of the study is therefore to suggest a framework for understanding IS ownership in the organisation.

A literature review provided the background to inform the empirical research process. The literature review reflects on the questions used in the interviews (Table 9 in Chapter 3). A financial services organisation was selected as the environment wherein the phenomenon of IS ownership was studied. The organisation has a number of diverse functions from where staff members at various levels made a study of IS ownership with various levels of analysis possible.

Interviewees at the levels of business leaders and executive managers were selected from the business environments in the organisation and invited to participate in the study of IS ownership (Chapter 3, section 3.2.6.2). The business environments represent the core functions and the support functions of the organisation. Senior

160

executive managers overseeing core- and supporting departments also participated in the interviews. The interviewees provided a balanced view of the organisation, rendering data that is rich enough to perform a study of IS ownership in a financial organisation.

Chapter 4 discusses the approach and process to develop codes and categories of codes from data acquired during interviews with executive managers and IT owners. The resultant categories of codes were analysed and relationships between the categories identified and compared to secondary data and interview transcripts, resulting in the identification of six themes that are pervasive in the study of IS ownership.

4.2 Research setup
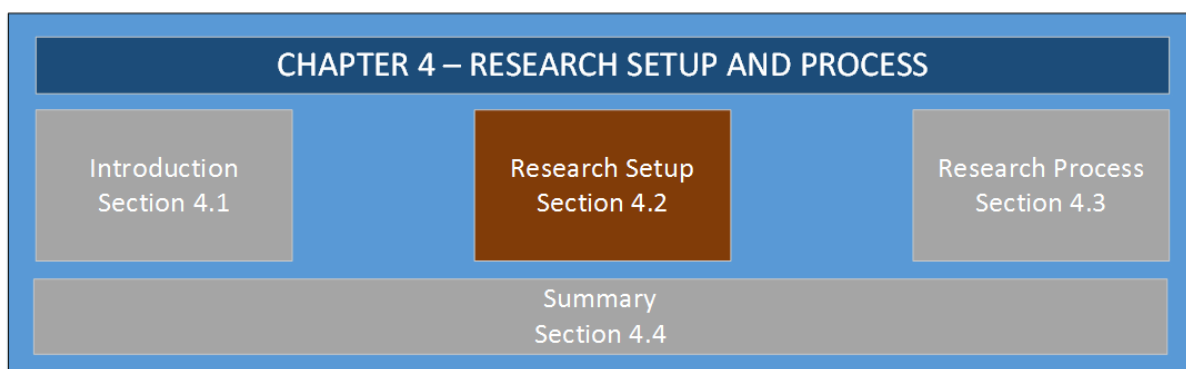
This section describes the setup of the field study of IS ownership in a financial services organisation. Semi-structured interviews were conducted with twelve participants in the organisation. The research commenced with a literature review related to ownership in general and IS ownership in particular. Interview questions were based on information acquired from the literature review and was influenced by the research approach, social exchange theory as a lens and the organisational environment wherein the study is undertaken. Interviews rendered audio recordings, which were transcribed, coded, categorised and themed.

Data from the field study was used in combination with the literature review to create a framework that can facilitate the understanding of IS ownership in the organisation. This chapter, together with Chapter 5 describes the research process followed during the study, including the refinement of the results of the interviews and the combination

of the field research with the literature review to create the initial draft and the final IS ownership framework.

4.2.1 Study objectives

The objective of the study is to suggest a framework for understanding IS ownership in the organisation. To support the goal of understanding IS ownership, the IS ownership framework's intent is to guide, rather than to prescribe. The framework addresses what IS ownership entails, why IS ownership is needed, where IS ownership should reside and who should contribute to the success of using the IS in pursuit of business objectives. The framework also highlights factors that can positively or negatively influence the development of IS ownership with business leaders and addresses the institution and management of IS ownership in the organisation.

The researcher identified three major groups of stakeholders that influence IS ownership. The stakeholders are the *executive managers* with the authority to assign IS ownership to *business leaders* and *IS departmental staff members* acting as custodians of the IS. The researcher held semi-structured interviews with twelve staff members, which include executive managers, business leaders and members of the IS department. Information acquired from the field shows homogeneous results regarding some aspects of IS ownership and heterogeneous results in other aspects.

4.2.2 The study environment

To study IS ownership in its natural settings, the researcher used a phenomenological field study in a financial service organisation in South Africa. Acquiring field information in this organisation, through its situational nature, supported the research objectives of the study (Laws and McLeod, 2004).

The financial service organisation has a diversity of functions, stakeholders, IS and number of business units. Apart from its activities around the roles of research institution, regulator and supervisor, the organisation also renders business services to communities and the central government. The organisation is seen as stable (change and risk aversive) and provides leadership in the economic and financial sectors in the country and the larger Southern African region.

The organisation comprises several "line" or "core" departments that perform the main functions of the organisation. The core departments are supported by the support and maintenance departments, one which includes the IS department. Activities in the core departments vary from the operational level with interaction with the market, while the strategist in the core departments may have interaction at government level, implying that reputational risk remains high on the agenda of the board of the organisation.

Departments in the organisation work collaboratively with other departments, all contributing to some major organisational function. A supervising department may acquire information from a regulator, or the financial markets department may share information with the supervising department. The organisation is generally risk-aversive, with centralised decision-making.

In its diversity of activities, the organisation fairly represents the market in which it operates, ensuring that the study environment covers activities in similar markets comprehensively and can provide data that is rich enough to render valuable lessons in IS ownership. The environment used in this study included a population comprising senior-executive, executive and middle-managerial levels.

Organisational composition

A general structure of the financial services organisation with respect to its IS ownership role players is discussed in Chapter 2, section 2.4.3 and depicted in Figure 5.

A structure of the financial services organisation is depicted in Figure 12.
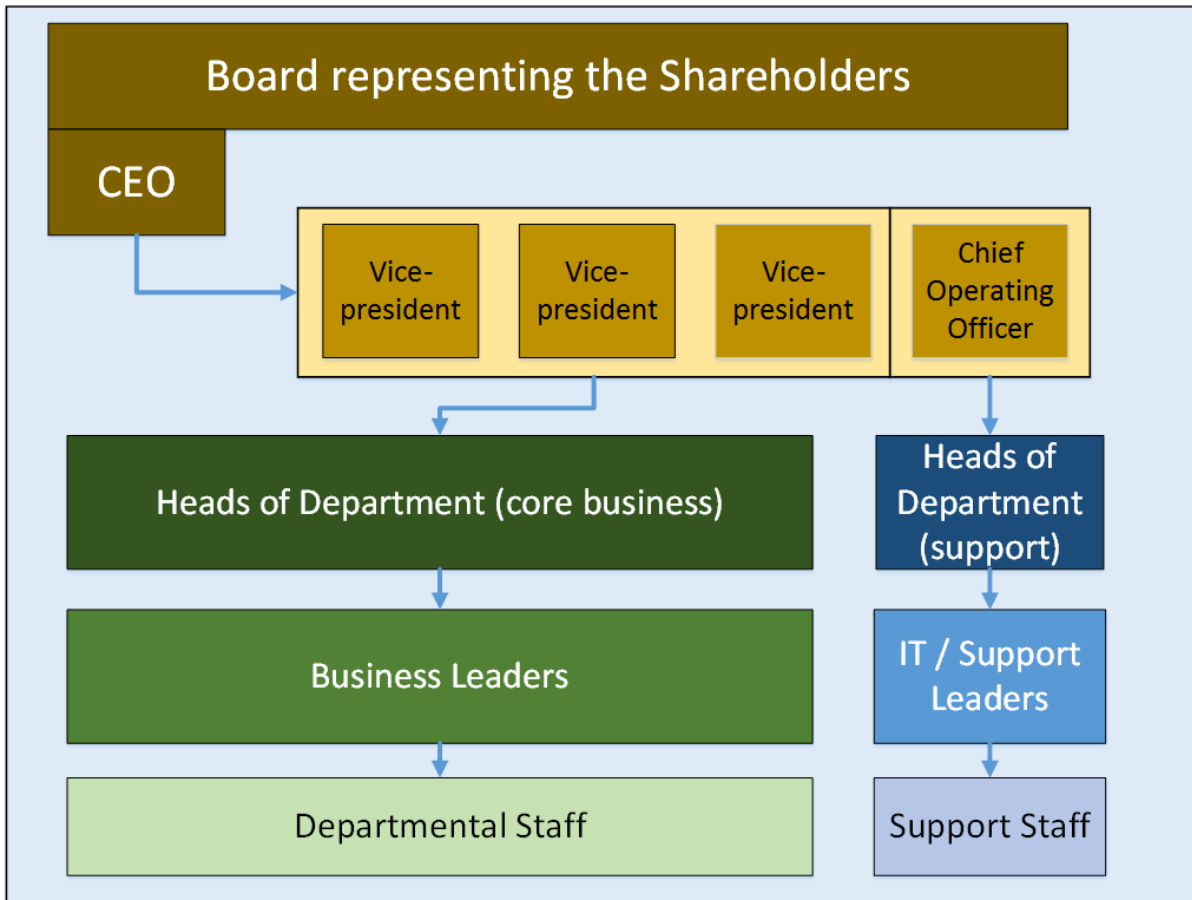
Figure 12 - Structure of the Financial Services Organisation

The organisation's overall structure comprises the core departments that represent the core functions of the organisation, while the support departments enable the activities of the core departments. Departments have their own business plans and contribute to a central IS budget, supporting the overall strategic plan of the organisation.

To provide the required financial and economic leadership in the country and neighbouring countries, the organisation needs the IS department to specialise in business specific areas and provides generic IS support to the whole organisation. Through standardisation, the IS department can consolidate skills, competencies and technologies where they provide common services to the organisation. The IS department is structured to provide support to core business departments by having departmental support groups. Software developers and support staff are grouped and

trained, providing specialist IS support to the financially oriented, regulatory and supervisory functions of organisation. Typically, approximately one tenth of the staff complement in financial organisations comprises IS-staff members providing IS support at various levels of the organisation (Guevara et al., 2009).

In this study, senior executive managers, executive managers and IS owners from the business environment have been the focus of the interviews, with interviews also held with IS departmental staff to acquire a balancing perspective.

An excerpt from a circular pertaining to the delegation of authorities is attached in Figure 13 as an example:

Agreements must be signed by:

3.2.1 any one authorised signatory from category A, being the [CEO] or any [Senior Executive Manager];

3.2.2 any two (2) authorised signatories from category B;

3.3 Heads of Departments must further ensure that internal departmental arrangements in addition to those which are set out in the Departmental Manual of Delegated Powers (the "Departmental Manual"), as well as those which are set out in the relevant Departmental Manual, are adhered to.

Figure 13 - Excerpt from Delegation of Authorities document

An excerpt from an organisational policy is attached in Figure 14 as an example.

The policy pertains to the process of change control with respect to ICT in the organisation:

3.1.1.3 An audit log of all requests for change will be maintained.

3.1.1.4 All requests for change will be uniquely identified and recorded.

3.1.1.5 The potential risk and business impact of the change will be assessed.

3.1.1.6 Risk and impact mitigating measures as well as back-out plans will be developed before requests are authorised.

Figure 14 - Excerpt from ICT Change Control policy

The following section focuses in more detail on the research process.

165

4.3 Research process
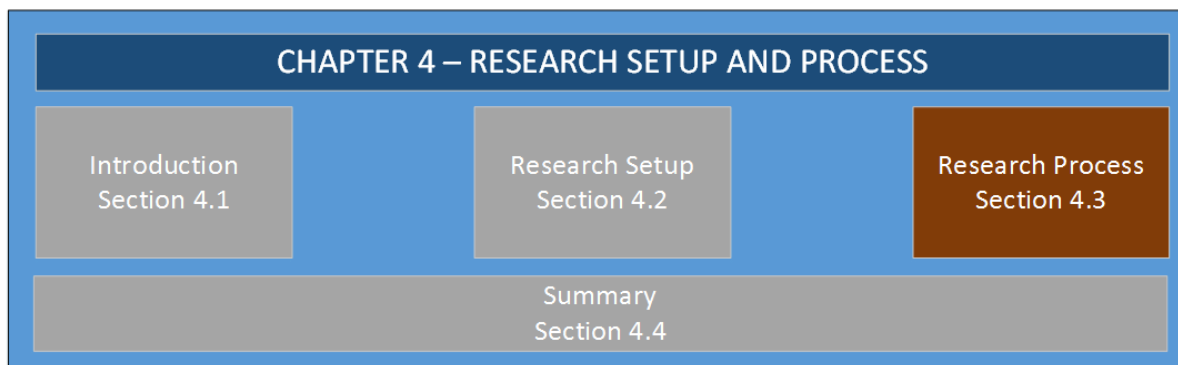
The development of the interview questions for the interviews is discussed next.

4.3.1 Interview questions

Using the questions posed in Table 1 (Chapter 1, section 1.4), information acquired from organisational artefacts (Figure 12), influences from the social exchange theory (Chapter 3, section 3.1.6.1) and information acquired during the literature review (Chapter 2), 10 questions with their sub-questions were developed (Chapter 3, section 3.2.6.2, Table 9).

The questions from Table 9 are also depicted in Table 10 and guided the researcher during the interviews, but also allowed the researcher to deviate from the suggested questions, depending on the responses and the role of the interviewee. Apart from the hierarchical level of the interviewees that required the researcher to tailor the questions to suit the role of the interviewee, the head of the IS department warranted questions that were not asked from other interviewees. The head of the IS department is also an executive manager.

Table 10 - Guiding questions for the interviews

Question	Target
Question 1: Introduction – Sets the scene for the rest of the questions and determines interviewee's awareness of IS ownership.	
1.1 Please describe your working situation with respect to IS 1.2 Within this context, do you ever think of IS in terms of ownership? 1.3 What is your concept of IS ownership?	Senior Executive Manager, Executive Manager, IS Owner,

Question	Target
	Head of the IS Department
1.4 What is your mandate with respect to providing IS to the business areas of the organisation?	Head of the IS Department
Question 2: The Role of the IS department – Determine the perception of the interviewees of the role of the IS department in the organisation.	
2.1 In your opinion, what does business perceive the role of [the IS department] in the organisation to be? 2.2 What would you like this role to be? 2.3 What is your opinion about the dependency that business have on [the IS department] to execute on their (the business's) mandate? 2.4 Who do you believe should "own" business-related IS? 2.5 Why do you say so?	Senior Executive Manager, Head of the IS Department, Executive Manager
2.6 With respect to IS ownership, what do you believe is the IS department's current role in achieving your business objectives? 2.7 What do you believe this role should be?	Executive Manager, IS Owner
2.8 What do you believe are the biggest IS challenges in the organisation? 2.9 What are your biggest challenges providing IS services to business?	Head of the IS Department
Question 3: Psychological Ownership - Establish if psychological ownership of IS exist with the interviewee.	
3.1 To what extent do you feel responsible and accountable for the IS in your business area? 3.2 What is the scope of control you have over the IS? 3.3 What is your opinion regarding the available scope of control? 3.4 What parts of the IS do you believe should be owned by your business and to which extent?	Executive Manager, IS Owner
Question 4: IS ownership in business – Establish the perception of IS ownership existence in the business areas of the organisation.	
4.1 Do you believe that there are different levels of IS ownership in the business?	Senior Executive Manager

Question	Target
4.2 What is your perception of the levels of IS ownership currently taken by business owners?	
4.3 Why do you say so?	
4.4 What is your opinion of the scope of control business owners currently have over IS in their areas?	
4.5 What do you believe their scope of control should be?	
Question 5: Shared ownership – Determine how the organisation handles shared IS and to what extent the interviewee developed psychological ownership for shared IS.	
5.1 What IS does your area currently share with other business owners?	Executive Manager, IS Owner
5.2 Do you share control with other business managers?	
5.3 What is your experience of sharing IS with other business units in the organisation?	
5.4 Who do you believe should take ownership of shared IS?	
5.5 Why do you say so?	
5.6 Who do you believe should own an organisation-wide IS?	
Question 6: Value of IS – To determine the dependency on IS and the value that the business derives from IS in their business environments.	
6.1 To which extent do you believe the IS supports your business objectives?	Executive Manager, IS Owner
Question 7: Value of IS ownership – To determine whether the interviewees find any value in having IS ownership.	
7.1 How does owning an IS make you feel?	Executive Manager, IS Owner
7.2 What are your expectations with respect to "owning" an IS?	
7.3 Did owning the IS satisfy your expectations?	
7.4 Why do you say so?	
7.5 What is your opinion of using IS ownership as a tool or resource to achieve organisational and/or personal success?	
7.6 Please elaborate.	

Question	Target
7.7 Do you perceive a difference between owning an IS in your capacity as executive and owning an IS in your personal capacity? 7.8 Please elaborate. 7.9 How do you go about assigning or delegating IS ownership to your managers?	Executive Manager

Question	Target
Question 8: Relationship – To determine the openness of the relationships between IS owners, executive managers and the IS department and whether it can be adjusted to the needs of the parties and also to identify whether there are power imbalances in the relationships.	
8.1 Do you believe that the IS department satisfy the expectations that business have with respect to owning IS? 8.2 Why do you say so? 8.3 What is your opinion about the IS department's capability to focus on supporting business objectives? 8.4 What is your opinion regarding the ICT "voice" of the business managers on the floor? 8.5 Do you feel that business concerns can be raised and addressed adequately through the current measures?	Senior Executive Manager
8.6 What pro-active measures could the IS department implement to facilitate IS ownership in business areas?	Head of IS department
8.7 Tell me about your relationship with your executive manager	IS Owner
Question 9: IS ownership expectations - To determine the interviewee's IS ownership expectations, whether their expectations have been met and whether the IS owners get as much out of owning IS as they put into the IS ownership.	
9.1 Tell me about your expectations related to IS ownership? 9.2 Have you ever had an experience where managers were not satisfied with the returns on owning an IS, based on their expectations not being fulfilled? 9.3 Why do you say so?	Senior Executive Manager, Executive Manager, IS Owner

Question	Target
9.4 Is there a fair balance between the expectations of IS owners in terms of their responsibilities and the returns they get from owning IS? 9.5 Why do you say so?	
9.6 Will you accept ownership of another IS if given the opportunity? 9.7 Why do you say so?	Executive Manager, IS Owner
9.8 Do you believe that the IS department satisfy the expectations that business have with respect to owning IS? 9.9 Why do you say so? 9.10 Does the business satisfy your expectations with respect to owning their IS? 9.11 Why do you say so? 9.12 Do you believe that there is a fair balance between what businesses expect from the IS department and what effort they put into the relationship with the IS department? 9.13 Tell me about it.	Head of IS department
Question 10: Conclusion – To determine which factors can promote or erode IS ownership, what are the challenges with respect to IS and IS ownership in the organisation and to close out with an open-ended question related to IS ownership that the interviewee wanted to discuss.	
10.1 Which factors do you feel can promote or erode IS ownership? 10.2 Is there anything else that we have not discussed that you want to talk about regarding IS ownership in the organisation? 10.3 What do you believe are the biggest IS challenges in the organisation? 10.4 What pro-active measures could the IS department implement to facilitate IS ownership in business areas?	Senior Executive Manager, Head of IS department, Executive Manager, IS Owner

By including the head of the IS department into the interviews, the interviewer was afforded the opportunity to:

- understand the challenges that the IS department experiences with business leaders who do not accept IS ownership;

- to understand how the IS department responds to business requirements and challenges;

- to understand the concept of IS ownership from the IS department's point of view.

The questions guiding the interviews have been attached as Annexure A to this document.

4.3.2 Interviewing

Interviews were conducted with twelve employees, who included four executive managers and eight business leaders (see Figure 12). Two of the executive managers that were interviewed operate at director-level (senior executive managers) while the other two are heads of their departments (executive managers), including the head of the IS department. One business leader was an IS owner in the IS department. A number of business units with diverse functions, including research, supervisory, regulatory and support activities were represented by IS owners in the interviews.

Interviewees were briefed on the nature of the study and the interviews, but no detail or information with respect to IS ownership was shared. This approach assisted to acquire bias-free responses that showed true reflections of IS ownership in the field. Each interview lasted approximately 45 minutes.

Interview questions were guided by Table 10. Aligning to social exchange theory and the structure of the organisation, the questions allowed for the differences in seniority and roles. The interviews were recorded on a voice recorder and the resultant audio files were transcribed using Microsoft Word. After conclusion and transcription of the interviews, a follow-up meeting was held with two interviewees to clarify certain aspects of the interviews. The follow-up interviews were incorporated into the original interviews.

Table 10 formed the basis of the interview questions, which were adapted during the interviews to suit the specific interviewee and the responses received from the interviewee. During the interviews, the researcher had the opportunity to follow up on issues that were perceivably impacting on IS ownership.

Initial impressions acquired during the interviewing process indicated that there are some areas that should concern the organisation. Examples of questions (as per Table 10) and the relevant responses are provided next

- *Question 1*: The introduction of the interviews served to inform the interviewees about the purpose of the interviews, their rights and voluntary participation in the interviews, the protection of their identity in the research process and the expectations of the parties emanating from the interviews. The working background and hierarchical position of the interviewees provided context to the interview responses.

  Interview extract from Question 1:

  > Question: "*please describe your working situation with respect to information systems.*"
  >
  > Response: "[F]rom a business perspective, I am responsible for the support of a business system – financial system. Support from an [interdepartmental] perspective and how it impacts on [the organisation] is that we need to ensure that everything is in sync at all times. Ok that the systems are in balance, the integrity of the information is correct and where it directly impacts on us is that we've got to do a lot of exception reports. We extract a lot of information out of the systems to give us variances, deviations, stuff like that – exception reports - from a compliance perspective and also from a systems perspective."

- *Question 2:* Questioned about the role of the IS department, interviewees had different opinions, depending on the interviewees' concept of IS and IS ownership. Role clarification with respect to IS ownership is not formally done

in the organisation. Responses varied between IS owners perceiving themselves to be merely "users of technology" to a point where the IS owners believe that they should have full control over all IS resources, including the staff of the IS department supporting and maintaining the IS.

Interviewees had consensus that the IS department should be the custodians of the IS, which includes the data of the business areas (see Chapter 2, section 2.4.3 for more detail regarding the role of the IS department as custodian of the IS).

Interview extract from Question 2:

> Question: *"With respect to IS ownership – what do you believe is [the IS department's] current role in achieving your business objectives?"*
>
> Response: "I think they're there to provide us with technical support, infrastructure – just enabling us to do our work."
>
> Follow-up question: *"What do you believe their role should be?"*
>
> Response: That's what I believe it should be.
>
> Follow-up question: *"So you are satisfied with the role that [the IS department] currently plays?"*
>
> Response: "There are some grey areas, there are some grey areas, but overall I am satisfied. Sometimes they tend… to get too involved in business – especially from a Projects Management perspective."

- *Question 3*: IS owners were questioned about their feelings of responsibility and commitment with respect to owning an IS. The intention of this question-line was to determine the interviewee's level of psychological ownership of the IS. Responses varied from IS owners that stated that they are fully committed and are going beyond their normal job descriptions to leverage the IS in the business area, to IS owners that only do enough not to irate their executive managers. The behaviours of the IS owners therefore vary between having

high levels of promotion-oriented psychological ownership and having prevention-oriented psychological ownership.

Interview extract from Question 3:

> Question: "*what responsibility and accountability do you feel with regards to these Information systems?*"

> Response: "I don't think we've got ownership of [a specific IS]. If it crashes or something happens or the queueing doesn't work we going to have the phone the IT people and say: What now?"

- *Question 4:* Senior executive managers were asked for their opinions related to the levels of IS ownership existing in the organisation.

Interview extract from Question 4:

> Question: "*Ok, talking about IS ownership. We can tell the person: "You are responsible for the information system in your department – you will be the champion of… whatever." There's a secondary component where this person at a point feels that: "You know – this IS belongs to me". Do you believe that that can happen in the business areas?*"

> Response: "It has to happen – there has to be a dual ownership of IS – simply because the system must first meet the requirements of the business. So you must have a business owner that defines what it is you want the system to do. If you leave it to the IT techs, every one of the systems that we build would be a Rolls Royce. If you leave it to the business owner, every system will be Rolls Royce Plus – and so there's limited resources – so both parties must come together. One says here's what I want the system to do – here are the capabilities I want in the system. The other designs and specs that to meet that need – somewhere they have to

meet. One look after the technical day to day running in the background – the other is the business owner and they're both… jointly owned. Has to be – otherwise it will fail. Otherwise it will be a fancy system which the user can't use. On the other side it may be so complex that the technology can't support it and the cost-efficiency to the business is lost."

- *Question 5:* Sharing of IS ownership with piers is complex and most IS owners feel uncomfortable about sharing ownership. The opinion of the interviewees was that sharing of an IS not conducive for business, as a conflict of interest between IS owners may arise and decisions could be made that could have a negative impact on their business areas.

  Interviewees were of the opinion that organisation-wide IS should be owned by the IS department.

  Interview extract from Question 5:

  > Question: "*What's your feeling about ownership of shared IS?*"

  > Response: "The moment they start sharing IS ownership, prioritisation becomes more complex."

- *Question 6:* Mixed feedback was received when IS owners where questioned on the value and impact of the IS in their business areas. The value of an IS is compared to the value of other systems in the area or organisation. Replacement of an IS with a new system may not always provide the user with a "better experience", which has a negative influence on the acceptance of ownership by the business leaders. In other cases IS owners experience better efficiency and effectiveness in using the newer IS. Interviewees had general consensus on the necessity of using IS in their business areas to achieve their business objectives.

  Executive managers had concerns about the monetary value of IS in the organisation. Initiatives to determine the return of investment of a major enterprise resource planning system were underway during the time when the

interviews were conducted. Executive management has to provide assurance to the board of the organisation that the funding made available to acquire, support and maintain the IS in the organisation provides the expected returns in terms of organisational capability, efficiency and effectiveness.

Interview extract from Question 6:

> Question: "*What is your opinion about the productive application of Information Systems in the [organisation]?*"
>
> Response: "Yes, I think the [organisation] gets unbelievable value from IT. [There is] absolutely no question that without very well-developed IT systems in the [organisation], this [organisation] cannot do its job. Absolutely no question about that, but that's true of any [financial services organisation] in the world today. No [financial services organisation] can compete without a good IT support. But are we getting better value for money in terms of return of return on investment? I do not have an answer for you. I'm not sure that we are very good yet at measuring that."

- *Question 7*: Participants were questioned to determine whether they find any value in having IS ownership. Value of IS ownership may relate to IS owners working environment, or at a personal level.

Interview extract from Question 7:

> Question: "*What is your opinion of IS ownership as a tool to achieve organisational or personal success?*"
>
> Response: "I believe it's quite key. If you, in the environment could get everybody – not to convince everybody, but to get everybody to believe that they own business processes and that they own systems that are going with that – they themselves believe. I believe that that would lead to excellence, because my take is if I personally take ownership of something I believe that I take quite a lot of interest in it and

176

I would personally feel that I take pride in it and I would do everything to ensure that it gets to a level where it could be the envy of others or it would ensure that all that can be expected of it is excellence. So, I'll drive myself, without being driven by anybody else."

- *Question 8*: This question was posed to determine the openness of the relationships between IS owners, executive managers and the IS department and whether it can be adjusted to the needs of the parties and whether there are power imbalances in the relationships.

Discussing the relationships between IS owners and executive managers, executive managers responded that they are open and available to interact with IS owners. Engaging with IS owners takes place regularly and no major problems are experienced.

IS owners have various opinions about the quality of the relationships with their managers. Some IS owners are satisfied that they can discuss problems and have the support of their executive managers when required. Other IS owners have little contact with their executive managers and displayed some levels of un-easiness when the relationships with their executive managers were discussed. In may be interpreted that IS owners with visible executive management support may perceivably be more successful in leveraging the IS in their business areas than IS owners receiving little or no executive management support.

Interview extract from Question 8:

Question: "*and the support that you get from your [executive manager] regarding this challenge that you've got?"*

Response: "We have never had any contact… I don't think our [executive manager] is up to speed with what we do in terms of [IS] support or [the IS itself] – he has no clue."

- *Question 9*: The responses of interviewees with respect to their expectations of having IS ownership, focused mostly on the effectiveness and efficiency that

the IS provide them in their pursuit of business objectives. When questioned at a deeper level, interviewees acknowledged that expectations were not only business-related but that they had personal expectations as well. Perceivably successful IS owners expressed expectations and experiences of pride, excellence, status and feelings of "worthiness" in the organisation. Reluctant IS owners expressed expectations and feelings of blame, high-risk and lack of support from executive management.

Executive managers generally expressed expectations that the business areas can successfully achieve their business objectives in support of the strategies of the organisation by leveraging the IS in their areas of responsibility. IS deployed in the business areas should provide value for the money spent on the IS, while leveraging the IS should contribute to innovation and operational excellence.

Interview extract from Question 9:

Question: "I*f you are saying you are the owner of the information system, what are your expectations of owning an IS?"*

Response: "Well one should have hands on say, in the development of it for a start. Although you don't do the technical maintenance of it, you need to have adequately representation where you can say what your needs are, the problems experiences and not going through another person or train - that's the frustrating part for us, specifically in this division. I don't know if the other divisions feel the same but we need to go through... we cannot deal directly with the expert in the IS department field. You must go through a [representative] and that depends on the person's availability. It makes it difficult because if you experience a problem, because if the system falls over, you need access now and you need help now. In the information environment the [organisation's] reputation is at stake, because if the wrong

information is displayed on the Internet screen it must be corrected like in yesterday."

- *Question* 10: IS owners were questioned which factors can promote or erode IS ownership and what are the challenges with respect to IS and IS ownership in the organisation. The interview concluded with an open-ended question related to IS ownership that the interviewee wanted to discuss.

Interview extract from Question 10:

> Question: "*If you've got another opportunity to get ownership of an IS in the future – would you take it?*"

> Response: "It depends on the environment where you are operating in. If you are not in an environment where – if you're in an environment where you are not supposed to be the owner, then obviously you won't, but given the same situation, I would push for ownership again."

> Follow-up question: *"Would you change anything?"*

> Response: "From an implementation perspective?"

> Follow-up question: *"From the agreement – say "I will take ownership, but under these conditions…."*

> Response: Not really, because I don't see how it will really change in the future. Not with the current bureaucracy I don't see it changing."

The next section discusses the analysis of the interviewee responses. Given the literature review that was conducted before the interviews were done, the researcher identified several instances in the organisation that corresponded to literature discussions. Knowledge acquired from the literature therefore affected the analysis process, which commenced with the coding of data.

4.3.3 Analysis

The process of inductive data analysis implies that the study progresses from information acquired from many individuals to developing a theory or framework based on the collective feedback of all interviewees interviewed in the study, information from the literature review and information from organisational artefacts.

Atlas.ti version 6.2 was applied to analyse the data of this study. The transcripts of the 12 interviews were imported as primary documents into one hermeneutic unit that served as the "envelope" for the thesis project.

Multiple iterations of coding were done to reduce the content of the interviews to a smaller number of significant and core codes, categories of codes or themes that serve to capture the essence of IS ownership. Using Atlas.ti as analysis tool, the initial round of coding was done close to the transcript data, as described next. Details of the coding were included in Annexure B.

The analysis process is depicted in Figure 15 and is discussed in detail in this section.
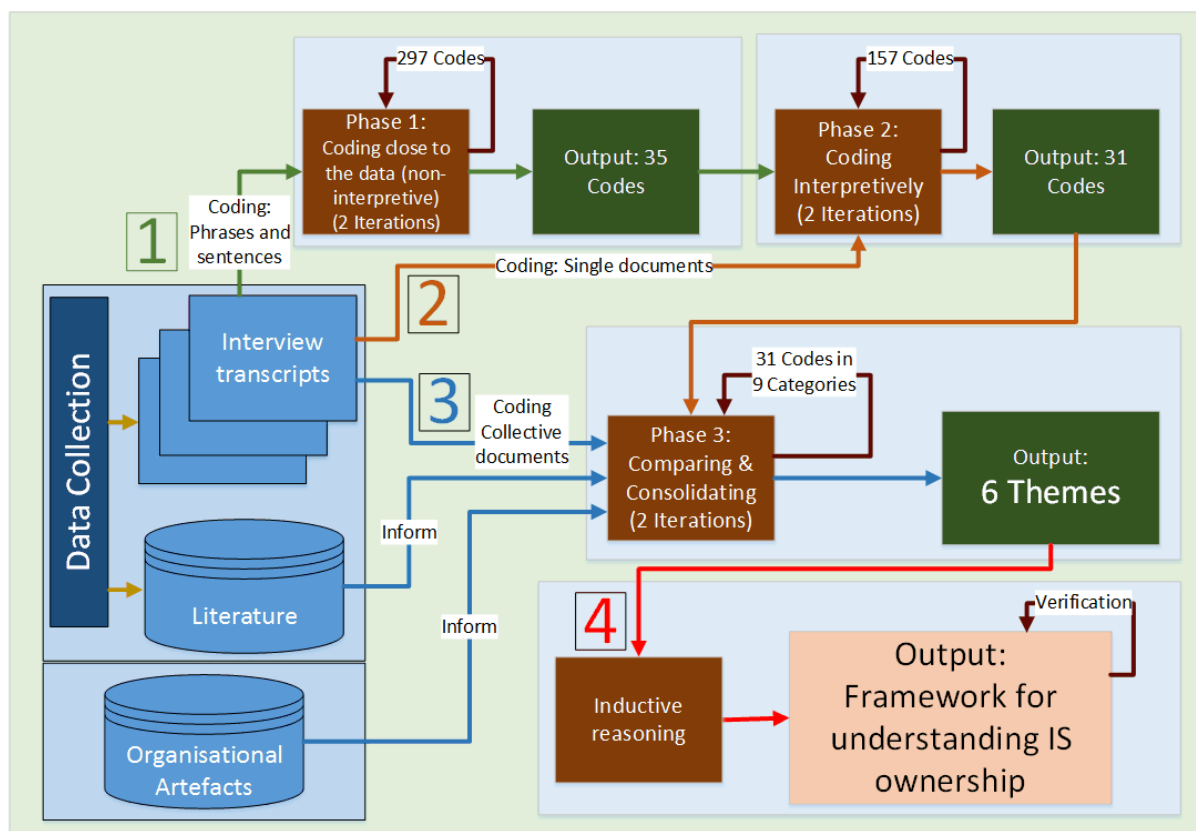
Figure 15 - Inductive data analysis process

4.3.3.1 Phase 1: Coding "Close to the Data"
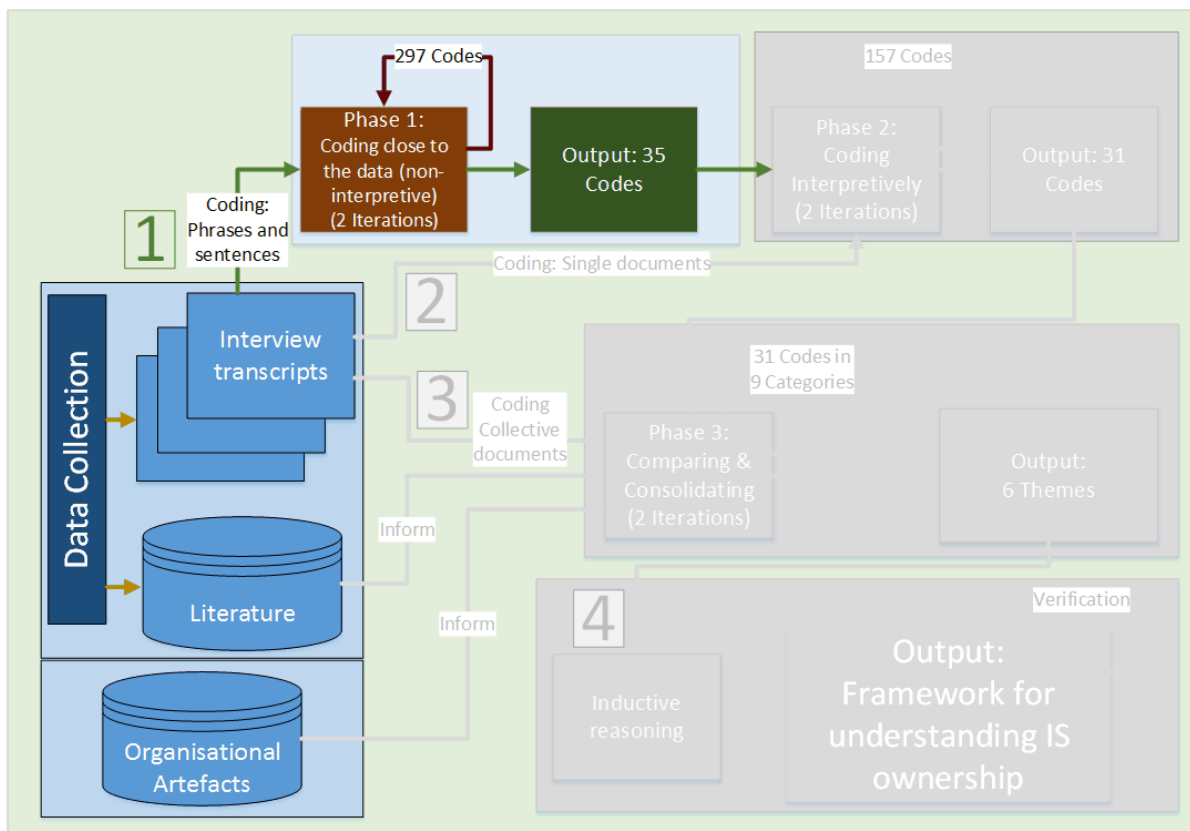
Figure 16 - Phase 1 Coding

The process followed during Phase 1 coding is depicted in Figure 17.
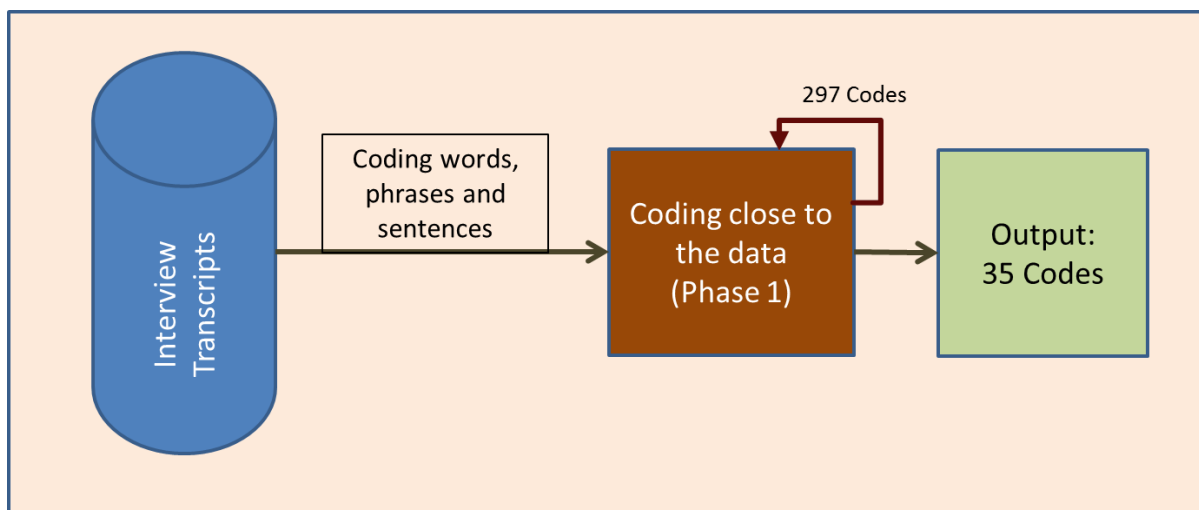
Figure 17 - Phase 1 Coding Details

- *Phase 1: Iteration 1* - the initial iteration of coding rendered 297 codes from the 12 primary documents. "Coding close to the data" implies the coding of words, text phrases and sentences in a literal manner, without attempting to search for hidden meanings attached to the text (Thomas, 2003, p.4).

- *Phase 1: Iteration 2* - during a second iteration of coding in the same literal manner, the codes were consolidated into 35 codes that were used as an input into Phase 2 of coding.

The codes of iteration 1 and iteration 2 of Phase 1 coding are documented in Table 11.

Table 11 - First and Second Iterations of Phase 1 Coding

Phase 1: First iteration of codes (297)		Phase 1: Second coding iteration (35 codes as output)
Application of IS	Knowledge of IS systems used elsewhere	Appropriation
Aware of other uses of ICT	Organisation-wide	
Best practice, but may be unfit	Organisation-wide service	
Combining data from different sources	Reason for replacing legacy IS	
Effectance	Reason why legacy system is being replaced	
Efficacy	Reason why legacy system is still used	
Explore other uses of IS	Replacement IS	
Generic IS	Replaces legacy IS	
Generic IS may not suit the business	Simplify ICT	
Improve ICT abilities	Solving business problems with IS	
IS use expands	Using generic IS	
IS used to integrate information	Wider organisation uses IS more extensively	
ICT-enabled business system	Legacy system	Assets
Data as a resource	New system	
Information as a resource	Organisation-wide IS	
Ownership assignment	Task assignment	Assignment
Concept of ICT	ICT as proxy	Conception
Concept of IS ownership	ICT mainly referred to in terms of hardware	

182

Phase 1: First iteration of codes (297)		Phase 1: Second coding iteration (35 codes as output)
Generalised view of ownership	Perception of IT	
ICT as a proxy of productivity	Proxy view of ICT	
Business wants more control of IS	Owner doesn't have control	**Control**
Limited control	Partial control	
Business critical	Business specific IS	**Core Business**
Underperformance		**Efficacy**
Emotion	Unsure about future	**Emotion**
Emotional		
Business has limited control over IT resources	Less dependent on ITD	**Empower**
Business should be more independent from IT	Limited ICT experience	
Business should have more say in ICT-decision-making	Limited ICT knowledge	
Dependent on ITD	Links ICT expertise to IS ownership	
Dependent on Service Provider	Locked in	
Empowerment	Ownership implies having the technical knowledge	
Lack of ICT expertise erodes ownership	Partially empowered	
Challenge	IT satisfy user expectancy	**Expectations**
Dissatisfaction	IT should take some responsibility	
Doubt IT's ability	Not addressing user expectations	
Doubtful if IS ownership taken by business is practical	Not addressing user requirements	
Impact unknown	Old problem still not addressed	
IS support not fully optimised	Personal requirements	
IS support structures are adequate	Reward	
It can be done better than now	Satisfied by level of control	
IT can lead the organisation	Satisfied with ownership deal	
IT doesn't address user expectations completely	Satisfy business requirements	
IT is not perfect	This needs to be addressed	
IT is slow	Underestimate effort	
IT is too slow	User expectations	
IT not taking ownership		
Practical example		**Experience**

Phase 1: First iteration of codes (297)		Phase 1: Second coding iteration (35 codes as output)
Delegated authority may not imply ownership	Formal ownership	**Formal ownership**
Exclusive ownership	Thinking about a link between delegated authority and IS ownership	
Business risk	Duplication has budget implications	**Governance**
Concern for impact of decentralising	Executives directing the organisation	
Concerned about confidentiality	Governance	
Concerned about data	Governance structure	
Data subject to security breaches	Lack of ICT support hinders business	
Decision to invest	Lack of IT experts poses risk for business	
Decision-making process	Over-governance	
Decision-making should be controlled	Questions strategies	
Delegated authorities	Thorough and good governance	
Divulging information		
Influence from executives	Negative influence on business	**Influences**
Influencing ownership	Personal factors may influence IS ownership	
Motivation for PO?	Reason for taking ownership	
Need incentive to promote ownership	Reason given for PO	
Needs control to have higher level of ownership		
Individual as unit of ownership	Interdependencies under shared IS	**IS distribution**
Units of ownership	Levels of ownership is a new concept for user	**IS ownership**
Levels of ownership	Not understanding concept of levels of ownership	
Need for ownership	Needs change	**Needs**
Needed to take ownership		
IS included in future	Objective	**Objectives**
Achieving business objectives	Specific business objectives	
Business process	Problem identified a while ago	**Operations**
Not business critical	Service provision	
Organisation evolves	Reluctant to change	**Change**

Phase 1: First iteration of codes (297)		Phase 1: Second coding iteration (35 codes as output)
Impact of event on shared IS	Personal satisfaction	**Outcome**
Ownership enables better leverage of IS	PO promotes attachment to organisation	
Shared IS does not imply conflict of interest	Shared IS may lead to resource contention	**Ownership distribution**
Shared IS forces business areas collaboration	Shared ownership	
Shared IS implies shared risks	Sharing of IS erodes ownership	
Big spenders	Perception of procrastination	**Perception**
Cost contributors	Positive towards IT	
Personal ownership	Self-evaluation	**Personal attributes**
Area of expertise	IT given the authority	**Power**
Afraid to alienate IT	IT is able to make good decisions	
Assertiveness	Need IT's expertise	
Authority exercised over business	Personal IT knowledge	
Authority relates to ownership	Technical expertise	
Business leader wants to have the expertise	Technical power	
Decision-making powers over ICT spending	Views IT staff as experts	
Executives have ultimate investment decision-making		
Cares about the ICT tools assigned to user	Passionate about ownership	**Psychological ownership**
Business must take some responsibility	Personal connection	
IS ownership does exist	Personal control	
IS ownership in business is deemed positive	Psychological ownership	
IS ownership is new idea	Responsibility relates to ownership	
No perceived ownership	Take responsibility	
Ownership implies responsibility	Taking ownership	
Ownership includes taking responsibility	Taking ownership of data	
Ownership of attaining business objectives	Unsure of ownership	
Explain relationship with IS	Negotiate	**Relations**
Interaction between IT and business	Social exchange theory	

185

Phase 1: First iteration of codes (297)		Phase 1: Second coding iteration (35 codes as output)
IT should be made aware	Stakeholders meeting with business	
IT/business communication	Weak relationship	
Leading role can be destructive		
Business requirements	Understand requirements	**Requirements**
Collective requirements		
Attrition erodes available expertise	Higher business priorities warrants priority assistance	**Resources**
Concern about business having too little ICT expertise	ICT resource requirements	
Concerned about available IT resources	IT resources are shared by organisation	
Consider using dedicated IT resources	Need IT involvement	
Expertise in IT ensures better leverage of ICT	Shortage of ICT skills	
Ownership rights and obligations		**Rights and obligations**
Business depends on IT	Involvement is declining	**Role**
Business not fully involved in ICT-decision-making	Involvement of executives	
Business not responsible for ICT/IS acquisition	IS owned by business assisted by IT	
Business not responsible for IS maintenance	IT has technical responsibility	
Business specification relates to IS ownership	IT owns IS with business playing lesser role	
Concerned about dependency on ICT	IT responsible for IS maintenance	
Conflict between IT and business	Job description	
Decision-makers are owners	Levels of leveraging ICT	
Decision-making powers	Little exposure to higher levels of business	
Departments are partially responsible for ICT	Local focus	
Departments share in ownership	Not involved in specific areas of IS	
Difficult to describe IT's role	Organisation-wide IS owned by IT	
Excluded from parts of the department	Ownership lies with executives	
Executives must take decision-making responsibility	Ownership migrates to business areas	

186

Phase 1: First iteration of codes (297)		Phase 1: Second coding iteration (35 codes as output)
Executives willing to leverage IT	Ownership of application	
Feels excluded from using "deep" IS	Ownership of data	
ICT decision-making should be shared between business and IT	Ownership of procurement	
If ICT within business, business forced to take ownership	Owns ICT	
If shared ownership, IT should take ownership	Sees executive involvement as ownership	
Information ownership	Was previously included in rest of department	
Act as agent for owner	Low level user	**Stakeholder**
Business colleague	Manager	
Business owner	Owner of ERP IS	
Clients	Owner of ICT project	
Identifies owners	Senior management	
IT Department	Senior stakeholder in IT	
Business department	Division as unit of ownership	**Structure**
Decision-making hierarchy	Ownership hierarchy	
Department as unit of ownership	Wrong structures in IT	
Describes new business areas		
Complex ICT		**Target Attribute**
Difficult to determine ROI	IS essential for business success	**Value**
Expected ROI	No immediate indication of ROI	
Expensive IS	Not fully convinced	
Financial impact of IT	Ownership seen as positive	
ICT must enable current task requirements	There is value in IS	
ICT plays an essential role in the organisation	Uncertainty of ICT's value	
Integration of IS		

At the end of Phase 1 coding, eight of the original 297 codes were discarded as irrelevant, since they did not contribute to the understanding of IS ownership. The codes that were discarded at the end of Phase 1 are depicted in Table 12.

Table 12 - Codes discarded after Phase 1 Coding

Discarded codes (8)
Adamant about statement
Comparison to other IT projects
Emphasis of importance
Hearsay
May or may not be justified
New concept
Soften the blow
Will address if opportunity arises

An example of Phase 1 coding in Atlas.ti is depicted in Figure 18.
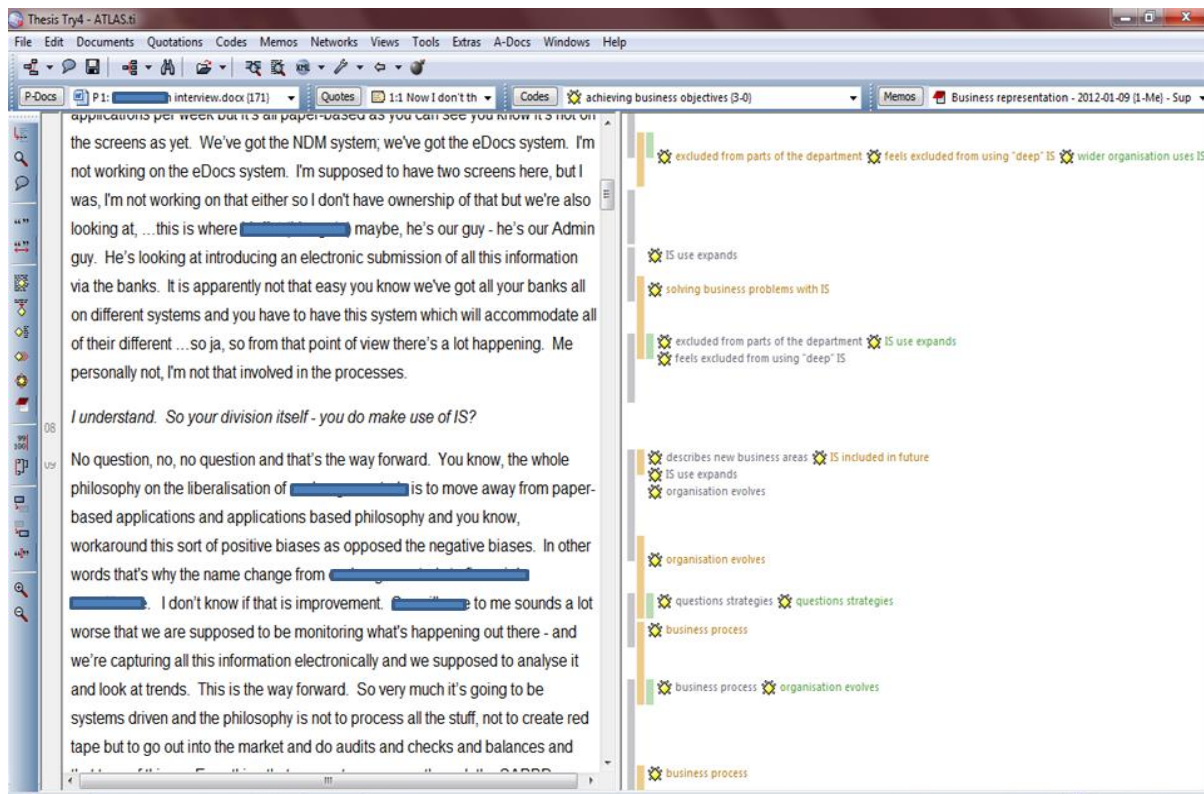
Figure 18 - Example of Coding Phase 1

4.3.3.2 Phase 2: Coding Interpretively
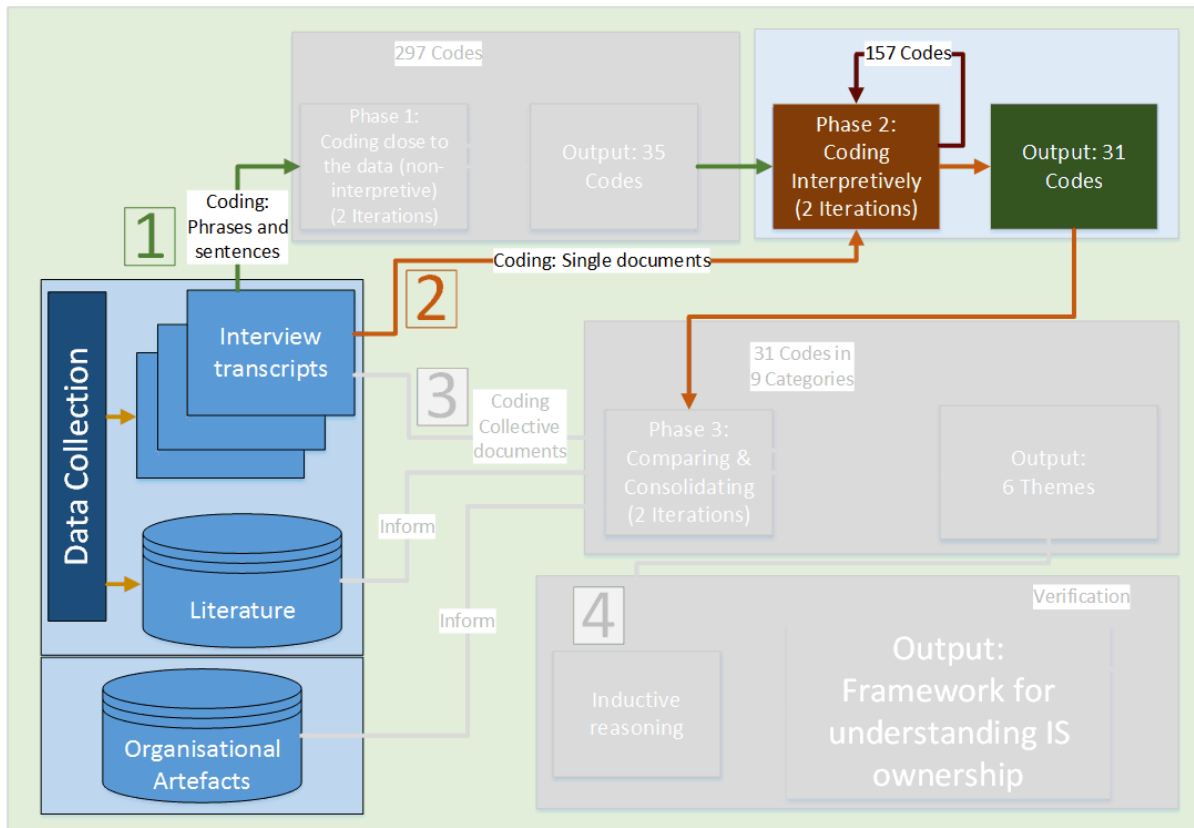
Figure 19 - Phase 2 Coding

Coding Phase 2 was done in an interpretive manner and followed the process depicted in Figure 20:
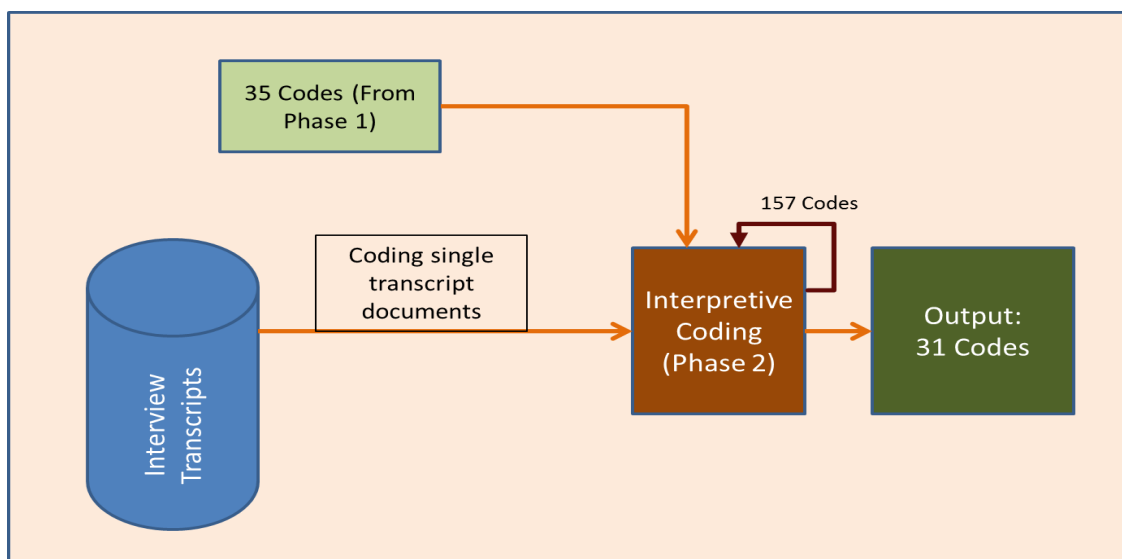
Figure 20 - Phase 2 Coding Details

Interpretive coding covers wider areas of transcript data than coding "close to the data". Coding was done by reading and interpreting a quotation or a large segment of text acquired from interviewees in response to a question. Codes or code categories that were developed during the interpretive iterations may be referred to as "interpretive" codes.

Viewing IS ownership through the lenses of the organisation as concern and the relationships between the executive and the IS owners through the lens of social exchange, Phase 2 of coding was conducted.

- *Phase 2: Iteration 1* - the iteration of coding rendered 157 interpretively acquired codes and was informed by the 35 code categories from the second iteration of Phase 1 coding.

- *Phase 2: Iteration 2* - the 157 interpretively acquired codes acquired during the first iteration of Phase 2, were reduced to 31 codes.

Table 13 - Coding Phase 2

Phase 2: First coding iteration (157 codes)	Phase 2: Second coding iteration (31 codes as output)
OPTIONS	Options
OPTIONS_Business	
OPTIONS_Personal	
Data as a resource	Assets
Legacy system	
Information as a resource	
Own-able IT	
Elements of formal ownership	Formal ownership
Formal ownership	
Information ownership	
Legacy system shared with other business area	Ownership distribution
Shared ownership	
OWNERSHIP	
OWNERSHIP_Hierarchy	
OWNERSHIP_Of	
Cares about the ICT tools assigned to user	Psychological ownership
ISO_Erosion	
ISO_Promotion	
IT not taking ownership	
ITD should have ISO	

Phase 2: First coding iteration (157 codes)	Phase 2: Second coding iteration (31 codes as output)
No perception of PO	
Psychological ownership	
Take responsibility	
Taking ownership	
Passionate about ownership	
EXPECTATION_Business	Expectations
EXPECTATIONS	
EXPECTATIONS_Failure	
EXPECTATIONS_Realizing	
Frustration	
Problem identified a while ago	
Underestimate effort	
Dissatisfaction	
Personal satisfaction	
PO promotes attachment to organisation	
Satisfied by level of control	
Satisfied with ownership deal	
Satisfy business requirements	
Work satisfaction	
Data vs IS ownership	Role
DECISION MAKING_Problems	
Explain relationship with IS	
ICT decision-making should be shared between business and IT	
ROLE	
ROLE_Buss	
ROLE_ITD	
ROLE_Personal	
SUPPORT	
SUPPORT_EXEC	
SUPPORT_EXEC_Neg	
SUPPORT_EXEC_Pos	
SUPPORT_ITD	
SUPPORT_ITD_Neg	
SUPPORT_ITD_Pos	
Business colleague	Stakeholder
Clients	
IT Department	
Manager	
Business department	

Phase 2: First coding iteration (157 codes)	Phase 2: Second coding iteration (31 codes as output)
Business capability	Empower
EMPOWERMENT	
EMPOWERMENT_Need for	
EMPOWERMENT_Neg	
EMPOWERMENT_Partially	
EMPOWERMENT_Pos	
Dependent on ITD	
Dependent on Service Provider	
Less dependent on ITD	
Partially empowered	
She wants to have the expertise	
OWNERSHIP_Rights and Obligations	Rights and obligations
Application of IS	Appropriation
Reason why legacy system is being replaced	
Reason why legacy system is still used	
Job description	Assignment
JOB_Meaningful	
Ownership assignment	
Task assignment	
CHANGE	Change
CHANGE_Need	
CHANGE_Resistant	
CHANGE_Willingness	
Describes new business areas	
New system	
Business critical	Core business
Not business critical	
Alignment	Governance
Governance	
IMPACT ON BUS OBJ neg	
Questions strategies	
DECISION MAKING_Authority	Power
Technical power	
COLLABORATION	Relations
COLLABORATION needs	
COLLABORATION us_and_them	
COMMUNICATION	
CONFLICT between org culture and business requirements	
CONTACT	
IT should be made aware	

Phase 2: First coding iteration (157 codes)	Phase 2: Second coding iteration (31 codes as output)
Negotiate solution	
Social exchange	
Negotiate	
INVOLVEMENT	
INVOLVEMENT_Disengaged	
INVOLVEMENT_Engaged	
Reward	Outcome
COMMODITISED IS	Value
IT VALUE_Neg	
IT VALUE_Pos	
IT VALUE_Questioned	
Blame	Culture
AMBITION	Driver
CHALLENGE	
Emphasis of importance	
Efficacy	
Inefficiency	
Underperformance	
EMOTION	Emotion
Emotion_Neg	
Emotion_Neut	
Emotion_Pos	
OBJECTIVE	Objective
OBJECTIVE_Business	
OBJECTIVE_Personal	
Practical example	Operational
SERVICE	
SERVICE_Neg	
SERVICE_Pos	
SERVICE_Provision	
Service provision	
FOCUS_EXT	Personal attributes
Local focus	
LOCUS_OF_CONTROL_Ext	
Self-evaluation	
Not fully convinced	Perception
Opinion	
OWNERSHIP_Perception	
PERCEPTION	
PERCEPTION_Neg	

193

Phase 2: First coding iteration (157 codes)	Phase 2: Second coding iteration (31 codes as output)
PERCEPTION_Neut	
PERCEPTION_Pos	
Cynical	
Business requirements specification relates to IS ownership	Requirements
REQUIREMENTS_Business	
REQUIREMENTS_Personal	
Business requirements	
ICT mainly referred to in terms of hardware	Conception
Concept of IS Ownership	
CONTROL	Control
CONTROL_Neg	
CONTROL_Pos	
Owner doesn't have control	
Partial control	
Influencing ownership	Influences
Motivation for PO	
Reason given for PO	
Want	Needs

An excerpt from Atlas.ti during Phase 2 coding is depicted in Figure 21. A memo used during the coding is included in the excerpt.
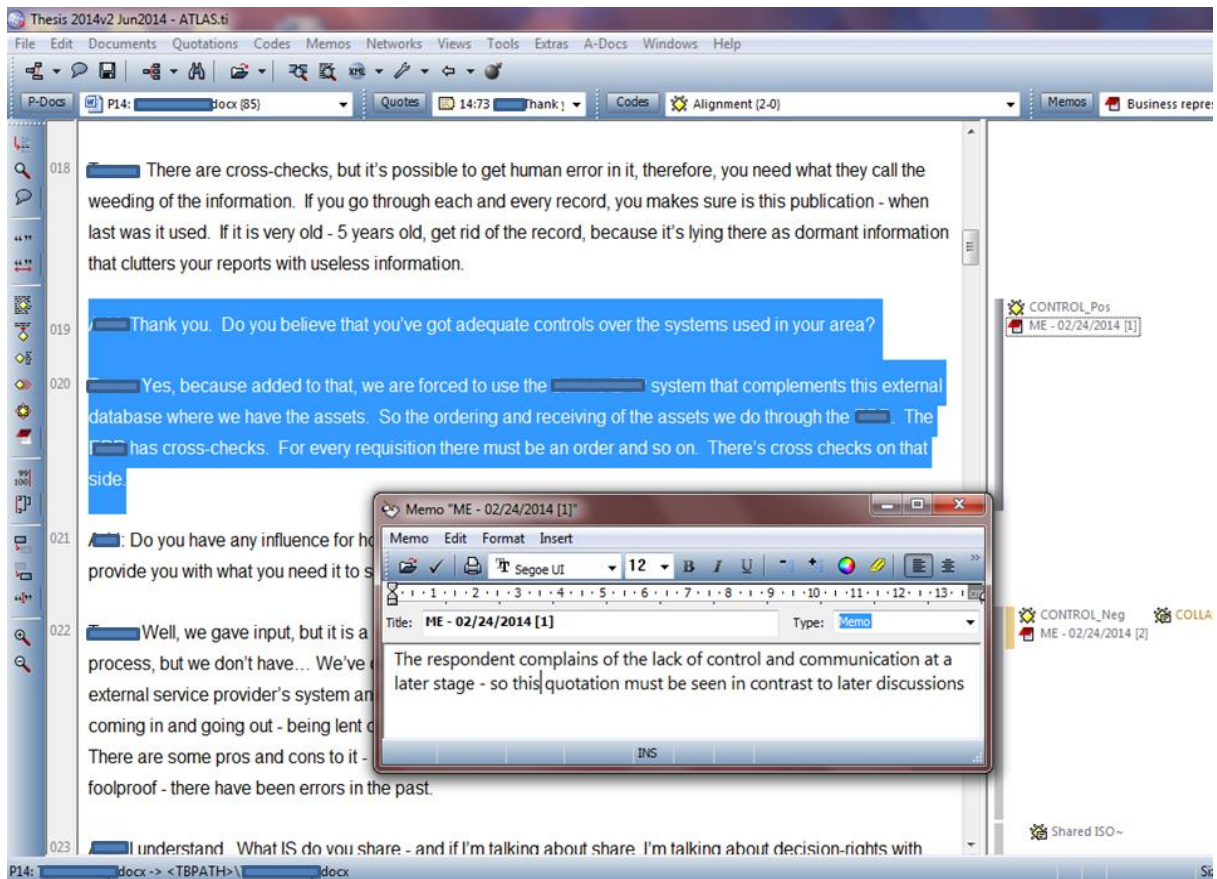
Figure 21 - Example of Coding Phase 2

The output from coding Phase 2 rendered 31 codes.

© University of Pretoria

4.3.3.3 Phase 3: Categorising Codes and developing themes
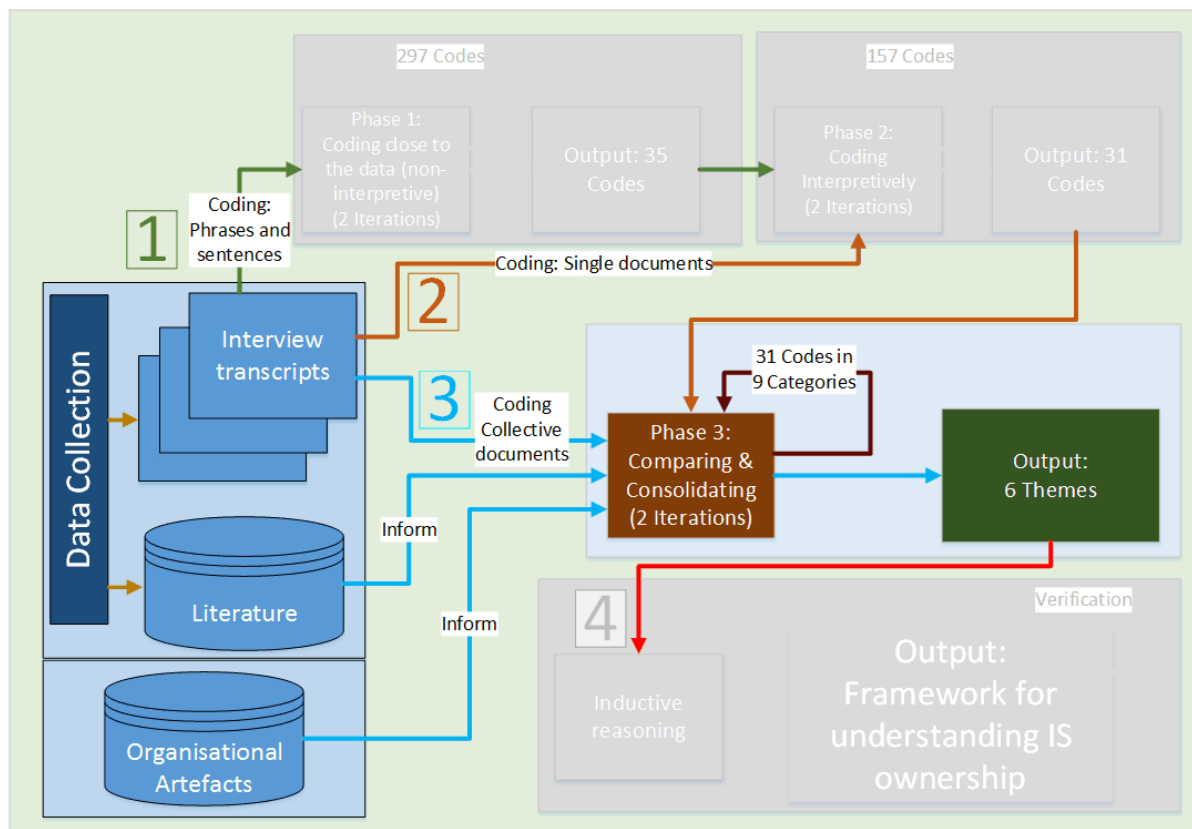
Figure 22 - Phase 3 Coding

When conducting the final iteration of coding, certain choices had to be made to materially reduce the 31 interpretively acquired codes from the second iteration of Phase 2 to a manage-able number of codes categories. The 31 code categories from Phase 2 were used as input into the coding of Phase 3.

In Phase 3 or the coding process the 31 codes acquired from Phase 2 were placed in a number of code categories. According to Thomas (2003) and Creswell (2009) the code categories should be reduced to the minimum number if code categories needed to capture the essence of the research. For this study, it was decided to reduce the number of codes categories to 10 or less. The first iteration of coding in Phase 3 rendered 9 categories of code. Two iterations of this phase were conducted. Six themes emerged from the second iteration of Phase 3 coding.

196
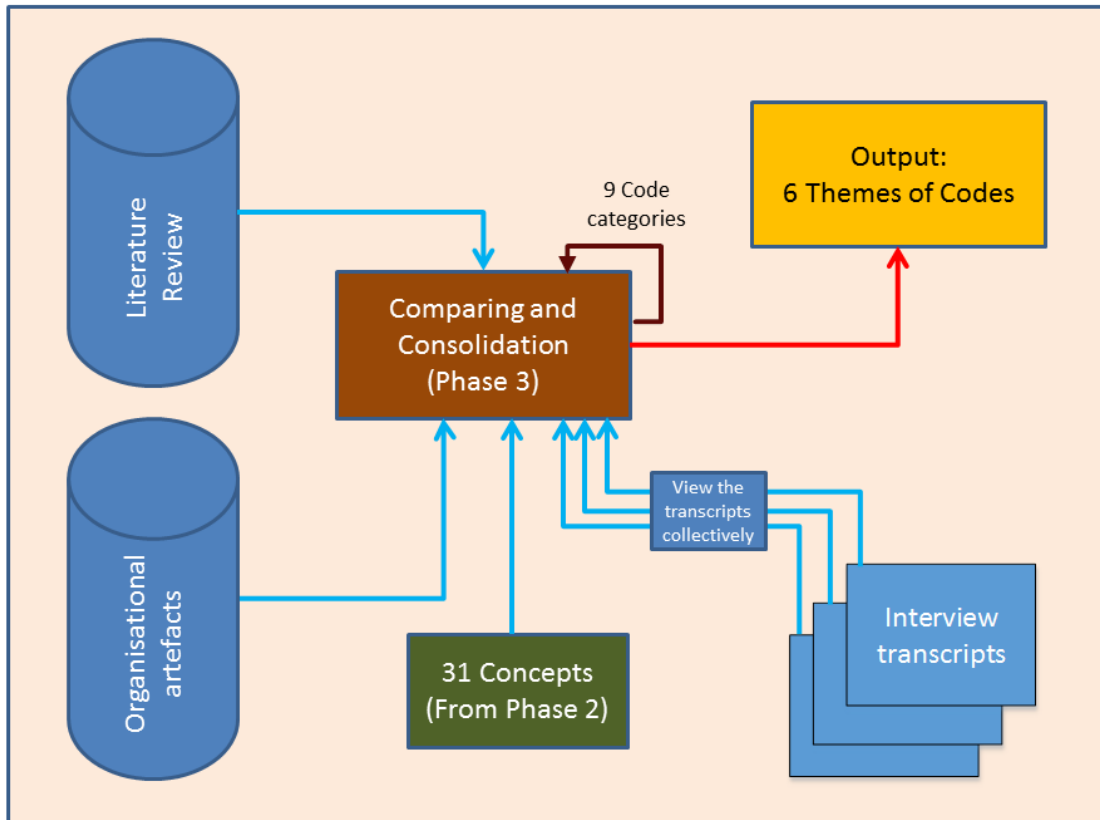
Figure 23 - Phase 3 Coding Details

4.3.3.3.1 Phase 3: Iteration 1

Iteration 1 of Phase 3 of the coding process is described in this subsection.

Figure 24 - Phase 3: Iteration 1 Coding

Using the 31 codes that resulted from Phase 2 and seeking for relationships between the codes, nine categories of codes emerged during the 1st iteration of Phase 3 coding. The 12 interview transcripts were analysed individually to render the nine categories of codes.

Identification of code categories

The codes "Governance" and "Management" were combined into the code category of "Governance and Management", mainly based on the International Standard ISO/IEC 38500:2008 explanation of "IT Gover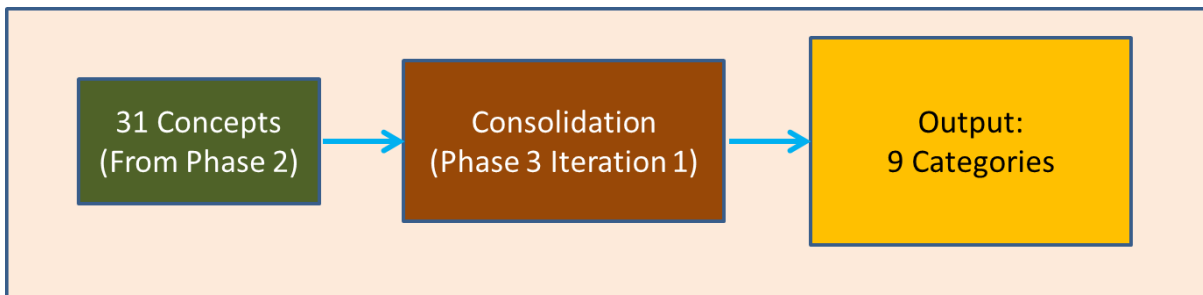nance" (ISO and IEC, 2008). The rest of the code categories were named intentionally to reflect IS ownership in the organisation. This section explains the identification of the 9 categories of code. Nine categories of codes emerged from the coding iterations (Phase 3: Iteration 1).

The process of consolidating codes under code categories posed some challenges, as some codes may fit into different code categories, while some codes did not fit closely ("snugly") into a code category. Three examples are provided:

- The code "*Combining data from different sources*" may fit into the category of "*Operations*", but after some deliberation it was placed in the category of "*Appropriation*"

- "*CHANGE_Willingness*" and "*new business areas*" were placed under "*Change*", but it may have been placed under categories that may have been named "*Evolve*" or "*Organic*", all which may describe the ever-changing environment in the organisation.

- "*Control*" refers to the levels of controls afforded by the job assignment to the IS owner, or it may refer to the levels of control afforded by the IS. "*Control*" may therefore fit into the category of "*Rights and obligations with respect to owning an IS*" or under "*Influences that support or erode the levels of IS ownership*".

The initial number of codes acquired from the iterations of coding were systematically reduced, relationships identified between them and then placed into a manageable number of categories (Creswell, 2009). The responses were studied through the lens of social exchange theory as described by Cook and Rice (2003) and ideas acquired from the IT-governance-oriented documentation of COBIT 5 (ISACA, 2011; De Haes et al., 2013; ISACA, 2012b; ISACA, 2012a), King III (Institute of Directors, 2009a, 2009b) and ISO/EIC 38500 (ISO and IEC, 2008). Tables depicting the iterative rounds

of coding are reflected in Table 11, Table 13, Table 14 and Table 16. The coding is also depicted in their different iterations in Annexure B of this document.

The first iteration of Phase 3 of the coding that was done in an interpretive manner is depicted in Table 14.

Table 14 - Coding Phase 3 - Categories of codes

Input into Phase 3 (31 codes)	Phase 3: 1st coding iteration - Categories of codes (9 categories)
Options	IS as assets in the organisation
Assets	
Formal ownership	IS ownership
Ownership distribution	
Psychological ownership	
Expectations	Expectations of stakeholders in IS ownership
Role	Roles of stakeholders in the IS ownership
Stakeholder	
Empower	Rights and obligations with respect to owning an IS
Rights and obligations	
Appropriation	Governance and management
Assignment	
Change	
Core business	
Governance	
Power	Relationships between the role-players involved in IS ownership
Relations	
Outcome	Outcomes of IS ownership
Value	
Culture	Influences that support or erode the levels of IS ownership
Driver	
Emotion	
Objective	
Operational	
Personal attributes	
Perception	
Requirements	
Conception	
Control	
Influences	
Needs	

The nine categories of codes are depicted in Figure 25.

9 Categories	Category 1: IS as assets in the organisation
	Category 2: IS ownership
	Category 3: Expectations of stakeholders in IS ownership
	Category 4: Roles of stakeholders in the IS ownership
	Category 5: Rights and obligations with respect to owning an IS
	Category 6: Governance and management
	Category 7: Relationships between the role-players involved in IS ownership
	Category 8: Outcomes of IS ownership
	Category 9: Influences that support or erode the levels of IS ownership

Figure 25 - Categories of Codes

The aim of identifying the categories of codes was to acquire a manageable number of building blocks for a framework for understanding IS ownership without losing the essence of IS ownership as expressed by the interviewees that participated in the study. The following sections analyse the categories of codes acquired from the first iteration of Phase 3 of coding. References to interviews are provided as "R1" to "R12". Using codes to discriminate between interviewees is done to protect the anonymity of the interviewees.

4.3.3.3.1.1 Category 1: IS as assets in the organisation

9 Categories	Category 1: IS as assets in the organisation
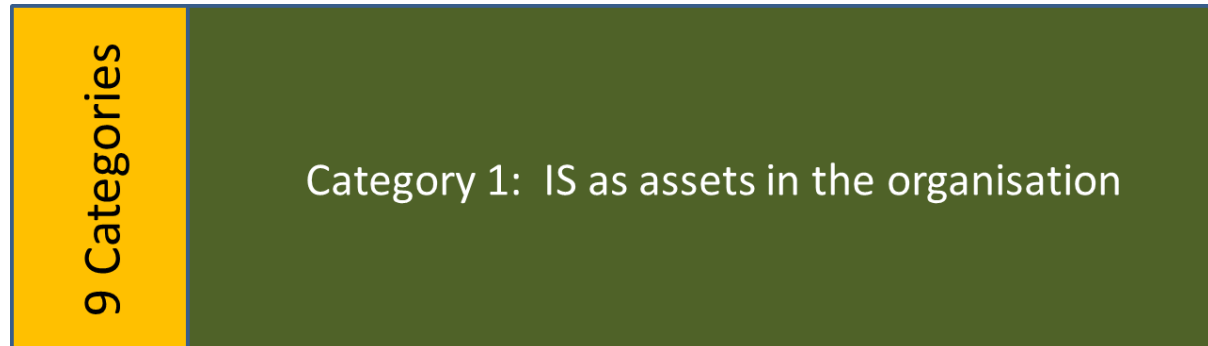
IS are perceived as strategic assets by the organisation. According to an executive manager, the purpose of the IS department is: "to provide sustainable information systems as well as maintain and support the current [IS] asset environment…" (R8).

Discussing the need for IS in the business, executive managers are adamant that: "without [IS] we cannot have [this organisation] - it's as simple as it is."(R3) and "the IS solution that we use fully supports the business processes, because without it – no operations" (R10). It should also be acknowledged that not all business areas rely as extensively on IS as others: "in my portfolio of operations I'm looking at processes and applications which is still a manually driven thing…" (R6).

The general consensus based on feedback from IS owners is that IS are essential for business in the organisation and that the optimal application of IS is needed to satisfy organisational expectations. The organisation has to satisfy governance requirements, ensuring that assets have owners who can leverage the asset to achieve business objectives (ISACA, 2012b). Acknowledging an IS as an asset can satisfy IS owners' drive to make a positive impact on the organisation (Pierce et al., 2001). Owning an IS allows IS owners to interact with it in the environment, to create a self-identity and to have a home in the organisation, serving as motivators for taking ownership.

4.3.3.3.1.2   Category 2: IS ownership

9 Categories	Category 2: IS ownership
	Category 2.1: Defining IS ownership (What is IS ownership?)
	Category 2.2: Formal and Psychological Ownership
	Category 2.3: Contracting IS ownership

A business executive argued that IS ownership is key to business success: "If you… could get everybody… to believe that they own business processes and that they own systems… I believe that that would lead to excellence" (R10).

Category 2.1: Defining IS ownership (What is IS ownership?)

9 Categories	Category 2: IS ownership
	Category 2.1: Defining IS ownership (What is IS ownership?)
	Category 2.2: Formal and Psychological Ownership
	Category 2.3: Contracting IS ownership

Ownership of IS is based on ownership of targets in general and was described in more detail in Chapter 2, section 2.2 and section 2.4. The understanding of IS ownership depends to a great extent on the individual's concept of what an IS comprises. For the purpose of this study, an IS comprises elements of technology and business processes, business knowledge and skills, business information and human resources (Fink and Neumann, 2009; Lehmann and Fernández, 2007; Melville et al., 2004; Orlikowski and Iacono, 2001; Orlikowski, 1992).

From the interviews, there was evidence that the concept of an IS influenced interviewees' concept of IS ownership. There were responses that indicate that there

is confusion in some IS owners' mind of what an IS with respect to IS ownership entails:

- "Ownership of data, integrity of data – not from a technical perspective though" (R11).
- "Someone needs [to] take accountability for the data of the system and that's where I come in" (R1).

As per the above extracts, IS was seen as the information or data used, stored or produced by the IS. In reality, information or data is a component of the IS used in the business area (section 2.3.1 in Chapter 2).

Other IS owners responded to what IS ownership means to them:

- "[Someone who] takes ultimate responsibility for buying, for maintaining, for using and for checking that it still meets the requirements…" (R3).
- "It's about the system itself, but more about information that we actually have to report on. Things you have to use on a daily basis to make decisions" (R1).
- "I see it as my responsibility to drive [the IS's] implementation and to drive its utilisation. So I see that as full ownership" (R9 – IS owner).
- "the IS that is put into place is owned by business but strongly supported by IS practitioners" (R10).

Apart from the differences in conceptualising IS ownership between individuals, a general difference was also found between executive management and IS owners. Executive managers view IS ownership as a vehicle to achieve organisational objectives, while the IS owner has a more efficacious objective for his own business-related activities in mind.

- "an information system would typically fulfil a business objective and… the person who is mandated to achieve that objective, would typically be the owner of that information system" (R8).
- "it is also a very personal thing and passionate thing because really what happens is the success of how well you manage your portfolios and how

successful you are as a business has got largely to do with the control that you have over the information that you have" (R4).

How a person defines IS ownership to himself, will impact on the expectations of the IS owner and that of the organisation, when tasked with owning an IS (Orlikowski and Iacono, 2001). Realising expectations is vital to developing ownership of a target.

Category 2.2: Formal and Psychological Ownership

9 Categories	Category 2: IS ownership
	Category 2.1: Defining IS ownership (What is IS ownership?)
	Category 2.2: Formal and Psychological Ownership
	Category 2.3: Contracting IS ownership

The two main forms of ownership are discussed in Chapter 2, sections 2.2.2 and 2.4.1. Executive management assigns the ownership of an IS according to organisational policies. Assigned IS ownership is a formal form of IS ownership and is recognised as "legal" in the organisation. Psychological ownership develops when the individual (or group) establishes an emotional link with the IS. Formal ownership and psychological ownership are not mutually exclusive and when either or both forms of ownership exist, it implies that the owner has ownership of the IS (Hou, 2012).

Assigning IS ownership does not imply that the IS owner will, without further incentive, "feel" the necessity to leverage the IS to the benefit of the organisation. Some IS owners have, however, expressed their intention to leverage the IS beyond the organisation's expectations: "[We are] trying to optimise [the IS investment] as far as possible" (R11).

Describing their experience with using IS in support of their business units:

- "I feel fully accountable, because if something has to go wrong, I'm the one to give answers and if escalation happens above me, I have

to take ownership of the problem and actually work on ensuring that I have addressed it" (R10).

- "it is also a very personal thing and passionate thing because really what happens is the success of how well you manage your portfolios and how successful you are as a business has got largely to do with the control that you have over the information that you have" (R4).

The interviewees' use of "feel fully accountable" "personal" and "passionate" are indications of psychological ownership development.

Accepting formal ownership of a business function is not a contentious issue and owners do not deny that they are responsible to perform a specific function in the organisation:

- "it's part of my job descriptions and I am responsible for it" (R4).
- "so that's what I am also responsible for" (R1).
- "I'm responsible for the [business area] and the systems related to that" (R5).

When they are assigned ownership of an IS to perform the business functions, business leaders accept formal ownership, but not all have developed psychological ownership of the IS. Because of various reasons, business leaders may not feel empowered to successfully utilise the IS optimally in their environments:

- "we don't have the expertise to take ownership of that type of thing, we need the IT people to assist us in that" (R6).
- "I think the maintenance of the equipment and the actual purchasing role behind the scenes setup – I think that should not be within our sphere" (R12).

Accepting formal ownership, but not developing psychological ownership constitutes IS ownership that may result in IS owners not utilising the IS optimally. IS owners with low levels of psychological ownership may not immerse themselves into the IS to the same level as IS owners with high levels of psychological ownership:

- "we are forced to use the [new IS] that complements this external database where we have the assets… so we are just [using this new

IS] to keep the management happy. We can go on without [this new IS]" (R5).

This response from the IS owner is an indication of prevention-oriented ownership as described in Chapter 2, section 2.6.1.2 (Avey et al., 2009; Olckers and Du Plessis, 2012).

The organisation as well as owners may find more benefit from an IS when the IS owners develop psychological ownership of the IS (Pierce et al., 2003). Executive managers assigning IS ownership to business leaders, as well as business leaders receiving IS ownership expect that a balance of rights and obligations exist when agreeing to give and take ownership. A balance of rights and obligations should be documented in a formal agreement between the parties.

Category 2.3: Contracting IS ownership

9 Categories	Category 2: IS ownership
	Category 2.1: Defining IS ownership (What is IS ownership?)
	Category 2.2: Formal and Psychological Ownership
	Category 2.3: Contracting IS ownership

Ownership rights, which were informed by the expectations of the individual, need to balance the obligations that were informed by the expectations of the organisation. A balance between rights and obligations ensures sustainability of the relationship created between the IS owner and the executive manager assigning the IS to the individual (Cook and Rice, 2003). No proof of IS ownership contracts could be established with the IS owners that were interviewed in the organisation:

- "[My] performance plan [governs the IS ownership agreement.]" (R11).

- it is almost as though the [IS ownership} is an add-on. You [have IS ownership] in addition to it all… [IS ownership] not regarded as important as the rest of your responsibilities" (R1).

While IS ownership is not documented in a formal agreement between the executive manager and the IS owner, IS ownership will not receive the elevated status of being a significant organisational resource. One IS owner explained that IS ownership is the key to achieving excellence in the business (R10). By formalising IS ownership explicitly through an IS ownership contract, the commitment of the IS owner as well as the executive manager is assured, since their contribution to the IS ownership contract is measured (Pierce et al., 1991).

Information that needs to be included in the ownership contract includes among other things:

- The business objectives, which represents the expectations of the organisation;
- Rights and responsibilities of the IS owner and of the organisation;
- The expected roles of the role players;
- The expected performance of role players with regards to the objectives of the business;
- The level of authority delegated to the IS owner;
- The resources allocated to the IS owner to enable the successful leveraging of the IS.

A comprehensive agreement will cause role players to know what is expected from them and against what their performances are measured (Pierce et al., 1991). The aspects of expectations, rights, responsibilities and roles are discussed in more detail in the next section and were also discussed in section 2.2 and section 2.4 in Chapter 2.

9 Categories	Category 3: Expectations of stakeholders in IS ownership
	Category 3.1: Organisational expectations
	Category 3.2: Individual expectations

Parties involved in the ownership assignment have certain expectations that may originate from the assignment of IS ownership. These expectations should be discussed between the nominated IS owner and the executive manager and included in the rights and obligations pertaining to the various parties (Pierce et al., 1991). The expectation from the organisation that the IS owner should leverage the IS to successfully achieve a specific business objective, constitutes a right on the part of the organisation. Likewise the IS owner has certain expectations, such as having a right to make or influence certain decisions. The executive assigning the IS ownership to the business leader therefore has the obligation to ensure that the IS owner receives the authority to make or influence decisions.

Expectations may not in all cases imply rights that the parties can claim. Individuals may have expectation such as a higher status amongst peers. Organisations, in turn, may expect that the IS owner will, over and above the agreed obligations, voluntary contribute his own time and effort to the organisation's well-being. Care should be taken that the expectations of IS owners and executive managers as documented in the IS ownership agreement, are aligned with organisational objectives and good governance guidelines (O'Driscoll et al., 2006).

Category 3.1: Organisational expectations

	Category 3: Expectations of stakeholders in IS ownership
9 Categories	*Category 3.1: Organisational expectations*
	Category 3.2: Individual expectations

Organisational expectations are influenced by governance requiring that business areas use their assets to achieve business objectives (De Haes et al., 2013; Institute of Directors, 2009a; ISACA, 2012b). The process of setting objectives leading to organisational expectations originates with executive management, determining the status of the organisation with respect to current and future goals. Organisational expectations are included in the strategic plans of the organisation and subsequently in the plans of the business. The executive managers have to ensure that plans and policies are in place and are executed to attain the set goals and then have the responsibility to monitor the conformance against policies and the performance against the plans (ISACA, 2012a, 2012b). The business leaders are responsible to attain the objectives as documented in the strategies of the business (Institute of Directors, 2009b; ISACA, 2012a).

Executive managers have expressed the following organisational expectations related to using IS in the business areas:

- "Therefore you are going to be reliant on systems… it is about the integrated capability of the organisation" (R7).
- "the IS solution that we use fully supports the business processes, because without it - no operations" (R10).
- "Ownership of the solution is important…" (R10).
- "Well I guess it can only lead to… higher productivity" (R3).

IS owners had the following ideas about business expectations:

- "business wants to see the product of participation, provided that the basics work" (R9).
- "we can do what we need to do in terms of the decision-making…, but the expectation is that we do it much more sophisticatedly and quicker" (R4).

It is of concern that not all IS owners are aware of the expectations of the organisation:

- "I am not aware of any expectations at this point in time… [s]o I should get some guidance… to get a clear indication of what is expected of me in terms of [applying the IS in the business]" (R1).
- "we're not too sure what their expectations are" (R11).
- "they're not much involved. They expect outputs… " (R5).

Being unaware or having an ambiguous perception about what executive managers require from the IS owner, contributed to the fact that IS ownership is taken for granted and forms part of the general activities of the IS owner. If the IS owner does not know what is expected of him, he may not go beyond his normal job specifications to leverage the IS optimally. Establishing a communication channel to address the relationship between the executive manager and the IS owner, may also address communication problems with regards to IS ownership. A lack of communication implies a lack of information transfer, which in turn may cause a breakdown in the relationship between the executive manager and the IS owner (Gatignon and Robertson, 1986).

Category 3.2: Individual expectations

	Category 3: Expectations of stakeholders in IS ownership
9 Categories	*Category 3.1: Organisational expectations*
	Category 3.2: Individual expectations
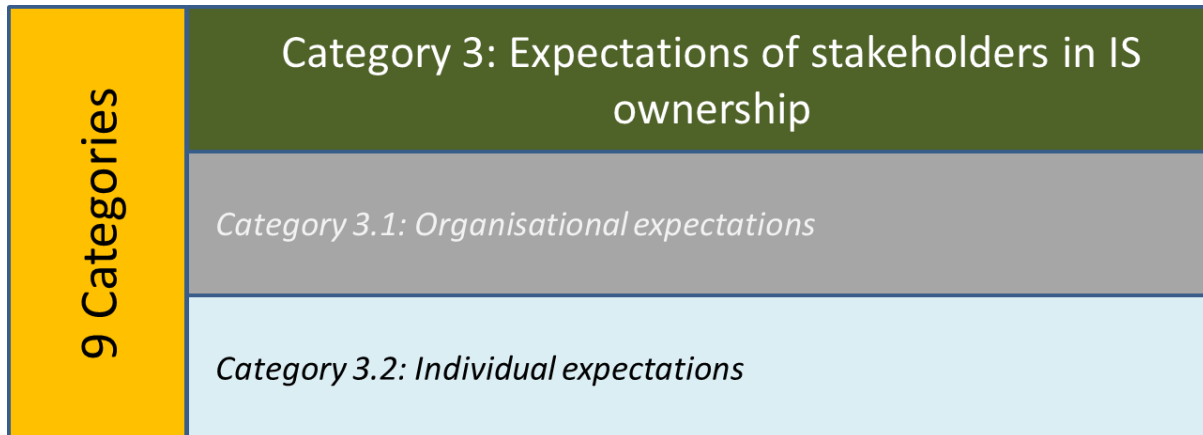
IS owners' and organisational expectations differed significantly. While executive managers focus on the strategic impact of an IS, IS owners focus more on their job at hand:

- "I believe that [IS ownership] would lead to excellence" (R10 – executive manager).
- "if we take ownership, we should be able to use it [optimally]… " (R6 – IS owner).
- "What I find exciting of IT development is that everything gets easier and you can do more things – you can give more power to the user" (R2 – IS owner).

IS owners also expect involvement from their executive managers. Not all executive managers seem to be concerned with what is going on at business level, including the problems that IS owners may experience.

- "[executives are] not much involved… from time to time in the past if asked: 'please we've got a problem'… [i]t's not being resolved" (R5).

Non-involvement of executive management in the activities and problems experienced by IS owners may put pressure on the psychological relationship between the IS owner and the IS. This is a concern that should be addressed in the relationship between the executive and the IS owner and the rights of the owner to be empowered to deliver on organisational expectation. The agreement between the executive manager and the business leader is discussed in section 4.3.3.3.1.2.

4.3.3.3.1.4   Category 4: Roles of stakeholders in the IS ownership

9 Categories	Category 4: Roles of stakeholders in the IS ownership
	Category 4.1: The role of the business leader (IS owner)
	Category 4.2: The role of the executive manager
	Category 4.3: The role of the IS department
	Category 4.4: The role of the steering committees
	Category 4.5: Role clarification

Business leaders may ask why it is important that they, as business leaders, should be the owners of the IS. While stakeholders such as executive management, users, the business department and the IS department may have an interest in an IS, their interests differ. Decision-making related to the IS should be aligned to the objective of leveraging the IS to the benefit of the stakeholders in the specific business unit (Ballantyne, 2003). Should the IS ownership not reside in the business environment, business objectives may not realise, since the business area's objectives may differ from the area where the IS ownership resides (Lohmeyer et al., 2002).   To address the issue of who is responsible for what in leveraging the IS, the organisation should define clear roles for all the role-players in IS ownership (ISACA, 2012a).

Stakeholders should contribute to leveraging IS according to their designated role in the ownership of IS. From the interviews it was observed that the roles of the stakeholders are not always clear:

- "We don't have any autonomy when it comes to [having control of IS in the business area]" (R6).
- "[The IS department] is supposed to take ownership of all the data…" (R1).

- "the wrong people are representing [the business in decision-making]" (R5).

Questioning executive managers and business leaders about their opinions of who should be recognised as the stakeholders of an IS, the following responses were acquired from interviewees:

- "an information system would typically fulfil a business objective and therefore the business objective that it fulfils, the person who is mandated to achieve that objective, would typically be the owner of that information system. What the [IS department's] role would be, [is] to act as the custodian, providing best practices, guidelines; with some expertise in the field on how best those systems should be maintained and looked after…. A distinction has to be made between a custodian and an owner" (R8).

- "I would have thought that the I[S] department is mostly in charge, but if user departments have software written for them, they probably have to take certain responsibility for it" (R3).

- "as [the primary] consumer of the system,… I do see myself as the owner of that solution" (R9).

- "IS that is put into place is owned by business, but strongly supported by IT practitioners" (R10).

- "there has to be a dual ownership of IS – simply because the system should first meet the requirements of the business. So you should have a business owner that defines what it is you want the system to do…. [t]he other [IS owner] designs and [specifies] [the IS] to meet that need… [one IS owner] look[s] after the technical day to day running in the background – the other is the business owner and they both jointly own [the IS]" (R7).

IS ownership role-players are allowed to function in their areas of strengths when they are assigned speciality roles aligned with their knowledge, skills and experience. As IS owner, the business leader is responsible to manage the roles of the other stakeholders to promote a synergetic culmination of skills. Technical support should

be performed by the IS department, while acquiring people to perform the support should be the responsibility of the Human Resource department.

One factor that may influence the roles of the stakeholders is whether services rendered to the business areas are centralised or not. Centralisation was discussed with one of the executive managers of the organisation:

- "The cycles that go between centralisation and decentralisation – because systems are so interdependent and so vast today, you have to have a single owner that puts together the framework and the architecture, within which all systems sit, so that you don't end up having disparate systems that don't talk to each other… that makes it inefficient… IS ownership allows you to create that framework that then allows users to use the different elements with their requirements taken into account… for what they will use it" (R7).

The organisation wherein this study is conducted centralised its IS support in the IS department. Having centralised support implies that business units have to compete for resources, which implies that some support problems may not be addressed as soon as the business would prefer. Contesting for resources may impact negatively on the achievement of the objectives of business areas. Some IS owners have the perception that their business practices are hampered by not having on-site support to maintain the system:

- "whenever there are [organisational-functional] issues, [the IS department] will put us on to the back burner…. Obviously sometimes we also want to be a priority client in terms of support and I think if we have a dedicated group of people that supports us, we will be in a position, to on a daily basis, do good work in terms of configuration and supporting our systems" (R1).
- "we sometimes [struggle] to get people to assist [with IS support] because [of] lack of staff…" (R6).

An IS owner that managed to establish a support team in the business department for a new IS, believed that "chances [of] obtaining your return on investment [having decentralised support] is far better than in a centralised environment" (R11).

Subject to the availability of resources, the organisation may choose to identify mission-critical areas in the organisation for decentralised support. If so decided, the IS department can serve the business community by providing specialised services by dedicating support staff members to specific business areas. Dedicated support staff members are given the opportunity to learn the business area and acquire an in-depth knowledge to technically support the business-specific IS of the business. Deciding to provide dedicated business support carries additional costs and places more pressure on IS resources supporting the rest of the organisation.

Support provision to the organisation has to be planned and negotiated with the business areas, as stated by a senior executive manager: "The whole idea is to work in an integrated way to ensure the support and the mandate of this organisation" (R7). By involving business, IS executive managers can create a situation where consensus is reached regarding the availability and appropriation of support resources. The IS department is currently investigating the use of service standards where the department promises to provide a catalogue of services rendered at a specific level of support to the business areas (R7). Service standards are monitored by the business, IS leaders and executive management.

Centralising decision-making also extend to the rationalising and standardisation of ICTs in the organisation. One of the functions of the Enterprise Architecture discipline in the organisation is to ensure that requirements from business areas are addressed in alignment with approved standards and practices in the organisation. This monitoring of standardisation is done by a Standards Committee under the guidance of the IT steering committee. The IT steering committee is represented by executive managers of the business areas and the CIO of the organisation.

Category 4.1: The role of the business leader (IS owner)

9 Categories	Category 4: Roles of stakeholders in the IS ownership
	Category 4.1: The role of the business leader (IS owner)
	Category 4.2: The role of the executive manager
	Category 4.3: The role of the IS department
	Category 4.4: The role of the steering committees
	Category 4.5: Role clarification

Without a full role clarification, the roles of IS owners are ambiguous, since they (the IS owners) are not sole decision-makers and do not have full control of the IS in their business environment:

- "[the IS department] would have to actually source and then investigate and find the best solution for our needs" (R2).
- "[Ownership implies for me] to use [the IS] responsibly. The management of that is done by an external party that does the upgrades and if there's some error, they are responsible for it" (R5).

The time taken to have certain decisions made resulted in some business leaders seeking more control over what are happening in their environments:

- "we need more ownership so then we can actually mould our own destiny… and not be in the hands of third parties" (R6).
- "my departmental head [doesn't want]… to wait on protocol, processes and procedures… [and] we don't have to go through a whole registering of a project, he doesn't want that – it is too time consuming" (R11).

Not having control over some aspects of the IS ensemble, may result in IS owners abdicating that part of the ownership:

- "Do we take ownership of [an IS]? I don't think so. It's a centralised system you know" (R6).
- "For some weird reason [one specific department] decided 'we don't like this [IS].' Why? Because they didn't have control over it" (R3).

From the viewpoint of a business executive, business areas have adequate controls in some aspects of the IS environment:

- "currently [business leaders] have full control over many aspects around the administration of [their IS], but they don't have control over the technology element" (R8).

Differences in perception should be discussed and parties made aware of the other party's expectations. Expectations are managed to ensure that both parties commit to the relationship:

- "people [should] feel that they have room to do things…" (R10).

How business units go about to leverage the IS to achieve business objectives, is largely left up to the business leaders. Executive managers expect that IS owners are responsible to deliver value for the IS investments made by the organisation:

> "[The executives] accept responsibility for the decisions taken [to spend resources on an IS]… [which does] not absolve [the IS department] and that particular [business] unit from making it work because at the end of the day they are going to be the people asked by the [executive managers]… 'we want to have an idea of return on investment.'" (R3).

IS owners were asked how they manage their business areas to optimally leverage the IS in pursuit of the objectives of the business areas:

- "ensuring that there is an optimum level of efficiency [requiring staff to] make changes to applications and data processes or business processes, which is sort of on an ad-hoc basis. So in certain components we have full control over it. I have [a number] of analysts

sitting here and the production-support people who can do that…
user setup and maintenance happens through a standardised control
process where it gets specified and development gets a quality
assurance process and testing before it goes into production" (R4).

In this case, the business leader accepted his role as IS owner by mobilising the
resources assigned to him. Moving forward, the IS owner accepts the assistance from
other parties such as the IS department and the enterprise architecture (EA) discipline:

- "[The IS department] is responsible… for setting the standards of
  what technologies may be used, how it is used, what are the
  frameworks, so, in terms of type of infrastructure that is used,
  because they are in charge of that.… So, if we get involved in new
  systems and applications, we make sure that we follow those
  standards in terms of architecture, topologies, on the one hand. And
  on the other hand we have got a close relationship with the [IS
  department] where they provide all the technical input into our
  processes and systems – all the development, testing and
  implementation" (R4).

By understanding and agreeing with the roles played by the stakeholders, IS owners
should have a clear mandate guiding them to leverage IS in pursuit of the objectives
of the business and the organisation.

Category 4.2: The role of the executive manager

	Category 4: Roles of stakeholders in the IS ownership
9 Categories	*Category 4.1: The role of the business leader (IS owner)*
	Category 4.2: The role of the executive manager
	Category 4.3: The role of the IS department
	Category 4.4: The role of the steering committees
	Category 4.5: Role clarification

Being accountable to the board to ensure that business units create value for the organisation, executive managers assign IS ownership to specific business areas and individuals that are best suited to execute the organisational strategic plan. Assignment of IS ownership is based on the structure of the business area and the role of the business leaders in the area. It is therefore in the best interest of the organisation and the executive managers that the business leader that receive the assignment of IS ownership delivers on the expectations of the organisation.

IS owners should be involved in the acquisition, development and customisation of the IS (Avey et al., 2009; Hou and Fan, 2010). The executive manager is responsible to ensure that the IS owner is empowered after the assignment (Avital and Vandenbosch, 2000; Ballantyne, 2003) to leverage the IS optimally. This may require that the IS owner becomes involved early in the life-cycle of the IS in the organisation. Resources required to run and maintain the IS should be made available to the IS owner. The IS owner should be adequately trained and be afforded the time to learn and understand the IS.

Executive managers should take an active interest in the activities of the IS owners pursuing business and organisational objectives and ensure that IS owners know what are expected from them in this pursuit (Pierce et al., 1991). The relationship between

219

the executive and the IS owner with respect to an IS ownership assignment should be one of mutual commitment. An executive manager indicated his commitment towards the relationship:

- "When deliverables are there and they need to be signed off, I will be there and so, people feel that they have room to do things…" (R10).

Instances were also found where the IS owner believes that executive management does not contribute meaningfully towards the relationship:

- "do I get enough executive support so that I can [utilise IS optimally]? I don't believe so… " (R4).
- "I don't think [my executive manager] is up to speed with what we do in terms of [utilising IS]… " (R1).

If support as an issue was raised with executive managers, IS owners may expect that they get support from the executive managers in their attempt to resolve these issues. Not all IS owners experienced the necessary support from their executive managers:

- "you raised your concerns and there it stops. I don't have the authority to do much more. I've used our path of our senior people in our department who's got good relationship with the [IS] department… without upsetting anybody the avenues I've used. My conscience is clear" (R5).

By providing the feedback of "[m]y conscience is clear" the interviewee indicated that he does not plan to pursue the support matter further. The interviewee indicated that he has little say in the support matter of a newly implemented IS: "I don't have much of a voice…" (R5). The interviewee who is also the manager of a specific business area, has access to older tools to perform his operational activities without using the new IS:

- "[The new IS] doesn't have that much effect because we have our own controls… [w]e can go on without [using the new IS]. Nothing will stand still in the [business]" (R5).

Because the IS owner believes that he has little impact in the business environment regarding decision-making around the new IS, he avoids the use of the new IS as far as possible and if using it, only with the intention to avoid being penalised for not using it. The IS owner stated: "we are just doing this [new IS] thing to keep the management happy" (R5). Without buying into the new IS (taking ownership), the business area's opportunities to leverage the new IS is largely diminished.   Business executive managers should have a close-enough relationship with IS owners to identify problems and practices that are detrimental to business and may result in the business leaders not achieving their business objectives.

Category 4.3: The role of the IS department

9 Categories	Category 4: Roles of stakeholders in the IS ownership
	Category 4.1: The role of the business leader (IS owner)
	Category 4.2: The role of the executive manager
	Category 4.3: The role of the IS department
	Category 4.4: The role of the steering committees
	Category 4.5: Role clarification

The IS department is responsible to ensure that the IS is usable and that the information used, stored and produced by the IS has integrity and is available in the format required. The IS department is not the owner of business information, neither is the IS department the owner of the business IS:

- "[The purpose of the IS department is] to act as the custodian, providing best practices, guidelines, with some expertise in the field on how best those systems should be maintained and looked after" (R8).

- "The business sees [the IS department] as an enabler. One that provides… stable systems that meet their requirements" (R7).
- "[The IS department's] role should be a one-stop shop that can provide technical expertise and support to our business area. They may not necessarily have to keep all the skills themselves, but they should make it available" (R10).
- "[The IS department] is responsible… for setting the standards of what technologies may be used, how it is used, what are the frameworks…." (R4).

As business leaders focus on the management of IS resources to achieve business objectives, the IS department has the expertise to enable business to apply the IS optimally.

Sometimes the role of the IS department does not satisfy the business requirements. Not all IS owners get the priority of support that they want:

- "they will put us on to the back burner… and they will get to us when they get to us. Obviously sometimes we also want to be a priority client in terms of support and I think if we have a dedicated group of people that supports us, we will be in a position to, on a daily basis, do good work in terms of configuration and supporting our systems" (R1).
- "[The IS department] cannot give us… 100% commitment in terms of support" (R1).
- "we need to get more support from [the IS department] to establish this [IS] support centre with respect to [our department]" (R1).

Dependency on the IS department has created anxiousness in some business areas:

- "this technical support that is coming from the I[S] department… makes the business owners somewhat vulnerable, because you are relying on another party to ensure the availability and the uptime…" (R10).

- "Though you can prove you did all you could to get the support from the other department's side, you do not get it, it makes you feel your hands are tied behind your back" (R5).
- "you rely on the technical people…" (R5).

The anxiety some IS owners experienced was discussed with a senior executive manager that responded as follows:

- "where one department says: 'The biggest risk to me to meeting my responsibility is another department', then we are not talking to each other. Because ultimately it doesn't matter what happens inside here when we have to fulfil our responsibilities" (R7).

Based on feedback from IS owners, support from the IS department is essential for the successful and sustainable utilisation of IS in the organisation. Discussing the expected role that the IS department should play, a senior executive explained that the maturity of the IS department to act as partners with the business is still emerging, placing the IS department in the role of instruction-taker. Moving on a maturity scale requires that the business and the IS department work more closely together. The process of moving from an "instruction taker" to a "business partner" is also the objective for another executive manager:

- "I would like business to see the IS department as a partner that provides strategic insight in association to achieve their business goals" (R8).

Achieving the process towards becoming a business partner poses some challenges as the executive manager continued:

- "the first thing is that business doesn't really understand that IS come at a cost and that for the organisation there needs to be some aspect about determining what investment you are going to make in information systems and that you can't just invest in everything… [and when] business believes they want something, they want it and are not prepared to look at other alternatives, more cost-effective

solutions, or try to re-use some of the information systems that are already available" (R8)

- "one of the biggest other challenges is the aspect about information - data ownership… [Business areas] have a very laxed [*sic*] approach towards the security of the data. They believe that the I[S] department will look after the security, when the security ownership is actually the business' ownership. The I[S] department just provides the tools to secure them, provides the guidelines, the processes [and] the governance around the security of the data. But the ownership cannot be taken away from the business departments. Data is owned by the business" (R8).

- "the new blood that is coming into this organisation has a drive for a quick change – a rapid change, but the organisation itself doesn't have the appetite to change at that pace" (R8).

The IS department acts as the custodian of the IS in the organisation. Based on business requirements, the IS department should provide guidance to business regarding the selection of new technologies. The IS department should also provide support for the technology, care for the data of the business by ensuring data storage, processing, data backups and retrieval and ensure that business continuity plans are carried out.

One of the tools that the IS department uses in the financial services organisation is enterprise architecture. The EA function resides in the organisation's IS department and its responsibilities include ensuring alignment between business objectives and IS. The EA function also assists the organisation to standardise and integrate IS across one or more business environment: "EA should give us those different architectures that allow all of these things to fit in seamlessly, in a cost efficient and effective way… so that when you change this, you know what the effect will be on something else" (R7).

Using an IS effectively depends, among other things, on the stability of the IS and the ability of the business staff to leverage the IS to create business value. Support for

the IS in the business areas is a focus point of business stakeholders. An executive expressed his perception of IS support as follows:

- "No [organisation] can compete without a good IT support. " (R3).

The following excerpts indicate that some IS owners are uncomfortable with the level of support received from the IS department:

- "[The IS department] cannot give us…100% commitment in terms of support" (R1).
- "in some cases they have the capacity [to support us] and in other cases they have short capacity" (R4).
- "I have to trust that they will do the right thing. But I will feel vulnerable because I do not have control over that" (R10).

In an area where IS support was provided from within the business unit, the IS owner had a more positive opinion about IS support. The IS owner believed that they (the business unit) have the assurance that technical support is available, allowing the IS owner to focus on innovation rather than on keeping the IS running:

- "We have the necessary expertise, outsourced or not, to make the change" (R11).

Business leaders should have the assurance that the IS department can provide the necessary service at most, if not at all times:

- "So it's not only about the ownership but defining what the other roles are, as well – who supports it, who maintains it, who keeps it up to date. Those kind of things need to be defined in the [IT plan of the organisation]" (R8).
- "we have been in the process of setting up service standards.… where we agree what services we will provide to business… We're tracking that. Thus far we have been meeting our service standards [as] agreed between parties" (R7).

In the cases where the IS department does not have the capability to provide ICT-services in-house, the IS department should have the means to acquire services from

external resources. Committing on its responsibilities of services to a client implies that the IS department takes ownership of the roles assigned to it. Accepting service standards as a norm can create a culture of service rendering that should be nurtured by the organisation. Service quality is one of the elements of an ownership culture that can spill over to other areas of the organisation.

Addressing any and all of the challenges expressed by the business executive (R8) may require time. The IS department needs to win the trust of the organisation's business areas, while the business areas need to become aware of the IS department's aspirations and willingness to work closer to the business. The business areas also need to be aware of the challenges that confront the IS department and need to exercise effort in establishing closer relationships with the IS department.

Category 4.4: The role of the steering committees

9 Categories	Category 4: Roles of stakeholders in the IS ownership
	Category 4.1: The role of the business leader (IS owner)
	Category 4.2: The role of the executive manager
	Category 4.3: The role of the IS department
	Category 4.4: The role of the steering committees
	Category 4.5: Role clarification

Guided by its governance-approach, the organisation used in the study based its organisational structure on centralised decision-making. Centralised decision-making is performed by steering committees that are responsible to make investment decisions that may have a strategic impact in the organisation. Steering committees in the organisation function at executive level. Departments use representatives that forward the business areas' business cases for high-level decisions to be made:

- "When it comes to the IT Steering Committee that's where the… investment decision is – so that's where business comes and motivate for it" (R9).
- "[Currently,] justification for business solutions have to be advocated by [the IS department], which is wrong, because I believe that if I (as business leader) was adamant that we could put this solution in place and it should be approved by a steering committee somewhere, [the IS department] maybe should be there to support me, but I should be the driver to serve that and convince those people why we need that" (R10).

This response is an example where the business leader acts as the IS owner, while the IS department acts as the custodian of the IS and it may be in the interest of the financial services organisation to deal with it in this manner. It is evident that not all IS owners are of the opinion that the steering committees serve the business best. Some IS owners believe that they should have more say in the decision-making and that the steering committees should only act as overseer of the business' decision-making:

- "The steering committee should be there to challenge your decision-making process. They should make sure that you've considered everything" (R4).

IS owners may prefer to have more decision-making powers. Firstly they are concerned about the time taken for decisions to be made:

- "key decision-making is very slow in the [organisation]" (R4).
- "I have complained in the past for instance where you have to approve something… but it took more than a year… They've rectified [the problem I had with the IS] [at] the end of last year… but for all those months you had to live with that frustration" (R5).

A second perceived problem is that the steering committees do not necessarily have the business expertise to make business-specific decisions. Business leaders may not always represent their own business areas at steering committee meetings. Heads of

departments or people designated by the head of the business department may present the case of the business:

- "sometimes the steering committee members may not have a good grasp of the business such that they feel that… this is something that needs to be done" (R10).
- "a [business-specific] person like myself has to convince a steering committee that may not be as technically proficient… [to what] the course of action [should be]" (R4).

Although the business areas benefit directly from investments into IS, from time to time, the business areas may also rely on the IS department to present their business cases to a committee. This seemingly non-involvement of business areas to own their decision-making proposals, has in turn resulted in executive managers seeing the IS department as "big spenders" as was noted by an executive manager in an interview. Discussing reasons why the IS department are deemed to be "big spenders" when they act on behalf of the business, another executive manager acknowledges that the business areas may perceive problems with their relations with steering committees. The executive manager argues that the problem could be resolved by decision-making proposals being "driven by business [and] supported by [the IS department]" (R10). Business leaders should take co-responsibility with the IS department for investments made in IS, with the executive manager responsible for the business areas driving the decision-making in the centralised decision-making committees.

Discussing the process of acquiring a decision from the steering committees, organisational staff confirmed that they sometimes acquire prior support from influential steering committee members to get a positive outcome from steering committee meetings. Convincing one or more executive before the committee meeting of the urgency, benefits and needs for a system or project, the decision-discussions may be championed by a senior executive manager to improve the chances for a favourable decision.

Category 4.5: Role clarification

9 Categories	Category 4: Roles of stakeholders in the IS ownership
	Category 4.1: The role of the business leader (IS owner)
	Category 4.2: The role of the executive manager
	Category 4.3: The role of the IS department
	Category 4.4: The role of the steering committees
	Category 4.5: Role clarification

Business leaders may ask why it is so important that IS ownership reside with them and not with the IS department. While it is expected that the IS department should support the business in their pursuit of the business's objectives, the business should take the lead and embrace IS as assets that are made available to the business to pursue their business objectives. Some business leaders see the IS department as a partner in pursuing their business objectives. This may have an influence on what the organisation expects the IS department to do:

- "[The IS department] is responsible… for setting the standards of what technologies may be used, how it is used, what are the frameworks.… there are very specific standards of technology that we need to apply or abide in terms of security, database standards, integration… if we get involved in new systems and applications, we make sure that we follow those standards in terms of architecture, topologies, on the one hand. And on the other hand we have got a close relationship with [the IS department] where they provide all the technical input into our processes and systems - all the development, testing and implementation" (R4).

Interviewing business leaders in the organisation, clear silos between some business and the IS department are visible. In some cases, the IS department is viewed as an organisation separately to that of the business and dictating IS to the business. One business leader that used localised support explained:

- "If the support [in my business area] was sitting in a centralised environment, they would never understand the business needs" (R11).

This statement of the IS owner implies that business may perform better if IS support resided closer to the business (R11). IS owners may believe that the IS is too technical to own:

- "do we have the expertise to take ownership?… I don't think we [have]" (R6).

The IS owner is not expected to be technically proficient, as the IS department in its role of IS custodian is responsible to ensure that the IS is available, has integrity and is performing according to business requirements. Custodianship is discussed in more detail in Chapter 2, section 2.6.4.3.

One IS owner perceivably experiences that the IS department "owns" the IS used in the business area by default:

- "if it was let's say a new purchase or whatever, [the IS department] would have to actually source and then investigate and find the best solution for our needs" (R12).

This lack of involvement in the acquisition process of the IS may result in IS owners never developing psychological ownership of the IS. The IS owner also has the perception that, unless the IS department "gets it their way", support from the IS department may not be at a level to address business requirements:

- "I think if one would negotiate [to acquire the IS that the business unit wants] and the department got the option they wanted, one doesn't know whether there would then an element of… resentment from the [IS department's] side, because that's not the product that

was first prize from [the IS department's] point of view and they might [not be] enthusiastic in their support of the particular system" (R12).

By agreeing on the roles of the stakeholders at high level, stakeholders can negotiate their role in the IS. A role-clarification matrix can assist to address issues related to who should be held responsible for what responsibilities in the acquisition, maintenance and utilising of IS in the organisation. Following the guidance of the role-clarification matrix, the organisation and role-players will be in a good position to understand what needs to be done to perform good IS governance and who should perform the activities to create value for the organisation's stakeholders. Roles can be assigned to stakeholders through a role classification matrix such as the RACI chart adapted from COBIT 5's : Enabling Processes (ISACA, 2012a) and depicted in Table 15:

Table 15 - Excerpt from RACI Chart indicating roles and responsibilities

Role-Players in the Financial Services Organisation	Executive Management			Executive Manager responsible for the business unit	Business leader who is also the IS owner	Centralised decision-making structures
Roles indicated by COBIT 5	Board	CEO	COO	Business Executive	IS owner	Steering (Programmes / Projects) Committee
APO07.05 Plan and track the usage of IT and business human resources.				R	C	R
APO07.06 Manage contract staff.						
APO08.01 Understand business expectations.		C	C	C	R	
APO08.02 Identify opportunities, risk and constraints for IT to enhance the business.		I	I	I	R	
APO08.03 Manage the business relationship.		C	C	R	R	
APO08.04 Co-ordinate and communicate.		R	R	R	R	
Legend: I - Informed C - Consulted A - Accountable R - Responsible						

9 Categories	**Category 5: Rights and obligations with respect to owning an IS**

The rights and obligations of an IS owner are linked to the expectations of the organisation and the owner. Apart from the basic rights associated with IS ownership such as having control over the IS, information related to the IS decision-making rights and other benefits associated with the IS, the individual may also expect other rights when accepting IS ownership. Expected rights of an individual may pertain to tangible benefits such as a promotion, salary increase, or bigger office, while it may also include intangible rights such as status or acceptance by a specific community. Executive managers, however, may not always agree, or may not have the authority to act on all the expectations of the IS owner. Obligations should balance the rights of ownership where IS owners are responsible to render specific services, or accept certain responsibilities for the IS.

Ownership rights and obligations are agreed upon when the assigned ownership is accepted by an employee. The rights and obligations of an IS ownership should be documented in a formal agreement (Pierce et al., 1991). Informal agreements may not suffice, as undocumented expectations are not enforceable at a later stage.

No evidence of owners with negotiated IS ownership agreements were found in the organisation. When questioned on what the governing agreement for ownership of a specific IS constitutes, an IS owner responded that the agreement is solely based on his performance plan that covers all his job activities. Performance plans only state what the staff member should do over a specific time period in his normal line of duty. IS ownership agreements include several elements that are not included in the performance plan, such as IS-specific rights (albeit that the obligations may be included in the performance plan) and the roles of the different stakeholders. The

232

concept of the IS ownership assignment agreement is discussed in more detail in Chapter 5, section 5.2.5.1.

4.3.3.3.1.6 Category 6: Governance and management

<table>
<tr>
<td rowspan="6">9 Categories</td>
<td>Category 6: Governance and management</td>
</tr>
<tr>
<td>Category 6.1: IT alignment with business objectives</td>
</tr>
<tr>
<td>Category 6.2: Accountability</td>
</tr>
<tr>
<td>Category 6.3: Performance measurement</td>
</tr>
<tr>
<td>Category 6.4: Risk Management</td>
</tr>
<tr>
<td>Category 6.5: Information security management</td>
</tr>
</table>

The organisation's IT governance framework provides guidance to executive managers and IS owners to leverage IS towards achieving business objectives (ISACA, 2012b). The guidance framework addresses how IS ownership is established and managed in the organisation.

The discipline of IT governance is pervasive and can be found in most, if not all aspects of the phenomenon of IS ownership in the organisation. IT governance guides decision-making in the organisation and pertains to the system directing and controlling current and future use of IS.

Executive managers evaluate the current environment and formulate plans and policies to take the organisation towards the intended outcomes of the strategic objectives. Lower level managers are responsible to execute the strategic plans and ensure that the business areas adhere to the policies of the organisation. The progress of the managers towards the business objectives are monitored by executive managers. Executive managers are also responsible to verify the business's compliance with organisational policies (ISACA, 2012a).

233

The discipline of governance has not fully matured in the organisation, raising concerns from the business environment:

- "Divisions are doing things [where] their tasks don't relate to each other, because there was never attention given to new things like governance and risk management…" (R5).

Based on governance guidelines, the financial services organisation established a governance structure to guide decision-making in the organisation. Business leaders may be dissatisfied with the apparent role of the governance structure if they believe that these structures question or delay decision-making in the business environments:

- "the current steering committee structure and the process… around key decision-making,… is very slow in the [organisation]" (R4).

There should be some concern where some business areas attempt to circumvent governance structures to conduct their business activities.

- "[My executive manager] doesn't want to wait on protocol, processes and procedures… we don't [want] to go through a whole registering of a project… it is too time consuming" (R11).

Signs of bureaucracy and slow decision-making are experienced at executive levels as well:

- "I respect [the IS department] for very carefully considering… decisions before getting there, but I do sense also a certain frustration on the part of the executive" (R3).

Organisations can benefit from evaluating and where required, adapt a streamlined, agile governance style that can fit the conducting of business better. Executive committees drive business governance and IT governance is linked with these committees to align the business and IT. The IT governance objectives listed above are discussed in the following sections.

Category 6.1: IT alignment with business objectives

9 Categories	Category 6: Governance and management
	Category 6.1: IT alignment with business objectives
	Category 6.2: Accountability
	Category 6.3: Performance measurement
	Category 6.4: Risk Management
	Category 6.5: Information security management

Business leaders and executive managers expect to create value for shareholders. Executive managers and business leaders define strategies and direct the organisation to enable sustainable performance. Examples of IS owners seeking avenues to better utilise the IS in their environments were found during the interviews with IS owners:

- "reporting that used to take us a day and a half to prepare, takes us three minutes now… because we married the business [requirements] with the potential that was lying in IS" (R11).
- "[Using a newly acquired] software package which will help us a very great deal with… travel [arrangements] should save us quite a lot of money" (R3).

Care should be taken that the IS acquired, deployed and utilised is aligned with business objectives by filling the gap between the current situation and an ideal future situation where the business can leverage the IS in pursuit of organisational objectives. Alignment alone is no longer enough, as organisations need to be agile to adapt to IS services in rapid-changing environments (Fink and Neumann, 2009). IS should be agile enough to follow changing business on a "real-time" basis to prevent

a gap opening between the business strategy and IS alignment. This requirement is evident in a response from an interviewee:

- "Even if [the IS department] is a one-stop shop, they take the approach of saying: "We will balance our basket in terms of internal and external support in this way in order to support business… in this fast changing environment, maybe [the IS department] should make it their problem to balance this equation of what capability we have inside, what we have outside and what arrangements have we put around it" (R10).

Business leaders need to take the responsibility of leading the IS department in terms of business objectives. The Chief Information Officer (CIO) has the responsibility to create awareness with business leaders of the potential of IS in the business areas.

Category 6.2: Accountability

9 Categories	Category 6: Governance and management
	Category 6.1: IT alignment with business objectives
	Category 6.2: Accountability
	Category 6.3: Performance measurement
	Category 6.4: Risk Management
	Category 6.5: Information security management

To achieve closer alignment between the IS department and the business environment, business leaders should take the accountability for the IS in their environments. IS leaders, in turn, should take some accountability for the performance of the business that relies on IS. During one interview, an executive manager, in his role as head of a business department, indicated that the board is holding him

accountable to ensure that the IS department perform according to the business expectations:

- "there is a document that the departments sign with the [senior executives], committing to ensure that their business processes run well. In our department I remember at one stage, we signed this document, but we want to qualify it to say 'but we are reliant on [the IS department]', but [senior executive management] was not happy about that.… We had to remove that qualification that we wanted to put in…. So, when I am facing my clients and something is wrong, I cannot blame someone else and say 'The system is down because the IT guys didn't check this', I would say 'The system is down because we had an oversight on this and we are working on it and we are resolving it.' I cannot pass the buck and say it's somebody else's fault, because then I don't take accountability for providing those services" (R10 – executive manager).

Where the executive managers are responsible to formulate the strategic plans of the organisation, business leaders are responsible to implement these plans in their business areas. Executive managers should monitor the performance of the business leaders to ensure that they perform against the plans to achieve business objectives. In their role as manager of the IS owners, executive managers should involve themselves with the business of the IS owners.

It is a concern that executive managers do not have close relationships with IS owners in some business areas, as is evident from the following feedback related to receiving executive support:

- "I don't think our [executive manager] is up to speed with what we do in terms of [IS] support…" (R1)

IS owners need to understand the intent of the organisational strategic plan. The IS owners then need to assess the current environment and determine the gaps between the current environment and the envisaged future environment, indicating what the business area needs to do to align with the organisational strategy. Executive

managers should collaborate with business leaders to create a strategic plan for the business area. The plan should then be communicated to the staff of the business area in an understandable manner. The business plan guides business leaders how their IS should support the business and organisational objectives.

Category 6.3: Performance measurement

<table>
<tr>
<td rowspan="6">9 Categories</td>
<td colspan="1">Category 6: Governance and management</td>
</tr>
<tr>
<td>Category 6.1: IT alignment with business objectives</td>
</tr>
<tr>
<td>Category 6.2: Accountability</td>
</tr>
<tr>
<td>Category 6.3: Performance measurement</td>
</tr>
<tr>
<td>Category 6.4: Risk Management</td>
</tr>
<tr>
<td>Category 6.5: Information security management</td>
</tr>
</table>

The performance of employees in the organisation used in the study is measured by evaluating the outcomes of activities stated in their performance plans. A performance plan is set up between management and employees. As part of their performance plans, managers and employees agree which objectives are measured and what outputs and standards are expected from employee-activities. IS ownership contracts do not exist in the organisation. Organisational expectations are written into employee's performance plans, service level agreements and service standards, while expectations of IS owners are perceivably not taken into consideration. Performance plans govern the general, but also the specific objectives of employees' job activities.

Service level agreements and service standards govern the performance of a party rendering a specific service to the other party. Service level agreements are legally binding agreements between a customer and an external service provider, while a

service standard is a non-legal promise to render a service to a client at a certain level. Service standards are mostly used between business units within the organisation:

- "[Instead of an IS assignment agreement] we have… service standards." (R11)
- "[We are in the] process of setting up service standards… where we agree what services we will provide to business" (R7)

Stakeholders should know what is expected of them to deliver and what they can expect to receive from other stakeholders. By measuring and managing the performance from stakeholders' with respect to their obligations, the IS can be used optimally in the organisation.

Category 6.4: Risk Management

Risk management is a basic discipline in the management of an organisation and the CIO is accountable for the execution of risk management plans in the organisation. Risk management is the responsibility of all employees and therefore should be owned by all employees in the organisation. Risk management has been included as a key performance indicator in the performance plans of all the employees in the financial services organisation used in this study.

IS owners in the financial services organisation are required to address IS-related risks as high priority in their business areas. The organisation established a Risk Management Committee that interacts with business areas to manage business as well as IS-related risks. Responding to a question related to risk management, a business executive said:

- "one can just say that the risks in the [business area] are managed" (R10).

One executive manager warned that IT risk management can also be applied in a manner that may inhibit the business activities in the organisation:

- "I think [the IS department is] exceedingly risk adverse… Somehow it seems as if [decisions] gets stuck in the management layers of [the IS department]… [W]e don't want to waste money, but we don't want to fall behind the rest of the world either…" (R3).

Organisations should have a balance between taking risks and mitigating risks to enable the organisation to function optimally. This balance is influenced by business managers, including the CIO, the risk appetite and also the culture of the organisation.

Category 6.5: Information security management

	Category 6: Governance and management
9 Categories	*Category 6.1: IT alignment with business objectives*
	Category 6.2: Accountability
	Category 6.3: Performance measurement
	Category 6.4: Risk Management
	Category 6.5: Information security management

According to the definition of an IS, business information forms a component of the IS. If the IS is owned by business, then information should also be owned by business. Some IS owners have identified information as an asset that forms part of IS ownership:

- "Ownership of data, integrity of data" (R11).
- "[taking] accountability for the data of the system..." (R1).

Information in the organisation is an asset that is vulnerable to external influences that may negatively impact on the value of the information. Organisations need to protect its information assets against maladies such as theft, corruption and destruction. The IS owners are implicitly also the owners of the data of the business and are responsible that information protection practices are in place and applied in the business. Information security features high on the agenda of executive managers in the organisation and some aspects thereof is a concern for executive managers:

- "Business doesn't have a concept about how long certain data should be kept and how secure it should be kept" (R8).
- "information management and information security became a key issue [in the organisation]" (R7).

It is the responsibility of the IS department as custodians to ensure that business information is available and has integrity. The IS department needs to explain to the IS owners in business terms how the information should be protected. Although IS owners are accountable that information security practices are in place in the business, the IS department is responsible to enable these business requirements.

Information security should be the concern of every employee of the organisation, but should be owned by business:

- "[Business] believe that the IS department will look after the security, when the security ownership is actually the business's [responsibility]" (R8).

Accepting ownership of the information in the business implies that the business should also own or be involved in securing the information. Organisations should embark on regular information risk awareness programs. Business areas should agree on focusing on the importance of information in their business areas and include information security as part of the business agenda (Kruger and Kearney, 2008).

The next section documents the relationships between the IS ownership role-players.

4.3.3.3.1.7   Category 7: Relationships between the role-players involved in IS ownership
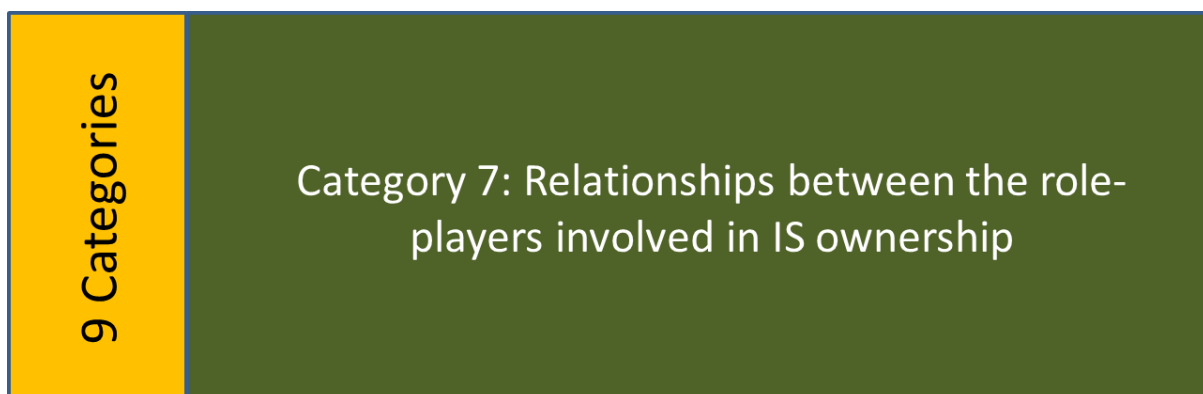
The relationship between parties participating in an agreement of exchanging services for goods is a major component as suggested in the social exchange theory. Social exchange theory is used as a lens in this study. Executive managers delegate IS ownership to business leaders. Business leaders, now IS owners, are expected to leverage the IS in pursuit of organisational objectives, while they receive the rights to

exercise control, have decision-making rights and receive information about the IS. Other rights associated with IS ownership pertains to personal objectives such as status, monetary incentives or personal satisfaction.

IS owners were questioned about their relationship with their executive managers with regards to the delegation of IS ownership:

- "do I get enough executive support so that I can write key decisions for it, I don't believe so." (R4).

- "They expect outputs but I've experienced not much support in the past - not from my direct manager (who gives support), but I'm talking higher up from Department head and deputy heads. Not much support from their side. They don't care much about what challenges you are experiencing and so on, because from time to time in the past if asked: "please we've got a problem now" - on our level, we've tried our best. It's not being resolved" (R5).

Executive management support has a direct influence on the development of IS ownership. Supporting IS may be perceived differently by executive managers and IS owners. One IS owner explained that he has a good relationship with his executive manager, but that he believes that he is putting more into the relationship than what he is getting from the relationship (R11). Evaluating the feedback from the IS owner through a lens of social exchange, a power imbalance in the relationship may exist. Should the IS owner perceive the relationship to be unfair, he may want to alter or end the relationship (Cook and Rice, 2003).

Discussing IS ownership relationships between business leaders and executive managers, an executive manager stated:

- "When deliverables are there and they need to be signed off, I will be there and so, people feel that they have room to do things, depending on the roles that they assign and I try myself not to stifle what could be done by one team to sort of sign off everything. I trust that they

would do that, if we agree that upfront: "This is what we are going to do" and work happens and some deliverables are delivered and they are in line, I feel comfortable. Then the development is going to happen, then the solution will be put on the table, testing and acceptance and all that. I feel that, only at relevant points should I be involved, but different role players with different roles should take ownership at appropriate positions" (R10 – executive manager).

Relationships should be managed by both the IS owners and the executive managers and should be based on an IS ownership agreement, which include the rights and obligations of both parties. Management support empowers the IS owners to leverage the IS in pursuit of business objectives. Progress towards achieving those business objectives can be measured to identify and eliminate any obstacles in the way of the IS owners' endeavors to achieve the business's objectives. Executive managers that do not provide visible support do not contribute to the creation of the synergy needed for optimised appropriation of the IS.

4.3.3.3.1.8 Category 8: Outcomes of IS ownership

9 Categories	Category 8: Outcomes of IS ownership
	Category 8.1: Evaluation

From time to time, as agreed between the executive manager and the IS owner, the IS ownership-relationship has to be evaluated to determine whether parties' expectations have been met. Parties entered into an agreement where their expectations have been agreed upon and documented as rights and obligations. Exchanges may be inequitable if there is an imbalance between the rights and the obligations in owning IS. If agreement was reached between the IS owner and the

executive manager, the outcomes of IS ownership should be aligned to the expectations of the parties:

- "I wasn't expecting to take technical ownership in terms of infrastructure, so there have been no real surprises" (R9 – IS owner).
- "and doing the give and take is what is key, because then it helps their buy in and it helps with their drive towards excellence" (R10 – executive manager).

Although formal ownership of IS is acknowledged in the organisation, IS owners need to be empowered to own the IS in a manner that they have all the possible means and opportunities to create shareholder value. IS owners should have the support from other stakeholders and they should have control over the necessary resources with the required skills and knowledge to provide the required support. Questioning IS owners about their control over IS resources, the following responses were received:

- "Ownership over the [IS department's] resources? I don't, there's too much sharing [of resources] as far as I'm concerned... it's a little bit thin [in terms of availability] - so I don't think we have much ownership…" (R6).
- "[When] we've experienced problems we always had to go out on tender and get someone in to make the change. [There is not] sufficient expertise on board" (R11).
- "The […] department does not at this particular point in time have the technical support to support [their business function]. That support factor sits in my section…" (R11). (The name of the department that the interviewee refers to has been omitted to ensure anonymity).

The organisation should evaluate whether parties' expectations have been met. By identifying key performance areas and agreeing on the metrics that are used, parties can focus on achieving the objectives agreed upon and then verify that these objectives have been met. Evaluation of performance against objectives is discussed in the following section.

Category 8.1: Evaluation

9 Categories	**Category 8: Outcomes of IS ownership**
	Category 8.1: Evaluation
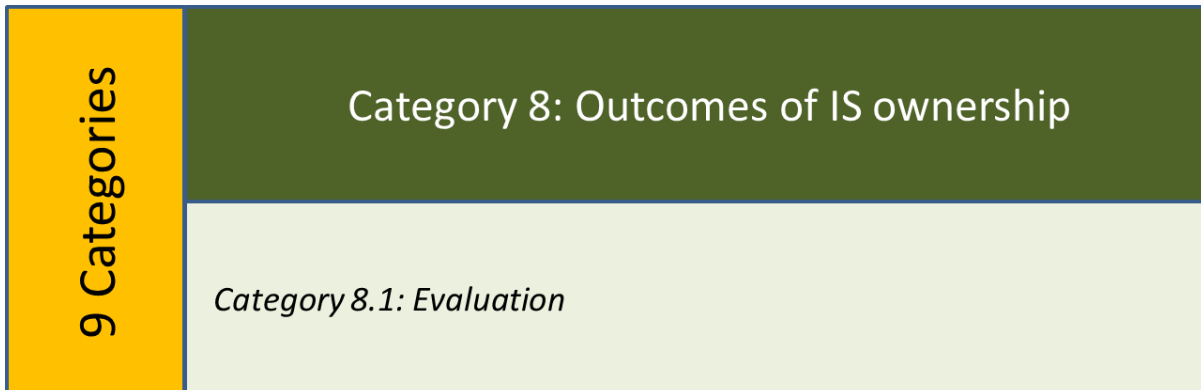
Management of the contract of IS ownership requires that the parties evaluate their progress towards the objectives of the IS ownership process. Progress is measured against the parties' contracted expectations. Positive outcomes with regards to achieving set targets strengthen the ties between the parties. Unsatisfactory outcomes may require revisiting of the IS ownership agreement, or force the parties to resolve the issue in another manner. When parties feel that their expectations have been met, they will continue with the relationship, whereas parties that believe that they contributed more than they got out of the relationship, may seek an alternative relationship or adjust the current relationship to make it more equitable. Asked about their opinion with respect to the deal that they got out of the IS ownership relationship, not all IS owners believe that the input into owning an IS has been met at the same level of output (R5, R4).

IS owners that do not satisfy the expectations of the executive or the organisation may find themselves to be punished or reprimanded. In the following instance, an information leak caused an IS owner to be held responsible:

- "for instance the leak of the [organisational] information, I was held directly responsible, although I had no control over it. [There were controls]… put in place from our side… to prevent [information leakages]. And despite that, it leaked out, [it was]… not something [under our control, but] the blame is still on us" (R5).

By infusing a culture of ownership in the business area and building a trusted relationships between executive managers and IS owners, can address the problems of blaming:

- "when things go wrong… then the thing is on us. If we prove it wasn't us then nobody says [anything]" (R5).

A collaborative effort between the IS owner and business stakeholders may prevent similar problems in the future. Business leaders should not only take ownership of their IS systems but also of ownership of all aspects of the information of the business, including information security and risk.

IS owners that achieved or exceeded the expectations of the organisation or the manager, may be rewarded for their contribution in the relationship and/or they may develop a power base that places them in a stronger position in the relationship (French and Raven, 1959). Indications of power bases were found in the organisation:

- "I'm one of the first go-to people that [the users] would come to" (R2).
- "So your manager relied much on you because he knows the whole inside, he knows where this problem comes from, where it stems from. You will know that rectifying this cause the other thing and quickly act on it where your manager that is not involved that much, so you were a central person" (R5).

With a stronger power base, IS owners may begin to develop certain demands on the relationship without increasing their input into the relationship. This is recognised by the business area with respect to support staff maintaining the IS:

- "If [a specific support staff member is] not here… then we're going to be a bit stuffed [and]… you [would like to] say okay… 'don't resign – we are going to pay you more'…" (R6).

Business questioned the organisation's succession planning maturity to provide the business areas with suitable replacement support resources. In some areas IS owners are concerned with the depth of support provided by the IS department. Business leaders should take the initiative to reach agreement with support units such as the IS

department to ensure that business areas have adequate depth in support for the IS in the business environments:

- "it comes to issues where, when our solutions are commissioned and implemented and working well, it seems that [the IS department] sometimes has a problem with the resources…" (R10).

Senior IS leaders should take responsibility to ensure that the IS department has the depth to sustain support at all times, as suggested by an executive:

- "it is always better to outsource or get a package from outside and show that the party that provides the service offers formal support and [can assist the organisation to] build a capacity [to support the business]" (R10).

Support environments should have contingency plans in place to ensure that support can be provided to business throughout the complete life-cycle of an IS in the organisation. Identifying the risks with the current support and the sustainability of the support is a risk management issue and is discussed in section 4.3.3.3.1.6.

4.3.3.3.1.9   Category 9: Influences that support or erode the levels of IS ownership

Several factors can influence the acceptance of ownership of an IS. Some of the code categories discussed above also have an influence on the taking of ownership. Influencing factors identified in the organisation can be categorised into four major areas. Areas of influence relate to the IS as target, the organisation, the assignment

of the job and personal factors. The influencing factors from the areas surrounding psychological ownership are discussed next. Many of the areas discussed in this section can be influenced by the executive manager of an IS owner. The executive managers can, among other things, create a positive relationship with the IS owner, allowing the IS owner to be involved in the IS and empower the IS owner to make decisions related to the IS.

Category 9.1: Attributes of the target

	Category 9: Influences that support or erode the levels of IS ownership
9 Categories	*Category 9.1: Attributes of the target*
	Category 9.2: Organisational Factors
	Category 9.3: Assignment Factors
	Category 9.4: Personal Factors

The attributes of the IS as ownership target play a significant role in the attitude of the IS owner towards the target. As discussed in Chapter 2, section 2.4.2, the IS should offer good motivations for taking ownership. IS that promotes effectance and efficacy, enables the owner to project the image of "self" to others (self-identity) and affords the individual a sense of belonging in the organisation makes a perceivably "good" ownership target (Pierce et al., 2003).

Information acquired from the organisation confirms that certain target attributes decrease or increase the desirability for owning an IS. IS owners develop a stronger affinity for targets that they control, as opposed to the general outputs of the department or organisation affording little control. Some IS owners indicated that they take care of IS because it is part of their jobs, but do not necessarily experience that the IS is "theirs". Some IS owners with positive feelings towards their IS stated that owning the IS makes them proud, enviable or that they experienced a specific status in the organisation.

Control afforded by the IS

IS that allows the user or owner to control the output of the system promotes the development of psychological ownership by the efficacy that they afford. One owner explained that "you have some pride in [having an influence in the organisation]" (R2) when the IS enabled him to assist clients from another business unit. An executive manager said that "a specific department in the organization don't like this [new IS]… because they didn't have control over it." (R3).

The attitude of IS owners towards low-valued IS differs visibly from that of IS owners with respect to perceivably high-value IS. The perceived value of an IS is discussed next.

Perceived value of the IS

The idea that acquiring and implementing a "new" IS, to replace a legacy IS, always results in a "better" solution may be misleading. A "new" IS may not necessarily be "better", unless all un-optimised components have been updated or re-engineered. Automating archaic processes and wrapping them in new technology may not render the expected results. This is evident in the organisation where staff members feel that a new IS that was implemented did not provide the benefits for the business area as were anticipated:

- "So we are just [using this new IS] to keep the management happy.
  We can go on without [it]" (R5).

Although the new IS provides similar services than the legacy systems used in the business area, it can provide additional (but sometimes hidden) benefits such as the sharing of information between business units and improvement of governance. Where hidden value is found in an IS, the IS owner may develop ownership after a period of time.

Quality of information can be linked to the quality of the IS. In the cases where bad processes are embedded in an IS, it is possible that the lack of information quality can be ascribed to the IS. An IS that does not address the immediate expectations of the employee may have a negative influence on developing psychological ownership.

Position of the IS in a value chain

The later an IS is placed in the value chain, the higher is its desirability for an owner. If an IS appears as an early contributor in a series of processes, the owner cannot see or experience the final outcome as a direct influencer on the objectives of the business. Where the IS outcomes are used by high-profile end-users, the perceived value of the IS is high:

- "there [are] a lot of statutory requirements that we got to comply with… the integrity of data is so important. You've got to be on top of everything daily. You can't let anything go out of balance per day, because it's going to take you 3-4 days to find it. When you report at month-end… that information has to be correct.… [and the information] goes to parliament once per year" (R11).

The interviewee also explained that the business area went beyond organisational expectations to optimise tasks that are normally performed in the use of the IS:

- "as one of our [new] support guys, [assisted us with] reporting that used to take us a day and a half to prepare… takes us 3 minutes now. That was just because we married the business with the potential that was lying in IS" (R11).

The importance of the IS also has a direct impact on the level of IS ownership experienced by the IS owner. The following feedback was received from an interviewee that has a different view of one of the IS in his business area:

- "[My responsibility as owner of the IS is to] use it responsibly. The management of that is done by an external party that does the upgrades and if there's some error, they are responsible for it. So we don't do the maintenance of it, we're just users of it" (R5).

Although the IS owner accepts responsibility for the IS and some level of psychological ownership has developed, there is a perceived lack of passion to act innovatively in leveraging the system: "we just from time to time go out to the market and see if we have the most appropriate system" (R5). The owner creates a perception that he is not enthusiastic about the IS and "simply goes through the motions" in the use and

maintenance of the IS. The perceived value of the IS in the business area is also low. The organisation should evaluate the continued use of the application and determine whether the process requiring the application cannot be eliminated, automated, replaced or combined with other processes rendering more value or fewer overheads.

New IS running parallel to existing system

A new organisation-wide IS was implemented in the financial services organisation five years earlier. Conditions of the implementation were that the new IS should have minimal customisation and self-developed modules, as they are costly and customisation may have a negative influence on future upgrades of the IS. Implementing the IS was therefore referred to as a "vanilla" implementation. User acceptance of the new IS took long and employees were reluctant to embrace the new system. Some of the modules did not add any visible value, although overall governance, standardisation and integration proved to be of significant value to the organisation. The system is used, but due to the lack of control over the IS, development of psychological ownership is slow:

- "[A specific department] don't like this [IS]… because they didn't have control over it" (R3).

In the case where the business unit still has access to existing systems, performing similar tasks to the new IS and where the new IS does not appeal to the users, the problem was perceivably overcome by the business unit's continued use of the old system:

- "we have our own controls on [our old systems]. So we are just doing this [new IS] thing to keep the management happy. We can go on without [the new IS]. Nothing will stand still in the [business area]" (R5).

While the new IS was implemented with the intention to replace a number of older systems to enable information sharing across the organisation and to improve the governance controls of the system, not all users have accepted it in the same light. From feedback in the organisation, it may be inferred that legacy systems with visible local benefits may be preferred above an IS with organisational benefits that are not

visible to the IS owner. Unless the governance body of the organisation can agree with the business leaders to remove the legacy systems completely, problems as indicated above will remain.

Category 9.2: Organisational Factors

Factors in the organisation such as the ownership culture, the structures in the organisation and the levels of decision-making delegated to individuals, should also be considered when analysing the development of psychological ownership in the business areas.

Ownership culture

Organisations can be seen as "little societies" where social interaction, rules and norms apply (Allaire and Firsirotu, 1984, p. 193). These social attributes are combined into the culture of the organisation. The organisational culture has an influence on the motivation, needs and values of staff members. Organisational culture influences the behaviours of executive managers and IS owners and therefore also influences IS ownership.

One IS owner described an incident as follows:

- "because if something goes wrong they're quick to be on your head and point fingers… [as the problem] was systems related… [but] the blame is still on us" (R5).

In this instance, organisational culture may be one of blame. Creating an ownership culture, owners that make mistakes will be allowed to learn from the mistakes and become better owners. Executive managers will share responsibilities and accept accountability of what happens in the business environment as explained by an executive manager:

- "I cannot pass the buck and say it's somebody else's fault, because then I don't take accountability for providing those services" (R10).

The level of support that executive managers provide to business leaders has an influence on the development of IS ownership as explained in the following section.

Management support

IS owners displayed a more positive opinion towards IS ownership when they have the support of their executive managers. Management expects that the IS owner should find better ways to leverage the IS. When discussing executive support, an IS owner stated:

- "my sponsor['s]… expectations is specifically… we can do what we need to do in terms of the decision-making that we do, but the expectation is that we do it much more sophisticatedly and quicker" (R4).

As the IS owner lamented the slow decision-making in the organisation, his executive manager could intervene to expedite decision-making as far as organisational policies and practices allow.

Another IS owner manager describes his executive manager addressing organisational bureaucracy as a moral force: "He doesn't want to wait on protocol, processes and procedures. Yes, you should have change control procedures in place that is correct – but we don't have to go through a whole registering of a project, he doesn't want that – it is too time consuming" (R11). Should the executive manager not provide the necessary support to the IS owner, the IS owner may have been reprimanded for being impatient and attempting to circumvent organisational protocols.

One IS owner explained that he does not have the required executive support:

- "[Executives] expect outputs, but I've experienced not much support in the past… I'm talking higher up from Department head and deputy heads" (R5).

Executive managers should support IS owners and encourage them to utilise the IS in an optimal manner to pursue business objectives. Executive managers are a part of a team within the business area and the organisation that can create synergy through combining their knowledge, skills and network connections.

Basic ownership rights

IS owners expect that they should be empowered to make decisions and be informed of what is currently happening in the space of the IS, or what the future holds for the area where the IS is used. IS owners also expect recognition for successfully applying an IS in pursuit of business objectives. Should any of the basic rights of ownership not be present (Pierce et al., 1991), the IS owner may still have formal ownership, but psychological ownership may not develop or may diminish. IS owners that were not involved in the identification and acquisition (procurement or development) of an IS may not identify strongly with the IS, as they may feel that they had no or little say in the decision-making surrounding the IS. IS owners had concerns where basic rights to owning the IS were not available to them. One IS owner that was not involved in the initial acquisition of the IS explains his reason of being unsatisfied with an IS:

- "The wrong vehicle was chosen and the people on the lower levels were not involved in choosing that vehicle… right at the beginning before the project kicked off, there were already mistakes made on a very high level" (R5).

In the following case, the IS owner did not have all the information available regarding IS utilised in his business environment:

- "We hear that [a business specific application used by another department] is going to stop and [one of my staff] then says: '[The IS department] says we won't get [the application] anymore and they are going to stop and I don't know what we're going to do' - and then what do we end up doing? We end up reflecting this in the risk

register of the department to say 'the risk is… we are reliant on this,

but [the IS department] is in transition…'" (R10).

Both cases above pose threats to IS owners to leverage the IS optimally in their business environments. In the case where the IS owner was involved late in the project, the owner may perceive frustration as certain key decisions related to his business environment were already taken and these decisions are perceived to be the wrong decisions. Earmarked IS owners should be involved in the acquisition of the IS as early as possible.

In the case where the IS owner overheard that some of the applications used in his business environment are going to be discontinued detracts from the perceived control that the IS owner has over his system and business area. Planned changes that may have a business impact locally or elsewhere in the organisation should be formally communicated to inform stakeholders of the plans to discontinue an IS, enabling business leaders to devise the necessary mitigation plans in time.

Centralisation

With the financial services organisation adopting centralisation, budgeting, procurement, support and staffing are done centrally. High-level decision-making is performed by executive-level steering committees, which influences the current and future use of IS in the organisation. Due to the processes of centralised decision-making that are embedded in the policies of the organisation, decision-making may perceivably hamper businesses' agility. Some business leaders are concerned about the period taken for certain decisions to be made:

- "key decision-making… is very slow in the [organisation]" (R4).
- "I have complained in the past for instance where you have to approve something… it took more than a year…" (R5).

Centralisation is a governance decision made in the organisation. Implementing governance does not imply that all parties in the organisation will share all benefits similarly. Business areas may expect that decisions should be made quicker, while other organisational stakeholders may prefer the control and economies of scale provided by centralised decision-making.

256

Category 9.3: Assignment Factors

	Category 9: Influences that support or erode the levels of IS ownership
9 Categories	*Category 9.1: Attributes of the target*
	Category 9.2: Organisational Factors
	Category 9.3: Assignment Factors
	Category 9.4: Personal Factors

Assignment factors that can influence the levels of IS ownership include the levels of authorisation assigned to the IS owner. Staff members in business areas that directly contribute to the core business of the organisation may have more decision-making powers than staff member in support areas. The seniority of the IS owner in the hierarchical structure of the organisation and the level of decentralisation of the function afforded by the IS can also influence the level of decision-making in the organisation.

- "So it's very difficult for me to take ownership of something that I do not have control over" (R1).
- "The [business department] don't like this [IS]. Why? Because they didn't have control over it" (R3).

Interviewees made a direct link between development of ownership and having control of a target. Recognising the importance of control can play a significant role in creating a fertile environment wherein psychological ownership of IS as a target can be promoted.

Relationship between the IS owner and the executive manager

Business leaders that were assigned ownership of IS in their environments do not dispute their IS assignments:

- "[IS ownership is] part of my job descriptions and I am responsible for it" (R4).

- "[IS ownership] was… available and it was a serious part of my job to [leverage] that, so that I'm… directly involved with the solution that they are busy with." (R9).

Assigning an IS to a business leader implies that IS ownership exists by virtue of formal ownership. An IS ownership agreement serves as the mandate for formal ownership to leverage an IS in pursuit of business objectives. The IS ownership agreement also expresses the expectations of the business and the individual. It is the responsibility of the executive managers to empower the IS owners to execute on their mandate. Empowerment can be achieved through, among other things*,* the delegation of authorisation, sharing of information, physical and moral support, commitment to the relationship and the application of good governance to achieve the objectives agreed upon between the parties (Ballantyne, 2003; Chun and Mooney, 2009; Shackleton, 2007).

IS owners receiving certain rights associated with IS ownership, have reciprocal obligations balancing the rights. An unbalanced relationship may result in one party contributing less than the other in perceived value, which may lead to a failure of the relationship. The relationship between executive managers and IS owners therefore focus mainly on managing the expectations of the other party.   The assignment agreement is discussed in more depth in Chapter 5, section 5.2.5.1.2.

Relationships between the IS owner and the IS department

Expecting that the IS owner is able to successfully leverage IS in the business area that he is responsible for, requires that the IS owner is empowered to control the IS. Viewing an IS as an ensemble (Melville et al., 2004), implies that the IS owner should also have some control over the human resources required to successfully utilise the IS. IS departmental staff, however, report to the CIO, which, in the case of the financial services organisation is also the head of the IS department. IS departmental staff members are committed to render services to the business areas based on the service standards agreement between the IS department and the business area:

258

- "Services standards are where we agree what services we will provide to business… and we track this every month and we report on it" (R7).

In the service standards agreement, the IS department undertakes to provide business-specific services at certain levels to the business environment. The IS department commits to serve as the custodian of the IS of the business environments in the organisation. As custodian, the IS department is responsible to ensure that IS, including the information generated, stored and processed by the IS, are available and secure, have integrity and are sustainable (ISACA, 2012b; Markus, 2000; Shackleton, 2007). An IS owner expressed the difference in roles between the IS owner and the IS department as follows:

- "One [of my roles] is obviously to the daily running of the business and ensuring that there is an optimum level of efficiency in changes to applications, data processes and business processes, which is sort of on an ad-hoc basis. [The IS department] is responsible… for setting the standards of what technologies may be used, how it is used, what are the frameworks, so, in terms of type of infrastructure that is used, because they are in charge of that. If we get involved in specialised financial services or systems – there are very specific standards of technology that we need to apply or abide by in terms of security, database standards and integration – those kinds of things." (R4).

In the case above, acknowledging the difference in roles allows the IS owner to focus on his business objectives, while allowing the IS support staff to enable the IS and guide the business. Acknowledging the role of the IS owner by IS role-players empowers the IS owner to focus on and pursue his business objectives.

Blaming the IS department for not achieving their (the business unit's) objectives may not be the solution for the business areas. Failure to understand the roles of the business environment and the IS department may cause business units not to achieve their set objectives:

- "[The business area] have realised it pretty soon that the ownership of the system includes the ownership of the processes. So the system is not going to change if you don't change the processes and you can't just blame the system if you haven't changed the processes. And it's easy to blame the system and blame [the IS department] if you don't take ownership of the information system" (R8).

It is expected that the IS department should render the required service levels to the business areas, allowing IS owners to achieve their business objectives. Negotiating service levels between the business areas and the IS department commits the IS department to ensure that it has the capacity to do so. Using guidance from a strategic sourcing plan, the IS department is able to render support in a predictive, but also in an agile manner. To be able to receive the expected levels of IS support, the IS owner has to commit to the relationship:

- "I believe that I own all the business processes, I own the customer interaction and all that which is of course the right thing to do. And with the assistance of controls that are put in place for change management as an example, the overall configuration management, setting of parameters, or whatever – if all that is controlled then I feel that I feel comfortable in trusting other parties to deal with other tasks" (R10).

As explained by the interviewee above, the IS department does not play the role of the IS owner, but rather enables the IS owner to realise the expectations of the executive managers.

Involving the IS owner with the IS

Development of psychological ownership is improved when stakeholders in an IS become involved in the early part of acquiring the IS. Discussing involvement of business involved in IS projects, a consultant (who was not part of the original interview population) recalled the buy-in of business areas into an in-house developed IS. He was of the opinion that the early involvement of key stakeholders proved invaluable to the project's success. Team members were assigned their respective roles in the

beginning of the project and remained loyal to the project until completion. An oversight department was involved in the project. Being involved in the unfolding of the project, the oversight department could provide assurance to the wider organisation that the developed IS complies with all governance requirements and that the majority of the risks were addressed.

One IS owner discussed another IS acquisition project, using developers from the IS department. Involving business staff in the development of the IS, allows stakeholders the opportunity to bond with other stakeholders. Bonding between stakeholders may play significant roles during the maturation process of the IS and the use of the IS in the organisation, which in turn may enhance the communication process:

- "every time a function didn't work [when implementing a business specific IS], we worked very closely with [the IS department] - the programmers that stage… your manager relied much on you… so you were a central person" (R5).

Involving IS owners and other stakeholders early in the acquisition phase gives them time to exert influence related to the ease of use and personalisation of the IS during the design of the IS. Project members have early exposure to the IS and can start developing psychological ownership through their involvement in developing the IS. Involved stakeholders are also less critical about the system, since they were part of the system design (Hou and Fan, 2010).

Not involving IS owners during in the acquisition phase may result in IS owners not taking ownership. They may criticise the system and may feel that the IS was imposed on them:

- "when they started on changes in improving the [IS]… the people on the ground level… [were] not involved. They cannot verbalise their frustrations" (R5).

Psychological ownership can be promoted by creating conditions that provide access to the IS, control over the IS, allow the user to become involved in the development and promote the innovative use of IS in the organisation. IS owners should be allowed

to exercise certain rights in owning the IS and be empowered to use and to make decisions related to the IS.

Shared ownership

Ownership-sharing diminishes the control that an IS owner has over a system, since more than one person has the authority to make decisions regarding the system. A conflict of interest may result if IS owners at a higher hierarchical level compete against lower-level IS ownership for funding for their business area's IS. When IS ownership is delegated vertically, the hierarchical level of an IS owner can come into play. Some IS owners do not have a favourable perception of shared ownership and expressed some concerns:

- "The moment they start sharing IS ownership, prioritisation becomes more complex" (R4).
- "shared ownership can be cumbersome, especially… when you are competing for resources…" (R9).

Discussing shared IS ownership, one business leader proposed the appointment of a primary owner with the same level of ownership than the other IS owners:

- "I think you can have shared ownership, but you need to have a primary owner. A primary owner is a primary sort of stakeholder and you can have the others as secondary stakeholders.… The primary stakeholder should be higher" (R9).

Ownership of tasks within the IS ownership environment should be clarified as roles and can be depicted in the form of a RACI matrix. Role clarification is discussed in section 4.3.3.3.1.4.

Empowerment

Employees owning IS can only use the IS optimally if they are allowed to do so. Control as a form of empowerment is perceivably a problem with some IS owners:

- "ownership of the [IS] is situated in another department and the only thing you can do is to raise your concerns… and there it stops. I don't have the authority to do much more" (R5).

When asked about their satisfaction regarding their control over their IS, some IS owners were of the opinion that their control over resources is inadequate:

- "I get the impression… that they are putting fires out in other places… [and may therefore not be available to address this business area's problems]" (R6).
- "we should have some influence to say please, make sure [that the IS specialist] doesn't leave [the organisation]" (R6).
- "it's very difficult for me to take ownership of something that I do not have control over: (R1).
- "in some cases [the IS department has] the capacity and in other cases they have short capacity [to provide resources for IS support]" (R4).

Organisations need resources to pursue organisational objectives. Managers can only effectively pursue objectives if they are duly empowered and have the human- and other resources to do so. An IS is an asset that can be applied to pursue business objectives if IS employees are empowered to leverage these assets to achieve business objectives.

Communication

One area that concerned IS owners were the lack of communication between stakeholders of the IS. IS owners in a business area are in most instances represented by delegates of the department in steering committees meetings. A lack of communication between the decision-makers and the IS owners are currently being experienced:

- "A lot of the information that is filtered through is maybe one-sided and not enough input comes from business. So if a presentation should be given for example at [the steering committee], the centralised unit will prepare that presentation and take it to [the steering committee], but they can't speak for business" (R1).
- "I do not get feedback from steering committee meetings whatsoever…" (R1).

- "I don't even know when the steering committee meetings are. I'm not informed – so we… I've never received any feedback from the Steerco during the last year" (R1).
- "We don't have control over what happens… we don't see minutes or something [to verify] that they discussed it" (R5).

At first glance, communication-problems between parties seem to be a departmental issue, or that it may be a problem between the executive assigning the IS ownership and the business leader as IS owner. The problem may, however, be wider and present in the structure of the organisation. The problem of communication was discussed with an executive manager:

- "That is not something that has been brought to my attention. It's the first time hearing of that and certainly for me… a starting point is that we should start to encourage open communication and that, yes we've got structures where we should face this… [IS owners that complain] should raise it through the structures. But if [the lack of communication] hampers the operations and it's not been resolved, nothing stops me from waking up and walking down to [the IS department] and talking to the relevant person say: 'listen - you support this system - as a user, here are some of the frustrations that I have. Yes, I've raised it through the formal structures but haven't seen to have gotten an answer.' It's engagement – we are colleagues and we should be able to sit down and engage" (R7).

Communication is the responsibility of all parties. IS owners should schedule feedback meetings with stakeholders, including executive management. Regular contact meetings serve the purpose of keeping all parties informed, involved and interested in the IS owners' activities to use the IS optimally.

Category 9.4: Personal Factors

	Category 9: Influences that support or erode the levels of IS ownership
9 Categories	*Category 9.1: Attributes of the target*
	Category 9.2: Organisational Factors
	Category 9.3: Assignment Factors
	Category 9.4: Personal Factors

Personalities and control

Personal attributes of the owner have an impact on the perception of control. In an interview one IS owner discussed his ability to exercise control over the new IS deployed in his assigned business area. "We have the necessary expertise, outsourced or not, to make the change" (R11), thereby implying that his business unit have the control over what happen to the IS in his business area. The IS owner ascribed this "taking" of control: "on personalities – who's prepared to take responsibility…" (R11).

Employees are more committed to the success of the business if they run a personal risk when the business does not succeed in achieving its objectives (Baines, 1998). Employees that do not develop psychological ownership of an IS may find the IS to be a burden and/or the owner may be afraid to take risks in an attempt to avoid punishment:

- "so we are just [using this new IS] to keep the management happy" (R5).

The reasons why individuals want, or do not want to have IS ownership can be ascribed to several factors, including personal attributes:

- "I think it also depends on personalities – who are prepared to take responsibility…" (R11).

265

Employees displaying certain personal attributes may find it easier to develop psychological ownership than other employees not displaying these attributes. IS owners with high levels of self-efficacy and an internal locus of control may become promotion-oriented IS owners, while staff without these attributes may naturally develop prevention-focused, protective-oriented psychological ownership (Erkmen and Esen, 2012; McIntyre et al., 2009). Personal attributes as factors that may influence the development of psychological ownership became visible during the interviews. Some of these attributes are discussed next.

Self-efficacy

Employees in the organisation expect a certain outcome based on their behaviour, but they don't necessarily believe that they have the ability to perform in the correct manner to reach a specific outcome. Self-efficacy is the belief that an individual has in one's own ability to produce certain outcomes in the organisation (Bandura, 1977; Zimmerman and Cleary, 1998):

- "I'm really proud of the fact that this is an old product and it works to such an extent that a new product… couldn't do everything [that I managed to do with the old IS]" (R2).
- "what does stimulate me is to provide optimum solutions to the [organisation] and its subsidiaries" (R11).

People avoid situations if they believe that they cannot perform according to expectation to render specific outcomes, while their belief that they can achieve the expected goal, will motivate the individuals to attempt to achieve the goal (Bandura, 1977). Staff with high levels of self-efficacy view difficult situations as a challenge and believe that they have the ability to achieve the desired outcome. An IS owner was asked to describe his experience of leveraging a new IS in the business environment:

- "it's a constant challenge…. [there's] so much [more] effort going into running [the new IS] from what we had before – I think it was mainframe before. It is chalk and cheese – there is so much effort involved in running [the IS] from a patch maintenance perspective,

the workload has so much increased. The workload has increased, the pressure has increased. Yes, it's just a bigger effort" (R11).

When the IS owner was asked why some other business leaders did not act in a similar innovative manner:

- "you're either a person that will take responsibility – or you're not" (R11).

The response from the IS owner indicates a high level of self-efficacy where the owner believes that he has the ability to achieve a specific outcome in the organisation. Not all IS owners always display self-efficacy. Discussing the impact of the owner on the organisation, one IS owner felt that he did not have the power to influence decisions in the organisation:

- "I don't have the authority to do much more…" (R5).

The more people become used to mastering new situations, the easier will they find the confidence and the belief that they can master other situations as well and make an impact on the environment. IS owners that are constantly challenged and succeed in the challenges most of the time, will in time believe that they can leverage almost all new IS successfully (Bandura, 1977; Pierce et al., 2009).

Internal Locus of Control

Interviews showed that some owners went to lengths to acquire ownership of an IS that complemented their current business environment:

- "I am getting to a point where we don't want to rely too heavily on the [IS support staff]" (R2).

In one case, a module was shared between two business units:

- "there was a tussle who should own the support function for the system – especially the modules in this business unit and we just felt that the expertise lay in [our] business" (R11).

Other IS owners did not feel strong enough about IS problems in their business areas to pursue the matter further:

267

- "there is no short-term solution for the support issue so it stays the way it is" (R1).
- "there are still things that don't work very comfortably [when using a new IS], but we live with it, because we don't have a choice" (R5).

IS owners that have an internal locus of control believe that they are responsible for the outcomes of their actions and behaviours (Erkmen and Esen, 2012). IS owners having an external locus of control implies that the IS owner gives up control of the situation and hope that executive managers and other role players make decisions that can alleviate their (the IS owners') problems. Organisations looking for IS owners that display high-levels of promotion-oriented psychological ownership of their IS, may benefit by contemplating the assignment of business-critical IS to business leaders with high levels of internal locus of control.

Territoriality

Having ownership of a target can be a strong motivator to satisfy professional and personal desires. A desire for ownership is found in everyday life where people acquire or aspire to acquire something that may be needed as life supporting or to satisfy inner cravings. Some IS owners in the financial services organisation try to leverage on the opportunity of ownership:

- "where your manager that is not involved that much, so you were a central person…" (R5).
- "I believe we do have adequate control, but it will always be nice to have more control" (R2).
- "They [another department] do not at this particular point in time have the technical support to support [a business function]. That support factor sits in my section" (R11).

When asked how an IS owner managed to acquire certain skills in his business unit with the IS department rendering centralised support:

- "I managed to do it through persuasion and also through negotiation and also a lot of underhand tactics" (R11).

The process of establishing decentralised support within the owner's business area continued with the acquisition of additional resources to strengthen the support:

- "in the next two weeks we are going to advertise for three specialists.
  I don't know if you know that [an IS specialist] also now reports to me… the new guy we're getting aboard is going to be a specialist…
  [and another two specialists are] going to report to me [soon]" (R11).

Managers can become so involved in owning an IS and the power that it offers that they may become overly-protective of the target and they may start acting defensively. Organisations should be aware that psychological ownership taken to a territoriality level can do some harm, as sharing of information can be hindered, silos can be created and disgruntled employees may act destructively in their objective to stay in control. Signs of empire-building may be early indications of territoriality which should be brought under the attention of the organisation. Territoriality is discussed in more detail in Chapter 2, section 2.2.10.1.

4.3.3.3.2 Phase 3: Iteration 2

Where the nine categories of codes reflected the essence of IS ownership of the twelve individuals interviewed to acquire an understanding of IS ownership in the organisation, iteration 2 of Phase 3 coding rendered 6 themes that were pervasive in the twelve interview transcripts. The process of Iteration 2 of Phase 3 coding is depicted in Figure 26.
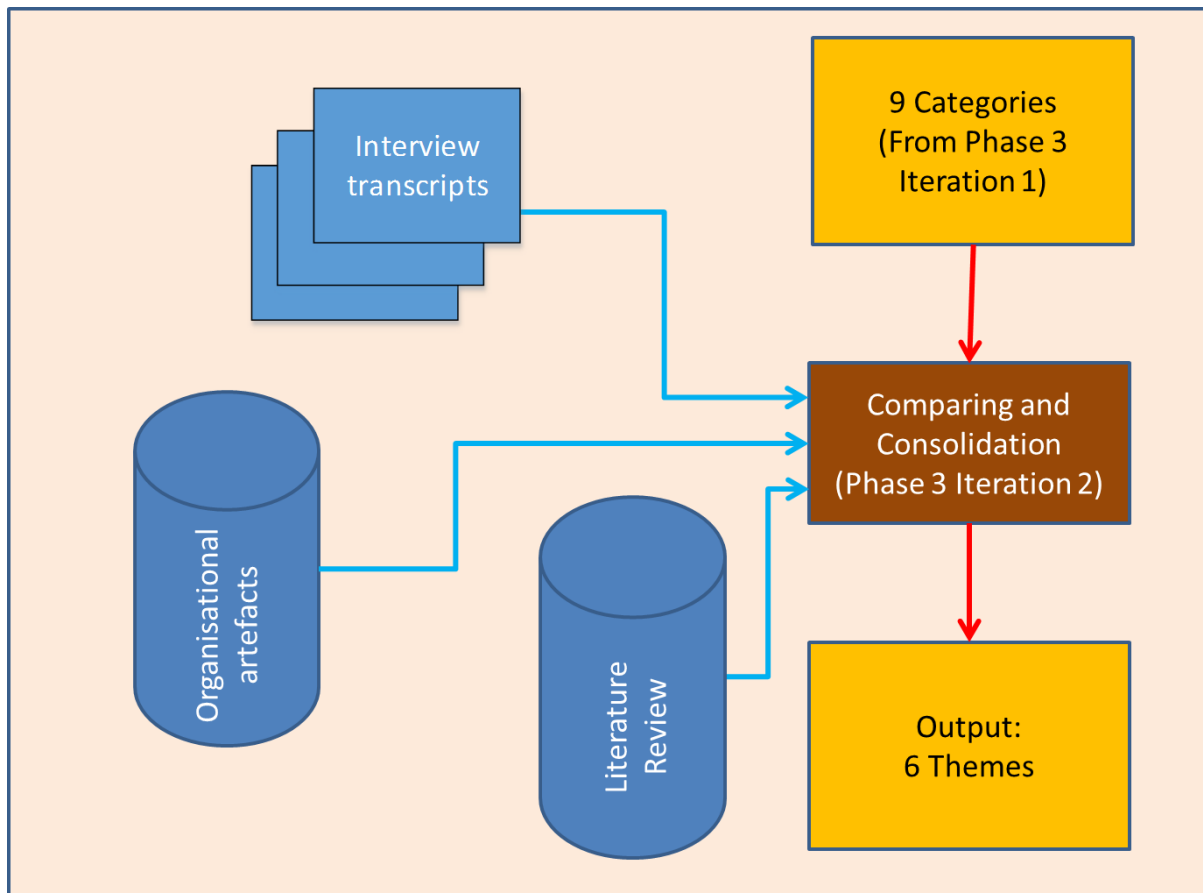
Figure 26 - Phase 3: Iteration 2 Coding

A detailed analysis of the nine categories of codes from the first iteration of Phase 3 was documented in section 4.3.3.3.1. Categories of codes acquired from the coding phases express the essence of what IS ownership in the organisation entails. However, the codes do not provide context in a holistic manner, as they are based on the analysis of the 12 interview transcripts viewed in a discrete manner.

Using the analysis from the categories of codes, taking a collective view of the 12 interview transcripts, using data from the literature review and using data from organisational artefacts, the researcher identified six themes that are pervasive in the study of IS ownership.

Themes are at a higher level of coding, where the available data is viewed in a holistic manner, than the categories of codes that were developed by viewing the data in a discrete manner. There was not a one-to-one relationship between code categories and themes. The process of developing themes is discussed in the following section.

The development of themes from the categories of codes acquired during Phase 3 of coding is depicted in Figure 26 and Table 16 (based on Ryan and Bernard, 2003).

Themes were developed by:

- Taking a collective view of all the interview transcripts;

- Finding the pervasiveness of codes;

- Searching for the frequency of appearance of the codes through all the transcripts;

- Taking notice of how the interviewees reacted to aspects of the IS ownership phenomenon;

- Taking notice of how the interviewees addressed the topics related to the codes;

- Comparing the codes with information acquired from the literature;

- Comparing the codes with information acquired from organisational artefacts.

A number of higher-level concepts or themes emerged from the categories of codes when data was analysed that was acquired by researching ownership-related literature, using organisational artefacts and interviewing staff members in a financial services organisation. The themes can be used to guide the building of a framework to improve the understanding of IS ownership in the organisation.

Some prominent themes from the data emerged:

Theme 1: Governance and management;

Theme 2: Organisational perspective of IS ownership and IS ownership from the IS owner's point of view;

Theme 3: Why individuals and the organisation should have IS ownership;

Theme 4: Who should have IS ownership;

Theme 5: How IS should be established and managed in the organisation;

Theme 6: The relationships that are created between IS ownership role-players.

A summary of the themes found in the categories are displayed in Table 16. Nine categories of codes were acquired from the 12 interview transcripts. The categories

of codes were analysed to acquire an understanding thereof in terms of IS ownership, taking a holistic view of the interview transcripts. Code categories did not map one-to-one with the themes as is depicted in Table 16. Literature and organisational artefacts are also related to themes in Table 16.

Table 16 - Coding Phase 3 - Identification of themes

Categories of codes	Literature (Chapter 2)	Organisational Artefacts	Theme
• IS as assets in the organisation – section 4.3.3.3.1.1 • IS ownership – section 4.3.3.3.1.2 • Expectations of stakeholders in IS ownership – section 4.3.3.3.1.3 • Role of the stakeholders – section 4.3.3.3.1.4 • Rights and obligations with respect to owning IS – section 4.3.3.3.1.5 • Governance and Management – section 4.3.3.3.1.6 • Outcomes of IS ownership – section 4.3.3.3.1.8 • Influences on IS ownership that supports or erode the levels of IS ownership – section 4.3.3.3.1.9	• Governance and Management – section 2.4.6.3 • The role of ownership in Information Systems – section 2.4 • Expectations of role-players – section 2.2.4 • Rights and obligations of IS ownership – section 2.4.6 • Assignment of IS ownership – section 2.4.5 • Outcomes of IS ownership – section 2.4.9.3 • Promotion of IS ownership – section 2.4.7	• Delegation of responsibilities • Organisational hierarchical diagrams	Theme 1: Governance and management
• IS ownership – section 4.3.3.3.1.2 • Expectations of stakeholders in IS ownership – section 4.3.3.3.1.3 • Role of the stakeholders – section 4.3.3.3.1.4	• IS Ownership – section 2.4 • Expectations of roleplayers – section 2.2.4 • Governance and	• Delegation of responsibilities • Organisational hierarchical diagrams	Theme 2: Organisational perspective of IS ownership and IS ownership from the IS owner's point of view

272

Categories of codes	Literature (Chapter 2)	Organisational Artefacts	Theme
• Governance and Management – section 4.3.3.3.1.6 • Relationships between the role-players involved in IS ownership – section 4.3.3.3.1.7 • Outcomes of IS ownership – section 4.3.3.3.1.8 • Influences on IS ownership that supports or erode the levels of IS ownership – section 4.3.3.3.1.9	Management – section 2.4.6.3 • Governance and Management – section 2.4.6.3 • Outcomes of IS ownership – section 2.4.7 • Promotion of IS ownership – section 2.4.7		
• Role of the stakeholders – section 4.3.3.3.1.4 • Governance and Management – section 4.3.3.3.1.6	• Stakeholders and role-players in the organisation – section 2.2.2 • Governance and Management – section 2.4.6.3	• Delegation of responsibilities • Organisational hierarchical diagrams	Theme 3: Why should individuals and the organisation have IS ownership?
• Role of the stakeholders – section 4.3.3.3.1.4	• Stakeholders and role-players in the organisation – section 2.2.2 • Governance and Management – section 2.4.6.3	• Delegation of responsibilities • Organisational hierarchical diagrams	Theme 4: Who should have IS ownership?
• Rights and obligations with respect to owning IS – section 4.3.3.3.1.5 • Governance and Management – section 4.3.3.3.1.6 • Influences on IS ownership that	• Rights and obligations of IS ownership – section 2.4.6 • Governance and Management – section 2.4.6.3	• Delegation of responsibilities • Organisational hierarchical diagrams	Theme 5: How should IS ownership be established and managed in the organisation?

Categories of codes	Literature (Chapter 2)	Organisational Artefacts	Theme
supports or erode the levels of IS ownership – section 4.3.3.3.1.9	• Assignment of IS ownership – section 2.4.5 • Promotion of IS ownership – section 2.4.7		
• Role of the stakeholders – section 4.3.3.3.1.4 • Relationships between the role-players involved in IS ownership – section 4.3.3.3.1.7 • Influences on IS ownership that supports or erode the levels of IS ownership – section 4.3.3.3.1.9	• Stakeholders and role-players in the organisation – section 2.2.2 • Governance and Management – section 2.4.6.3 • Assignment of IS ownership – section 2.4.5 • Promotion of IS ownership – section 2.4.7	• Delegation of responsibilities • Organisational hierarchical diagrams	Theme 6: Relationships between IS ownership role-players

The output of the second iteration of Phase 3 coding was six themes. The themes informed the creation of a framework to understand IS ownership. IT Governance tied the themes together and provided rationale to the IS ownership life-cycle. IS ownership has an impact on the organisation that is represented by the executive managers and the different business units, whether they are core business, or in an enabling or supporting role. Finally, IS ownership has an impact on individuals involved in IS ownership, as IS ownership offers a personal experience to individuals developing psychological ownership of the IS.

The six themes emerging from the second iteration of Phase 3 Coding is depicted in Figure 27.

6 Themes of IS ownership	Theme 1 Governance and Management
	Theme 2 Organisational perspective of IS ownership and IS ownership from the IS owner's point of view
	Theme 3 Why individuals and the organisation need IS ownership
	Theme 4 Who should have the ownership of an IS
	Theme 5 How should IS ownership be established and managed in the organisation
	Theme 6 The relationships that are created between IS ownership role-players

Figure 27 - Six themes emerging from Phase 3: Iteration 2 coding

The themes were addressed in more detail in Chapter 5, focusing on the emergence of the framework to create an understanding of IS ownership in the organisation as depicted in Figure 28.
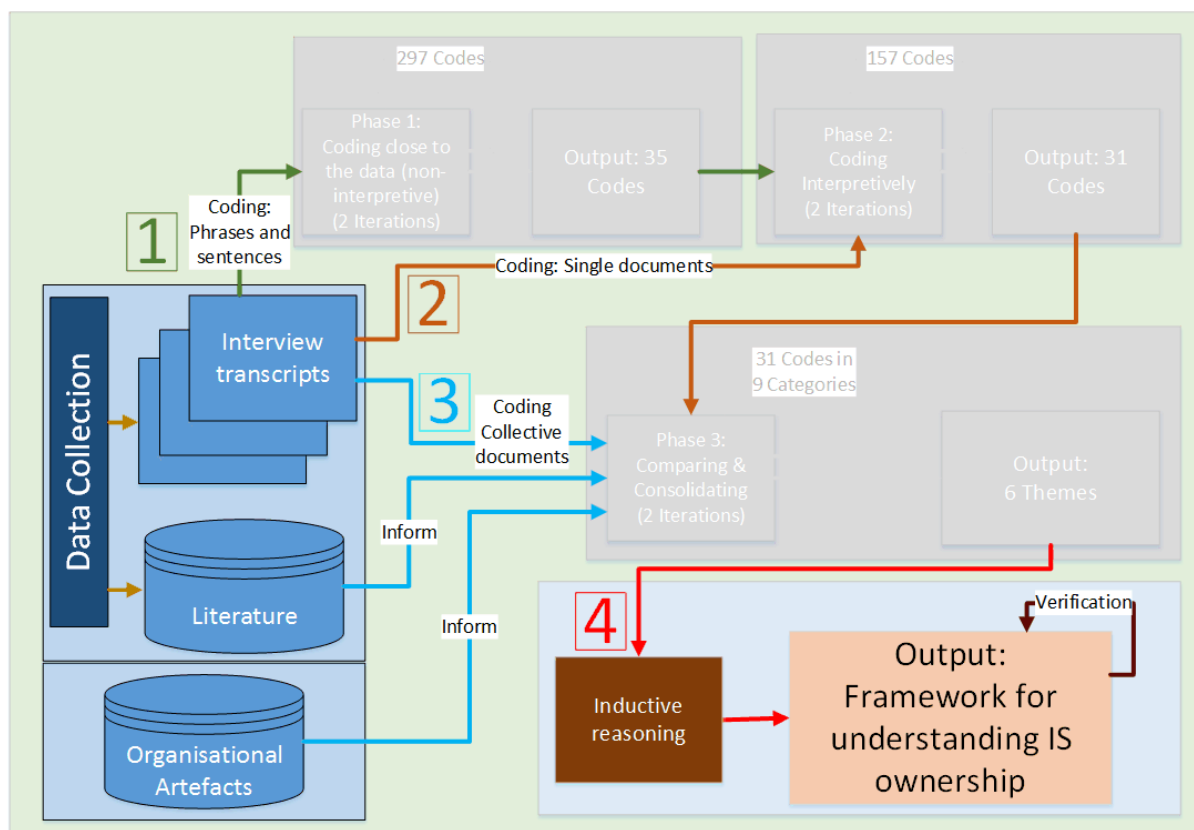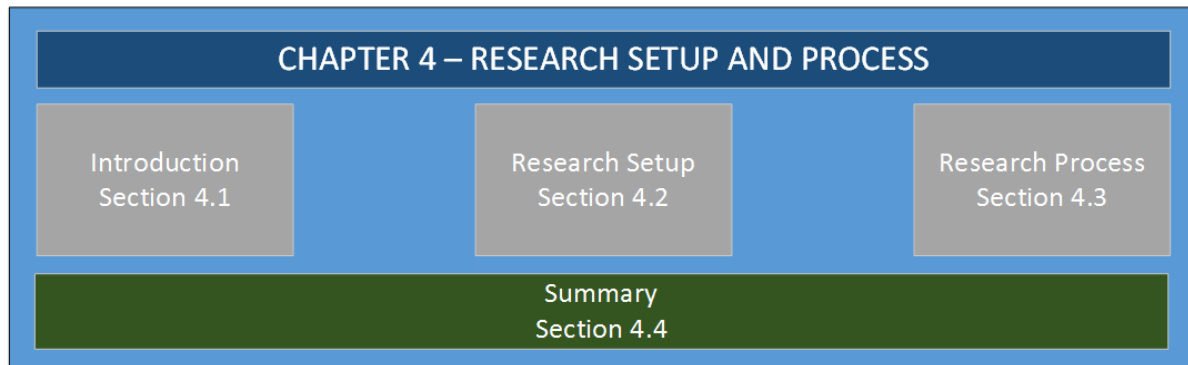

Figure 28 - Using themes to develop the IS ownership framework

275

4.4 Summary

Chapter 4 described the setup of the research in section 4.2. The research process was described in section 4.3. The chapter provided an analysis of the responses received during interviews to acquire a better understanding of IS ownership in an organisation. Semi-structured interviews were conducted with executive managers and business leaders in a financial services organisation.

In the chapter the process of coding is discussed. Audio recordings of the interviews were transcribed and coding of the data was done in Atlas.ti. An initial number of 297 codes from 12 primary documents were identified by coding close to the data. Five additional coding iterations reduced the codes to nine categories and then to six themes of codes that are pervasive in literature, organisational artefacts and the interviews with staff members of the organisation.

The categories of codes were analysed in this chapter, using excerpts from the interviews with executive managers and IS owners in the organisation. Using the nine categories of codes found, an analysis of data with respect to the codes was done in Chapter 4. The results of the analysis are compared with the literature from Chapter 2 and information acquired from organisational artefacts.

The output of the analysis of the 9 categories of code is 6 themes that are pervasive through the responses required from the interviews. The themes provided a picture of what IS ownership entails, why it exists, who should have IS ownership and how IS ownership is established and applied in the organisation and is depicted in Figure 29:

276

6 Themes of IS ownership	Theme 1 Governance and Management
	Theme 2 Organisational perspective of IS ownership and IS ownership from the IS owner's point of view
	Theme 3 Why individuals and the organisation need IS ownership
	Theme 4 Who should have the ownership of an IS
	Theme 5 How should IS ownership be established and managed in the organisation
	Theme 6 The relationships that are created between IS ownership role-players

Figure 29 - Six pervasive themes in understanding IS ownership

The output of the six themes is explained in Chapter 5 of the study. Chapter 5 focuses on the development of the framework that can serve to create an understanding of IS ownership in the organisation.

Chapter 5
Information Systems Ownership Framework

CHAPTER 5 – AN IS OWNERSHIP FRAMEWORK

Introduction
Section 5.1

Discussing the themes
of IS ownership
Section 5.2

Constructing the IS
ownership framework
Section 5.3

Describing the IS
ownership framework
Section 5.4

Applying the
IS ownership framework
Section 5.5

Verification of the study
Section 5.6

Summary
Section 5.7

CHAPTER 5 – AN IS OWNERSHIP FRAMEWORK

The purpose of this chapter is to suggest a framework for IS ownership through the induction of data acquired from literature, organisational artefacts of a financial services organisation and data acquired through interviews with staff members of the financial services organisation.

Addressing the research problem of "*Many business leaders are reluctant to take ownership of the IS in their business areas, missing the opportunity to utilise IS optimally as resource in the business organisation*", a number of questions were raised about the phenomenon of IS ownership (Chapter 1, section 1.4). By addressing the questions in Table 1 (Chapter 1), a better understanding of IS ownership could be acquired.

An overview of the research questions and the sections wherein they are discussed are provided in Table 17.

Table 17 - Research questions

High-level question	Low-level questions	Reason for question
Question 1: What is IS ownership? (See Chapter 2, section 2.4 and section 5.2.2)	• What are business leaders' perceptions of IS ownership? • To what extent do business leaders perceive themselves to be responsible and accountable for the IS in their business areas? • How do business leaders experience IS ownership? • What are business leaders' concepts of IS?	Answering this question will render a common understanding of IS ownership in the organisation.
Question 2: Why do we need IS ownership in the organisation? (See Chapter 2, section 2.4.6.3, section 2.4.8.6 and section 5.2.3)	• From an organisational perspective: Why should IS have owners? • From an individual perspective: Why should I accept or develop ownership?	Answering this question will provide a rationale for IS ownership.

High-level question	Low-level questions	Reason for question
Question 3: Who should own the IS in the organisation? (See Chapter 2, section 2.4.1 and section 5.2.4	• Which business area is best suited to leverage IS in pursuit of business objectives? • Which individual (or group) is best placed to optimise the leveraging of the IS in the organisation?	Answering this question will assist in identifying the best area and candidates for placing the IS in the organisation.
Question 4: Why are some business leaders hesitant to take IS ownership? (See section 5.5.3)	• What are the consequences if business leaders do not take ownership of the IS in their business environments? • What can the organisation do to assist business leaders to take IS ownership? • What are the contributors that promote or erode IS ownership?	Answering this question will assist to understand business's reluctance to "own" it's IS. This information is necessary to create a point of departure to create a common understanding of factors that cause IS ownership to remain in the business environment, or revert to the IS department
Question 5: How should the organisation structure the IS-business alliance? (See section 5.4.3)	• How should the IS support be structured to be compatible with the relevant IS-ownership structure? • How are decisions made with respect to the IS ownership structure? • What are owner-stakeholder responsibilities? • How should business retain the economies of scale, present in centralised ICT services, in the areas where IS ownership resides with the business? • How should standardisation and good practices be applied in the areas where IS ownership resides with the business?	It is imperative that the roles and responsibilities for IS owned by the business be clear and unambiguous. This will ensure that ownership is tied down to specific stakeholders.
Question 6: How should IS ownership be managed to be a positive resource in the organisation? (See section 5.2.5)	• How should IS ownership be constructed? • How should IS ownership be managed?	This question addresses how the application of an IS in the organisation can be optimised.

Questions 1, 2 and 3 in Table 17 are addressed in Chapter 2 and questions 4, 5 and 6 are addressed in Chapter 5. In section 5.5.3 the focus is on the reasons why some business leaders are hesitant to take IS ownership (Question 4), in section 5.4.3 the focus is on the structure of the IS-business alliance and section 5.4.6 focuses on how IS ownership should be managed as a resource in the organisation. Addressing the questions is depicted in Figure 30:
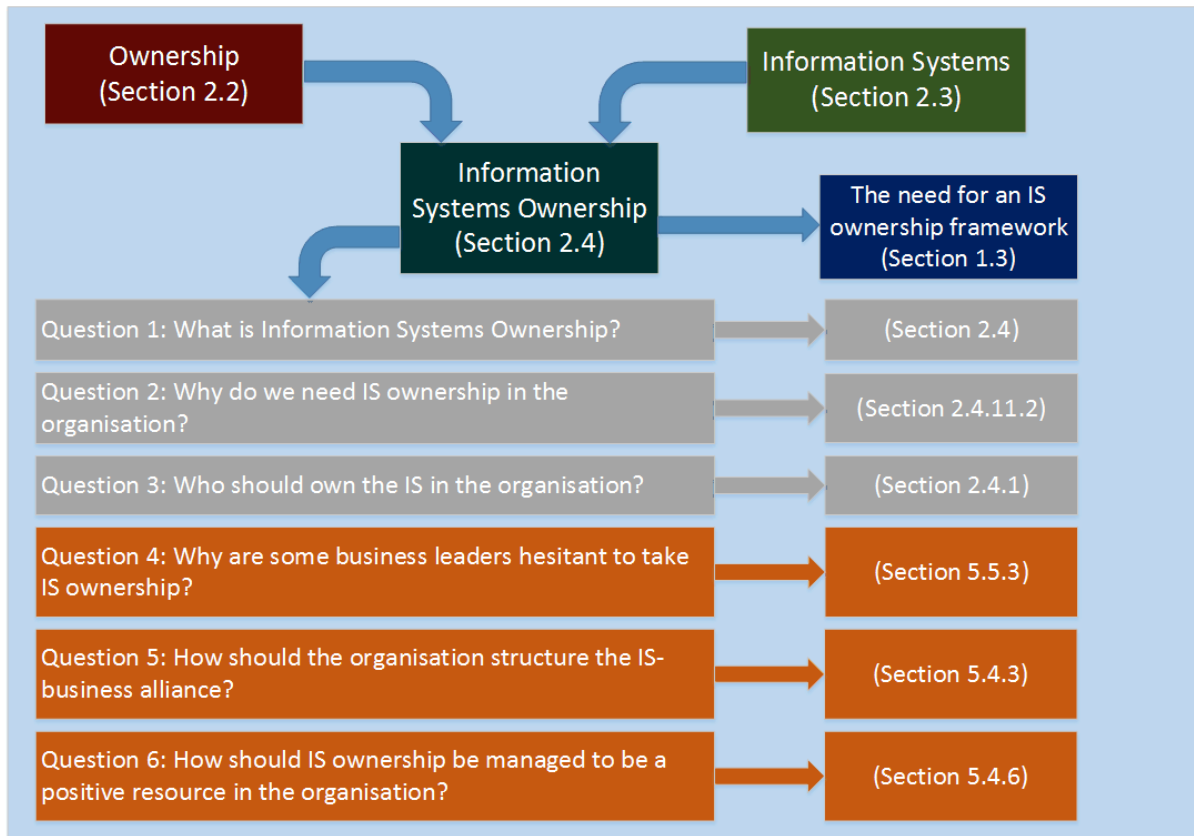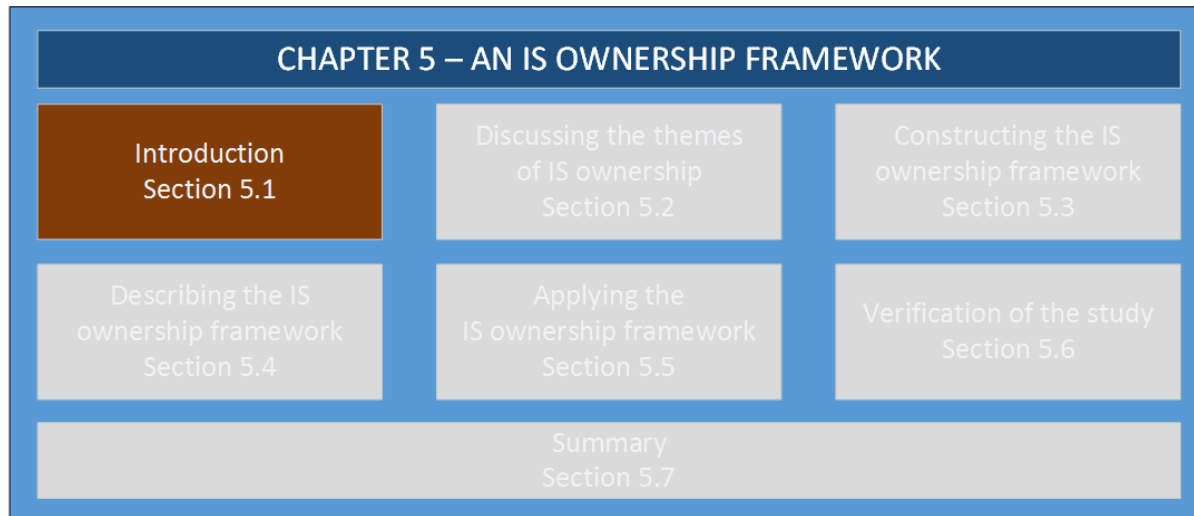

Figure 30 - Towards developing an understanding of IS ownership (part 2)

5.1 Introduction

CHAPTER 5 – AN IS OWNERSHIP FRAMEWORK

Introduction Section 5.1	Discussing the themes of IS ownership Section 5.2	Constructing the IS ownership framework Section 5.3
Describing the IS ownership framework Section 5.4	Applying the IS ownership framework Section 5.5	Verification of the study Section 5.6
Summary Section 5.7		

Ownership, according to Mackin (1995) and Pierce et al. (2003), is a complex phenomenon. This study was undertaken to create an understanding of IS ownership in a financial services organisation.

In Chapter 2, a literature study was conducted to acquire a basic understanding of ownership in general and IS ownership in particular. To acquire a better understanding of IS ownership in the organisation, IS owners and executive managers of a financial services organisation were interviewed. Chapter 4 of this study documents the analysis of the data that was acquired. Five iterations of coding interview data with Atlas.ti rendered nine categories of codes, while the final iteration (a sixth iteration) rendered six themes that were pervasive in the data. The six iterations of coding were done in three phases.

This chapter investigates the phenomenon of IS ownership from the viewpoints of organisational executive managers as well as that from IS owners. Executive managers and IS owners had different perceptions of what IS ownership is, why IS ownership exists, who should own the IS and what expectations are associated with owning an IS. In this chapter a framework is developed to understand IS ownership and guide the organisation to govern and manage IS ownership in the organisation. The construction of a framework for understanding IS ownership in the organisation forms the basis of this chapter. The development process of the framework for understanding IS ownership is summarised in Figure 31. Using the six themes

282

acquired from the three phases of the inductive coding process, an initial framework was introduced. The framework was then refined by arranging the themes in a sequential manner, rendering the elements of the construct of IS ownership and the institutionalisation and application of IS ownership in the organisation. The framework's applicability in the organisation was verified through a proof of concept. The framework was presented to staff members of the financial services organisation and a focus group session was conducted to acquire the opinions of participants related to the usability and the applicability of the framework in the organisation. The verification process is discussed in section 5.6.
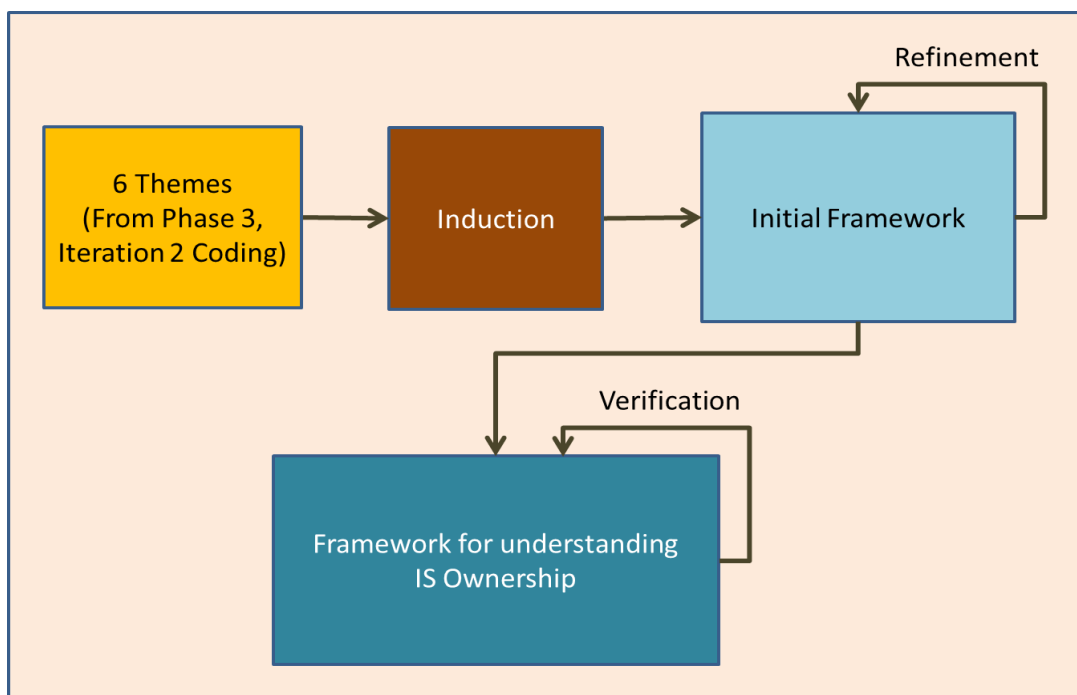

Figure 31 - Framework Development

5.2 Discussing the themes of IS ownership

This section discusses the six themes that emerged from the inductive coding in more detail (section 4.3.3.3.2 in Chapter 4).

Theme 1 discusses governance and management with respect to the phenomenon of IS ownership in the organisation.

5.2.1   Theme 1: Governance and management

	Theme 1 Governance and Management
6 Themes of IS ownership	Theme 2 Organisational perspective of IS ownership and IS ownership from the IS owner's point of view
	Theme 3 Why individuals and the organisation need IS ownership
	Theme 4 Who should have the ownership of an IS
	Theme 5 How should IS ownership be established and managed in the organisation
	Theme 6 The relationships that are created between IS ownership role-players

The theme of governance and management is pervasive in the construct, institutionalisation and application of IS ownership. Studying the theme of governance and management answers the questions why IS ownership is needed in section 5.2.3, what IS ownership entails in section 5.2.2 and who should own the IS in section 5.2.4 of this chapter. Governance guides the executive managers and the IS owners to create value for the organisation's stakeholders. Governance is discussed in more detail in Chapter 2, section 2.4.6.3 and Chapter 4, section 4.3.3.3.1.6.

Three governance roles are assigned to executive managers leading the organisation. The board expects that executive managers should evaluate the current and future state of the IT of the organisation, formulate and devise policies and strategic plans and then monitor that the business leaders execute the plans and comply with the policies of the organisation (De Haes et al., 2013; Institute of Directors, 2009; ISACA, 2012a, 2012b; IS ownership and IEC, 2008).

Where executive managers are responsible to formulate the policies and strategic plans of the organisation, business leaders are responsible to execute these plans (De Haes et al., 2013; Institute of Directors, 2009; ISACA, 2012a, 2012b; IS ownership and IEC, 2008).

Governance also includes other IS ownership role-players. The role of the IS department is to be the custodian of the IS in the organisation. Responsibilities of the

285

IS department require that business is protected against risks related to using the IS in the organisation, resources are available to support and maintain the IS, data is protected against loss, corruption and theft and that the organisation's IS spending remains at acceptable levels (ISACA, 2012a).

5.2.1.1 Strategic Planning

In exercising governance, executive managers are involved in formulating strategic plans which business leaders have to execute. Strategic plans are based on the gaps between the current and future state of the organisation. The organisation identifies areas that need to change or evolve to a preferred future state (IS ownership and IEC, 2008). The means for the business areas to change are documented in the business areas' roadmap. The roadmap is informed by the organisational strategies, the organisational IT plan and segmented enterprise architectures that informs the lower-level business strategic plan (The Open Group, 2011).

5.2.1.2 Business plans

Executive management hands the developed organisational strategic plan to business leaders that have the responsibility to execute the strategic plan. Strategic plans focus on long-term change in the organisation. Business leaders will internalise the strategic plan of the organisation, formulate a plan for the business area and explain the plan to the staff of the business area. The operational plan of the business area is informed by the gaps between the current and desired future state of the business, the availability of resources and the IT plan of the organisation. Operational plans are medium in term and are focused at tactical and operational levels of business activities. Enterprise architects can assist the business to create an IS roadmap to address the gaps between the current and future state of the business environment.

Once an IS has been assigned to business leaders, they will determine how best they can mobilise the resources and authority to their avail to leverage the IS in pursuit of the objectives identified in the plans of the business unit.

286

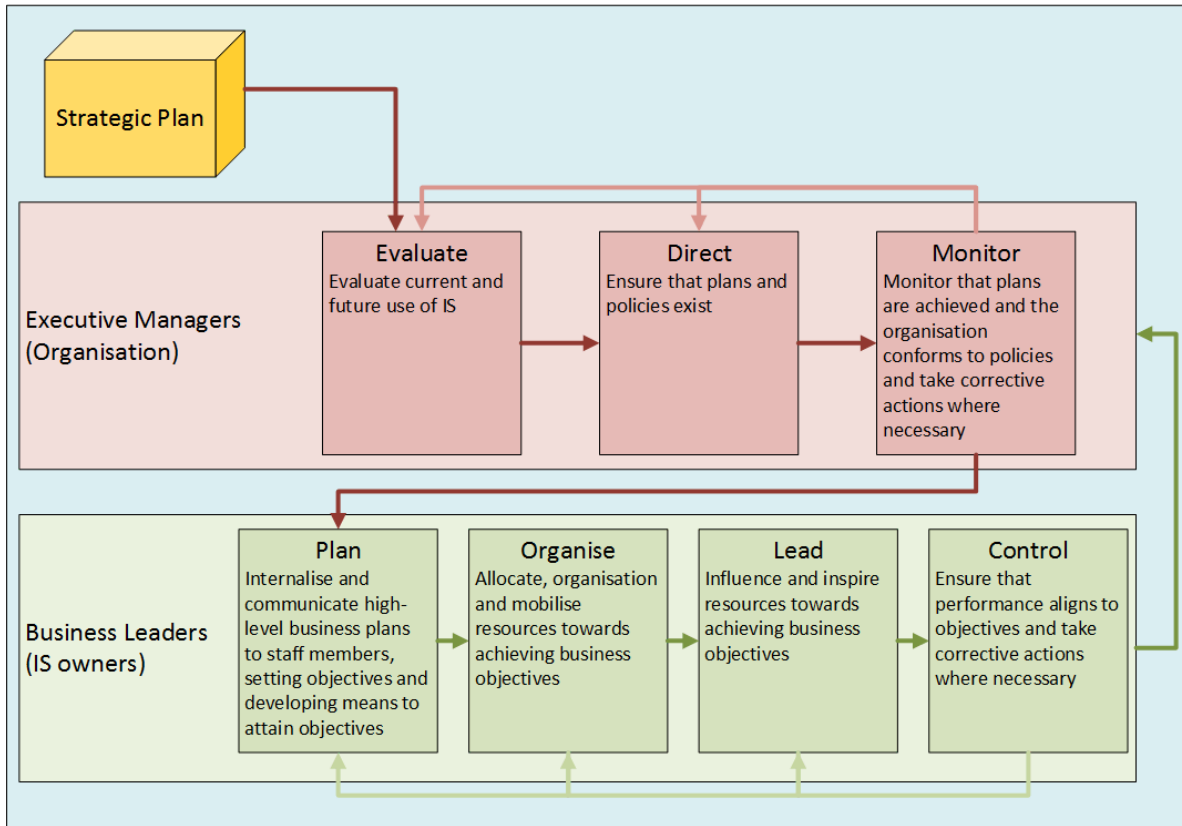A summary of governance and management is provided in Figure 32.

Figure 32 - Theme 1: Governance and Management

Theme 2, describing the different perspectives of role-players with respect to IS ownership, is discussed next.

5.2.2 Theme 2: Organisational perspective of IS ownership and IS ownership from the IS owner's point of view

6 Themes of IS ownership	Theme 1 Governance and Management
	Theme 2 Organisational perspective of IS ownership and IS ownership from the IS owner's point of view
	Theme 3 Why individuals and the organisation need IS ownership
	Theme 4 Who should have the ownership of an IS
	Theme 5 How should IS ownership be established and managed in the organisation
	Theme 6 The relationships that are created between IS ownership role-players

The question of "what is IS ownership" is influenced by the individual's conception of an IS and what the mandate of the IS owner with respect to IS ownership entails. The concept of IS ownership as understood from the viewpoint of the executive manager may differ from that of the IS owner. Executive managers may believe that the business leader is adequately empowered to be an IS owner, while the business leader may expect to have more control of the IS, or that IS ownership should reside elsewhere. This section discusses the concept of IS ownership as described in the literature, as well as the responses from interviewees discussed in Chapter 4.

Interviewees responded differently when asked what their concepts of IS ownership entail. One popular response was that IS ownership pertains to "looking after the data" in the business area. To ensure that executive managers and IS owners do not base their expectations on their own interpretation of IS ownership and IS, these concepts have to be defined in an unambiguous and uniform manner. Employees should have a clear understanding of the composition of IS in the organisation. A uniform and unambiguous definition and explanation of what IS ownership is, starts by defining an IS.

The definition of an IS provided in Chapter 2, section 2.3 implies that an IS comprises a number of interrelated elements which should be dealt with in a holistic manner. The

way that individuals conceptualise IS is discussed in Chapter 2, section 2.3.1. By having a single definition and understanding of an IS in the organisation, IS would be viewed in the same, unambiguous manner throughout the organisation.

The relationship between the IS owner and the IS as per the definition of an IS ownership in Chapter 2, section 2.4 is influenced by the type of ownership that the IS owner has. Two prominent types of IS ownership, namely formal and psychological ownership exist. The next section discusses the two types of ownership when owning an IS.

5.2.2.1 Formal and psychological ownership

Formal ownership pertains to the assignment of an IS to a business leader having received the necessary authority to make certain decisions related to the acquisition, application and upkeep of the IS in the business environment. Assignment of IS ownership is formalised in the policies of the organisation and ownership is acknowledged by the executive managers and employees of the organisation. Individuals that have been assigned IS ownership are empowered to exercise control over the IS and are made responsible to achieve certain business-related objectives by effective and efficient application of the IS.

Assigning IS ownership to a business leader does not imply that the IS owner will "feel" having ownership of the IS. Over time, IS owners may develop a certain connection with the IS that they own, indicating that the IS owner has developed psychological ownership of the IS. In some cases, IS owners may not feel that they own the IS at all, reducing the possibility to optimally leverage the IS. The combination of formal and psychological ownership residing in an IS owner is stronger than IS owners having only formal IS ownership.

> *Executive managers should realise that assigning IS ownership to an individual does not necessarily imply that the IS owner will experience feelings of ownership.*

If IS owners can be motivated to develop psychological ownership, or the conditions wherein the IS ownership is taking place promotes the development of psychological ownership, the possibility that the IS owner will apply the IS in an optimal manner is increased. The optimal application of an IS, in turn, enhances the possibility that the IS owner can achieve his business objectives.

Individuals desire to be efficacious. Given suitable authority, the IS owner is allowed to make decisions relating to the IS and make an impact on the business environment where the IS is used. The individual has the opportunity to interact with the IS and can become more efficient in using it, improving the possibilities of achieving his business objectives applying the IS in innovative manners (based on Pierce, Jussila and Cummings, 2009). Controlling a target and improving the environment provides satisfaction and pleasure to the individual, which in turn motivates the individual to take possession of the target (Furby, 1978; Olckers and Du Plessis, 2012; Pierce et al., 2001).

Pierce et al. (2009) describe the motive for effectance as the urge of an individual to interact effectively with the environment. Apart from being efficacious and being allowed to interact more effectively with the IS environment, individuals can express themselves and project the image that they want others to perceive them (self-identity) (Avey et al., 2009; Pierce et al., 2009). IS owners are allowed to find themselves a "home" in the organisation, which may be in the form of status or being part of a "selected group". Psychological ownership cannot be "given" or "taken", as it depends on the relationship between the IS owner and the IS that need to develop over time.

It was noticeable that not all IS owners in the organisation wanted to be IS owners. Some IS owners argued that the IS was "too technical" (R4) that "users did not want IS ownership because the IS did not afford them control" (R3), or that the IS was "too complicated" (R1). These IS owners had formal ownership of the IS, but did not manage or want to develop psychological ownership of the IS.

> *Organisations may benefit if executive managers positively influence the individual and the environment to promote the development of psychological ownership with IS owners.*

Motives for psychological ownership were identified as the desire for efficacy and effectance, to create a self-identity and to have a place in the organisation (Pierce et al., 2001).

Empowering IS owners to control, use and become knowledgeable about the IS, allow for IS owners to create feelings of ownership (Ballantyne, 2003; Heino and Jussila, 2010; Pierce and Jussila, 2010; Pierce et al., 2009).

> *For psychological ownership to develop and to satisfy the needs of the IS owner, IS owners need to be empowered to yield control over the IS to enable efficacy and effectance, create a self-identity and to find a place in the organisation.*

5.2.2.2 A matter of perspectives

A difference in the concept of IS ownership exists between executive managers and IS owners. Executive managers view IS as an asset in the organisation that needs to be leveraged to achieve business objectives (R3; R7; R10). The opinions of executive managers in the financial services organisation provide evidence for the opinions found in the literature that IS are assets that need to be leveraged in pursuit of organisational objectives (Clarke, 2010; Drnevich and Croson, 2013; ISACA, 2012b). Executive managers are also concerned about the impact of an IS and the integration between systems in the wider organisation. The following opinion of an executive manager is relevant to integration between IS: "each one of these [IS] can slot in seamlessly so that it works and that the rules are there so that when you change this, you know what the effect will be on something else" (R7).

291

> *The organisation has the perspective that an IS is an asset that must be integrated seamlessly into the organisation and optimally utilised towards achieving organisational objectives.*

The focus of the interviewees was more localised when IS ownership was discussed with business leaders that were assigned ownership of one or more IS. The matter was made clear by an IS owner that aspired "to improve the business processes and uses of systems in [the business area]" (R4). A second focus is on the personal self: "I would do everything to ensure that it gets to a level where it could be the envy of others…" (R10), taking pride in his role as IS owner. IS owners believe that owning an IS can be satisfying, provide you with status and enable you to perform better in your job.

> *Individuals have the perspective that IS ownership is a mechanism to achieve their business and personal objectives.*

Holding different concepts and perspectives of the same entities complicate the utilisation and management of those entities, which in the case of this study, pertain to IS and IS ownership.

> *To ensure that executive managers, IS owners and other employees understand what IS ownership is, the organisation needs to define and communicate what an IS and what IS ownership is.*

An organisation-wide definition of an IS and IS ownership serves as the starting point for understanding IS ownership in the organisation.

A summary of Theme 2 is provided in Figure 33 - Theme 2: Different perspectives of IS and IS ownership.
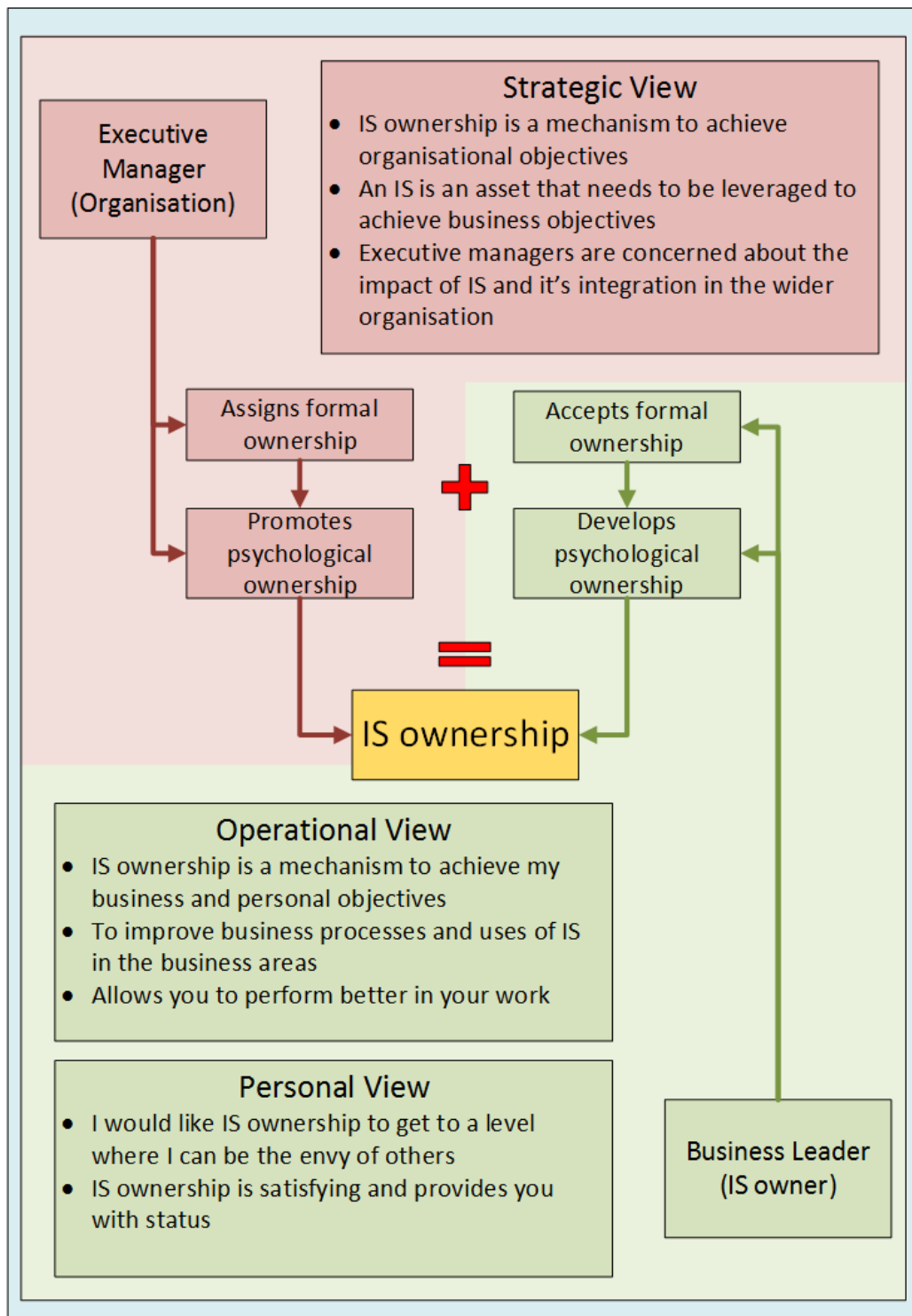
292

Figure 33 - Theme 2: Different perspectives of IS and IS ownership

The next section describes why IS ownership is needed in the organisation.

5.2.3 Theme 3: Why individuals and the organisation need IS ownership

6 Themes of IS ownership	**Theme 1** Governance and Management
	Theme 2 Organisational perspective of IS ownership and IS ownership from the IS owner's point of view
	Theme 3 Why individuals and the organisation need IS ownership
	Theme 4 Who should have the ownership of an IS
	Theme 5 How should IS ownership be established and managed in the organisation
	Theme 6 The relationships that are created between IS ownership role-players

Answering the question of why IS ownership is needed, explains the rationale for IS ownership. This section discusses the rationale for IS ownership from the perspectives of the organisation and of the IS owners. Being aware of the different perspectives of the concepts of IS and IS ownership, the justification for IS ownership should be looked at from an organisational and an individual perspective. IS are described as strategic assets in the organisation that are essential for business success and that the optimal application of IS is needed to satisfy organisational expectations. Business leaders may ask why they, as business leaders, have to have IS ownership and why should the IS ownership not reside elsewhere (such as in the IS department). The following sections discuss why organisations and business leaders need IS ownership.

5.2.3.1 Why do organisations need owners for their IS?

Governance directs organisations to have owners for their assets (De Haes et al., 2013; ISACA, 2012b; Weill and Ross, 2009). Governance dictates that assets require resources that are responsible to leverage the assets in pursuit of organisational objectives (Funchall, 2007; ISACA, 2012b). An IS is an organisational asset and consequently requires an owner (De Haes et al., 2013; Funchall, 2007; ISACA, 2012b; Weill and Ross, 2009). The owner of an IS is responsible to care for the IS during its lifecycle. With the delegation of ownership, the owner also receives the authority to

294

make certain decisions and is then held accountable for the decisions made. Exercising ownership therefore requires that the owner leverages the asset in an appropriate manner pursuing business objectives. Leveraging assets optimally may require the owner to participate in partnerships, collaboration exercises, resolving problems and creating synergy (Avital and Vandenbosch, 2000).

> *Organisations need IS ownership because an IS is an organisational asset which requires an owner that cares for and leverages the asset optimally to create value for the organisation.*

5.2.3.2 Why do individuals need IS ownership?

Executive managers identify individuals with specific attributes to become owners of IS that are, or will be deployed in the business environment. The individuals (now IS owners) are business leaders that are responsible to appropriate the IS with the intention to successfully achieve business objectives that support higher-level organisational objectives. The IS owners therefore received the opportunity to leverage the IS towards achieving business and organisational objectives. Being involved in the application of the IS, the IS owner may develop feelings of ownership, or psychological ownership, towards the IS.

Feelings of ownership are satisfying and creates a commitment of the individuals to the target being owned (Avey et al., 2009; Pierce et al., 2001; Van Dyne and Pierce, 2004). Business leaders would be motivated to take IS ownership if they have control of the IS, are allowed to become involved in applying the IS and are empowered to leverage the target towards successfully reaching business objectives.

IS owners, as the business leaders who are responsible to achieve their business objectives, are in the best position to apply their business skills to leverage the IS in pursuit of their business objectives. Therefore, by accepting the assignment of IS ownership, the IS owner receives formal ownership of the IS, affording them the opportunity to leverage the IS towards achieving business objectives. Through the development of psychological ownership of the IS, they become committed to

appropriate the IS optimally, enabling them to reach their business objectives and satisfy their urge for self-efficacy, developing a self-identity and finding a home in the organisation.

> *IS owners want to satisfy their need to make an impact in the organisation, interact with their environment, create a self-identity and find a place or home in the organisation. Through this satisfaction of need, IS ownership provides the IS owner with an opportunity to pursue their business and personal objectives, such as efficiency and effectiveness, status, gratification and pride.*

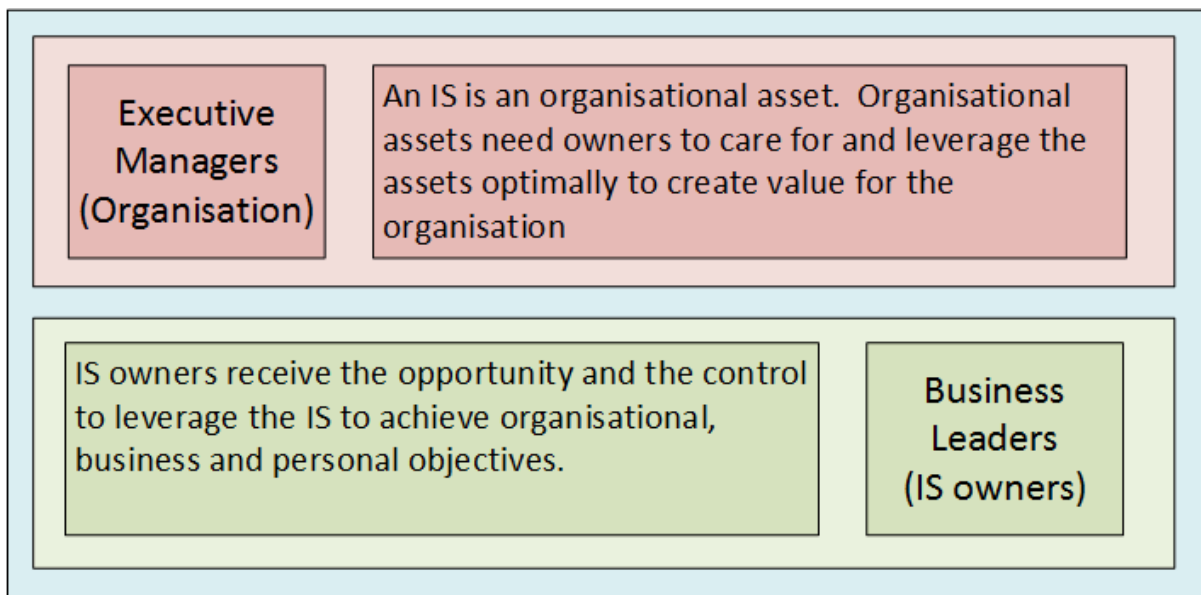A summary of Theme 3 is provided in Figure 34.

Figure 34 - Theme 3: The rationale for IS ownership

5.2.4 Theme 4: Who should have the ownership of an IS?

6 Themes of IS ownership	**Theme 1** Governance and Management
	Theme 2 Organisational perspective of IS ownership and IS ownership from the IS owner's point of view
	Theme 3 Why individuals and the organisation need IS ownership
	Theme 4 Who should have the ownership of an IS
	Theme 5 How should IS ownership be established and managed in the organisation
	Theme 6 The relationships that are created between IS ownership role-players

Understanding the roles of the stakeholders in IS ownership can assist to enable collaboration between the stakeholders to leverage IS optimally. Understanding that an IS was identified, acquired, implemented and is maintained and supported as part of a collaborative effort between multiple role-players during different times of its life-cycle, the IS owner does not have to be concerned about the IS being "too technical" to own. The main contribution from the part of the IS owner revolves around mobilising resources, the optimal application of the IS in the business environment, using it innovatively and identifying and nurturing champions for the IS.

The theme of the roles and responsibilities is discussed in section 5.2.5.1.4 of this chapter and can be viewed with the placement of IS ownership, which is discussed in the next section. The question of "who should have IS ownership" is addressed when the placing of IS ownership is discussed in this section.

Executive managers are responsible to create value for their stakeholders. Utilising IS in an optimal and innovative manner can provide the organisation with a competitive advantage. Failure of employees to create value may result in a failure of the organisation. Businesses should leverage their IS to achieve their objectives. Lohmeyer et al. (2002) argue that employees will focus to achieve objectives of the organisation wherein they reside. This argument has a significant impact on where IS ownership should be placed.

297

© University of Pretoria

Executive managers are held accountable for the performance of the business areas under their control. It is in the best interest of the organisation and the executive managers if the business areas are equipped and empowered to achieve their objectives in support of the objectives of the organisation. By identifying the business areas that are in the best position to optimally leverage organisational assets, the possibility that the business will succeed to achieve business objectives are maximised.

Executive managers identify business areas that are best fit to be IS owners. Executive managers take the organisational structure, the business knowledge, skills and authority built into the functions of the business areas, into account when selecting a suitable business area for IS ownership. The identified areas are assigned the responsibility to achieve specific organisational objectives.

Individuals are identified as IS owners based on their roles and the structure of the business unit. IS owners accepting the responsibility and accountability for the IS, increase the possibility of innovatively applying the IS in the business environment. IS ownership is best placed in the business environment where the IS is utilised in pursuit of business objectives. If the IS was not assigned to an owner that resides in the business environment, the IS owner (residing in another department such as a support department) may have different objectives than that of the business environment and continue to pursue the objectives of his own department (Lohmeyer et al., 2002). IS-staff having IS ownership will typically focus on the capacity and availability of the IS, while neglecting the optimisation of the IS to achieve business goals.

Simply assigning IS ownership to a business unit or an individual and expecting successful appropriation of the IS is not a clear-cut case. IS ownership may be seized by someone outside the business environment. For example, having the responsibility to guide the business in the acquisition of the IS, members of the IS department may develop a territorial relationship with the IS where they have been involved in and may view the IS as "ours". Perceivably "seizing" and then not relinquishing IS ownership to the business unit may cause the IS department to make unilateral decisions, believing that they and not the business should be satisfied with the outcome of the deliverable of the acquisition project. Decision-making that excludes the business unit

may result in problems when delivering the IS to the business. Unless the business was actively involved in the specification of the IS and agreed with the deviations from the initial specifications, the business areas may not be satisfied to an adequate degree with the delivered product.

It is therefore crucial that business acquires the IS ownership that they are entitled to, as was expressed by one IS owner and executive manager: "business should ensure that they get solutions that enable their business processes" (R10). It is the obligation of business leaders to ensure that they have the appropriate IS in place, that the IS performs according to the business's requirements and that the IS is appropriated in an optimal way. The IS owner, representing the business unit should mobilise the resources to his avail to enable optimal application of the IS.

> IS ownership should be placed with the business, with business leaders accepting IS ownership of the IS in their business environment.

5.2.4.1 Identifying the business unit responsible for the IS

In the financial services organisation, assignment of an IS is based on hierarchical structures and the functional activities of the business areas that were identified to fill strategic gaps. Executive managers, who may also be the heads of the business department that will use the IS, delegate the ownership of the IS to an individual or group that structurally and functionally fit the role in the business area best. The business unit should have the capacity and the capability to leverage the IS in pursuit of organisational objectives.

5.2.4.2 Identifying the individual responsible for the IS

Executive managers follow the same principles to identify IS owners as the principles to identify business units that are earmarked for owning an IS. Selection of business leaders to act as IS owners in the financial services organisation is based on the structure of the business unit and the role of the individual (R10). Executive managers identify whether the individual has the capacity and the capability to own a specific IS and then assign the IS to the identified business leader.

299

Personal attributes may play a significant role in the level of ownership that the individual has. Selecting an IS owner that "fits" the IS may be to the benefit of the individual as well as for the organisation. IS that are complex in nature may be owned "better" by individuals that have the ability to address challenges, such as individuals with high levels of self-efficacy and internal locus of control (Chapter 4, section 4.3.3.3.1.9). IS requiring high levels of stability may benefit from IS owners that can develop a moderate level of territoriality, as it is a manner of communicating that "I am the owner and I am willing to take responsibility to leverage the IS in an optimal manner in the organisation."

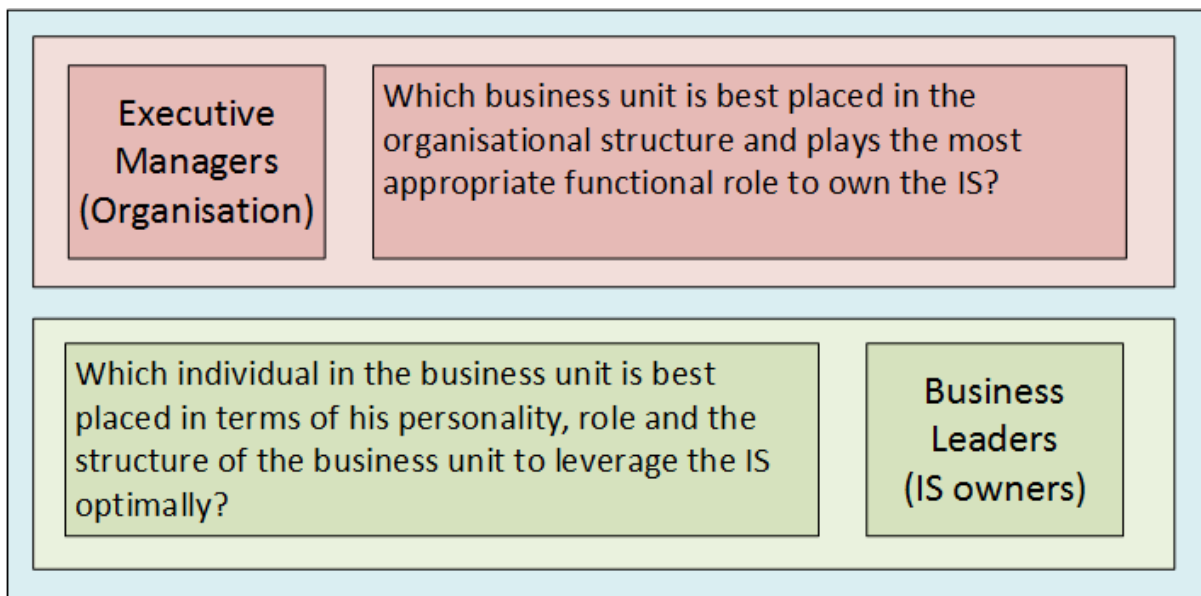A summary of Theme 4 is provided in Figure 35.

Figure 35 - Theme 4: The placement of IS ownership

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

5.2.5 Theme 5: How should IS ownership be established and managed in the organisation?

6 Themes of IS ownership	Theme 1 Governance and Management
	Theme 2 Organisational perspective of IS ownership and IS ownership from the IS owner's point of view
	Theme 3 Why individuals and the organisation need IS ownership
	Theme 4 Who should have the ownership of an IS
	Theme 5 How should IS ownership be established and managed in the organisation
	Theme 6 The relationships that are created between IS ownership role-players

Having different conceptions of IS ownership, asking why IS ownership is needed in the organisation and where the placing of IS ownership should be, is addressed in the construct of IS ownership. The question of how IS ownership is institutionalised and applied in the organisation is addressed in Theme 5.

5.2.5.1 Establishing IS ownership

The establishment of IS ownership with business leaders indirectly commences with the identification of a gap between the present and the preferred state of the organisation. In the case where it was identified that the gap is to be filled with the assistance of an IS, a suitable business unit is selected where the IS is placed. Likewise, the executive manager involved in the selected business unit decides which individual should have ownership of the IS. Choices are influenced by the structure of the organisation, the business unit and the roles of the candidate. Once an IS owner has been identified, an ownership agreement is negotiated with the IS owner.

5.2.5.1.1 Assignment of the IS ownership

Executive managers are responsible to ensure that resources are available to leverage the IS in the organisation (Ross and Weill, 2002). One of the required resources is the IS owner that has the authority, capacity and responsibility to care for

301

the IS and to mobilise resources to leverage the IS. Executive managers are also responsible that IS owners, in turn, have the resources available to sustain the levels of support and maintenance ability required to achieve business objectives.

Individuals are identified by executive managers to be owners of one or more IS in the business environment. An executive manager in the financial services organisation stated that IS ownership assignment is based on the business's structure and the role that the individuals play in the structure (R10). These individuals are then held responsible to attain the objectives assigned to them when IS ownership is assigned. The objectives of the IS ownership may be included in the individual's performance plan. IS owners' performances are measured against the key performance areas in their performance plans.

5.2.5.1.2 Assignment agreement

Assigning an IS is best done through an assignment agreement, where the authority needed to make appropriate levels of decisions are delegated to the IS owner (Aghion and Tirole, 1997; Cook and Rice, 2003; Pierce et al., 2003). The agreement also serves to guide the relationship between the executive managers and the IS owner, through the explanation of the rights, obligations and the roles of parties in the agreement. Using the rights and obligations as guidance, the executive managers agree to the key performance indicators that will be measured to determine the level of service attained by the IS owner. Rewards may be based on the success that the IS owner achieved with respect to the agreed-upon goals set by the parties.

Agreements which are fair to the IS owner as well as to the organisation are required to ensure that the relationship enabled by the agreement is sustainable. The perceived fairness of the agreement is influenced by the powers yielded by either or both of the parties to the agreement (Cook and Rice, 2003; Cropanzano and Mitchell, 2005; French and Raven, 1959). Power bases may relate to knowledge, information, position, or other factors placing one party at an advantage above another (French and Raven, 1959).

Formal ownership in the financial services organisation wherein the study took place is based on the organisational structure and the role wherein the potential owner of the IS operates (R10; R7). Individuals that are deemed suitable for the assignment of

IS ownership are then assigned the authority and the responsibility to act in the role of IS owner. The topic of contracting IS ownership as it is experienced in the financial services organisation is discussed in Chapter 4, section 4.3.3.3.1.2.

5.2.5.1.3 Rights and obligations

The organisation and owners may benefit optimally from an IS when the IS owners take psychological ownership of the IS. Executive managers assigning IS ownership to business leaders and business leaders receiving IS ownership, expect that a balance of rights and obligations exists when agreeing to give and take ownership (Cook and Rice, 2003).

Ensuring that the agreed-upon rights and obligations are exercised during IS ownership, the parties involved in IS ownership such as the IS owner, the executive manager and the IS department need to fulfil their roles in the IS ownership relationship.

> *To be manageable, a balance of rights and obligations should be documented into a formal agreement that governs the IS ownership arrangement between the executive manager, the IS owner and other involved parties.*

An agreement with documented obligations assists role players to know what is expected from them and against what their performances are measured.

5.2.5.1.4 Assigning resources

Once IS ownership is assigned to a business leader, resources to support and maintain the IS need to be assigned. Executive managers should ensure that the necessary resources are available to enable the IS owner to successfully pursue the objectives of the business (Ross and Weill, 2002). Acquiring resources is on the agenda of executive managers and IS owners of the financial services organisation:

- "there is shortage of skills…" (R6)
- "there is no short-term solution for the support issue…" (R1)

- "I'll ensure that I will mobilise any support and resource… [the IS department's] role should be a one-stop shop that can provide technical expertise and support to our business area. They may not necessarily have to keep all the skills themselves, but they should make it available" (R10)

Business leaders should work collaboratively with executive managers to develop a resource strategy to build or acquire and retain scarce skills needed to adapt to the changing IS landscape (Chun and Mooney, 2009).

Following the statement of an executive manager (R10 above), business should be assured that a resource plan is available to guide sustainable maintenance and support for the leveraging of the IS in the business. Where it is too costly to build or have the skills in-house, the organisation may address support and maintenance problems by acquiring external skills which should then be managed by a designated member of the organisation.

> The organisation should have a strategic resource plan in place, directing the organisation in acquiring the necessary resources to support and maintain any IS deployed and used in the organisation.

5.2.5.1.5 Role players

Several role-players are involved in IS ownership. Executive managers are responsible to execute the mandate of the board to create value for the shareholders of the organisation. The role-players that feature most prominent in leveraging the IS in the business include:

- The executive manager who may also be the head of the department;
- The business leader who is the also the IS owner;
- The IS department;
- The decision-making structures represented by the steering committees.

Certain governance structures, including risk and information security structures, may exist outside the IS department as it is in the case of the financial services

organisation. Staff members belonging to these external structures, users of the IS and clients of the business environment, also influence the successful utilisation of IS in the organisation

Evidence from the interviews with IS owners and executive managers indicates that the roles of the stakeholders are not always clear. To assist organisations to clarify the obligations of role-players in IT governance, the COBIT 5 IT Governance framework (ISACA, 2012a) provides role-clarification matrices for different activities of IT governance. An adaptation of the matrices that focuses on the role-players in IS ownership is provided as

Table 15 in Chapter 4. By identifying the roles of the role-players in leveraging the IS, organisations can delegate the various responsibilities as are indicated in the attached RACI chart. The matter of role-clarification is discussed in Chapter4, section 4.3.3.3.1.4.

ISACA (2012b) suggests the use of RACI charts that break down the role, responsibilities and activities of IT Governance contributors. IS ownership role-players include the executive manager, the IS owner and the staff of the IS department. A clear understanding of the roles of the different stakeholders in IS ownership is required to ensure that good governance can be applied to owning an IS in the organisation.

Organisations should therefore ensure that:

> *Stakeholders in the ownership of an IS have clear and specific roles that serve to communicate, collaborate and to leverage the IS to create value in the organisation.*

5.2.5.1.6 Acquisition of IS

The point of entry of the IS owner into the life-cycle of the IS is an important factor that has an influence on the level of ownership that the IS owner may develop. The earlier the IS owner gets involved in the IS life-cycle, the higher the possibility of the IS owner

developing feelings of ownership. The IS owner should preferably be identified early enough to participate in the acquisition process of the IS.

Participating in the design of a system affords the IS owner to influence issues such as customisation, personalisation and ease of use. IS owners that were involved in the development of an IS are less critical about the system (Avey et al., 2009; Hou and Fan, 2010). Since the employee had significant exposure to the IS prior to operationalisation, operational overheads at the operationalisation stage are reduced.

5.2.5.1.7   Setting and monitoring goals

The financial services organisation in this study relies mostly on job holders to function without constant supervision. Job holders are expected to collaborate with their managers negotiating their task plans and performance contracts. Individuals that are involved in negotiating the terms of the service to be rendered, setting the goals, outputs and service standards, can cause the individual to feel that they have a say in designing their jobs. The possibility of developing psychological ownership is more prominent in individuals that are allowed to be involved in designing their own jobs than those not involved in their job definitions (Pierce et al., 2009).

Planning activities include the setting of goals that are aligned to the strategies of the business area and that of the larger organisation. Business leaders and executive managers collaborate to set goals for IS owners. IS owners should perceive the goals to be attainable, challenging and contributing value to the organisation. Executive managers need proof that these goals have been achieved and that the goals contribute to the achievement of business and organisational objectives.

Where IS owners have the authority over the resources that enable the IS in the organisation, they may also have the responsibility to manage personnel that uses the IS. An IS owner as a manager of resources is obliged to ensure that business objectives are achieved. By managing the activities of the resources that are involved in leveraging an IS, the IS owner influences the level to which business objectives are achieved. Planning, organising, leading and controlling the resources form part of the management activities of the IS owner (Mcfarlane, 2014). If the IS owner manages his activities to promote the development of psychological ownership in the resources

involved with the IS, he contributes to the possibility that business and organisational objectives can be met.

To identify the goals and the objectives to be attained in the business area, business leaders internalise the strategic plans of the organisation, communicate it to their staff and identify actions in the form of operational plans. Managers fulfil their mandates by planning initiatives and activities to address the operational plans, organise resources to execute the initiatives, lead the team performing the activities and then monitor and control the activities to ensure success (Mcfarlane, 2014). By identifying goals to address operational plans, the managers create a roadmap that guides the business area towards achieving the objectives of the business area.

Where the executive managers are to a considerable degree involved in the establishment of IS ownership in the organisation and the business areas, IS owners are responsible to manage the IS in their business environment. Following the processes of planning to optimise the utilisation of the IS in pursuit of business objectives, the IS owners need to mobilise assigned resources. The IS owners also need to ensure that supporting structures are in place and monitor the progress of the resources towards reaching the business objectives.

5.2.5.2 Expectations and outcomes

5.2.5.2.1 Expectations

Expected outcomes of IS ownership should be viewed from the organisation and the IS owner's perspectives. Organisational expectations are influenced by governance requiring that business areas use their assets to achieve business objectives.

Organisations assign IS ownership to IS owners, expecting from the IS owner to accept responsibility to create value for the organisation. Likewise, the IS owner expects to be empowered to make decisions, have relevant information about the IS and to share in the benefits of owning the IS (Bernerth and Walker, 2012; Chi and Han, 2008).

The expectations of the IS owner may not always be aligned with the expectations of the organisation and it may not be on the agenda of the executive manager to ensure that the IS owner's expectations are fulfilled. In the financial services organisation, it

is of concern that not all IS owners are aware of the expectations of the executive managers of the organisation as documented in Chapter 4, section 4.3.3.3.1.3. Expectations of all parties should be discernible and parties made aware of the other's expectations. The expectations should be included as rights and obligations in the IS ownership agreement (Pierce et al., 1991).

> To ensure that the parties' expectations are addressed in the IS ownership agreement, all parties' expectations should be documented as rights and obligations in the IS ownership agreement.

Executive managers and business leaders can be aided by specific business-segment EA processes to identify business specific IS-related expectations. It is important that the expectations of the organisation and that of the IS owners are aligned. A noticeable difference between organisational expectations and individual expectations exist in the financial services organisation as was documented in Chapter 4, section 4.3.3.3.1.3. Expectations of IS owners focus on the value of IS ownership in their business environments and their personal space, while organisational expectations focus at a higher level, relating to what IS ownership can provide to the organisation in pursuit of organisational objectives. Expectations that do not align to business objectives or unreasonable expectations may exist that may cause dissatisfaction when the outcomes of the IS ownership are reviewed.

As discussed in Chapter 2, section 2.4.5, expectations of parties need to be documented as rights and obligations in the IS ownership assignment agreement, since unwritten expectations are not enforceable (Pierce et al., 1991).

5.2.5.2.2 Outcomes

Outcomes of IS ownership are evaluated against the expectations of the role-players in the IS ownership relationship. Executive managers measure whether the business area has achieved its business objectives in support of the organisational objectives.

IS owners determine whether IS ownership afforded them to achieve their business and personal objectives.

> *Outcomes of IS ownership contracts are measured against the expectations of the IS ownership role-players.*

Benchmarking the outcomes of IS ownership against the parties' expectations, the parties may want to alter, or strengthen the relationship with respect to owning the IS. Where an imbalance between rights and ownership exists, for example where the IS owner did not perform according to expectations, or the IS ownership did not contribute towards the personal objectives of the individual, the parties may want to alter or end the IS ownership contract or relationship (Cook and Rice, 2003).

IS owners may be punished for underperformance, or IS owners may want to distance themselves from the IS that they own if they perceive that they contribute more to the IS ownership relationship than what they get out of the relationship.

> *Underperformance of one of the parties may require an adjustment of the IS ownership contract to restore the balance between rights and obligations related to IS ownership.*

Executive managers and IS owners may want to continue the IS ownership contract if the parties' expectations were met.

> *Where the role-players' expectations were met, the relationship between the executive manager and the IS owner is strengthened.*

The progress towards reaching business objectives, which in turn support the objectives of the bigger organisation, is reflected in the outcomes of IS ownership. The results of IS ownership over time are evaluated against the expectations of the

executive manager and the IS owner. If the progress has been satisfactory, the possibility that the objectives set out in the IS ownership agreement were achieved is good, while an amendment to the agreement may help the process where the progress is lagging. The outcomes of IS ownership are also discussed in Chapter 4, section 4.3.3.3.1.8.

Assignment of ownership of an IS to a business leader does not ensure that the business leader in the role of the IS owner will go beyond his job description to leverage optimal value from IS. The development of psychological ownership of the IS increases the possibility that the IS ownership may be used in an innovative and optimal manner, which in turn increases the possibility of attaining organisational objectives.

Factors emanating from the organisational environment, the assignment of IS ownership, the attributes of the IS and personal factors may have an influence on the development of psychological ownership of the IS by the IS owner. Psychological ownership develops in a person and cannot be "given" or "assigned" by another party. Executive managers, do however, have an influence on the factors that may promote IS ownership. Executive managers have a direct influence on the assignment of IS ownership.

Involving an IS owner at an early stage of acquiring the IS, bestowing the necessary controls upon the IS owner to efficaciously utilise the IS and to enter into a fair agreement with the IS owner, can promote the development of psychological ownership in the IS owner:

> *Executive managers should be aware of factors influencing the development of psychological ownership. Executive managers should leverage the factors that can promote the development of psychological ownership with IS owners.*

It is necessary that the executive manager maintains a fair working relationship with the IS owner, supporting the IS owner in decision-making and promoting the IS in the

organisation. Non-involvement of executive management in the activities and problems experienced by IS owners may put pressure on the relationship of the IS owner with respect to the IS.

Factors that may influence promotion or erosion of IS ownership are discussed in Chapter 4, section 4.3.3.3.1.9. A summary of Theme 5: Establishing and managing IS ownership is provided in Figure 36.
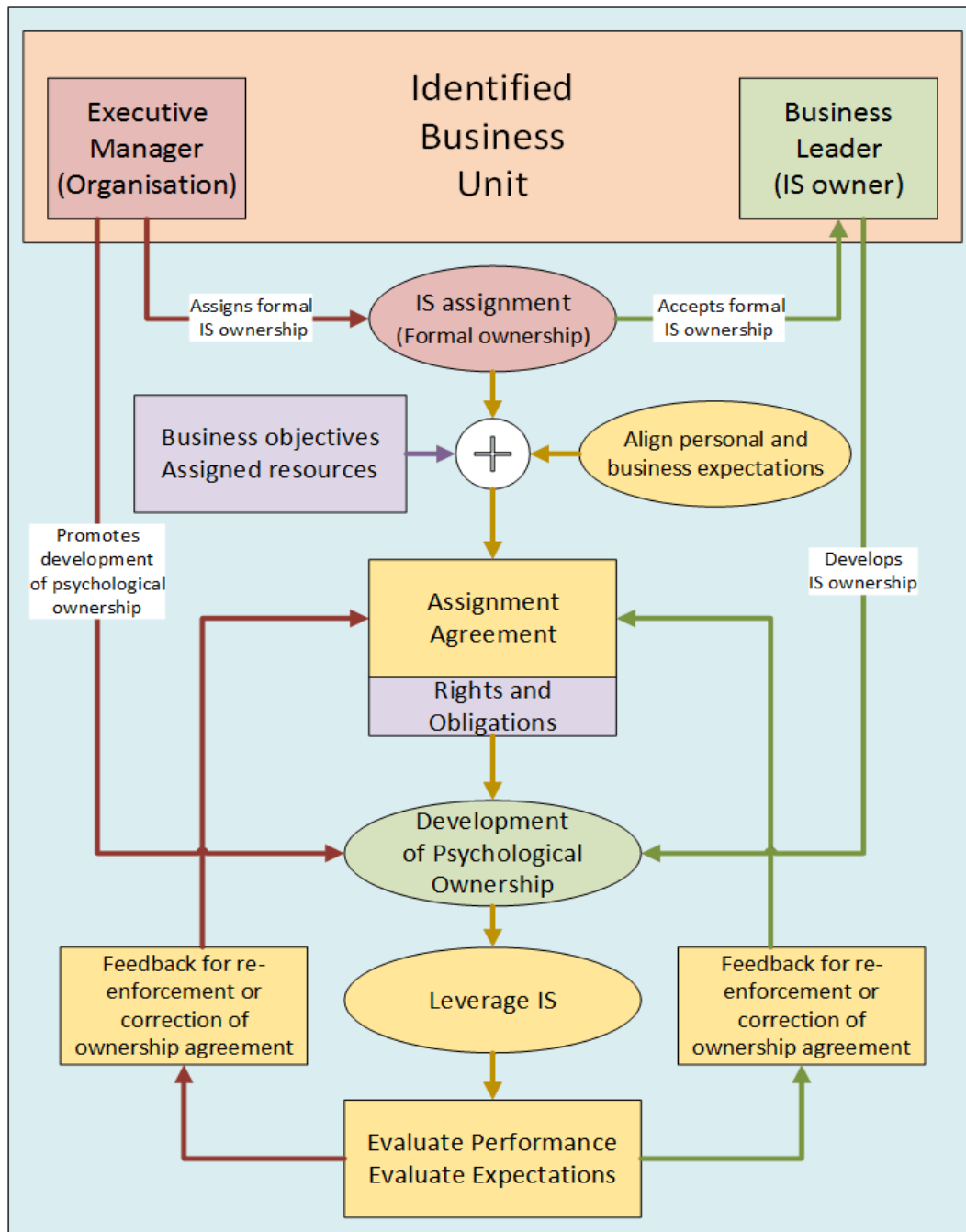

Figure 36 - Theme 5: Establishing and managing IS ownership

5.2.6 Theme 6: The relationships that are created between IS ownership role-players.

6 Themes of IS ownership	**Theme 1** Governance and Management
	Theme 2 Organisational perspective of IS ownership and IS ownership from the IS owner's point of view
	Theme 3 Why individuals and the organisation need IS ownership
	Theme 4 Who should have the ownership of an IS
	Theme 5 How should IS ownership be established and managed in the organisation
	Theme 6 The relationships that are created between IS ownership role-players

Successfully appropriating an IS in an optimal manner requires the collaboration of several role-players, each performing one or more activity. Executive managers may oversee the business areas wherein the IS was deployed, IS owners manage the appropriation of the IS, the IS department renders custodianship, maintenance and support and the users apply the IS. Workable relationships between the role-players are crucial to create the needed synergy to attain organisational objectives. Relationships are based on the roles of the role-players, where for example, the IS owner has the authority to request the IS department to perform testing on an IS that does not perform according to requirements or specifications. The following sections discuss the relationships between the IS owner and the executive manager and the IS owner and the IS department.

5.2.6.1 Relationship between the IS owner and his executive manager:

Optimally leveraging an IS is to the benefit of the IS owner, the executive manager, the business environment and the organisation as a whole. Supporting the IS owner in his endeavour to successfully leverage the IS requires involvement of key players, such as the executive manager to champion the IS in the organisation and the IS department to provide the necessary support structures for the IS.

The executive manager provides guidance to the business leader (the IS owner) to make the correct business decisions. The executive manager oversees the progress of the IS owner towards achieving business objectives and provides support, advice, punishment or rewards ensuring that the IS owner performs against the expectations of the organisation. By focusing on good communication, the executive manager and the IS owner can avoid surprises and can use the opportunity to resolve issues that may inhibit the achievement of business objectives.

Instances were found in the organisation where IS owners believe their executive managers do not contribute towards the relationship in the manner that they are expected to do, while others feel satisfied with the support from their executive managers. IS owners that have perceivably developed IS ownership have more support from their executive managers, while IS owners having the necessary support from executive management also appear to leverage the IS in a more innovative manner.

Relationship-building is however, not a one-sided effort from the executive manager. Avital and Vandenbosch (2000) state that IS owners have to participate in partnerships, collaboration exercises, resolving problems and creating synergy to be able to leverage their assets optimally. IS owners with high levels of self-efficacy and an internal locus of control may find it easier to leverage the IS owned by them in a positive and optimal manner as an IS owner explains: "[Owning an IS] is a [huge] task – trying to optimize as far as possible to… get a return on investment" and "It's a constant challenge" (R11). While the IS owner sets out to appropriate the IS in his area optimally, the executive manager responds by being actively involved, by for example, assigning the necessary resources: "in the next 2 weeks we are going to advertise for 3 specialists".

In the next section the relationship between the IS owner and the IS department is discussed.

5.2.6.2 The relationship between the IS owner and the IS department

The IS department guides the IS owner to optimally leverage the IS in support of the business objectives. Through a process of absorptive capacity, the IS owner and the IS department's staff can learn to leverage the IS innovatively (Cohen and Levinthal, 1990). The IS owner in his capacity as business leader ensures that the IS department lives up to the promises made to the business area with respect to delivering IS-related services. By entering into a promise of service standards, the IS department commits to rendering services to the business areas at the levels required to optimally appropriate the IS in the business environment.

Accepting that the IS department, the executive manager and the IS owner act as a team towards one common goal, is required for leveraging the IS successfully as explained by an executive manager: "The whole idea is to work in an integrated way to ensure the support and the mandate of this organisation" (R7).

Through an understanding of the roles of the IS owner and the IS department, the IS owner have the assurance that the IS department will fulfil its role as custodian, while focusing on the optimal leveraging of the IS in his business area. IS department staff members should take ownership of their custodianship-responsibilities in the same manner that the business leaders take ownership of the IS in their business areas. Roles of the stakeholders are discussed in more detail in Chapter 4, section 4.3.3.3.1.4.

Creating a relationship of partnership and understanding the points of view of the other party is essential for the relationship to work. The essence of understanding is explained by an executive manager stating that business that understands "the benefits of a particular solution and how dependent your business is on that will promote ownership". However, if the IS department forces "the systems down the throats of business owners", ownership will not develop.

In the next section the themes are applied to create the framework for understanding IS ownership.

5.3 Constructing the IS ownership framework
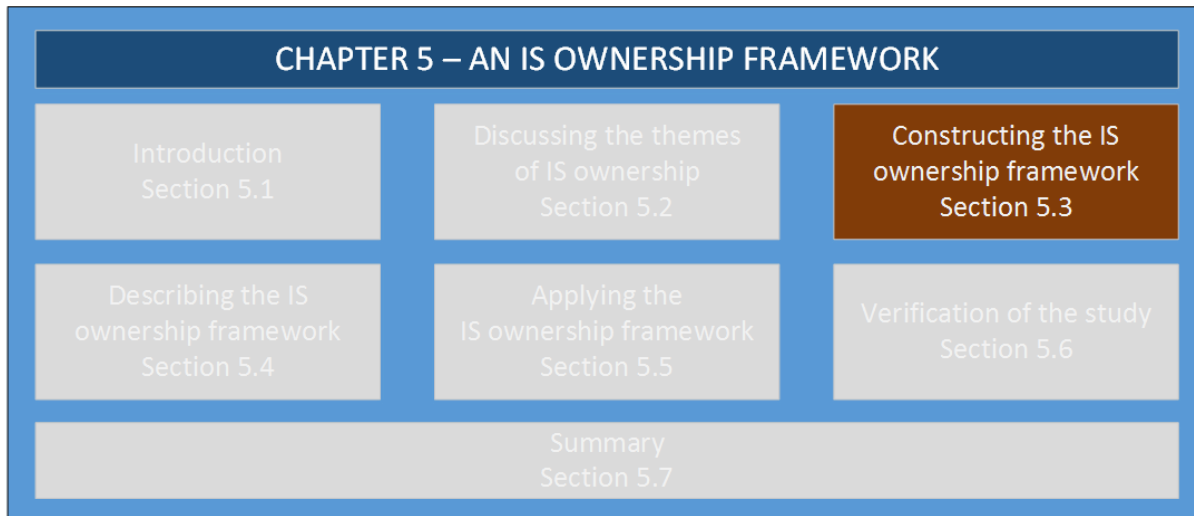
In this section the framework for understanding IS ownership is constructed through a process of induction.

Using the six themes emerging from the analysis of the data, a number of elements were posed as questions in Figure 30, created a basis for the understanding of IS ownership. The questions were concerned with:

- The organisation's executive managers' and IS owners' concepts of IS ownership;
- The rationale for having IS ownership in the organisation and why IS owners need IS ownership;
- The placement of IS ownership in the organisation and the individual to whom IS ownership should be assigned to;
- The institutionalisation and management of IS ownership in the organisation;
- The impact of governance on IS ownership and the management activities related to IS ownership.

The themes that emerged from the coding and the analysis of data as presented in section 4.3.3.3.2 in Chapter 4 are:

- Theme 1: Governance and management;
- Theme 2: Organisational perspective of IS ownership and IS ownership from the IS owner's point of view;

- Theme 3: Why individuals and the organisation need IS ownership;

- Theme 4: Who should have the ownership of an IS;

- Theme 5: How should IS be established and managed in the organisation;

- Theme 5: The relationships that are created between IS ownership role-players.

The difference in concepts of IS ownership from the perspectives of IS owners and business executive managers was used as a starting point for the development of an IS ownership framework. If IS ownership is not perceived unambiguously, creating a common knowledge domain wherein IS ownership is understood is impossible.

The identified themes that pertain to IS ownership are discussed in this section. The six themes that emerged from the data can be depicted in a question-based framework as in Figure 37:
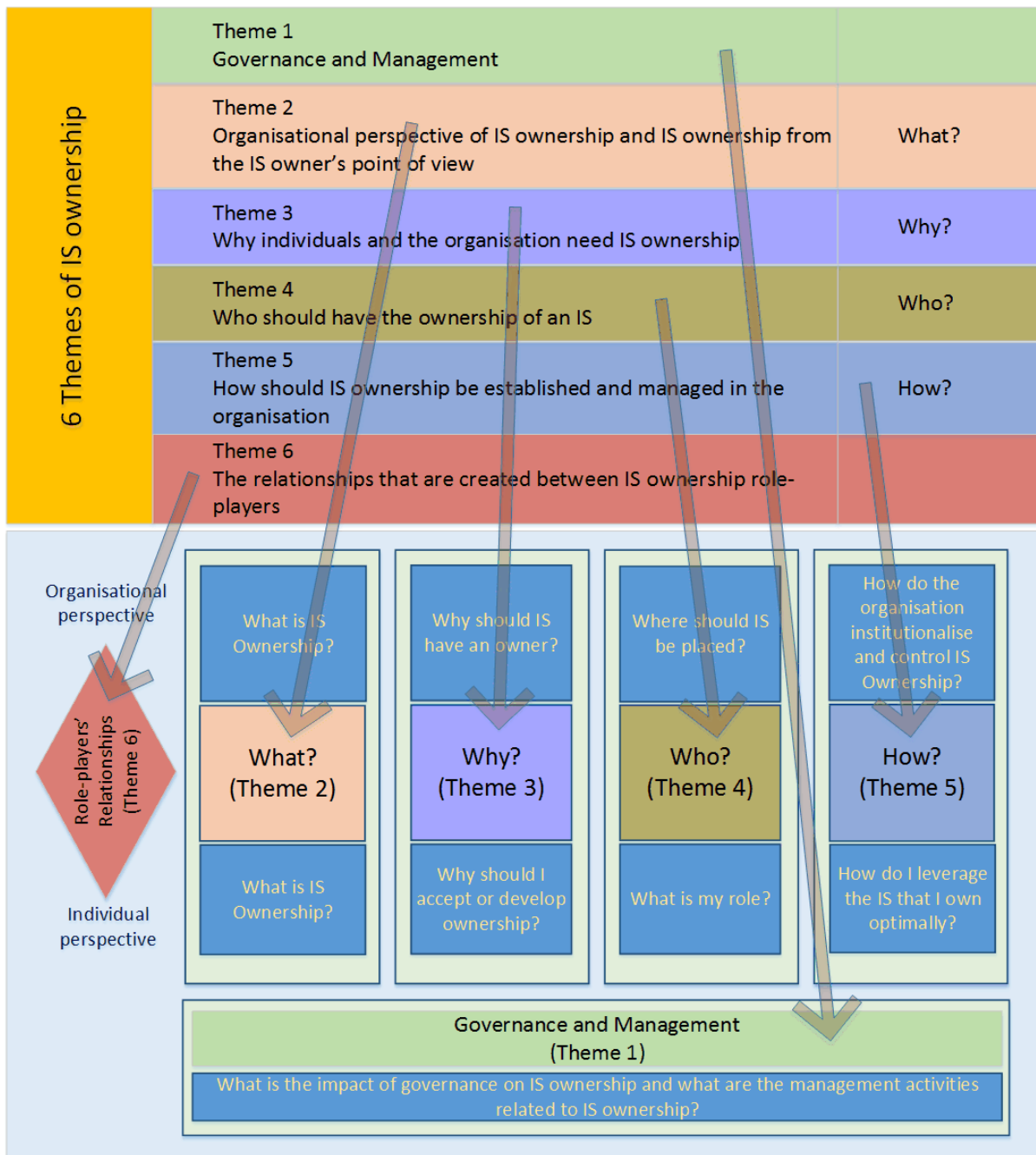
Figure 37 - Initial question-based framework of IS ownership

This section discusses the use of the six themes that emerged from the data analysis to induce a framework for understanding IS ownership. In Figure 38, the themes are mapped to a question-based framework to present the themes in a visual manner.
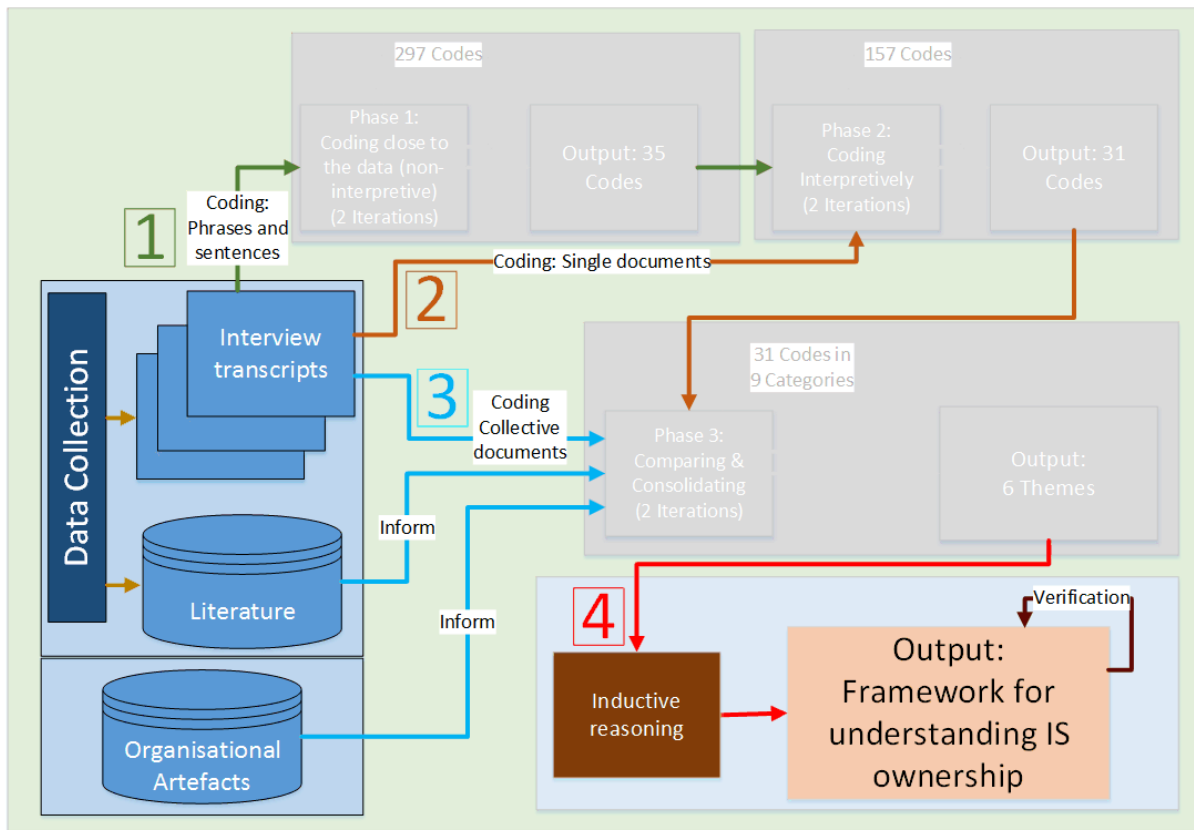
Figure 38 - Developing the IS ownership framework

The inductive analysis process commences by acquiring data from organisational artefacts, literature and interviews with staff members in the financial services organisation, providing input for a three-phased coding process, which rendered six themes of IS ownership. The themes of IS ownership reflect the essence of IS ownership. The themes of IS ownership are used to induce a framework for understanding IS ownership in the organisation. In the fourth phase of inductive data analysis the themes are arranged to provide a sequential build-up from the concepts of what IS ownership entails, the rationale for IS ownership in the organisation and with individuals, who should have IS ownership and how should IS ownership be implemented and applied in the organisation.

Data acquired from the field indicates that the concept, rationale, placing and institution and application of IS ownership are viewed differently by different role-players in the organisation. Executive managers have a strategic perception of IS ownership, while business leaders have a more tactical, operational and personal perception of IS ownership. The theme of governance and management runs through

all aspects of IS ownership and guides the organisation in the establishment, management and utilisation of IS ownership as a positive resource in the organisation.

One of the major focus areas of IS governance is role-responsibilities, where the obligations of the parties involved in IS ownership can be depicted in a matrix format such as found in COBIT 5's RACI matrix for IT Governance. Although the COBIT 5 framework focuses on IT governance, some of the stakeholders used in the COBIT 5 framework and their responsibilities and activities, are also found in the IS ownership framework. An extracted adaptation of the COBIT 5 RACI matrix to suit IS ownership is shown in Table 15 in Chapter 4.

Viewing IS ownership from the strategic perspective of the executive manager and the operational perspective of the IS owner implies that the construct of IS ownership and the processes of IS ownership are dual in nature, as is evident in the following examples depicted in Table 18:

Table 18 - Examples depicting the dual nature of IS ownership

Aspect of IS ownership	Organisational perspective	Individual perspective
Need for IS ownership	IS are assets that need owners to care for them	I need IS ownership to assist me achieving my business and personal objectives
Having IS ownership	Organisations assign formal IS ownership	Individuals develop psychological IS ownership
Influences on psychological IS ownership	Organisations can promote the factors influencing the development of psychological ownership	Factors influencing the development of psychological ownership exist in the world of IS owners
Roles of the role-players	Executive managers formulate strategic plans and policies	IS owners execute strategic plans and conform to policies
Resources	Executive managers assign human resources to IS owners	IS owners mobilise and manage human resources

Organisations have different reasons for needing owners for the IS than the individual needing ownership of the IS. While organisations can assign IS ownership formally, individuals can develop psychological ownership. Factors influencing the development of psychological ownership exist in the world of the IS owners, but the executive managers from the organisation's side can only influence the factors promoting psychological ownership.

The roles of the executive managers differ from the roles of the IS owners. Executive managers formulate strategic plans and policies to guide the organisation towards a desired future state. IS owners are responsible to execute the plans and comply with the policies. Executive managers assign human resources to the IS owner to enable the leveraging of the IS in a sustainable manner, while IS owners are responsible to manage the assigned resources.

IS ownership will only be able to exist optimally if the formally assigned IS ownership is complemented by the existence of psychological ownership developed by the IS owner. Unless the perspectives of the executive managers representing the organisation and the IS owners align, IS ownership will not render its potential synergetic benefits. The consequences of the dual nature of IS ownership are that executive managers should be cognisant of the views of the IS owner and be involved in the IS owner's efforts to leverage the IS optimally in the organisation. Similarly, IS owners should have consideration for the strategic view of IS ownership and not only focus on local and personal objectives.

Expanding on Figure 37, a more comprehensive picture of IS ownership is depicted in Figure 39 as the final IS ownership framework.
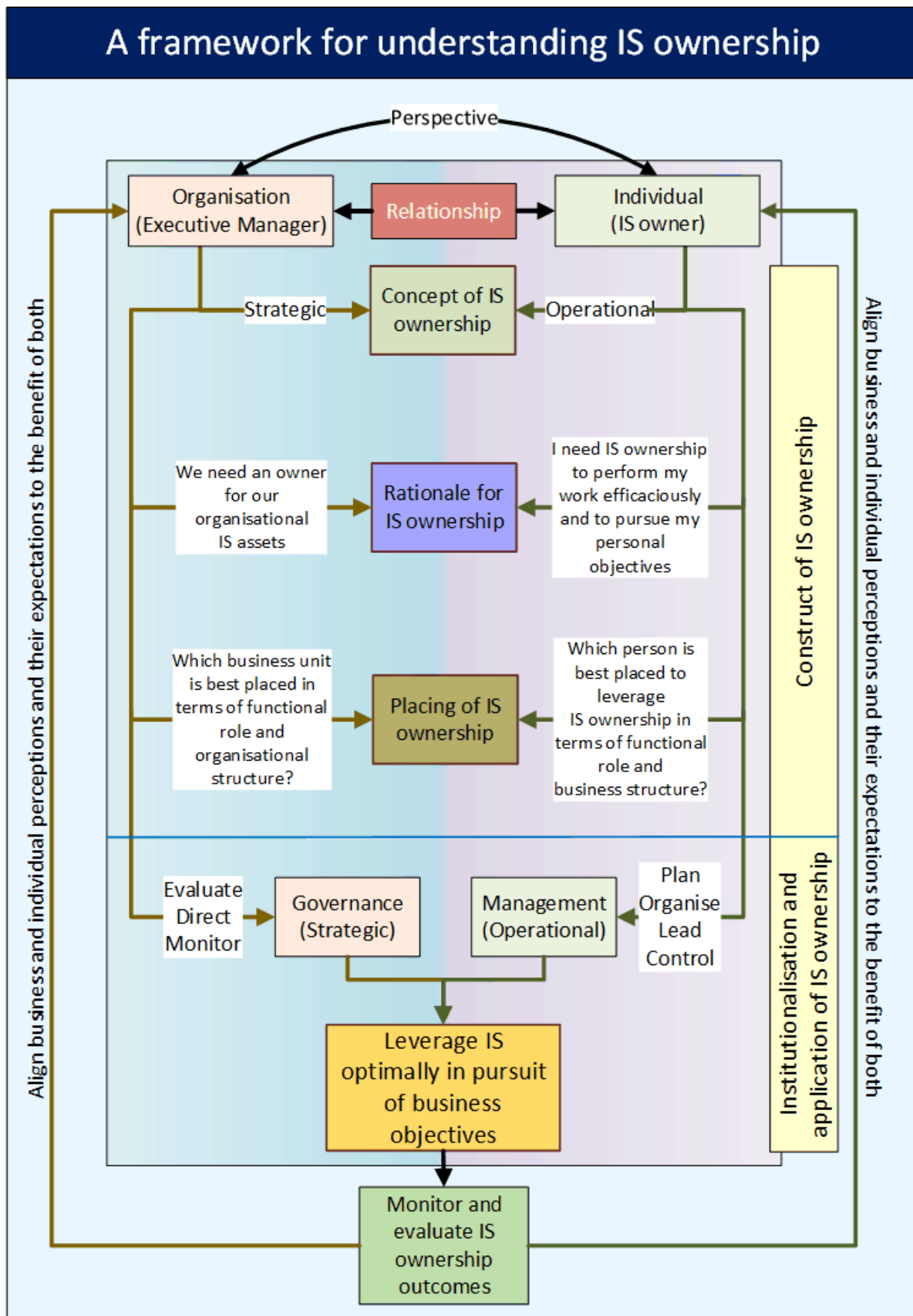
Figure 39 - IS ownership framework

The six themes of IS ownership that emerged from the analysis process are depicted in the final IS ownership framework as in Figure 40.
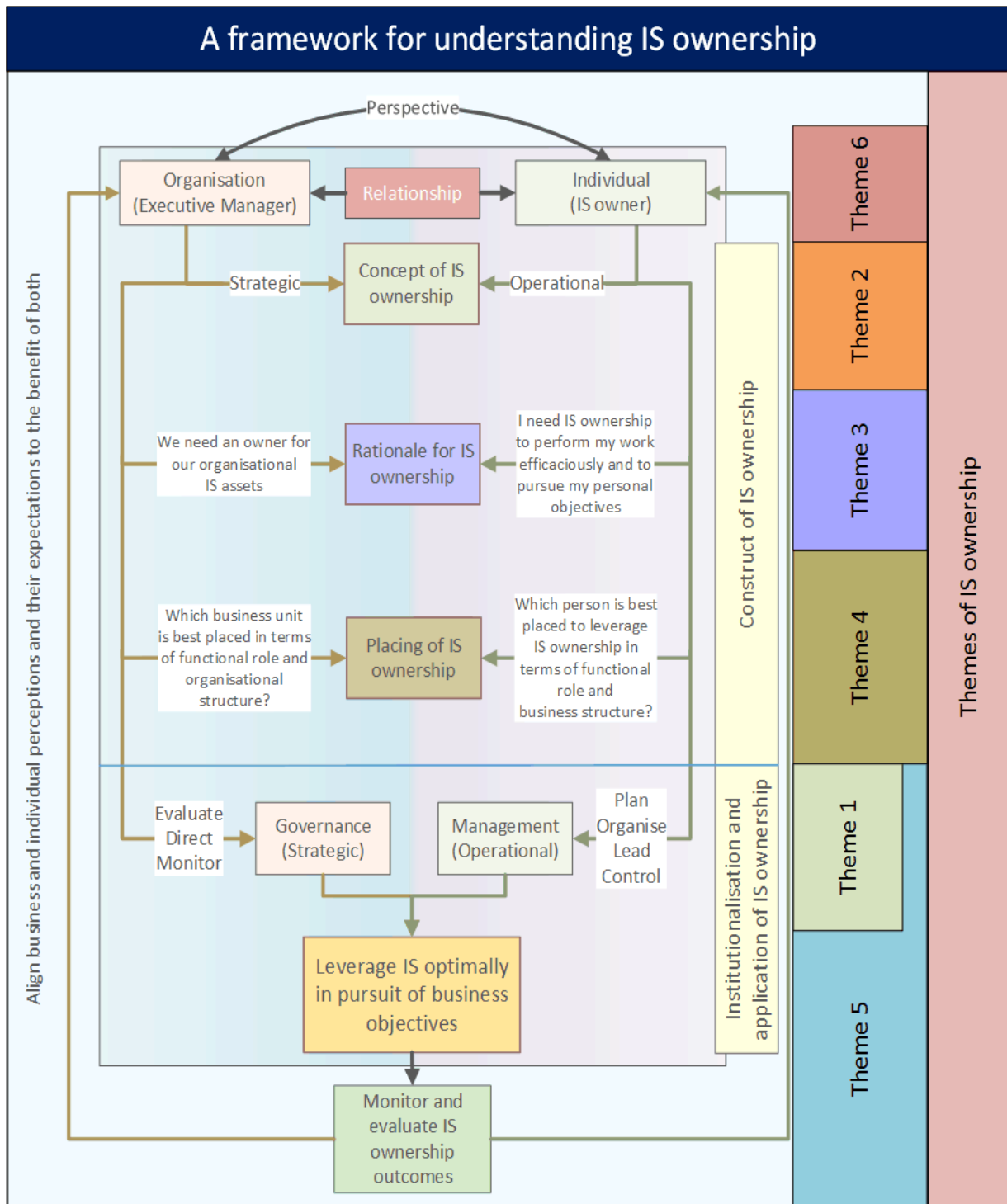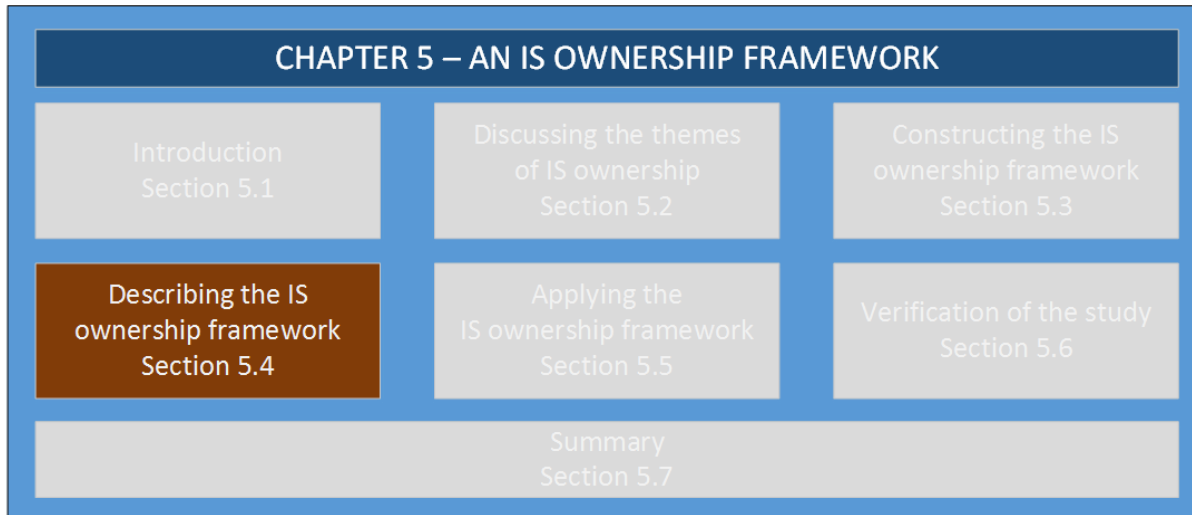

Figure 40 - IS ownership framework depicting the six themes

The following section contains a detailed discussion of the themes of IS ownership with respect to framework for understanding IS owners as depicted in Figure 40.

5.4   Describing the IS ownership framework

This section discusses the construct, realisation and application of an IS ownership framework in the organisation as shown in Figure 39.

The framework for understanding IS ownership comprises two major segments or phases, being (1) the construct of IS ownership and (2) the institutionalisation and application of IS ownership. The outcome of IS ownership is monitored and evaluated against the expectations of the IS ownership role-players and changes are made to the IS ownership agreement if required, else the relationship between the role-player will continue as before.

The IS ownership framework is depicted in Figure 39 and facilitates an understanding of IS ownership by explaining the construct, institutionalisation and application of IS ownership in the organisation. The construct of IS ownership explains what IS ownership entails, what the rationale for IS ownership is and where IS ownership should be placed in the organisation. Institutionalisation of IS ownership describes how IS ownership came into being and the application of IS ownership explains how IS ownership can be used to leverage the IS optimally in pursuit of business objectives.

IS owners and executive managers have different perspectives of the phenomenon of IS ownership in the organisation.   These perspectives are explained in the IS

ownership framework and depicted in Figure 39. In addition to the different perspectives of the IS ownership role-players, the framework explains the role of psychological ownership that is required to ensure that the IS is leveraged in an optimal manner. IS ownership without psychological ownership does not provide the individual (the IS owner) with the incentives to apply the IS in an innovative and optimal manner. By understanding the expectations of the IS owner and the executive manager, the role-players can collaborate to align business and individual perspectives to the benefit of both parties. This alignment of perspectives and expectations are verified through the evaluation of the outcomes of IS ownership.

For the IS ownership construct phase to commence it is necessary to address the various perceptions of the role-players.

5.4.1 Pre-requisites

Role-players should be aware that the viewpoints of other parties involved in IS ownership differs from another and that IS ownership levels depend on the alignment of an individuals' perception or expectation to that of the other parties. Several factors that may inhibit the development of IS ownership have been identified in the study:

- Different perceptions of IS and IS ownership between IS ownership role-players;

- Misalignment of expectations of IS ownership role-players;

- Lack of empowerment of IS owners;

- Imbalance of rights and responsibilities;

- Lack of communication between IS ownership role-players;

- Lack of management support;

- Lack of understanding the roles of the IS ownership stakeholders;

- Business leaders do not have the personal attributes to own the IS;

- The environment does not promote IS ownership;

- Some or all of the promoters of IS ownership are lacking.

324

The factors why business owners may be reluctant to take ownership of the IS in their business areas are also documented in more detail in Table 19 in section 5.5.3.

5.4.2 Perspectives

Executive managers view IS as assets in the organisation that need to be leveraged to achieve business objectives, while for IS owners, the IS is viewed more as an operational asset. Executive managers have the perspective that an IS is an asset that should be integrated seamlessly into the organisation and utilised towards achieving organisational objectives. IS owners view IS as a lever to improve the business processes and uses of systems in the business area, assisting them to do their job better. A second focus of the IS owners is on the personal self where the IS owner believes that owning an IS can be satisfying, provide you with status and can assist you to project yourself in a manner that you want others to perceive you.

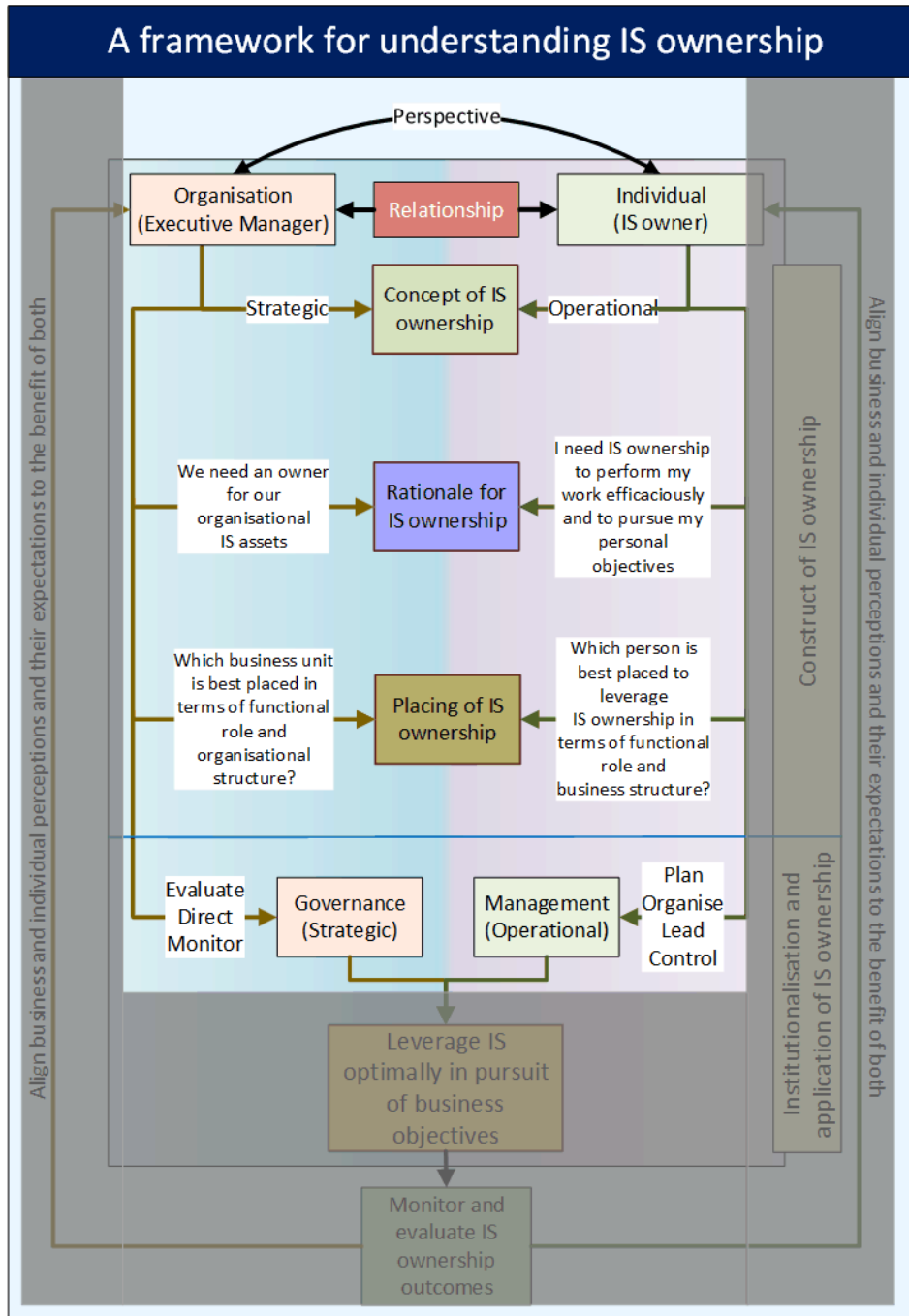The perspectives of IS ownership in the framework is highlighted in Figure 41.

Figure 41 - Different perspectives of IS ownership

5.4.3 Relationships between role-players in IS ownership

5.4.3.1 Role-players

Three major role-players are involved in IS ownership:

- Executive managers represent the shareholders of the organisation and have the responsibility and are held accountable for business units to achieve business objectives that support organisational objectives. Executive managers identify the correct individual to have control over an IS and assign formal IS ownership to the specific individual or group of individuals.

- Business leaders are responsible to achieve business objectives in support of organisational objectives. Business leaders have to be empowered to achieve their business objectives and are expected to leverage the IS in their business environments to assist them to do so. By assigning IS ownership to business leaders, executive managers give IS owners the authority of ownership, which includes the rights of information, decision-making rights and equity rights associated with the IS. Equity rights may be in the form of status, promotion or other tangible or intangible benefits. Acknowledging the rights associated with ownership, IS owners reciprocate by rendering certain services to the organisation. The services may include caring for the IS and taking responsibility for the optimal leveraging of the IS.

- The IS department acts as the custodian of the IS. The IS department is responsible to technologically assist the business in identifying and acquiring the appropriate IS for the business environment and ensure that the IS is safeguarded, maintained and supported in a sustainable manner. The IS department acts as guardians of the information generated, stored, modified, transmitted or received by the IS. The information should be available when required by the business with its integrity intact and the organisation should not be compromised by information leaks to unauthorised entities.

5.4.3.2 Relationships between executive managers and IS owners

The relationship between executive managers and IS owners is one of reciprocity where the executive manager expects that the IS owner provides a service in

exchange for certain privileges. This situation is supported by social exchange theory, stating that, unless a balance between rights and obligations exists, the relationship between the parties is not sustainable in its current form.

IS owners expect that executive managers support them in their efforts to optimally leverage the IS in the business areas, while the executive managers expect the IS owners to apply effort in achieving the objectives of the business area. The relationship between the IS owner and the executive manager role-players is discussed in section 5.2.6.1.

The IS ownership relationship between the executive manager and the IS owner is shown in Figure 42 .
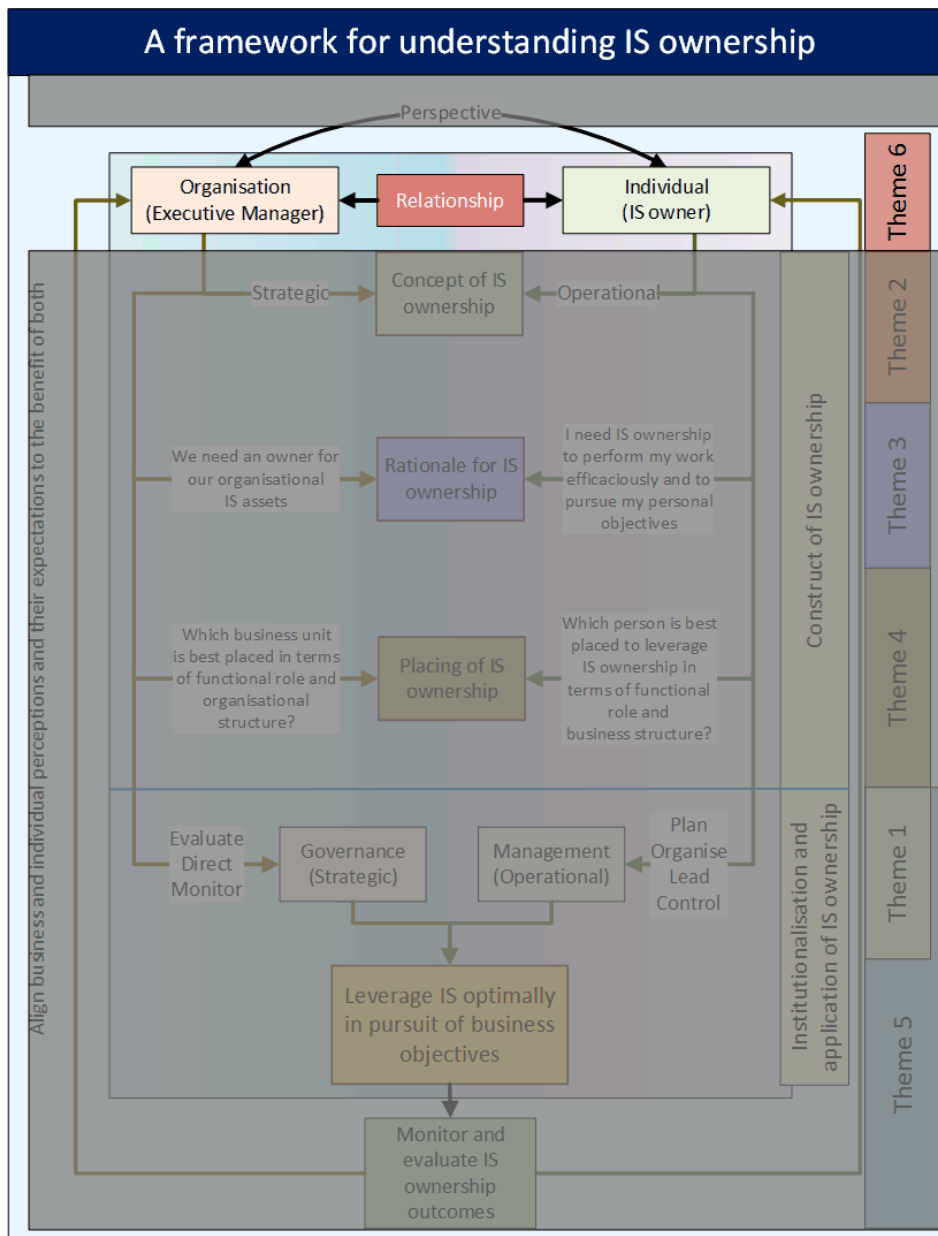
Figure 42 - Relationship between IS the executive manager and IS owner

5.4.4 Align business and individual perspectives to the benefit of both

Executive managers and IS owners do not perceive IS ownership in the same manner. Parties should acknowledge and respect the difference in perception and accept the right of the other party to perceive IS ownership differently. The executive manager and the IS owners need to negotiate the mandate of the IS owner, assignment of resources and the expected outcomes of the IS ownership agreement.

Assuming that parties' expectations are reasonable and aligned to organisational and business objectives, the parties have to agree to address the expectations of the other

party. Expectations are documented as rights and obligations in the IS ownership assignment agreement and key performance indicators are compiled to evaluate the progress towards the objectives of the assignment agreement. The outcomes of having IS ownership may result in the strengthening, alteration or disbanding of the IS ownership agreement.

Once parties agree to collaborate and create alignment between organisational objectives and business and personal objectives, IS ownership becomes an organisational resource that can be applied to successfully pursue organisational, business and personal objectives.

To ensure that the IS assignment agreement is balanced and set up in a manner that empowers the IS owner to achieve the business objectives:

> *The executive manager and the IS owner should align their perceptions of IS ownership and ensure that their expectations of IS ownership are aligned with business requirements, while addressing the reasonable expectations of the IS owner.*

Figure 43 depicts the alignment of expectations of role-players in the IS ownership arrangement.

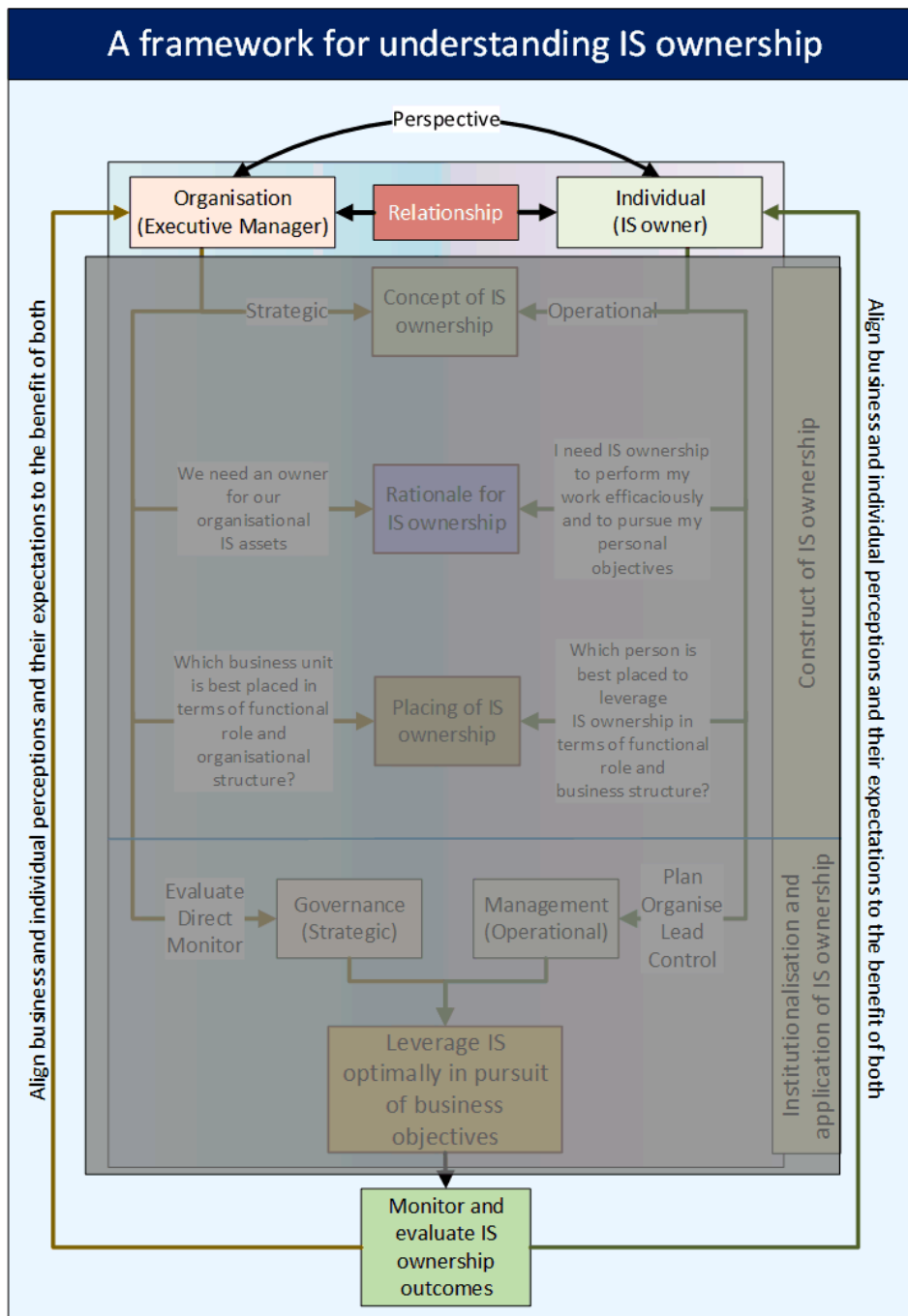**Figure 43 - Alignment of perspectives and expectations in IS ownership**

5.4.5 Construct of IS ownership

The construct of IS ownership entails *what* IS ownership is, *why* IS ownership is needed by the organisation and by the individual and *where* IS ownership should be placed and *who* the IS owners in the organisation should be. The construct of IS ownership is depicted in Figure 44.
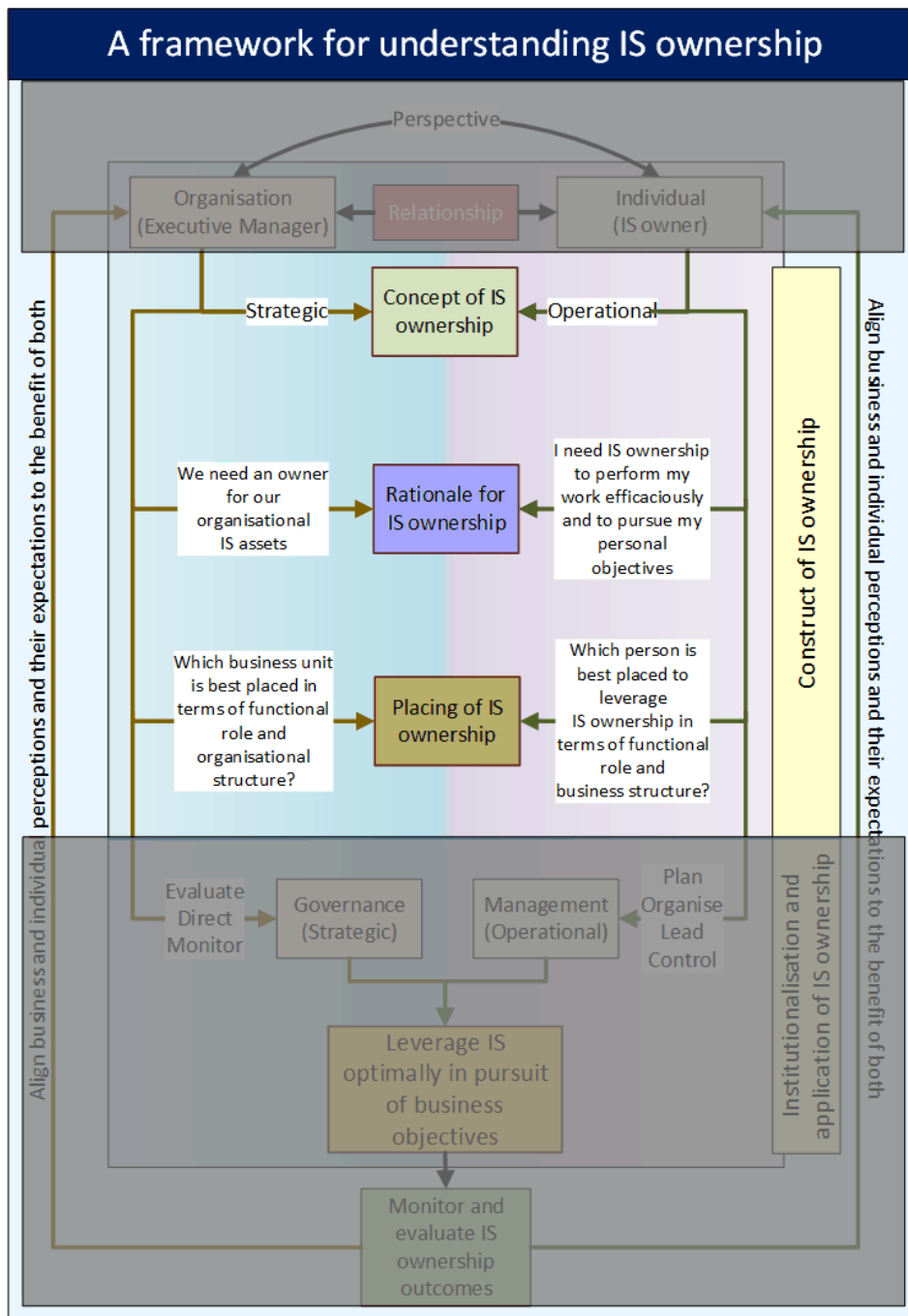
Figure 44 - Construct of IS ownership

5.4.5.1 Concept of IS ownership

Executive managers and business leaders conceptualise IS differently:

- Executive managers have a strategic concept of IS ownership. Executive managers perceive IS ownership to be a mechanism to achieve organisational

objectives. IS ownership is a resource that can be applied to optimally leverage IS in the organisation.

- IS owners have a more localised concept of IS ownership than executive managers and they perceive IS ownership to be a mechanism to achieve one's business and personal objectives. IS owners nurture the IS that they are responsible for and seek for ways to innovatively appropriate the IS in the business in support of organisational objectives. IS owners seek manners to leverage ownership of the IS to satisfy their efficacious needs, create a self-identity and to find a place in the organisation.

5.4.5.2 Rationale for IS ownership

Executive managers acting on behalf of the organisation have a different rationale for IS ownership than business leaders:

- Organisations may ask why they need owners for their IS. Governance dictates that all organisational assets should have owners to leverage them. Because an IS is an organisational asset, it should be assigned an owner to be responsible to leverage the IS to create value for the organisation.

- Similarly, business leaders may ask why they should be the owners of the IS used in their business environments. As the business leaders are responsible to achieve their business objectives, they are in the best position to apply their business skills to leverage the IS in pursuit of their business objectives. In order to do so, they need control of the IS, which is linked to owning the IS.

5.4.5.3 Placing of IS ownership

Placing of IS ownership is done by first identifying the business unit and then selecting the individual that is best suited to leverage the IS in the organisation.

- Organisational strategic planning identifies the gaps between the current state of the organisation and a preferred future state. Business areas are identified that are best fit to address the strategic gaps. Identification of business areas is based on the organisational structure and the current roles of the business

areas in the organisation. The identified business areas should have the highest probable success rate to achieve organisational objectives in their role.

- Individuals are identified based on their roles and the structure of the business unit. Executive managers identify individuals that have an appropriate knowledge of the business, have the authority to mobilise the appropriate resources and have the ability to achieve business objectives best. IS ownership is then assigned to the identified individuals.

Once an underlying structure wherein IS ownership can exist has been constructed, IS ownership needs to be institutionalised and applied. The following sub-section discusses the institutionalisation of IS ownership with business leaders and the application and management of IS ownership as a resource in pursuit of the objectives of the business and the organisation.

5.4.6 Institutionalisation and management of IS ownership

The institutionalisation of IS ownership commences with the identification of the need for a new IS in the business areas of the organisation. Based on the strategies of the organisation and as part of their governance responsibilities, executive managers have to provide strategic guidance to the organisation. The institutionalisation and management of IS ownership is depicted in Figure 45.
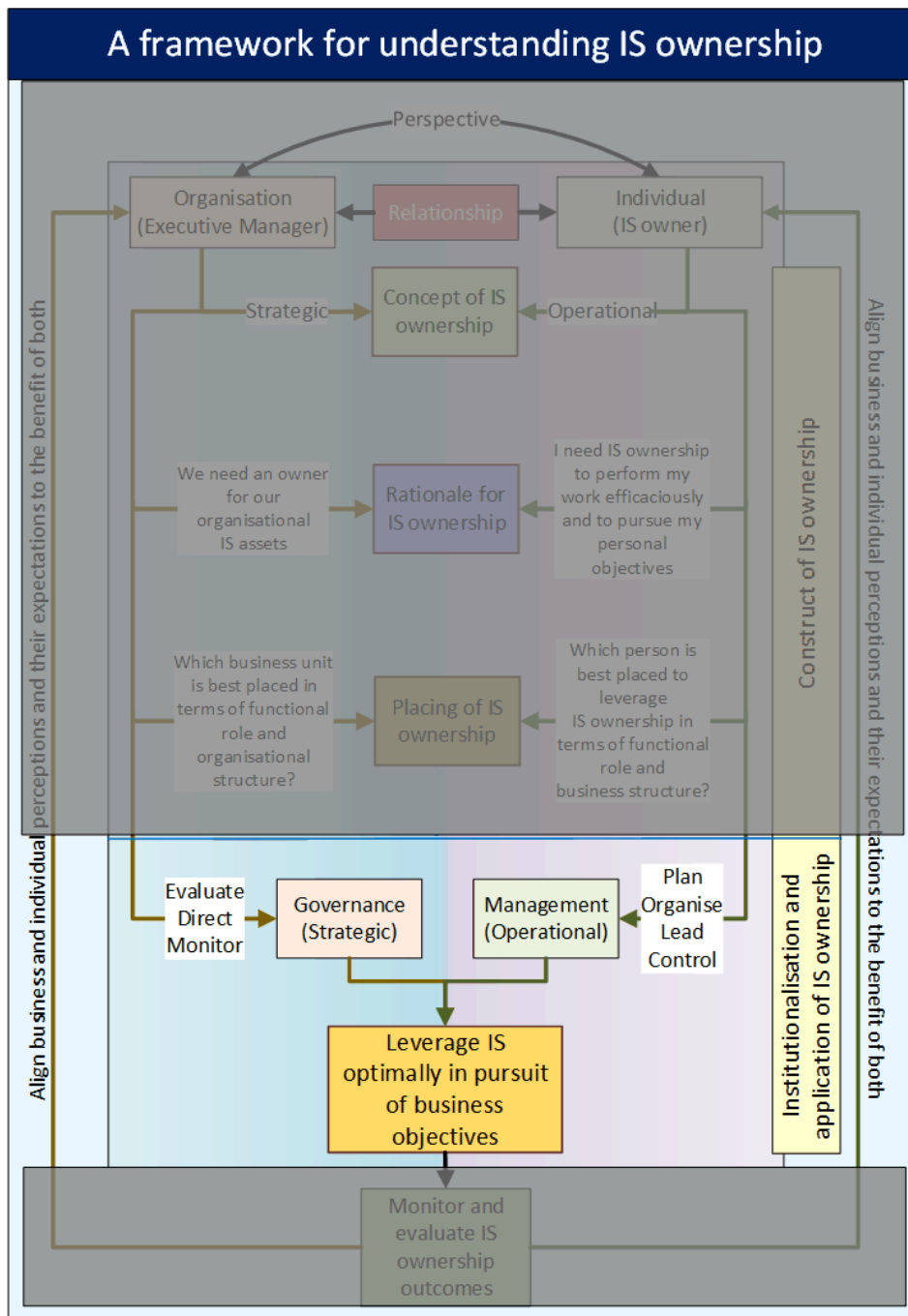
Figure 45 - Institutionalisation and Management of IS ownership

5.4.6.1 Strategic responsibilities

Executive managers are responsible to formulate strategic plans that provide roadmaps to the organisation, moving it from the current state of existence to a desired future state. Based on these roadmaps, business units are identified that should perform certain activities in a specific manner during a specific time. Executive

managers, with the assistance of enterprise architects, identify the appropriate IS that will assist business units to fulfil their strategic obligations.

Business units are responsible to execute the strategic plans formulated by executive management. Business leaders internalise the organisational strategic plans and unpack it in a manner that managers and staff members understand and can relate to. Operational plans that are aligned with organisational strategies are devised to guide the business units towards reaching their business objectives. Executive managers are responsible to ensure that the business units have the appropriate resources to achieve their respective business objectives.

5.4.6.2 Operational responsibilities

IS owners are responsible to leverage their IS in a manner that business objectives are achieved. The business leaders are responsible to plan how to achieve business objectives, organise the resources to perform the required activities in a sustainable manner, lead the resources to perform the required activities efficiently and effectively and control the processes and activities of pursuing business objectives.

Appropriating the IS in the business environment does not imply that it is done in an optimal manner. IS that are used "only to keep management happy" do not provide much support to achieving business objectives that are aligned to strategic organisational objectives.

IS owners that have been assigned an IS should be empowered and motivated to use the IS innovatively and efficaciously. This requires that IS owners develop an emotional relationship towards the IS and perceive that the IS is "theirs". It may be inevitable that IS owners may develop a certain level of territoriality, but assuming that this level is not exorbitant, the IS owners will care for the IS, promote change and search for innovative manners to leverage the IS optimally. Various factors may impact on the taking of ownership of a target. These factors have been discussed in Chapter 2, section 2.2.6.

5.4.6.3 Outcomes of IS ownership

IS owners as well as executive managers would like to confirm that their expectations related to IS ownership were carried to fruition. Executive managers need to monitor

that the IS owner conforms to the rules and regulations of the organisation and performs according to the necessary levels to achieve business objectives. Executive managers need to verify that the IS has been leveraged optimally towards achieving business objectives and may have to intervene if any evidence is present that business objectives may not be reached.

IS owners may want to verify to what level they have satisfied their efficacious needs, developed a self-identity and have a place in the organisation. Personal objectives that they linked to owning an IS are also analysed to determine whether the IS ownership satisfied their expectations. If the expectations of the IS owner have not been achieved, the IS owner may want to alter the ownership agreement to improve the possibility that their expectations can be achieved.

Executive managers should be aware that they can influence some of the areas, such as the culture of the organisation and structure of the IS assignment to promote the development of IS ownership with IS owners.

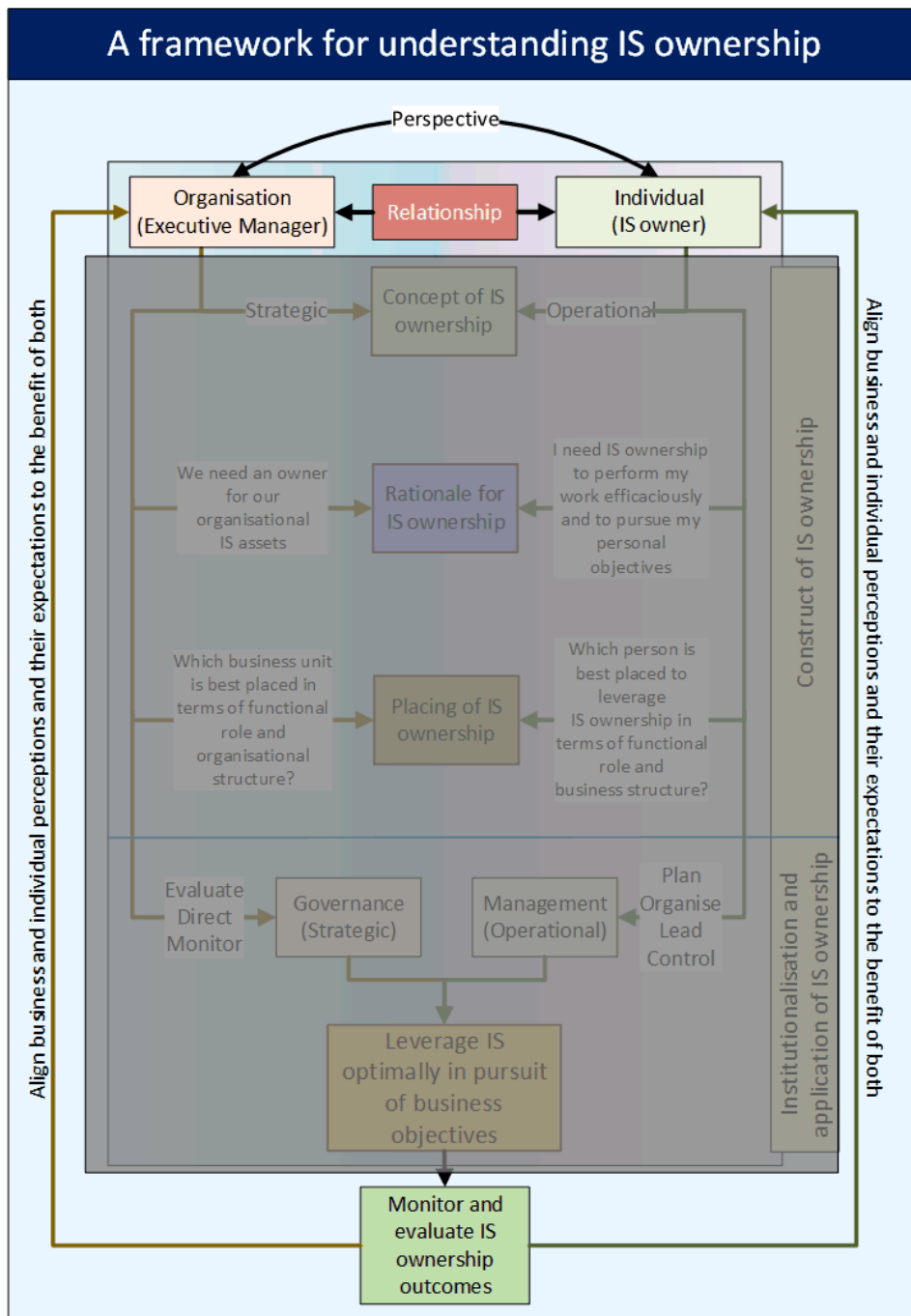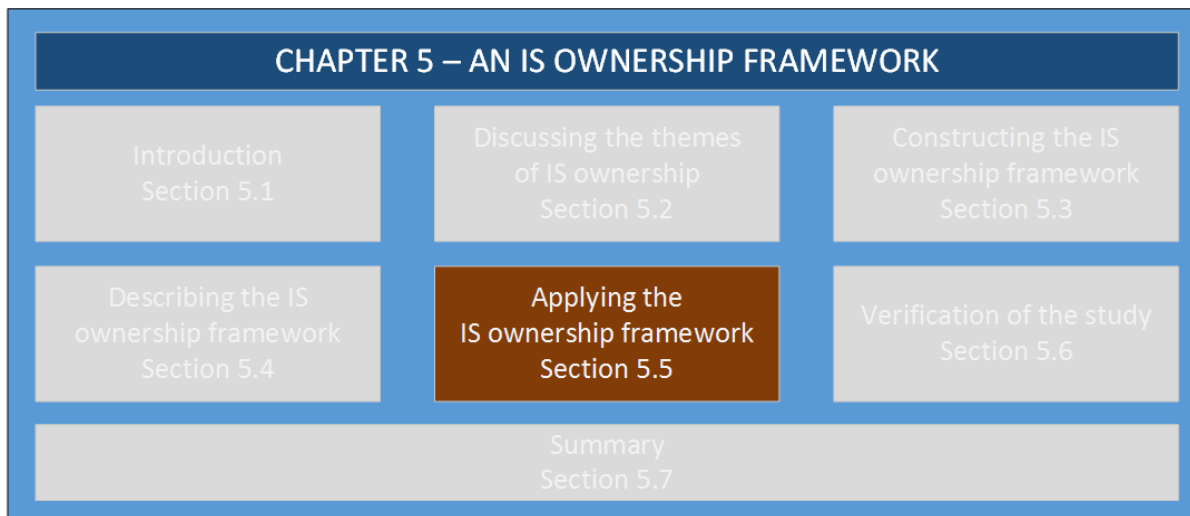Monitoring, evaluation and feedback of IS ownership is depicted in Figure 46.

Figure 46 - Monitoring, evaluating and feedback of IS ownership

The next section provides guidelines of how the organisation can understand, prepare for, institutionalise and manage IS ownership.

5.5 Applying the IS ownership framework

The method to apply the IS ownership framework in the organisation comprises five phases. Phase 1 pertains to the pre-requisites for implementing the framework and phase 2 focuses on the construct of the framework (section 5.4.5). Phase 3 focuses on the institutionalisation of the framework (section 5.4.6), phase 4 on the management of the framework (section 5.4.6.2) and phase 5 on the IS ownership outcomes (section 5.4.6.3).

5.5.1 Method for implementing IS ownership

5.5.1.1 Pre-requisites (phase 1)

IS owners, executive managers and other role-players have different viewpoints of IS, IS ownership and IS ownership expectations. It is suggested that these viewpoints are aligned to one another as well as to the objectives of the organisation when IS ownership is provided to a business leader.

5.5.1.2 Construct of IS ownership (phase 2)

Step 1:   Create and communicate a single unambiguous definition of IS and of IS ownership (section 5.5.2.1.1).

Step 2:   Understand the rationale for IS ownership from the point of the organisation and from the point of the IS owner (section 5.5.2.1.2).

Step 3:   Decide where the IS should be placed (section 5.5.2.1.3a and 5.5.2.1.3b).

5.5.1.3 Institutionalisation of IS ownership (phase 3)

Step 4:   Assign the IS to a suitable business unit (section 5.5.2.2.1).

Step 5:   Assign the IS to a suitable business leader in the business unit (section 5.5.2.2.2).

Step 6:   Express and align expectations of the role-players to the objectives of the organisation (section 5.5.2.2.2a).

Step 7:   Document expectations as rights and responsibilities in an IS ownership contract (section 5.5.2.2.2b).

Step 8:   Assign and document the necessary resources to the IS ownership initiative in the IS ownership contract (section 5.5.2.2.2c).

Step 9:   Document the mandate of the IS owner and the roles and responsibilities of the IS ownership role-players in the IS ownership contract (section 5.5.2.2.2d).

Step 10: Negotiate, agree and document the key performance areas of the IS ownership role-players in the IS ownership contract (section 5.5.2.2.2e).

5.5.1.4 Management of IS ownership (phase 4)

Step 11: The IS owner is responsible to mobilise and manage IS resources in support of the objectives in the organisation (section 5.5.2.3.1).

5.5.1.5 Outcomes of IS ownership (phase 5)

Step 12: Monitor and measure IS ownership outcomes to determine the performance of the role-players with respect to IS ownership (section 5.5.2.4.1).

Step 13: Adjust the agreement contract based on the outcomes of the IS ownership measurements (section 5.5.2.4.2), taking cognisance that several factors may influence the level of IS ownership and therefore the performance of the IS owners (section 5.5.2.3).

The following section discusses the steps guiding the application of the IS ownership framework in more detail:

5.5.2 Discussion of method for implementing IS ownership

5.5.2.1 Construct of IS ownership

The construct of IS ownership is the basis of IS ownership in the organisation. The construct explains the difference in perspectives of the executive manager assigning formal IS ownership and the business leader accepting formal ownership and developing psychological ownership of the IS. The construct presents the concept of IS ownership, the rationale for having IS ownership and the placement of IS ownership in the organisation and in the business unit.

The following steps serve as guidance to the construct of IS ownership as a resource in the organisation and align with the numbered steps in sections 5.5.1.2, 5.5.1.3, 5.5.1.4 and 5.5.1.5:

5.5.2.1.1 (Step 1): Create and communicate a single unambiguous definition of IS and of IS ownership to ensure that executive managers and IS owners do not base their expectations on their own interpretation of IS and IS ownership. Employees should also have a clear understanding of the composition of IS in the organisation.

5.5.2.1.2 (Step 2): Understand the rationale for IS ownership from the viewpoints of the organisation and the IS owner:

    a. Organisation: "*We need an owner for our organisational assets*"

    b. IS owner: "*I need IS ownership to perform my work efficaciously and to pursue my personal objectives*"

5.5.2.1.3 (Step 3): Decide where the IS should be placed:

    a. At strategic level: Identify the business unit best suited to own the IS taking the organisational structure and the roles of the existing business units in the structure into account.

    b. In the identified business unit: Identify the individual that is best suited to leverage the IS optimally, taking the structure of the business unit and

341

the role and the empowerment of the individual into account. Consideration should be given to the personality of the individual and his ability to manage complex or highly-automated IS and whether the individual has the authority over the required resources to optimally leverage the IS.

5.5.2.2 Institutionalisation of IS ownership

The institutionalisation describes the initiation of IS ownership where the executive manager assigns IS ownership to the business leader. The business leader accepts IS ownership in a formal manner and then develops psychological ownership of the IS with the intention of achieving the objectives of the business.

5.5.2.2.1 (Step 4): Using the identified gap in the organisational strategic plan wherein an IS should be acquired, executive managers assign the new IS to an existing or new business unit according to the structure of the organisation and the role of the business unit.

5.5.2.2.2 (Step 5): The executive manager of the relevant business unit assigns IS ownership to an identified business leader taking the structure of the business unit and the role of the business leader into consideration.

   a. (Step 6) Assignment is based on the expectations of the executive managers assigning the IS ownership and that of the business leader receiving the IS ownership. The expectations of the executive managers are aligned to the objectives of the organisation.

   b. (Step 7) Expectations of executive managers and business IS owners are documented as rights and responsibilities in a formal IS ownership agreement. Expectations of all IS ownership role-players should be aligned to another as well as to the objectives of the organisation. Only expectations documented as rights and obligations in the IS ownership agreement are recognised as valid.

c. (Step 8) The executive manager is responsible to assign the resources required to successfully leverage the IS to achieve the objectives of the business unit.

d. (Step 9) The IS ownership agreement should include the mandate of the IS owner, indicating his authority, control and decision-making powers available when exercising IS ownership. The responsibility and the roles of IS ownership role-players should also be included in the IS ownership agreement. This will ensure that all role-players have clear and distinct responsibilities collaborating towards the achievement of business objectives.

e. (Step 10) The key performance areas of the role-players are documented in the IS ownership agreement. The role of the IS owner may be in the form of key performance indicators that are measured and the role of the IS department may be documented in a service level agreement or a service standard that was agreed upon.

5.5.2.3 Management of IS ownership

The business leaders are responsible to plan how to achieve business objectives, organise the resources to perform the required activities in a sustainable manner, lead the resources to perform the required activities efficiently and effectively and control the processes and activities of pursuing business objectives.

5.5.2.3.1 (Step 11): The IS owner, as manager of the business unit or sub-unit, is responsible to mobilise and manage the resources assisting in leveraging the IS. IS ownership that comprises formal IS ownership and psychological ownership is required for the business leader to leverage the IS in pursuit of the business unit's objectives.

5.5.2.4 Outcomes of IS ownership

5.5.2.4.1 (Step 12): The outcomes of IS ownership are monitored and measured to determine the success of leveraging the IS in pursuit of business objectives.

Successful outcomes typically strengthen the relationship between role-players, while an outcome that does not fulfil the expectancy of one or more role-player may cause the relationship to become fragile. The assignment agreement may have to be adjusted to ensure a balanced and fair agreement for all role-players.

5.5.2.4.2 (Step 13): The relationship between the executive manager and the IS owner is a core component of the success of leveraging IS ownership successfully. The feedback from the outcomes of the IS ownership agreement feeds into the relationship between the executive manager and the IS owner and all adjustments required in the relationship is documented in the IS ownership agreement. Based on the lens of social exchange theory used in this study, the parties of the IS ownership agreement expects that the agreement should be reciprocal and balanced in terms of cost and profit. Cost pertains to the effort and time inserted into the arrangement and profit to the benefits acquired from the arrangement. An imbalance in the relationship may cause the need to adjust the agreement or can result in the breakdown of the relationship. When the outcomes of the IS ownership are to the satisfaction of the parties, the relationship is reinforced.

Several factors may influence the development of IS ownership with business leaders, such as:

- Environmental factors such as the culture of the organisation. An ownership culture where the owners of organisational targets have the authority to make decisions about the IS that they own and are given control to appropriate the IS in a manner most suited to the business unit should promote the development of IS ownership. An organisational culture of blame may hinder the development of IS ownership;

- Assignment factors where the IS owner are provided with adequate resources, information about the IS, are allowed to share in the success of the IS in the organisation and to provide executive management support to the IS owner at all times, should promote the development of IS ownership.

- Factors related to the IS as ownership target such as a complex IS assigned to an individual that thrives under challenging conditions, or an automated IS assigned to an individual that prefers stability and control, should promote the development of IS ownership.

- Personal factors may influence the development of IS ownership, such as where individuals with high levels of self-efficacy and individuals having an internal locus of control may prefer to own a complex, instead of a highly automated IS with little control available to the IS owner.

In the following section, several reasons are provided why business leaders may be reluctant to take IS ownership. Although these reasons do not provide guidance to the organisation how to implement IS ownership, the information may assist executive managers take the necessary precautions to prevent the breakdown of the IS ownership relationship between role-players.

5.5.3 Reasons why business leaders may be reluctant to take IS ownership

By stating that: "*Many business leaders are reluctant to take ownership of the IS in their business areas, missing the opportunity to utilise IS optimally as resource in the organisation*", the question arose of why are they reluctant to take IS ownership. Data from a literature review and the results of a field study resulted in the IS ownership framework. During the research, several reasons why business leaders may be reluctant to take IS ownership of the IS in their business environments became apparent. A non-exhaustive list of factors that may cause business leaders to be reluctant to take IS ownership of their IS, is depicted in Table 19.

Table 19 - Reasons why business leaders may be reluctant to develop ownership of an IS

Reasons why business leaders are reluctant to take IS ownership	Discussion	Addressed in the study
Different perceptions of IS and IS ownership	The business leader may have a perception of IS and IS ownership that does not concur with the perception of his executive manager. Not having	Section 5.4.5.1

345

Reasons why business leaders are reluctant to take IS ownership	Discussion	Addressed in the study
between IS ownership role-players	an unambiguous definition of what an IS constitutes and what it implies to be an IS owner in the organisation can hamper the achievement of business objectives.	
Misalignment of expectations of IS ownership role-players	Where the expectations of the IS owner are not aligned with the expectations of the executive manager representing the organisation, one of the parties may not be satisfied in the return of IS ownership. Expectations of IS ownership outcome should be discussed and agreed upon when the IS ownership assignment is made and should be documented as rights and responsibilities in an assignment agreement, ensuring that they can be managed by the parties involved in the agreement.	Section 5.4.4
Lack of empowerment of IS owners	IS owners should have all possible opportunities to successfully leverage the IS optimally in the organisation. Executive management should ensure that the IS owner is empowered to do so. Empowerment implies that the IS owner has access to the resources required to sustainably support and maintain the IS, that the IS owner has an adequate knowledge about the business and the IS and that he has the information needed to leverage the IS in an optimal manner. The IS owner also requires exercising control over the IS and therefore needs the authority to make decisions related to the IS.	Chapter 2, section 2.4.8

Reasons why business leaders are reluctant to take IS ownership	Discussion	Addressed in the study
Imbalance of rights and responsibilities	An imbalance between the rights and the responsibilities will result in one of the parties perceiving that he contributes more to the assignment relationship than the other party. This imbalance may lead to feelings of discontent and may cause the relationship to break down.	Section 5.4.3
Lack of communication between IS ownership role-players	Executive management expects IS owners to innovatively appropriate IS in their business areas, enabling them to optimally leverage the IS towards achieving business objectives. When problems arise, the IS owner should have a clear communication channel to his manager to assist with resolving the problems. Should the communication channel not be available to the IS owner, the IS owner may seek alternative routes to solve the issues, which may result in the IS ownership ending up elsewhere, such as with the IS department.	Section 5.4.3

Reasons why business leaders are reluctant to take IS ownership	Discussion ©	Addressed in the study
Lack of management support	Managers of IS owners should concern themselves with problems or ideas that may arise in leveraging the IS of the business. New ideas that have the potential to improve the value that the IS can bring about, should be pursued and championed by executive managers. Executive managers should use their influence to resolve problems as soon as possible. Personal coaching and support in utilising organisational assets will assist the business leaders to grow and take on more challenging endeavours, enhancing the quality of IS ownership in the business environments.	Section 5.4.3
Lack of understanding the roles of the IS ownership stakeholders	Feelings that "I am not technical enough to own an IS" may imply that the business leader does not understand the roles of the stakeholders in the IS ownership. The IS owner is responsible to manage the IS, including its resources. Because of an incorrect perception of what an IS entails, staff from the IS department may be seen and also perceive themselves to be owners of the IS. However, the IS department, as custodian of the IS, is responsible to safeguard the IS to ensure integrity, availability and sustainability of the IS. The IS department may therefore be seen as the owners of the technological activities related to the IS used in the business environment. Likewise, the executive managers are responsible to ensure that the IS owner has the necessary	Chapter 2, section 2.4.3 and section 5.4.3

| Reasons why business leaders are reluctant to take IS ownership	Discussion ©	Addressed in the study
	resources, the authority and the ability to leverage the IS in an optimal manner.	
Business leaders do not have the personal attributes to own the IS	Complex IS may result in business leaders to be overwhelmed by the IS. Owning the IS may pose challenges to the IS owner that he perceivably cannot overcome. When selecting an owner for an IS, the executive managers should take the personal attributes of the business leader into consideration. Business leaders with high levels of self-efficacy and internal locus of control may view a complex IS as a challenge to be conquered, while they may want to avoid being owners of a low-valued and highly automated IS in a low-risk environment.	Chapter 4, section 4.3.3.3.1.9 and section 5.2.6.1
The environment does not promote IS ownership	Environments that have a blaming culture are not conducive for IS ownership, as the owners in these areas will avoid taking risks and display prevention-oriented ownership, doing only as much as needed to "stay out of trouble". Having ownership in a learning and supporting environment may cause IS owners to take some risks to appropriate the IS in new and innovative ways.	Chapter 4, section 4.3.2, section 4.3.3.3.1.8 and section 4.3.3.3.1.9

Reasons why business leaders are reluctant to take IS ownership	Discussion ©	Addressed in the study
Some or all of the promoters of IS ownership are lacking	Promoters of IS ownership facilitate the development of IS ownership. If one or more of the following factors promoting IS ownership is not present, the opportunity for the business leader to take IS ownership is lost. The factors include: • The IS owner has control of the IS; • The IS has a perceivable importance in the business and the organisation; • The IS contributes to the value of the business; • The IS contributes to the work and personal objectives of the IS owner.	Chapter 2, section 2.4.6.1, section 2.4.8.1 and Chapter 4, section 4.3.3.3.1.4, section 4.3.3.3.1.8 and section 4.3.3.3.1.9

If executive managers are aware of the factors that erode the development of ownership of an IS, they may consider influencing the conditions promoting the development of IS ownership in the organisation.

The following section discusses the verification of the study in the form of a proof of concept to determine the applicability of the IS ownership framework in the organisation.

5.6 Verification of the study
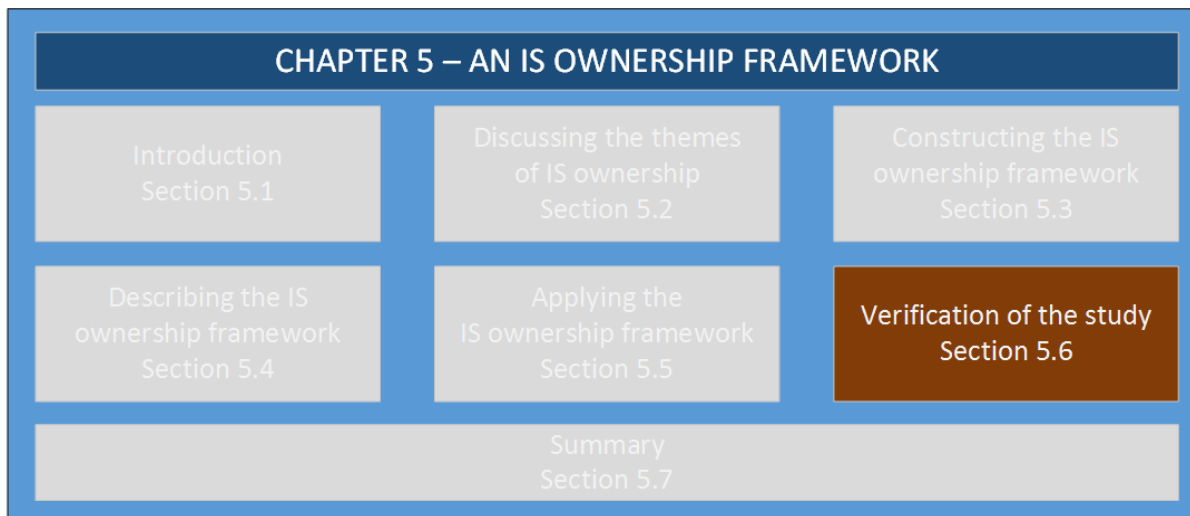
To get an indication of the applicability of the framework in the organisation, a proof of concept was done in the form of a focus group session. Four IS owners and executive managers of the financial services organisation participated in the session. One of the IS owners that participated in the focus group session also participated in the original interviews. Participants that accepted the invitation to the focus group session were briefed before the meeting and a presentation that was used in the session was provided to the participants. The presentation used during the focus group session is attached as Annexure C to this document. Section 5.2 that describes the framework for understanding IS ownership was also provided to the participants.

The questions that were forwarded for discussion and the responses received are documented in Table 20.

Table 20 - Focus group session discussion

Question	Response
1. Does the framework provide an understanding of IS ownership in your business environment?	Yes (all participants). Participants required that the framework should include a section where the collaboration between the business and the IS department is discussed more prominently.
	Participants felt that the framework brings about an understanding of what IS ownership entails. They acknowledge that IS ownership should be placed within the business and should be managed as a business resource. Roles of the IS ownership stakeholders have

Question	Response
	been discussed in Chapter 2, section 2.4.5 and Chapter 4, section 4.3.3.3.1.4. No action to be taken.
2. Is the framework applicable in your business environment?	Yes (all participants). All participants were positive in their response that the framework is applicable in their business environments. Participants explained that, where they took control of the IS in their business environment, the outcomes of the ownership led to the IS being appropriated more positively and that the buy-in of the users and IS role-players were acquired. These positive outcomes contrast the areas where business leaders did not take ownership, leading to users and other IS role-players not having a satisfactory experience when using the IS. No action to be taken.
3. Is the framework applicable elsewhere in the organisation?	Yes (all participants). Discussion: One of the IS owners' users consisted of approximately 90% external service providers comprising consultants and contractors working part-time in the financial services organisation, while another IS owner deal almost exclusively with internal staff. Both IS owners were satisfied that the framework can be applied in their areas. No action to be taken.
4. Do you want to add anything to the framework?	No (three participants) Yes (one participant): There was a concern about the roles of stakeholders in IS ownership. The concern was that IS departmental staff should also take ownership of their commitments as custodians of IS and that this concern should be emphasised in the framework. This response concurs with the response to question 1 above. The roles of the stakeholders are discussed in Chapter 2, section 2.4.3. The requirement that the IS department's staff members take ownership of their responsibilities is discussed in section Chapter 2, section 2.4.6. Action: This concern should be addressed when the roles of IS ownership role-players are better understood.

Question	Response
5. Do you want to remove anything from the framework?	No (all participants). No action to be taken.
6. Are there other changes that you would like to see in the framework?	No (three participants). Yes (one participant): A question was asked whether the definition of IS ownership should not include the responsibilities of other role-players. Action: The definition is adequate. The concern of the participant should be addressed when the roles of IS ownership role-players are better understood.
7. Is there anything else that you would like to discuss that is related to the framework?	A number of issues were raised and are discussed below.

5.6.1 Issues discussed during the focus group session

This section refers to question 7 in Table 20: *Is there anything else that you would like to discuss that is related to the framework?*

The following issues were raised:

1. *Ownership from IS-staff is not in place* –
   Interpretation of the statement: Business units experience the problem that, even if they accept the responsibility and accountability of an IS, the same enthusiasm for the support and maintenance tasks is not always visible in the staff from the IS department. This lack of ownership of the responsibilities by IS departmental staff makes the business unit uneasy and they feel vulnerable. The dependency of the business unit is illustrated in Chapter 4, section 4.3.3.3.1.6, where an IS owner wanted to qualify a letter of promise to senior executive managers.

   Response: Where business leaders are obliged to take ownership of the IS in their environments, IS-staff should take ownership of their activities as custodians of IS. Business units should have the assurance that the IS department will in all circumstances render the appropriate levels of support that are required by the business. Business units can acquire assurance of

sustainable support and maintenance levels, which can be assisted by entering into service level agreements with the IS department, or to acquire a service standards promise from the IS department.

2. *Consulting companies promote IS ownership in the IS department* [and not in the business] *through their "centres of excellence concept"* –

    Interpretation of the statement: Consulting companies create awareness of practices in the IS environment. The concept of a centre of excellence as promoted by consultants is structured in a manner that the business and the IS department form a practice community to support, maintain and appropriate the IS in an innovative manner in the organisation. The centre of excellence is headed by the business-based IS owner, implying that IS ownership resides within the centre of excellence, under the care of the business unit. Not all "service centres" in the financial services organisation were designed in this manner and the interviewee's concept of a centre of excellence was in reference to a "support centre" that comprised only of technologists. This comment from the business leader can be understood if the business leader has a perception that IS ownership resides in the support centre, which functions under the care of the IS department.

    Response: The concept of centres of excellence should be understood as a collaborative initiative between business, the IS department and other role-players in IS ownership and should actually promote IS ownership in the business environment. The business-based IS owner heads the centre of excellence, hence the idea of ownership residing with the business.

3. *When the business asks the IS department to address a problem with an IS, the IS department hi-jacks the IS ownership* –

    Interpretation of the statement: It is the perception that the IS department takes control of the IS when the business requires assistance from the IS department.

    Response: It may be the case that the IS department views the problems that are experienced as technology-associated problems and not business-related problems. However, the problem where the IS department seizes IS ownership

from the business should be acknowledged as a problem that needs to be addressed in IS ownership. This issue was addressed in section 5.2.4.

4. *When an IS is developed, the IS department allows the outside company that was contracted to implement the IS, to take the initiative of the implementation* –

Interpretation of the statement: Business leaders that are responsible for an IS utilise the services of the IS department to contribute to the identification and acquisition of a suitable IS that should satisfy the requirements of the business. This concept of taking the lead from the IS department is misunderstood in the organisation, since the IS department is mainly qualified to assist with technologies, while the alignment with business requirements is the responsibility of all involved parties. Business leaders (as IS owners) should be in control of the complete life-cycle of the IS.

Response: The statement of the participant would be a valid response if the IS department were the owners of the IS. However, the roles of the stakeholders in IS ownership clarifies that the business is responsible for IS projects in the business environment. It is not the IS department that allows the external company to take the lead, but rather the business leaders that allow this to happen. Once the concept of IS ownership is understood and applied in the business areas, this phenomenon should end. Understanding IS ownership should increase when it is adopted in the organisation and stakeholders in IS ownership understand and accept their IS ownership-related responsibilities and roles.

5. *Business should trust the IS department. If it doesn't happen, business will bypass them* –

Interpretation of the statement: The statement was made with respect to the acquisition of IS solutions to resolve a business problem. The organisation frequently utilises external service providers to develop a suitable solution for the business. Business leaders have the perception that the IS department "abdicates" its responsibilities and does not perceivably "fight" for the rights of the business when dealing with the external service providers. This creates the

perception that the IS department does not have the capability to satisfy business units' requirements.

Response: IS ownership is a collaborative effort and when the roles of the stakeholders in IS ownership is understood and applied, the IS department should execute on their obligations.

6. *Business has a problem with business analysts that do not understand the business, resulting in IS that only partially complies with business requirements*

Interpretation of the statement: Business believe that the IS department does not understand their requirements, interpret the requirements in their own way and deliver the IS based on their (the IS department's) own interpretation. This may be the case, as business analysts reside in the IS department and may not have the in-depth knowledge of the specific business unit.

Response: The problem relates to a lack of in-depth business knowledge and the dilemma of "business-speak *versus* IS-speak". Initiatives to build absorptive capacity should assist addressing this problem (Cohen and Levinthal, 1990; Hou, 2012; Kwahk, 2013). The concept of centres of excellence with the business-based IS owner heading the centre, may present a viable solution for the organisation.

Although the discussions do not in all cases relate to the framework, some of the concerns of the focus group participants were addressed in the framework.
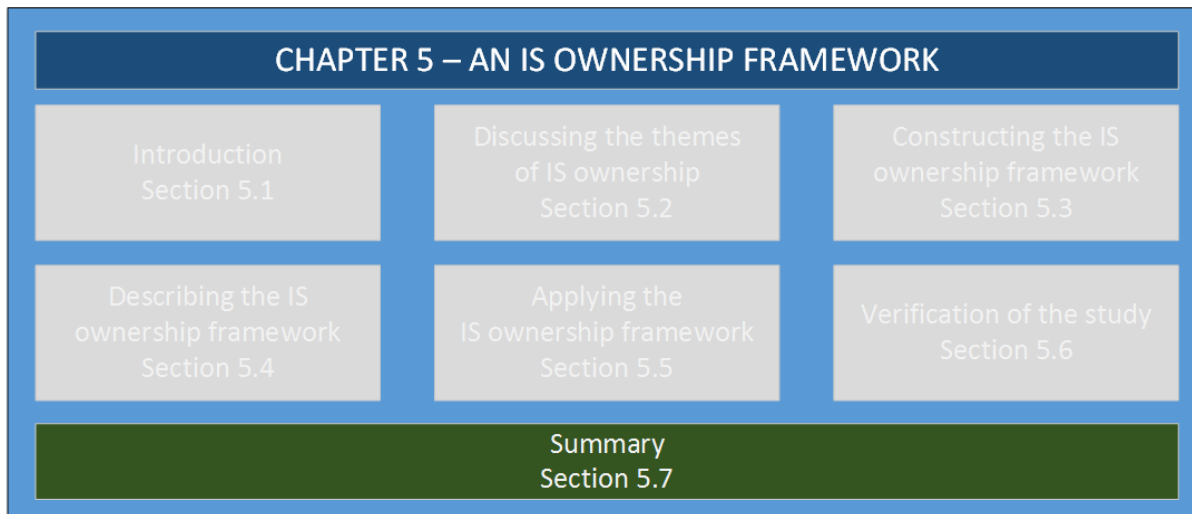
5.6.2 Conclusions of the proof of concept

The proof of concept to get an indication of the applicability of the framework for understanding IS ownership in the financial services organisation provided an indication that the framework is valid to use in the organisation. All participants agree that the framework provides an understanding of IS ownership and that the framework is applicable in their business environments.

The discussions between participants and questions from participants displayed a significant shift from high levels of ignorance on the side of IS owners when the study

commenced, to the current situation where IS owners were exposed to the concept of IS ownership.

5.7 Summary

CHAPTER 5 – AN IS OWNERSHIP FRAMEWORK

Introduction
Section 5.1

Discussing the themes
of IS ownership
Section 5.2

Constructing the IS
ownership framework
Section 5.3

Describing the IS
ownership framework
Section 5.4

Applying the
IS ownership framework
Section 5.5

Verification of the study
Section 5.6

Summary
Section 5.7

In this chapter the framework for understanding IS ownership was developed. The framework for understanding IS ownership addresses the construct of IS ownership and also the institutionalisation and application of IS ownership from the perspectives of the organisation and the individual. Acknowledging the difference in perspectives of the role-players and addressing the individual's expectations and the expectations of the other party in the IS ownership assignment, a situation can be created where all parties' expectations are met. This situation reflects the desired outcome of IS ownership in the organisation.

Following the construct of IS through to the processes of IS ownership, the organisation should be able to understand IS ownership from the perspective of the IS owner, including the challenges experienced by IS owners. IS owners should become aware of the higher-level perspective of IS as seen from the organisation's point of view and contribute to the holistic objectives of the organisation.

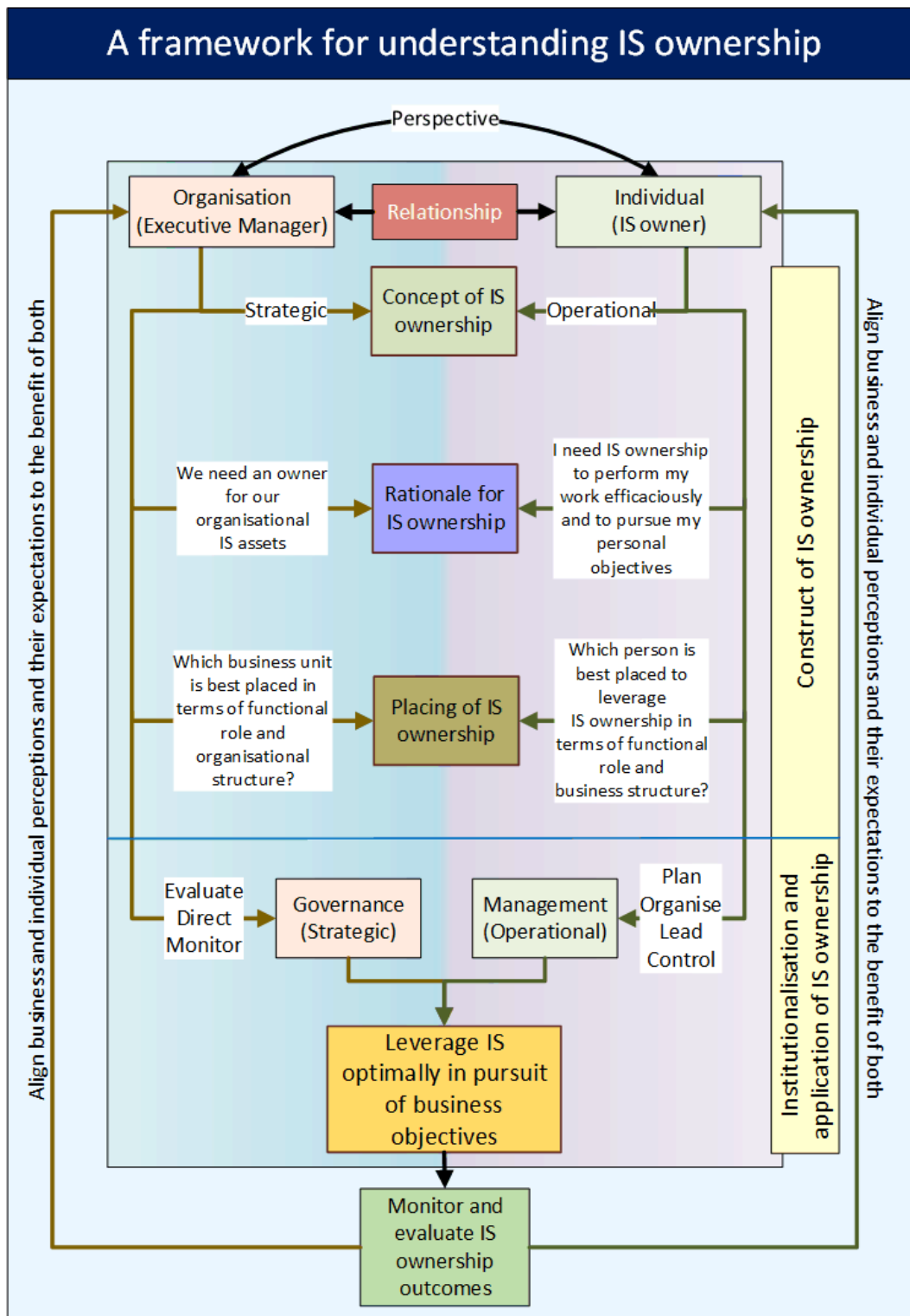The framework for understanding IS ownership is depicted in Figure 47.
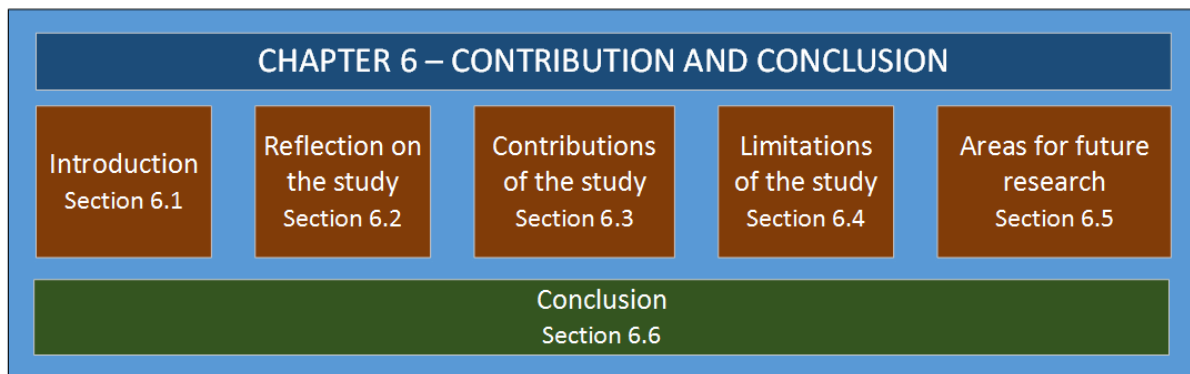

Figure 47- A framework for understanding IS ownership

The following chapter discusses the contribution made by the study.

Chapter 6 – Contribution and conclusion of the study

CHAPTER 6 – CONTRIBUTION AND CONCLUSION

6.1 Introduction

The aim of this study was to investigate and develop a framework for understanding IS ownership in the organisation. In addition, the study also provides guidelines for organisations to implement IS ownership and individuals to develop IS ownership. Through a process of logical reasoning elements of generic ownership (see Chapter 2, section 2.2), were applied to the concept of IS ownership (Chapter 2, section 2.4). The study also identified six themes that capture the essence of IS ownership in the organisation.

In their pursuit of business objectives, business areas need to involve business leaders to take ownership of the IS in their areas. Establishing and managing IS ownership in the business areas have been problematic for organisations (Channin et al., 2009; Grover et al., 2007; Lohmeyer et al., 2002; Pierce et al., 2004). As the concept of ownership is complex (Pierce et al., 2003), developing a framework was identified as an approach to understand IS ownership, with the intention that IS owners would lose the reluctance to accept ownership once they acquire a better understanding of IS ownership. This study is built on the knowledge base of ownership in general and more specifically on the knowledge base of IS ownership in a financial services organisation.

Chapter 6 concludes the study of understanding IS ownership. The conclusion discusses general findings related to IS ownership in the organisation, the implications of having an IS ownership framework and the applicability of the IS ownership framework. The limitations and challenges of the study and possible areas for future research are also addressed in this chapter.

The influence of social exchange theory on the research

In the study, social exchange theory was used as a lens to view the relationships between IS role-players. A theoretical lens provides a focus to guide the perspective of the researcher in the study and provides insight into areas that otherwise may have remained hidden.

Based on the required collaboration to successfully leverage an IS in the business areas and the resulting creation of relationships between IS ownership role-players, the use of social exchange theory was identified to guide the study in aspects related to these relationships. Social exchange theory explains why and under which conditions two or more individuals exchange something of value for something else that may or may not be of approximately equal value. The exchange process is guided by norms of reciprocity or negotiation that dictate what are involved in the exchange and how the exchange should take place.

Social exchange theory is based on principles that include reciprocity and equity, value of the outcome, experience, costs, comparison and distributed justice. The principle of reciprocity serves as a guide to what may seem to be a fair exchange in the IS ownership relationship. Both parties will continue to exchange their contribution to the relationship if they believe that the other party contribute in equal value to the relationship. This implies that if one party perceives that he gets less than the other party contributes, the relationship may deteriorate, or if the contributions are of equal value, the relationship is strengthened.

The more satisfied a party is with the outcomes of a relationship, the less likely the party will leave the relationship. Parties are likely to remain in the relationship if they believe that the outcomes of the relationship renders better outcomes than alternative relationships.

The study was influenced by social exchange theory, as the theory made the researcher aware of relationship factors that may influence the development of psychological ownership with IS. Some of the questions compiled for the interviews related to the IS ownership relationship and agreement.

6.2 Reflection on the study

For the framework to been seen as a contribution, it should have been developed:

- following a rigorous and scientific sound research process;
- addressing the research problem and the research objective.

An indication of the usability and value of the framework in the organisation should be available. The following sections provide an insight into the approach followed during

the research and the level to which the research problem and research objective were addressed.

6.2.1 The research process

The research followed a rigorous and scientific sound research process. In Chapter 3, a framework for conducting the study was proposed, which is aligned to the research onion suggested by Saunders et al. (2012). The research onion of Saunders (2012) was used to identify the elements of the study. Guided by the literature study described in Chapter 2, an awareness of formal and psychological ownership was created. This theoretical knowledge viewed through the lens of social exchange theory was applied to structure the questions for interviewing business leaders and executive managers in the financial services organisation.

A subjective approach was taken to understand the meanings of social interactions and actors' intentions, the realisation of their expectations and the satisfaction of their motives (Holden and Lynch, 2004). An interpretive stance was taken to understand the world from the viewpoint of the human actor (Saunders et al., 2012). Limited information was available in the literature that addresses both formal and psychological ownership of an IS in the organisation. The study was therefore approached inductively to build an understanding or theory of IS ownership in the organisation (Saunders et al., 2012).

To acquire an understanding of IS ownership, a phenomenological study was conducted, which focused on the experiences of IS ownership role-players in the financial services organisation, rather than focusing on the phenomenon of IS ownership itself. By understanding how IS owners and executive managers experience IS ownership, a better understanding of the phenomenon of IS ownership is acquired (Campbell, 2011; Willis, 2007). Conducting a phenomenological study uncovered the reasons why some business leaders are reluctant to take ownership of the IS in their business areas, which is a focus area of the research. The study was approached through a lens of social exchange focusing on the reciprocal relationships between IS ownership role-players. The study was qualitative in nature and investigated IS ownership in a cross-sectional time horizon.

As mentioned, IS ownership was investigated in the research environment of a financial services organisation. The organisation comprises a diversity of functions, a number of business areas. The hierarchical structure of the organisation affords using multiple levels of analysis of data acquired for the study. Data was acquired through semi-structured interviews with business leaders and executive managers. The collected data was transcribed and coded with a text-analysis application, Atlas.ti. The data was analysed in a general inductive manner with constant comparison with data acquired from a literature review.

6.2.2 The research problem and the study objective

The IS ownership framework addresses the research problem and the study objective. The problem statement was defined as:

> *Many business leaders are reluctant to take ownership of the IS in their business areas, missing the opportunity to utilise IS optimally as resource in the organisation.*

To address the research problem, an understanding of IS ownership is required (Chapter 1, section 1.3). In the absence of literature discussing the multi-faceted aspects of IS ownership (formal ownership together with psychological ownership, existing and being applied in the organisation), it may be argued that IS ownership is not comprehensively understood in the organisation. To acquire a better understanding of IS ownership, the objective of the study was:

> *To suggest a framework for understanding IS ownership in the business environment.*

In order to construct a framework for understanding IS ownership in the organisation, it is necessary to understand what such a framework may comprise. The main research question was identified as:

> *What are the components of a framework for understanding IS ownership in the organisation?*

6.2.3 Constructing the framework

To create an understanding of IS ownership, a number of high-level questions emanating from the main research question are documented in Table 21. The questions in the table guided the questions used in interviews to acquire field data in the financial services organisation wherein this study was conducted.

Table 21 - Guiding questions for the interviews

Question	Reason for question	Reference in study
Question 1: What is IS ownership?	Answering this question will render a common understanding of IS ownership in the organisation.	Chapter 2, section 2.4 and Chapter 5, section 5.2.2
Question 2: Why do we need IS ownership in the organisation?	Answering this question will provide a rationale for IS ownership.	Chapter 2, section 2.4.6.3 and section 2.4.8.6 and Chapter 5, section 5.2.3
Question 3: Who should own the IS in the organisation?	Answering this question will assist in identifying the best area and candidates for placing the IS in the organisation.	Chapter 2, section 2.4.1 and Chapter 5, section 5.2.4
Question 4: Why are some business leaders hesitant to take IS ownership?	Answering this question will assist to understand business's reluctance to "own" its IS. This information is necessary to create a point of departure to create a common understanding of factors that cause IS ownership to remain in the business environment, or revert to the IS department	Chapter 5, section 5.5.3
Question 5: How should the organisation structure the IS-business alliance?	It is imperative that the roles and responsibilities for IS owned by the business be clear and unambiguous. This will ensure that ownership is tied down to specific stakeholders.	Chapter 5, section 5.4.3
Question 6: How should IS ownership be managed to be a positive resource in the organisation?	This question addresses how the application of an IS in the organisation can be optimised.	Chapter 5, section 5.2.5

All the questions in Table 21 were addressed in the research. Literature and field data related to the questions were analysed and interpreted. The answers to the questions were used as the basis for the IS ownership framework. The following section addresses the high-level questions from Table 21:

6.2.3.1 Question 1: What is IS ownership?

IS ownership comprises two forms of ownership. With formal ownership, the IS is assigned to the individual through organisational policies and is recognised in the organisation as a form of legal ownership. The second form of IS ownership emerges when the individual develops a psychological relationship with the IS and "feels" that the IS belongs to him (Pierce et al., 1991) (Chapter 2, section 2.4.1).

Ownership of any target is complex (Mackin, 1995; Pierce et al., 2003) and so is ownership of an IS. When IS owners discussed IS ownership during the interviews, their focus was not only on their business objectives but also on their personal objectives. Expectations of individuals are focused on both the business and on the personal self. Individuals expect that IS ownership should afford them with control over the IS, that they are provided with information regarding the IS and that they should share in the benefits of the successful leveraging of the IS in the organisation (Chi and Han, 2008; Mackin, 1995; Pierce et al., 2001, 1991). Apart from the expected rights of IS ownership above, feedback from the employees in the organisation was that IS owners also expect some level of status, power and satisfaction in return for owning an IS (Chapter 2, section 2.2.4.1 and Chapter 4, section 4.3.3.3.1.3).

Some IS owners experience IS ownership as a challenge to be conquered and they perceive the IS as a resource in their pursuit of business objectives. The IS owners have taken psychological ownership of the IS and seek for new and innovative means to leverage the IS to create value in the organisation. IS owners having developed psychological ownership generally have fewer problems mobilising IS support resources and are more comfortable with the levels of IS support they receive from the IS department. IS owners who accepted ownership also understand the separate and different roles of the IS owner and the IS department. Some IS owners may believe that it is part of their job to accept responsibility and accountability to leverage

the IS in pursuit of business objectives (R4). While this argument may be true for some IS owners, other IS owners may perceive IS ownership to be a positive resource in itself: "If you, in the environment could get everybody… to believe that they own [IS,]… that would lead to excellence" (R10) (Chapter 4, section 4.3.3.3.1.2).

IS owners that generally do not take psychological ownership perceive that the IS ownership delegated to them are "over and above" their normal jobs, but it is not recognised as an additional contribution. The lack of IS ownership may be blamed on the attributes of the IS and the environment, such as the IS being too technical or cumbersome to use, or lack of IS support. Once a stumbling block is reached, the IS owner may choose not to pursue the matter, but rather to accept the disablement brought about by the obstacle (Chapter 4, sections 4.3.3.3.1.4 through 4.3.3.3.1.7).

Executive managers view IS ownership as a mechanism to achieve organisational objectives. IS is an asset in the organisation that needs to be leveraged in pursuit of organisational objectives (Chapter 4, section 4.3.3.3.1.2). Executive managers expect IS owners to take responsibility and accountability for the successful leveraging of IS in the organisation (Chapter 2, section 2.2.4.2 and Chapter 4, section 4.3.3.3.1.3).

Business leaders' concept of IS revolved mostly around ownership of data or information, whilst having no uniform understanding of IS in the organisation, implying that the concept of IS ownership is also ambiguous. The concept of IS as an ensemble of technology, business processes, resources, organisational skills and knowledge and business information is discussed in Chapter 4 (section 4.3.3.3.1.4, section 4.3.3.3.1.5, section 4.3.3.3.1.6 and section 4.3.3.3.1.8).

6.2.3.2 Question 2: Why do we need IS ownership in the organisation?

From the perspective of the organisation's executive managers with regards to IS ownership, IS are assets and all assets should have owners (ISACA, 2012b) (Chapter 5, section 5.2.3.1). IS owners may argue that nobody in the organisation is better placed to achieve personal and business objectives, because it provides the control to perform one's work efficaciously and also to pursue one's personal objectives (Chapter 5, section 5.2.3.2).

6.2.3.3 Question 3: Who should own the IS in the organisation?

Viewing IS as an extension of a business system, business leaders are in the best position to leverage IS to pursue the objectives of the business. Should IS ownership not reside within the business area, the objectives of the business area may not be realised. For example, IS managers typically pursue the objectives of the IS department and, if they were the owners of an IS, they may focus on the business objectives of the IS department, which may not in all aspects correspond to the business objectives of the business area.

Executive managers formulate plans to strategically steer the organisation towards specific outcomes. These organisational strategic plans are then unpacked into business plans to guide business areas towards business objectives in support of the organisational objectives. The organisational IT plan is depicted as a roadmap leading the organisation towards a desired future IT state. Unpacking the IT plan reveals IS initiatives that are required to address the gaps between the current and future states of the business and its technologies. Once it has been established that the strategic gap should be filled by an IS solution, business areas that have the best potential to successfully pursue the organisational objectives are identified to own the IS. Identification of the business areas are based on their functions and the structure of the organisation (Chapter 5, section 5.2.4).

Similar to selecting the most suitable business area to own an IS, executive managers should identify the most suitable individual or group of individuals to which IS is assigned. Selection is based on the functions of the individuals and the structure of the business department wherein the individuals operate. Careful selection where choices are available may be made based on the personality and the capability of the individual to pursue targets. Individuals with high internal loci of control and internal efficacy drives may be better suited to own complex and challenging IS. More routine-based and less challenging IS to own may be assigned to staff members that are more suited to own an IS as part of the normal, everyday chores (Chapter 4, section 4.3.3.3.1.4).

6.2.3.4 Question 4: Why are some business leaders hesitant to take IS ownership?

IS ownership is complex and perceived differently by different individuals. Understanding what IS and IS ownership entail, how IS ownership enables the business, individual preferences and who has to take IS ownership can place IS ownership into context in the organisation.

Not all IS owners interviewed have taken ownership of the IS that they are held accountable and are deemed responsible for. IS owners that did not develop psychological ownership for their IS typically display a sense of non-involvement and they use the IS in a manner to "keep management happy" (R5). Another IS owner without psychological ownership stated that he does not know what his executive manager expects him to do: "we're not too sure what their expectations are" (R11). Reasons why many business leaders are reluctant to take ownership of the IS in their business environments are discussed in Chapter 5, section 5.5.3. The consequences of business leaders that do not develop psychological ownership of their IS, have been discussed in Chapter 2, section 2.4.1.2, in Chapter 4, section 4.3.3.3.1.2, section 4.3.3.3.1.3 and section 4.3.3.3.1.8.

Organisations have no direct influence on the personal attributes of business leaders that can promote IS ownership, but they can, through careful selection, identify individuals that have the traits of "good" potential IS owners. The influence of personal attributes on taking ownership of a target is discussed in Chapter 2, section 2.2.6 and personal attributes influencing taking ownership of IS in Chapter 4, section 4.3.3.3.1.9.

Factors that directly influence the development of psychological ownership of an IS can be attributed to the business environment, the assignment of IS ownership, the attributes of the IS and personal attributes. Factors that can influence the affinity for an ownership target are discussed in Chapter 2, section 2.4.9.1 and for IS as an ownership target in particular, in Chapter 4, section 4.3.3.3.1.9. Executive managers have influence over the areas where the IS is deployed, the assignment of IS ownership and the organisational environment (Chapter 2, section 2.4.7, Chapter 4, section 4.3.3.3.1.9 and Chapter 5, section 5.2.5).

6.2.3.5 Question 5: How should the organisation structure the IS department-business area alliance?

Differentiating between the roles of the IS owner and the support-resources required to acquire, deploy, support and maintain the IS, leads the relationship between the role-players. Where the business takes ownership of the IS, the IS department acts as custodian for the IS. The roles and responsibilities of the IS department and the IS owner are discussed in Chapter 2, section 2.4.3 and Chapter 4, section 4.3.3.3.1.4.

ISACA (2012a, 2012b) provides the COBIT 5 framework and processes for IT governance in the organisation. Role-players in the governance space, which includes managers at various levels and other staff functions in the organisation, have been identified and roles and responsibilities documented in the COBIT 5 framework. RACI charts are used to clarify the responsibilities of the different role-players (also see Chapter 4, section 4.3.3.3.1.4). An extracted adaptation of COBIT 5's (ISACA, 2012a) RACI chart is depicted in Table 15 in Chapter 4.

The role of the IS owners is to create and manage plans to leverage the IS successfully to achieve organisational objectives. IS owners are guided by the overall IT plan of the organisation and segmented IT plans that cover the IS roadmap for the business areas. The IT plan includes principles that guide the acquisition, deployment, maintenance and support of IS. The IT plan for the overall organisation and the segmented plans of the business areas are constructed with the assistance of business, IS specialists and the enterprise architects in the organisation. The IS department serves as custodians for the IS, including the data generated and/or consumed by the IS. Custodianship implies that the IS department provides support for the technology, cares for the data of the business by ensuring data storage, processing, data backups and retrieval and ensures that business continuity plans are carried out.

By understanding and agreeing with their roles, IS owners have a clear mandate to leverage IS optimally in their business areas. COBIT 5 and the International Standard ISO/IEC 38500:2008 describe the responsibilities for the different role-players in IS ownership in the IT governance arena (ISACA, 2012b; ISO and IEC, 2008).

Requirements for documented roles and responsibilities are discussed in Chapter 4, section 4.3.3.3.1.4.

High-level decision-making is centralised and is performed by steering committees. Executive managers or assigned delegates represent the IS owners at the steering committee meetings. Adopting a governance design of centralisation implies that the organisation can also centralise support, budgeting and procurement. Centralising IS support in the IS department implies that the organisation can aggregate common ICTs such as that used in ICT infrastructure, servers and storage devices. End-user devices are budgeted for and procured in a manner that combines the requirements of the wider environment of the organisation. The concept of centralisation is discussed in Chapter 4, section 4.3.3.3.1.4.

IS ownership involves caring and taking responsibility for the IS in the organisation. IS owners have to leverage their IS to achieve business objectives, but they are dependent on contributions from other role-players, such as executive managers, the IS department and the EA function.

The function of EA in the organisation provides the opportunity to view the organisation holistically and also to focus on the various segments that make up the respective business areas using IS. In the financial services organisation, EA resorts under the CIO as head of the IS department. "EA should give us those different architectures that allow all of these things to fit in seamlessly, in a cost efficient and effective way" (executive manager). Guiding the organisation's IS towards the desired future state, the EA division guides the business environment ensuring standardisation and integration across IS platforms. Standardisation results in minimising support skills, training of support staff and users and in economies of scale. Integration ensures that IS can be deployed on different IS platforms, while sharing data and working in a synergetic manner together. Standardisation and good business practices have been addressed in Chapter 4, section 4.3.3.3.1.4.

6.2.3.6 Question 6: How should IS ownership be managed to be a positive resource in the organisation?

IS ownership can be applied as a resource when the owners are able to appropriate the IS to successfully achieve their business objectives. IS owners that develop psychological ownership of the IS as ownership target are such resources (Avey et al., 2009; Liu et al., 2012). IS owners with psychological ownership can be expected, not only to apply IS as designed but also to apply IS in new and innovative manners to provide the organisation with a competitive advantage (Venkatraman, 1997). IS owners provided with the necessary authority and control over the IS may accept ownership and thereby also acquire the inclination to leverage the IS to the advantage of the organisation (Avey et al., 2009). The matter of IS ownership as a resource is discussed in Chapter 4, section 4.3.3.3.1.2.

Part of the responsibilities of the executive management is to evaluate the current and future state of IS in the organisation and formulate strategic plans to move the organisation from its current, to the preferred future state. Identifying the gaps between the current and future state, taking the structure of the organisation and the functions of the business areas into account, the executive managers identify the business areas that have, or are able to develop the capabilities to execute the strategic plans. IS ownership is then assigned to the most suited business area. With the assistance of other role-players such as the IS department and vendors in the market, the business area then initiates the acquisition process and ensures that the IS is implemented and operationalised in the organisation. The institutionalisation of an IS in the organisation is discussed in Chapter 5, section 5.4.6.

Managing an IS optimally is a collaborative effort between different role-players that include the IS owner, the executive manager and the IS department. Where executive managers are responsible to formulate organisational strategies, the IS owners are responsible to execute these strategic plans. The IS owner is overall responsible to ensure that the IS becomes and remains capable as a resource to achieve business objectives. The IS department may through service standards, promise the business leaders that the IS is maintained and that the necessary processes are in place to ensure availability and usability of the IS. The IS department also cares for the

information used in, or generated by the IS. Management of an IS is discussed in Chapter 4, sections 4.3.3.3.1.4 and 4.3.3.3.1.6.

A summary of the framework of IS ownership and guiding method is provided next.
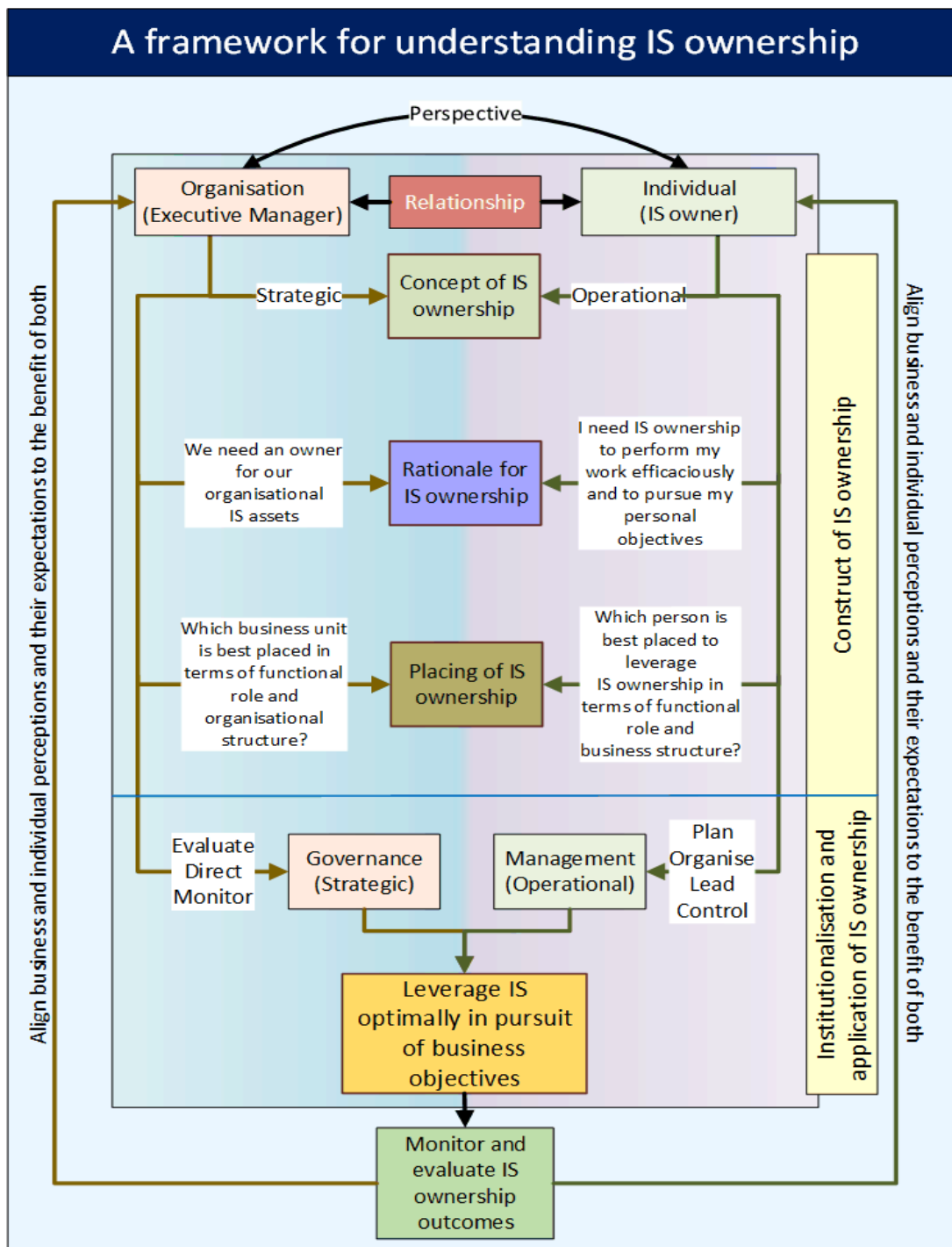
6.2.3.7 A framework of IS ownership

Figure 48 - Framework for understanding IS ownership

The framework is described in detail in Chapter 5, section 5.4 and the method of applying the framework is provided in Chapter 5, section 5.5. Chapter 5, section 5.5.1 provides a high-level method and section 5.5.2 provides the description of the method. The framework for understanding IS ownership comprises two main segments, namely the Construct of IS ownership and the Institutionalisation and Application of IS ownership (see Chapter 5, section 5.4.5 and section 5.4.6).

Construct of IS ownership

In this segment, the concept, rationale and placement of IS ownership is discussed (Chapter 5, section 5.4.5). The segment describes IS ownership from the perspectives of the IS owner and the executive manager.

Institutionalisation and application of IS ownership

In this segment, the strategic drivers for IS ownership are discussed, including the assignment of IS ownership to the business area and to the individual in the identified business area (Chapter 5, section 5.4.6). The management role of the IS owner to leverage the IS towards achieving business objectives is discussed in this segment.

Outcomes of IS ownership

The outcomes of IS ownership are monitored and evaluated to verify that the IS ownership assignment led to the successful leveraging of the IS in the business area and that the parties involved in the IS agreement are satisfied that their expectations of IS ownership were met. Feedback from the outcome evaluation may affect the relationship between the IS owner and the executive manager. If any of the parties participating in the IS ownership agreement are not satisfied with the outcomes of IS ownership or their expectations were not met, changes to the IS ownership agreement may be required. The relationship may be strengthened if the parties are satisfied with the outcomes of the IS ownership.

6.2.3.8 Guiding method for applying the IS ownership framework

Pre-requisites

IS owners, executive managers and other role-players have different viewpoints of IS, IS ownership and IS ownership expectations, which should be aligned to another as well as to the objectives of the organisation when IS ownership is provided to a business leader.

Construct of IS ownership

Step 1:   Create and communicate a single unambiguous definition of IS and of IS ownership

Description: A single unambiguous definition of IS and of IS ownership used in the organisation should ensure that executive managers and IS owners do not base their expectations on their own interpretation of IS and IS ownership.

Step 2:   Understand the rationale for IS ownership from the point of the organisation and from the point of the IS owner.

Description: The rationale for IS ownership differs between the viewpoints of the organisation and IS owner. Organisations may argue that they need owners for their organisational assets, while an IS owner may argue that IS ownership is necessary because it provides the control to perform one's work efficaciously and to pursue one's personal objectives.

Step 3:   Decide where the IS should be placed.

Description: At strategic level it is necessary to identify the business unit that is best suited to own the IS taking the organisational structure and the roles of the existing business units in the structure into account. In the identified business unit it is necessary to identify the individual that is best suited to leverage the IS optimally, taking the structure of the business unit and the role and the empowerment of the individual into account. Consideration should be given to the personality of the individual and his

ability to manage complex or highly-automated IS and if the individual has the authority over the required resources to optimally leverage the IS.

Institutionalisation of IS ownership

Step 4:   Assign the IS to a suitable business unit.

Description: Using the identified gap in the organisational strategic plan wherein an IS should be acquired, executive managers assign the new IS to an existing or new business unit according to the structure of the organisation and the role of the business unit.

Step 5:   Assign the IS to a suitable business leader in the business unit.

Description: The executive manager of the relevant business unit assigns IS ownership to an identified business leader taking the structure of the business unit and the role of the business leader into consideration.

Step 6:   Express and align expectations of the role-players to the objectives of the organisation.

Description: Assignment is based on the expectations of the executive managers assigning the IS ownership and that of the business leader receiving the IS ownership. The expectations of the executive managers are aligned to the objectives of the organisation.

Step 7:   Document expectations as rights and responsibilities in an IS ownership contract.

Description: Expectations of executive managers and business IS owners are documented as rights and responsibilities in a formal IS ownership agreement. Expectations of all IS ownership role-players should be aligned to another as well as to the objectives of the organisation. Only expectations documented as rights and obligations in the IS ownership agreement are recognised as valid.

Step 8:   Assign and document the necessary resources to the IS ownership initiative in the IS ownership contract.

Description: The executive manager is responsible to assign the resources required to successfully leverage the IS to achieve the objectives of the business unit.

Step 9:   Document the mandate of the IS owner and the roles and responsibilities of the IS ownership role-players in the IS ownership contract.

Description: The IS ownership agreement should include the mandate of the IS owner, indicating his authority, control and decision-making powers available when exercising IS ownership. The responsibility and the roles of IS ownership role-players should also be included in the IS ownership agreement. This will ensure that all role-players have clear and distinct responsibilities collaborating towards the achievement of business objectives.

Step 10:   Negotiate, agree and document the key performance areas of the IS ownership role-players in the IS ownership contract.

Description: The key performance areas of the role-players are documented in the IS ownership agreement. The role of the IS owner may be in the form of key performance indicators that are measured and the role of the IS department may be a service level agreement or a service standard that was agreed upon.

Management of IS ownership

Step 11:   The IS owner is responsible to mobilise and manage IS resources in support of the objectives in the organisation.

Description: The IS owner, as manager of the business unit or sub-unit, is responsible to mobilise and manage the resources assisting in leveraging the IS. IS ownership that comprises formal IS ownership and psychological ownership provides the strongest form of ownership and increases the

possibility that business objectives will be met. Formal ownership is found where the IS is assigned to the IS owner and psychological ownership where the IS owner develops feelings that the IS is "mine".

Step 12: Monitor and measure IS ownership outcomes to determine the performance of the role-players with respect to IS ownership.

Description: The outcomes of IS ownership are monitored and measured to determine the success of leveraging the IS in pursuit of business objectives. Successful outcomes typically strengthen the relationship between role-players, while an outcome that does not fulfil the expectancy of one or more role-player may cause the relationship to become fragile. The assignment agreement may have to be adjusted to ensure a balanced and fair agreement for all role-players.

Outcomes of IS ownership

Step 13: Adjust the agreement contract based on the outcomes of the IS ownership measurements, taking cognisance that several factors may influence the level of IS ownership and therefore the performance of the IS owners.

Description: The relationship between the executive manager and the IS owner is a core component of the success of leveraging IS ownership successfully. The feedback from the outcomes of the IS ownership agreement feeds into the relationship between the executive manager and the IS owner and all adjustments required in the relationship is documented in the IS ownership agreement. Based on the lens of social exchange theory used in this study, the parties of the IS ownership agreement expect that the agreement should be reciprocal and balanced in terms of cost and profit. Cost pertains to the effort and time inserted into the arrangement and profit pertains to the benefits acquired from the arrangement. An imbalance in the relationship may require an adjustment of the agreement, else it can result in the breakdown of the relationship. When

377

the outcomes of the IS ownership are aligned to the satisfaction of the parties, the relationship is reinforced.

The next section discusses the applicability of the framework for understanding IS ownership in the organisation.

6.2.4 The applicability of the framework

The framework was developed using a sound and valid scientific approach. The literature review focused on generic ownership, distinguishing between formal ownership and psychological ownership. Viewing the ownership of IS as a target for ownership, the basis for the questions used in the interviews with IS ownership stakeholders was formulated. The financial services organisation wherein this study was conducted has a diversity of functions, ranging from highly structured and stable functions to functions that are agile and innovative. Interviews were held with IS owners and executive managers involved in various functions in the organisation. The diversity of the functions and the multi-level analysis brought about by the perspectives of the executive managers at strategic level and the IS owners at tactical level, provided data rich enough to allow meaningful interpretations.

Some of the data acquired from the interviews generally corresponded with data from the literature review, while new data was also uncovered. The matching data provided an indication that the IS ownership framework is generic to such a level that it can be applied elsewhere in the financial services organisation and may even be usable in other organisations. The newly uncovered data from the interviews assisted to fill the identified gaps in the literature related to IS ownership (Chapter 2, section 2.5).

For verification, the framework was submitted for discussion to a panel in a focus group session in the financial services organisation. The intention of the focus group session was to acquire an indication of the understanding of IS ownership and the applicability of the framework in the financial services organisation (Chapter 5, section 5.6). A summary of the IS ownership framework was provided to four participants comprising executive managers and IS owners. The participants concurred that the framework is applicable in their business units and in the wider organisation.

378

Some concerns were aired about the commitment of the IS departmental staff to IS ownership. Commitment of the IS departmental staff was addressed in the framework as the roles of the stakeholders in IS ownership, but based on feedback from the focus group participants, its importance was emphasised as a crucial factor in successfully leveraging IS ownership in pursuit of business objectives. No major changes were applied to the framework, but a number of small concerns had to be addressed in the framework. Details of the questions raised in the focus group session are provided in Chapter 5, section 5.6

6.2.5 The implications of the availability of an IS ownership framework for the organisation

It is not a given fact that IS ownership that was assigned to an individual or a group of staff members will always lead to positive outcomes in the organisation. When conducting field research in a financial services organisation, it was evident that not all business leaders that were assigned the responsibility to care for and leverage an IS, could define IS ownership. IS ownership are seen as "taking care of the data created by the IS". Some IS owners are of the opinion that the IS used in the business areas are too technical and IS ownership should therefore reside with the IS department.

In the financial services organisation, roles played by different stakeholders in the IS are not fully defined and IS owners in general do not know what is expected from them when they receive IS ownership. Not all IS owners display that they have taken ownership. Feelings of ownership (psychological ownership) are essential for optimally leveraging the IS in the business area (Chapter 2, section 2.4.1.2 and Chapter 4, section 4.3.3.3.1.2).

By defining IS ownership, justifying the need for IS ownership, placing the IS ownership in the organisation, establishing IS ownership and finally leveraging IS ownership to create value for the organisation, a resource is uncovered that may previously have been unused. IS owners that develop psychological ownership of organisational targets also perform better in appropriating these targets than individuals without psychological ownership. Creating a culture of IS ownership therefore also provides individuals the opportunities to perform better and inculcate a

culture of excellence as stated by an executive manager interviewed during the study. Using the IS ownership framework creates a better understanding of the nature of IS ownership, as well as an understanding of the practical implications of IS ownership in the organisation.

By identifying why business leaders are reluctant to take IS ownership, the organisation and the business leaders can address the problems that they encounter in this regards. Business leaders taking IS ownership, contribute towards successfully achieving business objectives. The reasons why business leaders are reluctant to accept IS ownership are discussed in Chapter 5, section 5.5.3.

The following section discusses the contributions made by the study.

6.3 Contributions of the study

The purpose of the study was to suggest a framework for understanding IS ownership in the organisation in order to overcome the reluctance that many IS owners have in accepting ownership of the IS in their business areas. No evidence of a framework to understand IS ownership in organisations could be found in the literature. The IS ownership framework firstly focuses on the difference in the perspectives of IS ownership between the executive management and the individuals receiving IS ownership, thereby providing research information at multiple levels of analysis. Secondly the IS ownership framework focuses on business leaders that take or accept IS ownership and business leaders that are reluctant to take ownership of the IS in their business environment.

The study was guided by the research questions as per Table 17 - Research questions and repeated in Table 22 for the purpose of increased readability. "Reason for question" in the table was revised to reflect the status of the table after completing the research.

Table 22 - Research questions

High-level question	Low-level questions	Reason for question
Question 1: What is IS ownership?	• What are business leaders' perceptions of IS ownership? • To what extent do business leaders perceive themselves to be	Answering this question guided the establishment of a common understanding of IS ownership in the organisation.

380

High-level question	Low-level questions	Reason for question
(See Chapter 2, section 2.4 and section 5.2.2)	responsible and accountable for the IS in their business areas? • How do business leaders experience IS ownership? • What are business leaders' concepts of IS?	
Question 2: Why do we need IS ownership in the organisation? (See Chapter 2, section 2.4.6.3, section 2.4.8.6 and section 5.2.3)	• From an organisational perspective: Why should IS have owners? • From an individual perspective: Why should I accept or develop ownership?	Answering this question provided a rationale for IS ownership.
Question 3: Who should own the IS in the organisation? (See Chapter 2, section 2.4.1 and section 5.2.4	• Which business area is best suited to leverage IS in pursuit of business objectives? • Which individual (or group) is best placed to optimise the leveraging of the IS in the organisation?	Answering this question assisted in identifying the best area and candidates for placing the IS in the organisation.
Question 4: Why are some business leaders hesitant to take IS ownership? (See section 5.5.3)	• What are the consequences if business leaders do not take ownership of the IS in their business environments? • What can the organisation do to assist business leaders to take IS ownership? • What are the contributors that promote or erode IS ownership?	Answering this question assisted to understand business's reluctance to "own" it's IS. This information is necessary to create a common understanding of factors that cause IS ownership to remain in the business environment, or revert to the IS department
Question 5: How should the organisation structure the IS-business alliance? (See section 5.4.3)	• How should the IS support be structured to be compatible with the relevant IS-ownership structure? • How are decisions made with respect to the IS ownership structure? • What are owner-stakeholder responsibilities? • How should business retain the economies of scale, present in centralised ICT services, in the areas where IS ownership resides with the business?	It is imperative that the roles and responsibilities for IS owned by the business be clear and unambiguous, ensuring that ownership is tied down to specific stakeholders.

High-level question	Low-level questions	Reason for question
	• How should standardisation and good practices be applied in the areas where IS ownership resides with the business?	
Question 6: How should IS ownership be managed to be a positive resource in the organisation? (See section 5.2.5)	• How should IS ownership be constructed? • How should IS ownership be managed?	This question addressed how the application of an IS in the organisation can be optimised.

6.3.1 Product contribution

In this section the contribution of the IS ownership framework as an artefact in the organisation is discussed.

6.3.1.1 Product contribution in the organisation

A framework including a method to understand IS ownership was constructed through a process of induction. The purpose of the IS ownership framework is to provide an understanding of IS ownership in the organisation and to guide the organisation to implement and manage IS ownership as a resource in the organisation. The organisation can benefit from a better understanding of IS ownership to promote, establish and manage IS ownership.

Addressing the reasons why business leaders are reluctant to take ownership of the IS in their business areas (Chapter 5, section 5.5.3) should promote the development of IS ownership in the organisation. Although not all the reasons can be addressed, or addressed in the short-term, many of the reasons why business leaders are reluctant to take IS ownership can be addressed through the actions of executive managers. Guidance is provided in the study for executive managers to address these obstacles towards developing IS ownership with business leaders (Chapter 2, section 2.4.8).

6.3.1.2 Product contribution towards the individual

The framework also provides guidance to individuals to develop IS ownership, enabling them to pursue organisational objectives, as well as personal objectives.

Personal objectives may include gratification, efficacy, effectance and status in the organisation.

6.3.2 Contribution to IS research

Literature related to ownership as a generic organisational phenomenon is available. Some studies focus on formal ownership and psychological ownership and the combined effect thereof is mentioned in the literature. No studies were identified that relate to the existence and emergence of IS ownership as a resource in the organisation that can be engendered and nurtured.

IS ownership is a problematic concept in organisations due to its complexity and the difference in conception of IS and of IS ownership between organisational stakeholders. Expectations of executive management and business leaders with respect to IS ownership are not always aligned, leading to the under-utilisation of IS as assets and IS ownership as a resource in organisations. Not leveraging an IS optimally may cause the business unit and subsequently the organisation not to reach its potential. A lack of understanding IS ownership was identified as a main contributor why business leaders are reluctant to take ownership of the IS in their business environment.

This study contributes to IS-related body of knowledge by providing a framework for understanding IS ownership, enabling organisations to apply it as a mechanism for pursuing organisational objectives. IS ownership, as it is constructed, institutionalised and applied in the organisation is a new concept in IS research. In this research, the core concepts of IS ownership was defined as "a relationship established by rights and obligations between an owner and an information system, where the owner becomes responsible and accountable to leverage the information system in pursuit of the objectives of the organisation" (Koiranen, 2007; Lohmeyer et al., 2002; Moffett and Sloman, 1991; Parker et al., 1997; Pierce et al., 2004, 2003, 2001). IS ownership is optimised when formal ownership of the IS is assigned to an IS owner and IS owner develops psychological ownership of the IS.

The framework allows individuals to discover the essence of IS ownership by asking the questions of what IS ownership entails, why is it necessary that the IS is owned by

individuals, who is the best placed to own the IS and then, what to do once IS ownership has been assigned. This in-depth understanding of IS ownership assists the IS owner to understand IS ownership in the context of the business environment in the organisation. Likewise, by creating their own understanding of IS ownership, answering why organisations need owners for their IS, where the IS should be placed and how the IS should be instituted and managed to ensure that the IS can be leveraged, executive managers are enabled to utilise IS ownership as a resource to achieve organisational objectives.

The framework for understanding IS ownership therefore addresses the various concepts that role-players may have of IS ownership, the rationale for IS ownership in the organisation and why individuals may need to have IS ownership. The framework also addresses the placement of IS ownership in the organisation and with the individual. The institutionalisation of IS ownership and the application of IS ownership in the organisation are supported by organisational and IT governance practices. The framework for understanding IS ownership is therefore not only descriptive in nature but also provides guidance to establish and manage IS ownership in the organisation.

Reasons why taking IS ownership is problematic for business leaders are discussed in Chapter 5, section 5.5.3 and may provide the necessary information for organisation to start an initiative of developing IS ownership as a resource in the organisation. Acknowledging that an IS ownership assignment revolves around the relationship between multiple role-players, each having their own perspective of IS ownership, can assist the organisation to create an understanding of IS ownership with IS owners, IS department staff members and executive managers. Creating alignment between the perceptions and expectations of IS owners, executive managers and business objectives, the organisation can promote the level of IS ownership of an individual and leverage IS ownership as a resource in the organisation.

IT Governance practices acknowledge IS as strategic organisational assets (De Haes et al., 2013; Institute of Directors, 2009b; ISACA, 2012b). IT Governance in its objective nature, prescribes specific activities in its role-clarification matrices (ISACA, 2012a), thereby not considering personal preferences of individuals. IS ownership is

acknowledged as an organisational resource that can be leveraged to achieve strategic organisational objectives.

By introducing IT Governance as a guidance for IS owners to govern and manage their IS, acceptance of IS ownership is enhanced. IT Governance enhances the value of IS by prescribing the roles of the role players in IS ownership and also enhances the possibility that the IS can assist the IS owners to achieve their organisational and personal objectives. A better-performing IS promotes the development of ownership of the IS.

The study explores the relationships between role-players involved in IS ownership and also emphasises the roles of the different role-players and their expected contributions. Understanding that IS ownership does not require that the IS owner has the technical know-how to maintain and support the IS, or that it is not the function of the IS owner to ensure that the appropriate resources have been assigned to support the IS, may address many of the concerns of the would-be owners of IS in their business areas. IS owners understanding that they can influence the success of applying the IS in pursuit of business objectives by "making things happen", can instil a mastery in the minds of IS owners, improving the possibility of utilising the IS successfully in the business.

By creating a framework to understand the complexity and multi-facetted nature of IS ownership, a contribution was made that could provide the basis for ownership of other organisational targets such as risks and information security. The framework provides a new insight to understand promote, institutionalise and manage IS ownership in the organisation.

6.3.3 Contribution beyond the objectives of the study

The study also rendered contributions beyond the main objective to suggest a framework for understanding IS ownership in the organisation.

6.3.3.1 Adding to the vocabulary of IS ownership

Concepts of generic ownership were applied to IS ownership through a process of logical reasoning. An IS is an asset in the organisation and all organisational assets must have owners (De Haes et al., 2013; ISACA, 2012b), therefore an IS is an own-

able target. Formal and psychological ownership applies to any type of own-able target (Avey et al., 2009; Furby, 1978; Pierce et al., 2003), including own-able targets in the organisation. It is therefore argued that an IS can also be owned formally and psychologically and other aspects related to ownership in the forms of psychological and formal ownership can be applied to IS ownership. Through this use of general ownership concepts in the study of IS ownership, the vocabulary of general ownership is extended into the vocabulary of IS ownership.

6.3.3.2 Applying the IS framework to other ownership targets

The framework for understanding IS ownership, or aspects thereof, can be applied to concepts other than IS ownership in the organisation. Staff members developing ownership of targets such as:

- The management of business risks;

- Job activities;

- Information management;

- Other organisational targets, can serve as resources that can be positively applied towards achieving business objectives.

Concepts of the framework such as the development of psychological ownership of a target can also be applied to personal objectives of the individual. Through a process of understanding of what ownership of a personal target entails, why the individual should accept ownership of a personal target and how to institutionalise and manage the personal target, the individual is guided towards achieving his personal objectives.

6.3.3.3 Applying social exchange theory to manage relationships

The study to create a framework for understanding IS ownership uses social exchange theory as a lens. By applying social exchange theory as a lens to view relationships between parties, the importance of balance in the relationship is emphasised. Understanding how factors such as bases of power can influence a relationship, parties entering into a reciprocal agreement to take responsibility of a target in exchange for equitable rewards, have a better understanding of the dynamics of the

relationship. By aligning and documenting the expectations of the parties, ownership agreements can be managed to the benefit of all involved parties.

6.4 Limitations of the study

The following limitations were identified in the study to propose a framework for understanding IS ownership in the organisation:

- The study environment comprised a single organisation. Although the study was conducted in one organisation, the organisation has a diversity of functions and provided the researcher with a homogeneous population with respect to IS ownership. (Creswell, 2007) advises that a population with similar demographics should be used when conducting a phenomenological study. Interviews were held across the organisation at executive and managerial levels. The data acquired from the interviewees was rich and provided valuable information to understand IS ownership in the organisation.

- To acquire an indication of the applicability of the framework in the financial services organisation, a focus group session was conducted with IS owners and executive managers in the organisation. Feedback from the participants in the focus group indicated that the framework is useable in other areas of the financial services organisation.

  Although the responses of the interviewees and the feedback from the focus group participants indicated high levels of applicability, the generalisability of the IS ownership framework was not verified outside the financial services organisation.

  Using a focus group to debate the usability and value of the framework in the organisation does not imply conclusively that the framework will work in the organisation. Factors such as organisational culture, the maturity of the agility of the organisation and priorities of the employees may hinder the acceptance and use of the framework in the organisation. Organisational culture and maturity are slow-changing and the organisation may not be in a position to promote IS ownership as a resource in the nearby future.

- Although the empirical value of IS ownership was not tested in this study, it does not constitute a limitation of the study in itself. What may be a limitation is the fact

that the influence of psychological ownership on the achievement of organisational objectives was not empirically determined in the study. This shortcoming implies that the levels of success of IS owners that did not develop psychological ownership could not be empirically compared with IS owners that had developed psychological ownership.

The limitations discussed in this section may limit on the value and general applicability of the framework to understand IS ownership in the organisation. The limitations listed for this study do not detract from the value of the study to develop a framework for understanding IS ownership in the organisation in any way.

6.5 Areas for future research

The study was undertaken to create an understanding of IS ownership in an organisation. A suggestion for future research is to evaluate the application of the IS ownership framework in other organisations. Using the IS ownership framework successfully in other similar and different types of organisation can contribute to a more generalised knowledge-base and to the pragmatic value of the framework.

- The IS ownership framework can also be extended to include methods describing the institutionalisation and management of IS ownership in the organisation, as they are influenced by the IT governance style, such as centralised decision-making and –procurement, selected by the organisation. Additional research with respect to the functions of the IS ownership role-players can create a knowledge domain that can assist organisations to institute and manage IS ownership in a more rule-based manner.

- The levels of success of IS owners that did not develop psychological ownership were not empirically compared with IS owners that developed psychological ownership. A study comparing the success of IS ownership with and without psychological ownership of IS can further contribute to the understanding of IS ownership in the organisation.

- Research to extend the framework to other disciplines such as ownership of job activities, risks, processes, methodologies and principles may be possible, as ownership targets are not confined to IS. "Ownership" of organisational targets

have been discussed in several studies, focusing on the necessity of psychological ownership of organisational targets (Liu et al., 2012; Nagel, 2007; Olckers and Du Plessis, 2012; Olckers, 2011; Pierce and Jussila, 2010). Ownership targets may be tangible or intangible in nature and motivators for taking ownership of these targets are subject to the same motivators found in the IS ownership framework.

A framework for understanding ownership in general can be derived from the framework for understanding IS ownership. Organisations can benefit by using a framework for understanding ownership in general. Viewing ownership relationships through a social exchange theory lens implies that parties expect the ownership relationships to be reciprocal, fair and balanced. Each party will have its own perspective and expectations and should acknowledge and respect the perspectives and expectations of the other party. Expectations of both parties should be aligned to the objectives of the organisation. Assignment, governance and management of the organisational target can be guided by similar activities of the framework for understanding IS. Success of the ownership arrangement is attained by comparing the outcome of the ownership arrangement with the expectations of the parties. A successful ownership outcome strengthens the relationship, while shortcomings may require the relationship to be adapted or ended.

6.6 Conclusion

In this study, the core concepts of IS, formal and psychological ownership and IS ownership were defined:

- Information system (IS): An IS is defined as "an ensemble of technologies, processes, information and people applying their knowledge and skills, leveraging organisational resources to achieve some business objective(s)" (Fink and Neumann, 2009; Lehmann and Fernández, 2007; Melville et al., 2004; Orlikowski and Iacono, 2001; Orlikowski, 1992).

- Formal ownership: Formal ownership exists when ownership of a target is recognised by the organisation and the rights of the owner protected by law (or organisational policies) (Pierce et al., 2001).

- Psychological ownership: The sense of possession, i.e. where a psychological owner may feel and refer to the target as "my", "mine" or "ours", forms the core of psychological ownership (Erkmen and Esen, 2012; Furby, 1980, 1978; Olckers and Du Plessis, 2012; Pierce and Jussila, 2010; Pierce and Rodgers, 2004; Pierce et al., 2003, 2001).

- IS ownership: IS ownership is defined as "a relationship established by rights and obligations between an owner and an information system, where the owner becomes responsible and accountable to leverage the information system in pursuit of the objectives of the organisation" (Koiranen, 2007; Lohmeyer et al., 2002; Moffett and Sloman, 1991; Parker et al., 1997; Pierce et al., 2004, 2003, 2001).

The study was guided by the research questions as depicted in Table 23:

Table 23 - Research questions

High-level question	Low-level questions	Reason for question
Question 1: What is IS ownership? (See Chapter 2, section 2.4 and section 5.2.2)	• What are business leaders' perceptions of IS ownership? • To what extent do business leaders perceive themselves to be responsible and accountable for the IS in their business areas? • How do business leaders experience IS ownership? • What are business leaders' concepts of IS?	Answering this question guided the establishment of a common understanding of IS ownership in the organisation.
Question 2: Why do we need IS ownership in the organisation? (See Chapter 2, section 2.4.6.3, section 2.4.8.6 and section 5.2.3)	• From an organisational perspective: Why should IS have owners? • From an individual perspective: Why should I accept or develop ownership?	Answering this question provided a rationale for IS ownership.
Question 3: Who should own the IS in the organisation? (See Chapter 2, section 2.4.1 and section 5.2.4	• Which business area is best suited to leverage IS in pursuit of business objectives? • Which individual (or group) is best placed to optimise the leveraging of the IS in the organisation?	Answering this question assisted in identifying the best area and candidates for placing the IS in the organisation.
Question 4: Why are some business leaders hesitant to take IS ownership? (See section 5.5.3)	• What are the consequences if business leaders do not take ownership of the IS in their business environments? • What can the organisation do to assist business leaders to take IS ownership? • What are the contributors that promote or erode IS ownership?	Answering this question assisted to understand business's reluctance to "own" it's IS. This information is necessary to create a common understanding of factors that cause IS ownership to remain in the business environment, or revert to the IS department
Question 5: How should the organisation structure the IS-business alliance? (See section 5.4.3)	• How should the IS support be structured to be compatible with the relevant IS-ownership structure?	It is imperative that the roles and responsibilities for IS owned by the business be clear and unambiguous, ensuring that ownership is tied down to specific stakeholders.

High-level question	Low-level questions	Reason for question
	• How are decisions made with respect to the IS ownership structure? • What are owner-stakeholder responsibilities? • How should business retain the economies of scale, present in centralised ICT services, in the areas where IS ownership resides with the business? • How should standardisation and good practices be applied in the areas where IS ownership resides with the business?	
Question 6: How should IS ownership be managed to be a positive resource in the organisation? (See section 5.2.5)	• How should IS ownership be constructed? • How should IS ownership be managed?	This question addressed how the application of an IS in the organisation can be optimised.

The problem experienced with business leaders being reluctant to take IS ownership of the IS in their business areas is a reality in organisations and results in organisations applying resources sub-optimally. This research, following a rigorous research methodology, provides suggestions to address the problem. The study used a phenomenological approach by focusing on the experiences of executive managers and business leaders in a financial services organisation with respect to IS ownership. Data acquired from literature, organisational artefacts and semi-structured interviews with executive managers and business leaders (IS owners) was used to construct an IS ownership framework. The framework improves the understanding of IS ownership and addresses the roles and relationships between role-players in IS ownership.

By acknowledging the different perspectives and expectations of the role-players in IS ownership, IS ownership as a resource in the organisation is promoted. Applying IS ownership as a resource, increases the possibility of achieving the objectives of the business areas and subsequently of the organisation.

7 BIBLIOGRAPHY

Aghion, P., Tirole, J., 1997. Formal and Real Authority in Organizations. J. Polit. Econ. 105, 1–29.

Allaire, Y., Firsirotu, M.E., 1984. Theories of Organisational Culture. Organ. Stud. 5, 193–226.

Allen, M.W., Ng, S.H., 1999. The direct and indirect influences of human values on product ownership. Jourrnal Econ. Psychol. 20, 5–39.

Arrington, T.S., 2009. General Assumptions of Social Exchange Theory.

Asatryan, V.S., Oh, H., 2008. Psychological Ownership Theory: An Exploratory Application in the Restaurant Industry. J. Hosp. Tour. Res. 32, 363–386. doi:10.1177/1096348008317391

Avey, J.B., Avolio, B.J., Crossley, C.D., Luthans, F., 2009. Psychological ownership : theoretical extensions , measurement and relation to work outcomes. J. Organ. Behav. 191, 173–191. doi:10.1002/job

Avison, D.E., Lau, F., Myers, M.D., Nielsen, P.A., 1999. Action research. Commun. ACM 42, 94–97. doi:10.1145/291469.291479

Avital, M., Vandenbosch, B., 2000. The Relationship Between Psychological Ownership and IT-Driven Value, in: International Conference on Information Systems (ICIS) 2000 Proceedings. Assicoation for Information Systems, pp. 652–659.

Baines, A., 1998. Creating a culture of ownership. Work Study 47, 14–16.

Bakari, J.K., Tarimo, C.N., Yngström, L., Magnusson, C., Kowalski, S., 2007. Bridging the gap between general management and technicians – A case study on ICT security in a developing country. Comput. Secur. 26, 44–55. doi:10.1016/j.cose.2006.10.007

Ballantyne, P., 2003. Ownership and Partnership – Keys to Sustaining ICT-enabled Development Activities, IICD Research Brief - No 8, December 2003.

Bandura, A., 1977. Self-efficacy: toward a unifying theory of behavioral change. Psychol. Rev. 84, 191–215.

Barbour, R.S., Schostak, J., 2005. Interviewing and Focus Groups, in: Somech, B., Lewin, C. (Eds.), Research Methods in the Social Sciences. SAGE Publications, London, UK., London, pp. 41–48.

Barki, H., Paré, G., Sicotte, C., 2008. Linking IT implementation and acceptance via the construct of psychological ownership of information technology. J. Inf. Technol. 23, 269–280. doi:10.1057/jit.2008.12

Baskerville, R., Myers, M.D., 2004. Special Issue on Action Research in Information Systems: Making IS Research Relevant to Practice - Foreword. MIS Q. 28, 329–335.

Bell, R.L., Martin, J.S., 2012. The Relevance of Scientific Management and Equity Theory in Everyday Managerial Communication Situations. J. Manag. Policy Pract. 13, 106–115.

Bennedsen, M., Fosgerau, M., Nielsen, K., 2003. The strategic choice of control allocation and ownership distribution in closely held corporations, in: 14th Annual Financial Economics and Accounting Conference.

Bernerth, J., Walker, H.J., 2012. Reexamining the Workplace Justice to Outcome Relationship: Does Frame of Reference Matter? J. Manag. Stud. 49, 945–969. doi:10.1111/j.1467-6486.2010.00977.x

Boote, D.N., Beile, P., 2005. Scholars Before Researchers: On the Centrality of the Dissertation Literature Review in Research Preparation. Educ. Res. 34, 3–15. doi:10.3102/0013189X034006003

Broadbent, M., Weill, P., 2003. Shape your IT governance to your business orientation, in: Gartner (Ed.), Tailor IT Governance to Your Enterprise. Gartner, pp. 1–47.

Brooke, C., 2002a. Editorial: Critical research in information systems: issue 1. J. Inf. Technol. 17, 45–47. doi:10.1080/02683960210154139

Brooke, C., 2002b. What does it mean to be "critical" in IS research? J. Inf. Technol. 17, 49–57. doi:10.1080/02683960210164336

Brown, G., Lawrence, T.B., Robinson, S.L., 2014. Territoriality in Organizations. Acad. Manag. Rev. 30, 577–594.

BusinessDictionary, 2013. Defnition: business system [WWW Document]. WebFinance. URL http://www.businessdictionary.com/definition/business-system.html

Campbell, J., 2011. Qualitative Method of Research: Phenomenological.

Carroll, J., 2004. Completing Design in Use : Closing the Appropriation Cycle, in: European Conference of Information Systems, January 2004. p. 11.

Carroll, M., 2012. A Risk and Control Framework for Cloud Computing and Virtualization. University of South Africa.

Carter, S.M., Little, M., 2007. Justifying knowledge, justifying method, taking action: epistemologies, methodologies, and methods in qualitative research. Qual. Health Res. 17, 1316–28. doi:10.1177/1049732307306927

CFO Research Services and PricewaterhouseCoopers, 2004. IT Moves from Cost Center to Business Contributor The CFO ' s View on Measuring IT Value.

Channin, D.S., Bowers, G., Nagy, P., 2009. Should radiology IT be owned by the chief information officer? J. Digit. imaging Off. J. Soc. Comput. Appl. Radiol. 22, 218–21. doi:10.1007/s10278-009-9196-6

Chi, N.-W., Han, T.-S., 2008. Exploring the linkages between formal ownership and psychological ownership for the organization: The mediating role of organizational justice. J. Occup. Organ. Psychol. 81, 691–711. doi:10.1348/096317907X262314

Chibucos, T.R., Leite, R.W., Weiss, D.L., 2005. Social Exchange Theory, in: Chibucos, T.R., Leite, R.W., L, W.D. (Eds.), Readings in Family Theory. SAGE Publications, Thousand Oaks, CA., pp. 137–182.

Choppin, J., 1996. Quality is bringing back a key service element - ownership. Manag. Serv. Qual. 6, 10–12. doi:10.1108/09604529610115803

Chun, M., Mooney, J., 2009. CIO roles and responsibilities: Twenty-five years of evolution and change. Inf. Manag. 46, 323–334. doi:10.1016/j.im.2009.05.005

Clarke, M., 2010. IT Governance Design : An Application of Problem Oriented Engineering to Enterprise Architecture , TOGAF and SOA Development.

Clifford, A., 2008. Ownership and Ownability, Toolbox for IT.

Cohen, W.M., Levinthal, D.A., 1990. Absorptive Capacity : A New Perspective On Learning And Inno. Adm. Sci. Q. 35, 128–152.

Cook, K.S., Rice, E., 2003. Social Exchange Theory, in: Delamater, J. (Ed.), Handbook of Social Psychology. Kluwer Academic/Plenum Publishers, New York, USA, pp. 53–76.

Crant, J.M., 2000. Proactive Behavior in Organizations. J. Manage. 26, 435–462. doi:10.1177/014920630002600304

Creswell, J.W., 2009. Research Design: Qualitative, Quantitative, and mixed methods approaches, 3rd ed. SAGE Publications, Thousand Oaks, CA.

Creswell, J.W., 2007. Five Qualitative Approaches to Inquiry: Choosing Among Five Approached, in: Qualitative Inquiry and Research Design. SAGE Publications, Thousand Oaks, CA., Thousand Oaks, pp. 53–84.

Creswell, J.W., Hanson, W.E., Clark Plano, V.L., Morales, a., 2007. Qualitative Research Designs: Selection and Implementation. Couns. Psychol. 35, 236–264. doi:10.1177/0011000006287390

Cropanzano, R., Mitchell, M.S., 2005. Social Exchange Theory: An Interdisciplinary Review. J. Manage. 31, 874–900. doi:10.1177/0149206305279602

Crotty, M., 1998. The foundations of social researh: Meaning and perspective in the research process. Sage Publications Limited.

Dale, C., 2004. IT Spend : The New Realities. Consult. Syst. Intergration Outsourcing 1–56.

Davies, J.R., Hillier, D., McColgan, P., 2005. Ownership structure, managerial behavior and corporate value. J. Corp. Financ. 11, 645–660. doi:10.1016/j.jcorpfin.2004.07.001

De Haes, S., Van Grembergen, W., Debreceny, R.S., 2013. COBIT 5 and Enterprise Governance of Information Technology: Building Blocks and Research Opportunities. J. Inf. Syst. 27, 307–324. doi:10.2308/isys-50422

Demsetz, H., 2010. The Structure of Ownership and the Theory of the Firm. J. Law Econ. 26, 375–390.

Dewett, T., Jones, G.R., 2001. The role of information technology in the organization: a review, model, and assessment [WWW Document]. J. Manage. doi:10.1177/014920630102700306

Dey, I., 2012. Qualitative data analysis. A User-Friendly Guide for Social Scientists, Evidence-based nursing. Routledge: London, London, England. doi:10.1136/ebnurs.2011.100352

Drnevich, P.L., Croson, D.C., 2013. Information Technology and Business-Level Strategy: Toward an integrated Theoretical Perspective. MIS Q. Forthcomin, 1–27.

Druskat, V.U., Pescosolido, A.T., 2002. The content of effective teamwork mental models in self-managing teams : Ownership , learning and heedful interrelating. Hum. Relations 55, 283–314.

Du Toit, M., 2006. The Establishment, through Action Research, of an Appropriate Strategic ICT Planning Process for the South African Department of Defence as a Diversified Organisation. University of Pretoria.

Emerson, R.M., 1976. Social Exchange Theory. Annu. Rev. Sociol. 2, 335–362.

Erkmen, T., Esen, E., 2012. The Mediating Role of Psychologcial Ownership on the Relationship between Internal Locus of Control and Organizational Commitment. Int. J. Bus. Manag. Stud. 4, 171–185.

Evans, A., 2004. A Framework for Creating Fusion in the Business-IT Interface. Universtity of Pretoria.

Fernández, W.D., 2003. Metateams in Major Information Technology Projects A Grounded Theory on Conflict ,. Queensland University of Technology.

Fink, L., Neumann, S., 2009. Exploring the perceived business value of the flexibility enabled by information technology infrastructure. Inf. Manag. 46, 90–99. doi:10.1016/j.im.2008.11.007

Formanek, R., 1994. Why they collect: collectors reveal their motivations, in: Pearce, S.M. (Ed.), Interpreting Objects and Collections. Routledge, London, England, pp. 327 – 335.

Fraser, K., Kemp, S., 2012. Effects of Employee Governance and Operational Control on Psychological Ownership and Perceived Justice. NZ. J. Psychol. 41, 13–20.

French, J.R., Raven, B., 1959. The bases of social power, in: Studies in Social Power. pp. 259–269.

Funchall, D.M., 2007. Effects of Organisational Maturity on Information Technology Intiatives. Tshwane University of Technology.

Furby, L., 1980. Collective possession and ownership - a study of its judged feasibility and desirability. Soc. Behav. Pers. 8, 165–184.

Furby, L., 1978. Possession in Humans - An exploratory study of its meaning and motivation. Soc. Behav. Pers. 6, 49 – 65.

Gaines, C., Hoover, D., Foxx, W., Matuszek, T., Morrison, R., 2012. Information systems as a strategic partner in organizational performance. J. Manag. Mark. Res. 1–18.

Galt, K.A., 2009. Qualitative, Quantitative and Mixed Methods Approaches to Research and Inquiry [WWW Document]. SPAHP Methods Present. URL http://spahp2.creighton.edu/OfficeOfResearch/share/sharedfiles/UserFiles/file/Galt_SPAHP_Methods_Presentation_082609.pdf.

Gaskin, J., Lyytinen, K., 2010. Psychological Ownership and the Individual Appropriation of Technology. 2010 43rd Hawaii Int. Conf. Syst. Sci. 1–8. doi:10.1109/HICSS.2010.472

Gatignon, H., Robertson, T.S., 1986. An Exchange Theory Model of Interpersonal Communication. Adv. Consum. Res. 13, 534–538.

Gichoya, D., 2005. Factors Affecting the Successful Implementation of ICT Projects in Government. Electron. J. e-Government 3, 175–184.

Glaser, B.G., Strauss, A.L., 1967. The discovery of Grounded Theory: Strategies for Qualitative Research. Aldine Publishing Company, Chicago, IL.

Grover, V., Henry, R.M., Thatcher, J.B., 2007. Fix IT-Business relationships through better decision rights. Commun. ACM 50, 80–86.

Guillemette, M.G., Paré, G., 2012. Toward a new theory or the contribution of the IT function in Organizations, MIS Quarterly.

Hall, H., 2003. Borrowed theory. Libr. Inf. Sci. Res. 25, 287–306. doi:10.1016/S0740-8188(03)00031-8

Han, K., Kauffman, R.J., Nault, B.R., 2003. Who should own "IT"? Ownership and incomplete contracts in Interorganizational systems 1–33.

Han, T.S., Chiang, H.-H., Chang, A., 2010. Employee participation in decision making, psychological ownership and knowledge sharing: mediating role of organizational commitment in Taiwanese high-tech organizations. Int. J. Hum. Resour. Manag. 21, 2218–2233. doi:10.1080/09585192.2010.509625

Hardy, G., 2005. Information Risks: Whose Business Are They?

Hart, C., 1998. Doing a Literature Review: Releasing the Social Science Research Imagination. SAGE Publications.

Hart, O., Moore, J., 1990. Property Rights and the Nature of the Firm. J. Polit. Econ. 98, 1119–1158.

Heino, N., Jussila, I., 2010. Psychological ownership : A key mediator in family involvement – effects -relationship, in: 10th Annual IFERA World Family Business Research Conference 6-9 July 2010. Lancaster, UK, pp. 1–28.

Higgins, E.T., 1997. Beyond pleasure and pain. Am. Psychol. 52, 1280–300.

Holden, M.T., Lynch, P., 2004. Choosing the Appropriate Methodology : Understanding Research Philosophy. Mark. Rev. 4, 397–409.

Homans, G.C., 1958. Social Behavior as Exchange. Am. J. Sociol. 63, 597–606.

Hou, S., 2012. Psychological Ownership and Technology Adoption.

Hou, S.-T., Fan, H.-L., 2010. How sense of belonging toward community-based organization influence member's technology adoption. 2010 IEEE Int. Conf. Manag. Innov. Technol. 28–34. doi:10.1109/ICMIT.2010.5492845

Huang, C., Sun, J., Wang, X., Si, Y., 2008. Separation of Duty Constraint for Permission Based Delegation Model. 2008 Int. Semin. Bus. Inf. Manag. 465–468. doi:10.1109/ISBIM.2008.132

Hyde, K.. F., 2000. Recognising deductive processes in qualitative research. Qual. Mark. Res. 3, 82–89.

Institute of Directors, 2009a. Draft code of Governance Principles for South Africa - 2009 - King Committee on Governace.

Institute of Directors, 2009b. Corporate and Commercial / King Report on Governance for South Africa - 2009, Pure and Applied Mathematics.

ISACA, 2012a. COBIT 5: Enabling Processes. Rolling Meadows, IL: USA.

ISACA, 2012b. COBIT 5: A Business Framework for the Governance and Management of Enterprise IT. Rolling Meadowns, IL: USA.

ISACA, 2011. COBIT 5 : The Framework - Exposure Draft. Rolling Meadowns, IL: USA.

ISO, IEC, 2008. International Standard ISO/IEC 38500:2008 - Corporate governance of information technology.

Izard, C.E., 1977. Human Emotions: Emotions, Personality, and Psychotherapy Optical Physics and Engineering. New York: Plenum Press.

Jabareen, Y., 2009. Building a Conceptual Framework : Philosophy , Definitions , and Procedure. Int. J. Qual. Methods 8, 49–63.

Karley, N., 2013. Research Methods for Business Management: Understanding Research Philosophy [WWW Document]. Angl. Rus. Univ. URL http://www.ftms.edu.my/pdf/Download/PostgraduateStudent/Lecture 3 Understanding Research Philosophy.pdf

Kilpeläinen, T., Nurminen, M., 2007. Applying Genre-Based Ontologies to Enterprise Architecture, in: 18th Australasian Conference on Information Systems. Toowoomba, pp. 468–477.

Koiranen, M., 2007. Family's Collective Motivation to Business Ownership : A Review of Alternative Theoretical Approaches. Electron. J. Fam. Bus. Stud. 1, 118–136.

Krause, G.A., Bowman, A.O., 2001. The Horizontal and Vertical Dimensions of Policy Delegation : Institutional Politics and American Federalism , 1947 – 1998.

Kruger, H.., Kearney, W.D., 2008. Consensus ranking – An ICT security awareness case study. Comput. Secur. 27, 254–259. doi:10.1016/j.cose.2008.07.001

Kwahk, K., 2013. Exploring the Roles of Social Exchanges in Using Information Systems. World Acad. Sci. Eng. Technol. 81, 119–122.

Langan, C.M., 2001. The Theory of Theories [WWW Document]. Cogn. Theor. Model Universe. URL http://megafoundation.org/CTMU/Articles/Theory.html (accessed 9.19.13).

Le Roux, D.C., 2006. Towards Understanding Dissatisfaction with Explanations of IT Value. University of Pretoria.

Lehmann, H., 2011. Second Time Lucky ? A Tale of Two Systems. Interdiscip. J. Information, Knowledge, Manag. 6, 107 – 118.

Lehmann, H., Fernández, W.D., 2007. Adapting the Grounded Theory Method for Information Systems Research, in: 4th QUALIT Conference Qualitative Research in IT & IT in Qualitative Research,. Wellington, New Zealand, pp. 1–8.

Letseka, M., Iyamu, T., 2011. The dualism of the information technology project. Proc. South African Inst. Comput. Sci. Inf. Technol. Conf. Knowledge, Innov. Leadersh. a Divers. Multidiscip. Environ. - SAICSIT '11 294–297. doi:10.1145/2072221.2072261

Liang, T., Liu, C.-C., Wu, C.-H., 2008. Can Social Exchange Theory Explain Individual Knowledge-Sharing Behavior ? A Meta-Analysis, in: Twenty Ninth International Conference on Information Systems. Paris, p. 18.

Lincoln, Y.S., Guba, E.G., 2000. Competing paradigms in qualitative research, in: Denzin, N., Lincoln, Y.S. (Eds.), Handbook of Qualitative Research. SAGE Publications, Thousand Oaks, CA., pp. 163 – 188.

Liu, J., Wang, H., Hui, C., Lee, C., 2012. Psychological Ownership: How Having Control Matters. J. Manag. Stud. 49, 869–895. doi:10.1111/j.1467-6486.2011.01028.x

Lohmeyer, D., Pogreb, S., Scott, R., 2002. Who is accountable for IT? McKinsey Q. Special Ed, 39–47.

Machiraju, V., Rolia, J., Moorsel, A. Van, 2002. Quality of Business Driven Service Composition and Utility Computing (No. HPL-2002-66). Palo Alto.

Mackin, C., 1995. Ownership Theory, in: Foundation for Enterprise Development Conference. La Jolla, CA, pp. 1–2.

Madan, R., Sørensen, C., Scott, S. V, 2003. Strategy sort of died around April last year for a lot of us: CIO perceptions of ICT value and strategy in the UK financial sector.

Makhlouk, H., Shevchuk, O., 2008. The importance and the influence of the corporate culture in a merger and acquisition context. Kalmar.

Markus, M.L., 2004. Technochange management: using IT to drive organizational change. J. Inf. Technol. 19, 4–20. doi:10.1057/palgrave.jit.2000002

Markus, M.L., 2000. Paradigm Shifts - E-Business and Business / Systems Integration. Commun. Assoc. Inf. Syst. 4, 1–45.

Maxwell, J., 2005. Qualitative Research Design: An Interpretive Approach, 2nd ed. SAGE Publications, Thousand Oaks, CA.

McCracken, G., 1986. Culture Account the and of Consumption : A Theoretical account of the Structure and Movement of the Cultural Meaning of Consumer Goods. J. Consum. Res. 13, 71–84.

Mcdonald, M.P., 2010. Maersk Drilling : Creating value by refocusing IT.

Mcfarlane, D.A., 2014. The Challenges of Operations Management for Business Managers. Int. J. Oper. Logist. Manag. 29, 16–29.

McIntyre, N., Srivastava, A., Fuller, J.A., 2009. The Relationship of Locus of Control and Motives with in Organizations. J. Manag. Issues 21, 383–401.

Melville, N., Kraemer, K., Gurbaxani, V., 2004. Review: Information Technology and Organizational Performance: An Integrative Model of IT Business Value. MIS Q. 28, 283–322.

Merriam-Webster, 2013. Definition: employee [WWW Document]. Merriam-Webster Online Dict. URL http://www.merriam-webster.com/dictionary/employee

Mittal, N., Nault, B.R., 2009. Investment in Information Technology: Indirect Effects and Information Technology Intensity. Inf. Syst. Res. 20, 140–154.

Moffett, J.D., Sloman, M.S., 1991. Delegation of authority, in: Krishnan, I., Zimmer, W. (Eds.), Second International Symposium on Integrated Network Management. Washington, DC, pp. 595–606.

Molm, L., 2003. Theoretical comparisons of forms of exchange. Sociol. Theory 21, 1–17.

Moon, J., Sanders, G.L., 2004. Customers ' Psychological Ownership towards Personalized Spaces on e-Commerce Sites, in: AMCIS 2004 Proceedings. pp. 3400–3409.

Morse, J.M., Barrett, M., Mayan, M., Olson, K., Spiers, J., 2002. Verification Strategies for Establishing Reliability and Validity in Qualitative Research. Int. J. Qual. Methods 1, 19. doi:10.1063/1.2011328

Muhr, T., Friese, S., 2004. ATLAS . ti User ' s Guide 5.0, 2nd Ed. ed. ATLAS.ti Scientific Software Development, Germany: Berlin.

Myers, M.D., 1997. Qualitative Research in Information Systems. MIS Q. 21, 241–242.

Nagel, L., 2007. The Dynamics of Learner Participation in a Virtual Learning Environment.

Nordqvist, M., 2005. Understanding the Role of Ownership in Strategizing: A study of Family Firms. Jönköping University.

O'Driscoll, M.P.O., Pierce, J.L., Coghlan, A., 2006. The Psychology of Ownership : Work Environment Structure, Organizational Commitment, and Citizenship Behaviors. Gr. Organ. Manag. 31, 388–416.

O'Reilly, C., 2002. The wrong kind of Ownership - O'Reilly (2002).pdf. Across Board (NY). 19 – 20.

Oates, B.J., 2006. Researching Information Systems and Computing, First. ed. SAGE Publications, London, UK., London, England.

Olckers, C., 2011. A Multi-dimensional Measure of Psychological Ownership for South African Organisations.

Olckers, C., Du Plessis, Y., 2012. The role of psychological ownership in retaining talent: A systematic literature review. SA J. Hum. Resour. Manag. 10, 1–18. doi:10.4102/sajhrm.v10i2.415

Olivier, M.S., 2004. Information Technology Research: A practical guide for Computer Science and Informatics, 2nd Editio. ed. Van Schaik Publishers, Pretoria.

Ordanini, A., Rubera, G., 2010. How does the application of an IT service innovation affect firm performance? A theoretical framework and empirical analysis on e-commerce. Inf. Manag. 47, 60–67. doi:10.1016/j.im.2009.10.003

Orlikowski, W.J., 1992. The duality of technology: rethinking the concept of technology in organzations - Orlikowski (1992).pdf. Organ. Sci. 3, 398–427.

Orlikowski, W.J., Baroudi, J.J., 1991. Studying Information Technology in Organizations: Research Approaches and Assumptions. Inf. Syst. Res. 2, 1–28. doi:10.1287/isre.2.1.1

Orlikowski, W.J., Iacono, C.S., 2001. Research Commentary: Desperately Seeking the "IT" in IT Research--A Call to Theorizing the IT Artifact. Inf. Syst. Res. 12, 121–134. doi:10.1287/isre.12.2.121.9700

Ozler, H., Yilmaz, A., Ozler, D., 2008. Psychological ownership: an empirical study on its antecedents and impacts upon organizational behaviors. Probl. Perspect. Manag. 6, 38–47.

Paré, Guy; Sicotte, Claude; Jacques, Helene, 2006. The effects of creating Psychological Ownership on Physicians Acceptance of Clinical Information Systems. J. Am. Med. Informatics Assoc. 13, 197–205. doi:10.1197/jamia.M1930.reasoned

Parker, S.K., Wall, T.D., Jackson, P.R., 1997. "That's not my job": Developing flexible employee work orientations. Acad. Manag. J. 40, 899–929.

Paul, R.J., 2010. What an Information System Is , and Why Is It Important to Know This. J. Comput. Inf. Technol. 18, 95–99.

Peansupap, V., 2004. An Exploratory Approach to the Diffusion of ICT in a Project Environment. RMIT University.

Pierce, J.L., Jussila, I., 2010. Collective psychological ownership within the work and organizational context : Construct introduction and elaboration. J. Organ. Behav. 31, 810–834. doi:10.1002/job

Pierce, J.L., Jussila, I., Cummings, A., 2009. Psychological ownership within the job design context : revision of the job characteristics model. J. Organ. Behav. 496, 477–496. doi:10.1002/job

Pierce, J.L., Kostova, T., Dirks, K.T., 2003. The State of Psychological Ownership: Integrating and Extending a Century of Research. Rev. Gen. Psychol. 7, 84–107.

Pierce, J.L., Kostova, T., Dirks, K.T., 2001. Toward a Theory of Pschological Ownership in Organizations. Acad. Manag. Rev. 26, 298–310.

Pierce, J.L., O'Driscoll, M.P., Coghlan, A.-M., 2004. Work environment structure and psychological ownership: the mediating effects of control. J. Soc. Psychol. 144, 507–34. doi:10.3200/SOCP.144.5.507-534

Pierce, J.L., Rodgers, L., 2004. The Psychology of Ownership and Worker-Owner Productivity. Gr. Organ. Manag. 29, 588–613.

Pierce, J.L., Rubenfeld, S. a, Morgan, S., 1991. Employee Ownership: A Conceptual Model of Process and Effects. Acad. Manag. Rev. 16, 121–144.

Ponterotto, J.G., 2005. Qualitative Research in Counseling Psychology: A Primer on Research Paradigms and Philosophy of Science. J. Couns. Psychol. 52, 126–136. doi:10.1037/0022-0167.52.2.126

Porteous, J.D., 1976. Home: The Territorial Core. Am. Geogr. Soc. 66, 383–390.

Prasad, A., Heales, J., Green, P., 2009. Information Technology Resources, Complementaries and Capabilities : Towards a Deeper Understanding of Leveraging Business Value from IT, in: Americas Conference on Information Systems (AMCIS). pp. 0–9.

Psychology Dictionary, 2014. Definition: Effectance [WWW Document]. URL http://psychologydictionary.org/effectance/

Puri, S.K., Sahay, S., 2007. Role of ICTs in Participatory Development: An Indian Experience. Inf. Technol. Dev. 13, 133–160. doi:10.1002/itdj

Queensland Government CIO, 2014. Queensland Government FAQ answers [WWW Document]. URL http://www.qgcio.qld.gov.au/faq-answers (accessed 11.26.14).

Reeves, S., Albert, M., Kuper, A., Hodges, B.D., 2008. Why use theories in qualitative research? BMJ 337, 631–634. doi:10.1136/bmj.a949

Richins, M.L., 1994. Valuing Things : The Public and Private Meanings of Possessions. J. Consum. Res. 21, 504–521.

Roberts, J.P., Steenstrup, K., 2010. The Management Implications of IT / OT Convergence.

Roode, D.J., 1993. Implications for Teaching of a Process-Based Research Framework for Information Systems. Pretoria.

Ross, J.W., Weill, P., 2002. Six IT decisions your IT people shouldn't make. Harv. Bus. Rev. 80, 84–91, 133.

Ryan, G.W., Bernard, H.R., 2003. Techniques to Identify Themes. Field methods 15, 85–109. doi:10.1177/1525822X02239569

Saunders, M., Lewis, P., Thornhill, A., 2012. Research Methods for Business Students, 6th ed. Pearson Education Limited.

Schein, E.H., 1985. Defining organizational culture. Class. Organ. theory 1–13.

Schwandt, T.A., 2000. Three Epistemological Stances for Qualitative Inquiry: Interpretivism, Hermeneutics, and Social Constructionism, in: Denzin, N.K., Lincoln, Y.S. (Eds.), Handbook of Qualitative Research. SAGE Publications, Thousand Oaks, CA., pp. 189 – 213.

404

Shackleton, C., 2007. Developing Key performance Indicators for Corporate Communication in the Information Technology Industry. University of Pretoria.

Sourcemaking, n.d. Business Processes and Business Systems: Business Systems [WWW Document]. Model. Bus. Syst. URL http://sourcemaking.com/uml/modeling-business-systems/business-processes-and-business-systems

South African Qualifications Authority, n.d. Demonstrate and apply knowledge and understanding of the roles, function and responsibilities of the main stakeholders and role players in local economic development [WWW Document]. Regist. Unit Stand. URL regqs.saqa.org.za/showUnitStandard.php?id=110502

Sparks, T. a, Hunter, S.K., Backman, T.L., Morgan, G. a, Ross, R.G., 2012. Maternal parenting stress and mothers' reports of their infants' mastery motivation. Infant Behav. Dev. 35, 167–73. doi:10.1016/j.infbeh.2011.07.002

Spohrer, J., Anderson, L., Pass, N., Ager, T., 2008. Service science and service-dominant logic. Otago Forum 2 Acad. Pap. 1–18.

Spreitzer, G.M., 1996. Social Structural Characteristics of Psychological Empowerment. Acad. Manag. Journ 39, 483–504.

Stanton, J.M., Stam, K.R., 2003. Information Technology , Privacy , and Power within Organizations : a view from Boundary Theory and Social Exchange perspectives . Surveill. Soc. 1, 152–190.

Susanti, F., Sembiring, J., 2011. The Mapping of Interconnected SOA Governance and ITIL v3.0, in: 2011 International Conference on Electrical Engineering and Informatics. Bandung, Indonesia, pp. 1–5.

Symons, C., 2005. IT Governance Framework (No. 3), IT Governance.

Teo, T.S.H., King, W.R., 1999. An empirical study of the impacts of integrating business planning and information systems planning. Eur. J. Inf. Syst. 8, 200–210. doi:10.1057/palgrave.ejis.3000334

The Open Group, 2011. TOGAF Version 9.1: Open Group Standard.

TheFreeDictionary, 2014. Definition: efficacy [WWW Document]. TheFreeDictionary. URL http://www.thefreedictionary.com/efficacy

Thomas, D.R., 2003. A general inductive approach for qualitative data analysis. Auckland, New Zealand.

Towill, D.R., 1997. Successful business systems engineering: Part 1 The systems approach to business processes. Eng. Manag. J. 55–64.

405

Trauth, E.M., 2001. The choice of qualitative methods in IS research, in: Trauth, E.M. (Ed.), Qualitative Research in IS: Issues and Trends. Idea Group Publishing, Hershey, PA, pp. 1–19.

Turel, O., Serenko, A., Bontis, N., 2007. User acceptance of wireless short messaging services: Deconstructing perceived value. Inf. Manag. 44, 63–73. doi:10.1016/j.im.2006.10.005

UK Academy for Information Systems, 1999. The definition of information systems.

Urquhart, C., 2000. An Encounter with Grounded Theory : Tackling the Practical and Philosophical Issues.

Van Dyne, L., Pierce, J.L., 2004. Psychological ownership and feelings of possession: three field studies predicting employee attitudes and organizational citizenship behavior. J. Organ. Behav. 25, 439–459. doi:10.1002/job.249

Vandewalle, D., Van Dyne, L., Kostova, T., 1995. Psychological Ownership: An empirical examination of its consequenses. Gr. Organ. Manag. 20, 210–226.

Veblen, T., 1898. The Beginnings of Ownership. Am. J. Sociol. 4, 352–365.

Venkatraman, N., 1997. Beyond outsourcing: managing IT resources as a value center. Sloan Manage. Rev. 38, 51–64.

Venkatraman, N., 1994. IT-enabled business transformation: from automation to business scope redefinition. Sloan Manage. Rev. 35, 73–87.

Vitantonio, G. Di, Legh-Smith, J., Millar, W., Wilkinson, M., 2006. Meeting business objectives through adaptive information and communi- cations technology. BT Technol. J. 24, 113–120.

Wagner, S.H., Parker, C.P., Christiansen, N.D., 2003. Emplyees that think and act like Owners: Effects of Ownership believs Believes and Behaviors on Organizational Effectivness. Pers. Psychol. 56, 847–871.

Wallace, P., 2014. Introduction to Information Systems, 2nd Ed. ed. Pearson Education Limited, Upper Saddle River, New Jersey.

Wang, Q., Battocchi, A., Graziola, I., Pianesi, F., Tomasini, D., Zancanaro, M., Nass, C., 2006. The Role of Psychological Ownership and Ownership Markers in Collaborative Working Environment, in: 8th International Conference on Multimodal Interfaces ICMI 06. ACM Press, Alberta, Canada, pp. 225–232.

Weill, P., Ross, J.W., 2009. IT Savvy: What Top Executives Must Know to Go from Pain to Gain. Harvard Business School Press., Boston, MA.

White, R.W., 1959. Motivation reconsidered: the concept of competence. Psychol. Rev. 66, 297–333.

Willis, J.W., 2007. Frameworks for Qualitative Research, in: Foundations of Qualitative Research. SAGE Publications, pp. 147–184.

Witt, D.D., 2013. Family Crisis Social Exchange Theory and Developmental Theories.

Yin, R.K., 2003. Case Study Research: Design and Methods, 3rd ed. SAGE Publications, Thousand Oaks, CA.

Young-Ybarra, C., Wiersema, M., 1999. Strategic flexibility in information technology alliances : The influence of transaction cost economics and social exchange theory. Organ. Sci. 10, 439–459.

Zhang, Z., Xiao, J., Li, H., Geng, Y., 2008. An Extended Permission-Based Delegation Authorization Model. 2008 Int. Conf. Comput. Sci. Softw. Eng. 696–699. doi:10.1109/CSSE.2008.983

Zimmerman, B.J., Cleary, T.J., 1998. Adolescents' Development of Personal Agency: The Role of Self-Efficacy Beliefs and Self-Regulatory Skill, in: Self-Efficacy Beliefs of Adolescents. Information Age Publishing, pp. 45–69. doi:10.1177/1548051811404419

Zuppo, C.M., 2012. Defining ICT in a Boundaryless World: The development of a working Hierarchy. Int. J. Manag. Inf. Technol. 4, 13–22.

ANNEXURE A
Interview Questions

Table of Contents

Research Questions – IS Owners

Questions – IS Owners
Question 1: Introduction – Sets the scene for the rest of the questions and determines respondent's awareness of IS ownership.
1. Please describe your working situation with respect to IS 2. Within this context, did you ever consider thinking of IS in terms of ownership? 3. What is your concept of IS ownership?
Question 2: The Role of the IS department – Determine the perception of the interviewees of the role of the IS department in the organisation.
1. With respect to IS ownership, what do you believe is the IS department's current role in achieving your business objectives? 2. What do you believe this role should be?
Question 3: Psychological Ownership - Establish if psychological ownership of IS exist with the interviewee.
1. To what extent do you feel responsible and accountable for the IS in your business area? 2. What is the scope of control you have over the IS? 3. What is your opinion regarding the available scope of control? 4. What parts of the IS do you believe should be owned by your business and to which extent?
Question 4: IS ownership in business – Establish the perception of IS ownership existence in the business areas of the organisation.
1. No question

Questions – IS Owners
Question 5: Shared ownership – Determine how the organisation handles shared IS and to what extent the respondent developed psychological ownership for shared IS.
1. What IS does your area currently share with other business owners?   2. Do you share control with other business managers?   3. What is your experience of sharing IS with other business units in the Bank?   4. Who do you believe should take ownership of shared IS?   5. Why do you say so?   6. Who do you believe should own an organisation-wide IS?
Question 6: Value of IS – To determine the dependency on IS and the value that the business derive from IS in their business environments.
1. To which extent do you believe the IS supports your business objectives?
Question 7: Value of IS ownership – To determine whether the interviewees find any value in having IS ownership.
1. How does owning an IS make you feel?   2. What are your expectations with respect to "owning" an IS?   3. Did owning the IS satisfy your expectations?   4. Why do you say so?   5. What is your opinion of using IS ownership as a tool or resource to achieve organisational and/or personal success?   6. Please elaborate.
Question 8: Relationship – To determine the openness of the relationships between IS owners, executive managers and the IS department and whether it can be adjusted to the needs of the parties and also to identify whether there are power imbalances in the relationships.
1. Tell me about your relationship with your executive manager

Questions – IS Owners
Question 9: IS ownership expectations - To determine the interviewee's IS ownership expectations, whether their expectations have been met and whether the IS owners get as much out of owning IS than they put into the IS ownership.

1. Tell me about your expectations related to IS ownership?

2. Have you ever had an experience where managers were not satisfied with the returns on owning an IS, based on their expectations not being fulfilled?

3. Why do you say so?

4. Is there a fair balance between the expectations of IS owners in terms of their responsibilities and the returns they get from owning IS?

5. Why do you say so?

6. Will you accept ownership of another IS if given the opportunity?

7. Why do you say so?

Question 10: Conclusion – To determine which factors can promote or erode IS ownership, what are the challenges with respect to IS and IS ownership in the organisation and to close out with an open-ended question related to IS ownership that the interviewee wanted to discuss.

1. Which factors do you feel can promote or erode IS ownership?

2. Are there anything else that we have not discussed that you want to talk about regarding IS ownership in the Bank?

3. Are there anything else that we have not discussed that you want to talk about regarding IS ownership in the Bank?

4. What do you believe are the biggest IS challenges in the organisation?

5. What pro-active measures could the IS department implement to facilitate IS ownership in business areas?

Research Questions – Executive Managers

Questions – Executive Managers
Question 1: Introduction – Sets the scene for the rest of the questions and determines respondent's awareness of IS ownership.
1. Please describe your working situation with respect to IS 2. Within this context, did you ever consider thinking of IS in terms of ownership? 3. What is your concept of IS ownership?
Question 2: The Role of the IS department – Determine the perception of the interviewees of the role of the IS department in the organisation.
1. In your opinion, what does business perceive the role of [the IS department] in the organisation to be? 2. What would you like this role to be? 3. What is your opinion about the dependency that business have on [the IS department] to execute on their (the business's) mandate? 4. Who do you believe should "own" business-related IS? 5. Why do you say so? 6. With respect to IS ownership, what do you believe is the IS department's current role in achieving your business objectives? 7. What do you believe this role should be?

Questions – Executive Managers
Question 3: Psychological Ownership - Establish if psychological ownership of IS exist with the interviewee.

1. To what extent do you feel responsible and accountable for the IS in your business area?
2. What is the scope of control you have over the IS?
3. What is your opinion regarding the available scope of control?
4. What parts of the IS do you believe should be owned by your business and to which extent?

Question 4: IS ownership in business – Establish the perception of IS ownership existence in the business areas of the organisation.

1. No question

Question 5: Shared ownership – Determine how the organisation handles shared IS and to what extent the respondent developed psychological ownership for shared IS.

1. What IS does your area currently share with other business owners?
2. Do you share control with other business managers?
3. What is your experience of sharing IS with other business units in the Bank?
4. Who do you believe should take ownership of shared IS?
5. Why do you say so?
6. Who do you believe should own an organisation-wide IS?

Question 6: Value of IS – To determine the dependency on IS and the value that the business derive from IS in their business environments.

1. To which extent do you believe the IS supports your business objectives?

Questions – Executive Managers
Question 7: Value of IS ownership – To determine whether the interviewees find any value in having IS ownership.
1. Do you perceive a difference between owning an IS in your capacity as executive and owning an IS in your personal capacity? 2. Please elaborate. 3. How do you go about assigning or delegating IS ownership to your managers? How does owning an IS make you feel? 4. What are your expectations with respect to "owning" an IS? 5. Did owning the IS satisfy your expectations? 6. Why do you say so? 7. What is your opinion of using IS ownership as a tool or resource to achieve organisational and/or personal success? 8. Please elaborate.
Question 8: Relationship – To determine the openness of the relationships between IS owners, executive managers and the IS department and whether it can be adjusted to the needs of the parties and also to identify whether there are power imbalances in the relationships.
1. No question
Question 9: IS ownership expectations - To determine the interviewee's IS ownership expectations, whether their expectations have been met and whether the IS owners get as much out of owning IS than they put into the IS ownership.

Questions – Executive Managers
1. Tell me about your expectations related to IS ownership?
2. Have you ever had an experience where managers were not satisfied with the returns on owning an IS, based on their expectations not being fulfilled?
3. Why do you say so?
4. Is there a fair balance between the expectations of IS owners in terms of their responsibilities and the returns they get from owning IS?
5. Why do you say so?
6. Will you accept ownership of another IS if given the opportunity?
7. Why do you say so?
Question 10: Conclusion – To determine which factors can promote or erode IS ownership, what are the challenges with respect to IS and IS ownership in the organisation and to close out with an open-ended question related to IS ownership that the interviewee wanted to discuss.
1. Which factors do you feel can promote or erode IS ownership?
2. Are there anything else that we have not discussed that you want to talk about regarding IS ownership in the Bank?
3. Are there anything else that we have not discussed that you want to talk about regarding IS ownership in the Bank?
4. What do you believe are the biggest IS challenges in the organisation?
5. What pro-active measures could the IS department implement to facilitate IS ownership in business areas?

Research Questions – Head of the IS department

Questions – Head of the IS department
Question 1: Introduction – Sets the scene for the rest of the questions and determines respondent's awareness of IS ownership.
1. Please describe your working situation with respect to IS 2. Within this context, did you ever consider thinking of IS in terms of ownership? 3. What is your concept of IS ownership? 4. What is your mandate with respect to providing IS to the business areas of the organisation?
Question 2: The Role of the IS department – Determine the perception of the interviewees of the role of the IS department in the organisation.
1. In your opinion, what does business perceive the role of [the IS department] in the organisation to be? 2. What would you like this role to be? 3. What is your opinion about the dependency that business have on [the IS department] to execute on their (the business's) mandate? 4. Who do you believe should "own" business-related IS? 5. Why do you say so? 6. What do you believe are the biggest IS challenges in the organisation? 7. What are your biggest challenges providing IS services to business?
Question 3: Psychological Ownership - Establish if psychological ownership of IS exist with the interviewee.
1. No question

Questions – Head of the IS department
Question 4: IS ownership in business – Establish the perception of IS ownership existence in the business areas of the organisation.
1. No question
Question 5: Shared ownership – Determine how the organisation handles shared IS and to what extent the respondent developed psychological ownership for shared IS.
1. No question
Question 6: Value of IS – To determine the dependency on IS and the value that the business derive from IS in their business environments.
1. No question
Question 7: Value of IS ownership – To determine whether the interviewees find any value in having IS ownership.
1. No question
Question 8: Relationship – To determine the openness of the relationships between IS owners, executive managers and the IS department and whether it can be adjusted to the needs of the parties and also to identify whether there are power imbalances in the relationships.
1. What pro-active measures could the IS department implement to facilitate IS ownership in business areas?

Questions – Head of the IS department
Question 9: IS ownership expectations - To determine the interviewee's IS ownership expectations, whether their expectations have been met and whether the IS owners get as much out of owning IS than they put into the IS ownership.
1. Do you believe that the IS department satisfy the expectations that business have with respect to owning IS? 2. Why do you say so? 3. Does the business satisfy your expectations with respect to owning their IS? 4. Why do you say so? 5. Do you believe that there is a fair balance between what businesses expect from the IS department and what effort they put into the relationship with the IS department? 6. Tell me about it.
Question 10: Conclusion – To determine which factors can promote or erode IS ownership, what are the challenges with respect to IS and IS ownership in the organisation and to close out with an open-ended question related to IS ownership that the interviewee wanted to discuss.
1. Which factors do you feel can promote or erode IS ownership? 2. Are there anything else that we have not discussed that you want to talk about regarding IS ownership in the Bank? 3. Are there anything else that we have not discussed that you want to talk about regarding IS ownership in the Bank? 4. What do you believe are the biggest IS challenges in the organisation? 5. What pro-active measures could the IS department implement to facilitate IS ownership in business areas?

Research Questions – Senior Executive Manager

Questions – Senior Executive Manager
Question 1: Introduction – Sets the scene for the rest of the questions and determines respondent's awareness of IS ownership.
1. Please describe your working situation with respect to IS 2. Within this context, did you ever consider thinking of IS in terms of ownership? 3. What is your concept of IS ownership?
Question 2: The Role of the IS department – Determine the perception of the interviewees of the role of the IS department in the organisation.
1. In your opinion, what does business perceive the role of [the IS department] in the organisation to be? 2. What would you like this role to be? 3. What is your opinion about the dependency that business have on [the IS department] to execute on their (the business's) mandate? 4. Who do you believe should "own" business-related IS? 5. Why do you say so?
Question 3: Psychological Ownership - Establish if psychological ownership of IS exist with the interviewee.
1. No question

Questions – Senior Executive Manager
Question 4: IS ownership in business – Establish the perception of IS ownership existence in the business areas of the organisation.
1. Do you believe that there are different level of IS ownership in the business?   2. What is your perception of the levels of IS ownership currently taken by business owners?   3. Why do you say so?   4. What is your opinion of the scope of control business owners currently have over IS in their areas?   5. What do you believe their scope of control should be?
Question 5: Shared ownership – Determine how the organisation handles shared IS and to what extent the respondent developed psychological ownership for shared IS.
1. No question
Question 6: Value of IS – To determine the dependency on IS and the value that the business derive from IS in their business environments.
1. No question
Question 7: Value of IS ownership – To determine whether the interviewees find any value in having IS ownership.
1. No question

Questions – Senior Executive Manager
Question 8: Relationship – To determine the openness of the relationships between IS owners, executive managers and the IS department and whether it can be adjusted to the needs of the parties and also to identify whether there are power imbalances in the relationships.

1. Do you believe that the IS department satisfy the expectations that business have with respect to owning IS?

2. Why do you say so?

3. What is your opinion about the IS department's capability to focus on supporting business objectives?

4. What is your opinion regarding the ICT "voice" of the business managers on the floor?

5. Do you feel that business concerns can be raised and addressed adequately through the current measures?

Questions – Senior Executive Manager
Question 9: IS ownership expectations - To determine the interviewee's IS ownership expectations, whether their expectations have been met and whether the IS owners get as much out of owning IS than they put into the IS ownership.
1. Tell me about your expectations related to IS ownership? 2. Have you ever had an experience where managers were not satisfied with the returns on owning an IS, based on their expectations not being fulfilled? 3. Why do you say so? 4. Is there a fair balance between the expectations of IS owners in terms of their responsibilities and the returns they get from owning IS? 5. Why do you say so?
Question 10: Conclusion – To determine which factors can promote or erode IS ownership, what are the challenges with respect to IS and IS ownership in the organisation and to close out with an open-ended question related to IS ownership that the interviewee wanted to discuss.
1. Which factors do you feel can promote or erode IS ownership? 2. Are there anything else that we have not discussed that you want to talk about regarding IS ownership in the Bank? 3. Are there anything else that we have not discussed that you want to talk about regarding IS ownership in the Bank? 4. What do you believe are the biggest IS challenges in the organisation? 5. What pro-active measures could the IS department implement to facilitate IS ownership in business areas?

ANNEXURE B
Three Phases of Inductive Coding

Table of Contents

Phase 1 Coding

Phase 1: First iteration of codes (297)		Phase 1: Second coding iteration (35 codes as output)
Application of IS	Knowledge of IS systems used elsewhere	**Appropriation**
Aware of other uses of ICT	Organisation-wide	
Best practice, but may be unfit	Organisation-wide service	
Combining data from different sources	Reason for replacing legacy IS	
Effectance	Reason why legacy system is being replaced	
Efficacy	Reason why legacy system is still used	
Explore other uses of IS	Replacement IS	
Generic IS	Replaces legacy IS	
Generic IS may not suit the business	Simplify ICT	
Improve ICT abilities	Solving business problems with IS	
IS use expands	Using generic IS	
IS used to integrate information	Wider organisation uses IS more extensively	
ICT-enabled business system	Legacy system	**Assets**
Data as a resource	New system	
Information as a resource	Organisation-wide IS	
Ownership assignment	Task assignment	**Assignment**
Concept of ICT	ICT as proxy	**Conception**
Concept of IS ownership	ICT mainly referred to in terms of hardware	
Generalised view of ownership	Perception of IT	
ICT as a proxy of productivity	Proxy view of ICT	
Business wants more control of IS	Owner doesn't have control	**Control**
Limited control	Partial control	
Business critical	Business specific IS	**Core Business**
Underperformance		**Efficacy**
Emotion	Unsure about future	**Emotion**
Emotional		

Phase 1: First iteration of codes (297)		Phase 1: Second coding iteration (35 codes as output)
Business has limited control over IT resources	Less dependent on ITD	**Empower**
Business should be more independent from IT	Limited ICT experience	
Business should have more say in ICT-decision-making	Limited ICT knowledge	
Dependent on ITD	Links ICT expertise to IS ownership	
Dependent on Service Provider	Locked in	
Empowerment	Ownership implies having the technical knowledge	
Lack of ICT expertise erodes ownership	Partially empowered	
Challenge	IT satisfy user expectancy	**Expectations**
Dissatisfaction	IT should take some responsibility	
Doubt IT's ability	Not addressing user expectations	
Doubtful if IS ownership taken by business is practical	Not addressing user requirements	
Impact unknown	Old problem still not addressed	
IS support not fully optimised	Personal requirements	
IS support structures are adequate	Reward	
It can be done better than now	Satisfied by level of control	
IT can lead the organisation	Satisfied with ownership deal	
IT doesn't address user expectations completely	Satisfy business requirements	
IT is not perfect	This needs to be addressed	
IT is slow	Underestimate effort	
IT is too slow	User expectations	
IT not taking ownership		
Practical example		**Experience**
Delegated authority may not imply ownership	Formal ownership	**Formal ownership**
Exclusive ownership	Thinking about a link between delegated authority and IS ownership	
Business risk	Duplication has budget implications	**Governance**
Concern for impact of decentralising	Executives directing the organisation	

Phase 1: First iteration of codes (297)		Phase 1: Second coding iteration (35 codes as output)
Concerned about confidentiality	Governance	
Concerned about data	Governance structure	
Data subject to security breaches	Lack of ICT support hinders business	
Decision to invest	Lack of IT experts poses risk for business	
Decision-making process	Over-governance	
Decision-making should be controlled	Questions strategies	
Delegated authorities	Thorough and good governance	
Divulging information		
Influence from executives	Negative influence on business	**Influences**
Influencing ownership	Personal factors may influence IS ownership	
Motivation for PO?	Reason for taking ownership	
Need incentive to promote ownership	Reason given for PO	
Needs control to have higher level of ownership		
Individual as unit of ownership	Interdependencies under shared IS	**IS distribution**
Units of ownership	Levels of ownership is a new concept for user	**IS ownership**
Levels of ownership	Not understanding concept of levels of ownership	
Need for ownership	Needs change	**Needs**
Needed to take ownership		
IS included in future	Objective	**Objectives**
Achieving business objectives	Specific business objectives	
Business process	Problem identified a while ago	**Operations**
Not business critical	Service provision	
Organisation evolves	Reluctant to change	**Change**
Impact of event on shared IS	Personal satisfaction	**Outcome**
Ownership enables better leverage of IS	PO promotes attachment to organisation	
Shared IS does not imply conflict of interest	Shared IS may lead to resource contention	**Ownership distribution**
Shared IS forces business areas collaboration	Shared ownership	

Phase 1: First iteration of codes (297)		Phase 1: Second coding iteration (35 codes as output)
Shared IS implies shared risks	Sharing of IS erodes ownership	
Big spenders	Perception of procrastination	**Perception**
Cost contributors	Positive towards IT	
Personal ownership	Self-evaluation	**Personal attributes**
Area of expertise	IT given the authority	**Power**
Afraid to alienate IT	IT is able to make good decisions	
Assertiveness	Need IT's expertise	
Authority exercised over business	Personal IT knowledge	
Authority relates to ownership	Technical expertise	
Business leader wants to have the expertise	Technical power	
Decision-making powers over ICT spending	Views IT staff as experts	
Executives have ultimate investment decision-making		
Cares about the ICT tools assigned to user	Passionate about ownership	**Psychological ownership**
Business must take some responsibility	Personal connection	
IS ownership does exist	Personal control	
IS ownership in business is deemed positive	Psychological ownership	
IS ownership is new idea	Responsibility relates to ownership	
No perceived ownership	Take responsibility	
Ownership implies responsibility	Taking ownership	
Ownership includes taking responsibility	Taking ownership of data	
Ownership of attaining business objectives	Unsure of ownership	
Explain relationship with IS	Negotiate	**Relations**
Interaction between IT and business	Social exchange theory	
IT should be made aware	Stakeholders meeting with business	
IT/business communication	Weak relationship	
Leading role can be destructive		
Business requirements	Understand requirements	**Requirements**
Collective requirements		

Annexure B

Phase 1: First iteration of codes (297)		Phase 1: Second coding iteration (35 codes as output)
Attrition erodes available expertise	Higher business priorities warrants priority assistance	**Resources**
Concern about business having too little ICT expertise	ICT resource requirements	
Concerned about available IT resources	IT resources are shared by organisation	
Consider using dedicated IT resources	Need IT involvement	
Expertise in IT ensures better leverage of ICT	Shortage of ICT skills	
Ownership rights and obligations		**Rights and obligations**
Business depends on IT	Involvement is declining	**Role**
Business not fully involved in ICT-decision-making	Involvement of executives	
Business not responsible for ICT/IS acquisition	IS owned by business assisted by IT	
Business not responsible for IS maintenance	IT has technical responsibility	
Business specification relates to IS ownership	IT owns IS with business playing lesser role	
Concerned about dependency on ICT	IT responsible for IS maintenance	
Conflict between IT and business	Job description	
Decision-makers are owners	Levels of leveraging ICT	
Decision-making powers	Little exposure to higher levels of business	
Departments are partially responsible for ICT	Local focus	
Departments share in ownership	Not involved in specific areas of IS	
Difficult to describe IT's role	Organisation-wide IS owned by IT	
Excluded from parts of the department	Ownership lies with executives	
Executives must take decision-making responsibility	Ownership migrates to business areas	
Executives willing to leverage IT	Ownership of application	
Feels excluded from using "deep" IS	Ownership of data	
ICT decision-making should be shared between business and IT	Ownership of procurement	

Phase 1: First iteration of codes (297)		Phase 1: Second coding iteration (35 codes as output)
If ICT within business, business forced to take ownership	Owns ICT	
If shared ownership, IT should take ownership	Sees executive involvement as ownership	
Information ownership	Was previously included in rest of department	
Act as agent for owner	Low level user	**Stakeholder**
Business colleague	Manager	
Business owner	Owner of ERP IS	
Clients	Owner of ICT project	
Identifies owners	Senior management	
IT Department	Senior stakeholder in IT	
Business department	Division as unit of ownership	**Structure**
Decision-making hierarchy	Ownership hierarchy	
Department as unit of ownership	Wrong structures in IT	
Describes new business areas		
Complex ICT		**Target Attribute**
Difficult to determine ROI	IS essential for business success	**Value**
Expected ROI	No immediate indication of ROI	
Expensive IS	Not fully convinced	
Financial impact of IT	Ownership seen as positive	
ICT must enable current task requirements	There is value in IS	
ICT plays an essential role in the organisation	Uncertainty of ICT's value	
Integration of IS		

Annexure B

Phase 2 Coding

Phase 2: First coding iteration (157 codes)	Phase 2: Second coding iteration (31 codes as output)
OPTIONS	Options
OPTIONS_Business	
OPTIONS_Personal	
Data as a resource	Assets
Legacy system	
Information as a resource	
Own-able IT	
Elements of formal ownership	Formal ownership
Formal ownership	
Information ownership	
Legacy system shared with other business area	Ownership distribution
Shared ownership	
OWNERSHIP	
OWNERSHIP_Hierarchy	
OWNERSHIP_Of	
Cares about the ICT tools assigned to user	Psychological ownership
ISO_Erosion	
ISO_Promotion	
IT not taking ownership	
ITD should have ISO	
No perception of PO	
Psychological ownership	
Take responsibility	
Taking ownership	
Passionate about ownership	
EXPECTATION_Business	Expectations
EXPECTATIONS	
EXPECTATIONS_Failure	
EXPECTATIONS_Realizing	
Frustration	
Problem identified a while ago	
Underestimate effort	
Dissatisfaction	
Personal satisfaction	
PO promotes attachment to organisation	

Phase 2: First coding iteration (157 codes)	Phase 2: Second coding iteration (31 codes as output)
Satisfied by level of control	
Satisfied with ownership deal	
Satisfy business requirements	
Work satisfaction	
Data vs IS ownership	Role
DECISION MAKING_Problems	
Explain relationship with IS	
ICT decision-making should be shared between business and IT	
ROLE	
ROLE_Buss	
ROLE_ITD	
ROLE_Personal	
SUPPORT	
SUPPORT_EXEC	
SUPPORT_EXEC_Neg	
SUPPORT_EXEC_Pos	
SUPPORT_ITD	
SUPPORT_ITD_Neg	
SUPPORT_ITD_Pos	
Business colleague	Stakeholder
Clients	
IT Department	
Manager	
Business department	
Business capability	Empower
EMPOWERMENT	
EMPOWERMENT_Need for	
EMPOWERMENT_Neg	
EMPOWERMENT_Partially	
EMPOWERMENT_Pos	
Dependent on ITD	
Dependent on Service Provider	
Less dependent on ITD	
Partially empowered	
She wants to have the expertise	
OWNERSHIP_Rights and Obligations	Rights and obligations
Application of IS	Appropriation
Reason why legacy system is being replaced	

Phase 2: First coding iteration (157 codes)	Phase 2: Second coding iteration (31 codes as output)
Reason why legacy system is still used	
Job description	Assignment
JOB_Meaningful	
Ownership assignment	
Task assignment	
CHANGE	Change
CHANGE_Need	
CHANGE_Resistant	
CHANGE_Willingness	
Describes new business areas	
New system	
Business critical	Core business
Not business critical	
Alignment	Governance
Governance	
IMPACT ON BUS OBJ neg	
Questions strategies	
DECISION MAKING_Authority	Power
Technical power	
COLLABORATION	Relations
COLLABORATION needs	
COLLABORATION us_and_them	
COMMUNICATION	
CONFLICT between org culture and business requirements	
CONTACT	
IT should be made aware	
Negotiate solution	
Social exchange	
Negotiate	
INVOLVEMENT	
INVOLVEMENT_Disengaged	
INVOLVEMENT_Engaged	
Reward	Outcome
COMMODITISED IS	Value
IT VALUE_Neg	
IT VALUE_Pos	
IT VALUE_Questioned	
Blame	Culture

Phase 2: First coding iteration (157 codes)	Phase 2: Second coding iteration (31 codes as output)
AMBITION	Driver
CHALLENGE	
Emphasis of importance	
Efficacy	
Inefficiency	
Underperformance	
EMOTION	Emotion
Emotion_Neg	
Emotion_Neut	
Emotion_Pos	
OBJECTIVE	Objective
OBJECTIVE_Business	
OBJECTIVE_Personal	
Practical example	Operational
SERVICE	
SERVICE_Neg	
SERVICE_Pos	
SERVICE_Provision	
Service provision	
FOCUS_EXT	Personal attributes
Local focus	
LOCUS_OF_CONTROL_Ext	
Self-evaluation	
Not fully convinced	Perception
Opinion	
OWNERSHIP_Perception	
PERCEPTION	
PERCEPTION_Neg	
PERCEPTION_Neut	
PERCEPTION_Pos	
Cynical	
Business requirements specification relates to IS ownership	Requirements
REQUIREMENTS_Business	
REQUIREMENTS_Personal	
Business requirements	
ICT mainly referred to in terms of hardware	Conception
Concept of IS Ownership	
CONTROL	Control

Annexure B

Phase 2: First coding iteration (157 codes)	Phase 2: Second coding iteration (31 codes as output)
CONTROL_Neg	
CONTROL_Pos	
Owner doesn't have control	
Partial control	
Influencing ownership	Influences
Motivation for PO	
Reason given for PO	
Want	Needs

Phase 3 Coding

Phase 3: First coding iteration (31 Codes as input)	Phase 3: First coding iteration (9 categories as output)
Options	IS as assets in the organisation
Assets	
Formal ownership	IS ownership
Ownership distribution	
Psychological ownership	
Expectations	Expectations of stakeholders in IS ownership
Role	Roles of stakeholders in the IS ownership
Stakeholder	
Empower	Rights and obligations with respect to owning an IS
Rights and obligations	
Appropriation	Governance and management
Assignment	
Change	
Core business	
Governance	
Power	Relationships between the role-players involved in IS ownership
Relations	
Outcome	Outcomes of IS ownership
Value	
Culture	Influences that support or erode the levels of IS ownership
Driver	
Emotion	
Objective	
Operational	
Personal attributes	
Perception	
Requirements	
Conception	
Control	
Influences	
Needs	

Phase 3: Second coding iteration (9 categories as input)	Phase 2: Second coding iteration (6 themes as output)
• IS as assets in the organisation • IS ownership • Expectations of stakeholders in IS ownership • Roles of stakeholders in the IS ownership • Rights and obligations with respect to owning an IS • Governance and management • Outcomes of IS ownership • Influences on IS ownership that supports or erode the levels of IS ownership	Theme 1: Governance and management
• IS ownership • Expectations of stakeholders in IS ownership • Role of the stakeholders • Governance and Management • Relationships between the role-players involved in IS ownership • Outcomes of IS ownership • Influences on IS ownership that supports or erode the levels of IS ownership	Theme 2: Organisational perspective of IS ownership and IS ownership from the IS owner's point of view
• Role of the stakeholders • Governance and Management	Theme 3: Why should individuals and the organisation have IS ownership?
• Role of the stakeholders	Theme 4: Who should have IS ownership?
• Rights and obligations with respect to owning IS • Governance and Management • Influences on IS ownership that supports or erode the levels of IS ownership	Theme 5: How should IS ownership be established and managed in the organisation?

Phase 3: Second coding iteration (9 categories as input)	Phase 2: Second coding iteration (6 themes as output)
• Role of the stakeholders • Relationships between the role-players involved in IS ownership • Influences on IS ownership that supports or erode the levels of IS ownership	Theme 6: Relationships between IS ownership role-players

ANNEXURE C
Presentation for Proof of Concept

A framework for understanding Information Systems Ownership

Annexure C
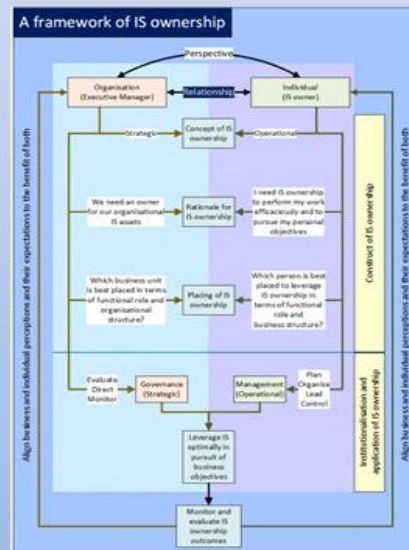
Problem Statement and Research Objective

Problem Statement

Many business owners are reluctant to take ownership of the information systems (IS) in their business areas, missing the opportunity to utilise information systems optimally as a resource in the business organisation.

Research Objective

To create a framework for understanding IS ownership in the business environment.

Annexure C

Defining IS Ownership

Information Systems Ownership is a relationship established by rights and obligations between an owner and an information system, where the owner becomes responsible and accountable to leverage the information system in pursuit of the objectives of the organisation

(Koiranen, 2007; Lohmeyer et al., 2002; Moffett & Sloman, 1991; Parker, Wall, & Jackson, 1997; Pierce et al., 2001, 2003; Pierce, O'Driscoll, & Coghlan, 2004)

Annexure C

A framework of IS ownership

Annexure C

Influences on IS Ownership

Organisational
- Organisational culture
  - Risk appetite
- Governance approach

Target
- Visible and attractive
  - Controllable
- Perceived value

Assignment
- Sole/Shared IS Ownership
- Rights and obligations
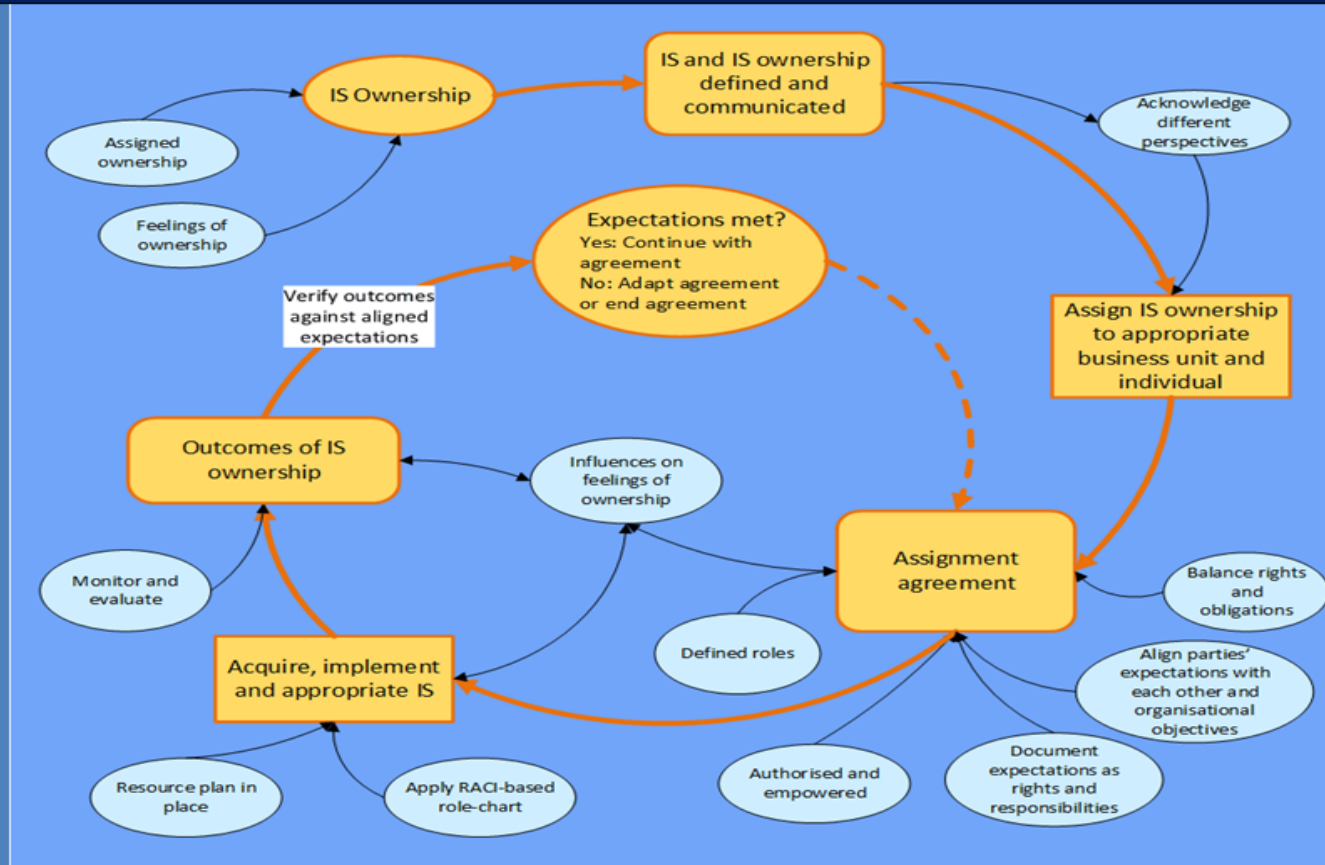- Involvement in the IS Ownership transaction

Personal
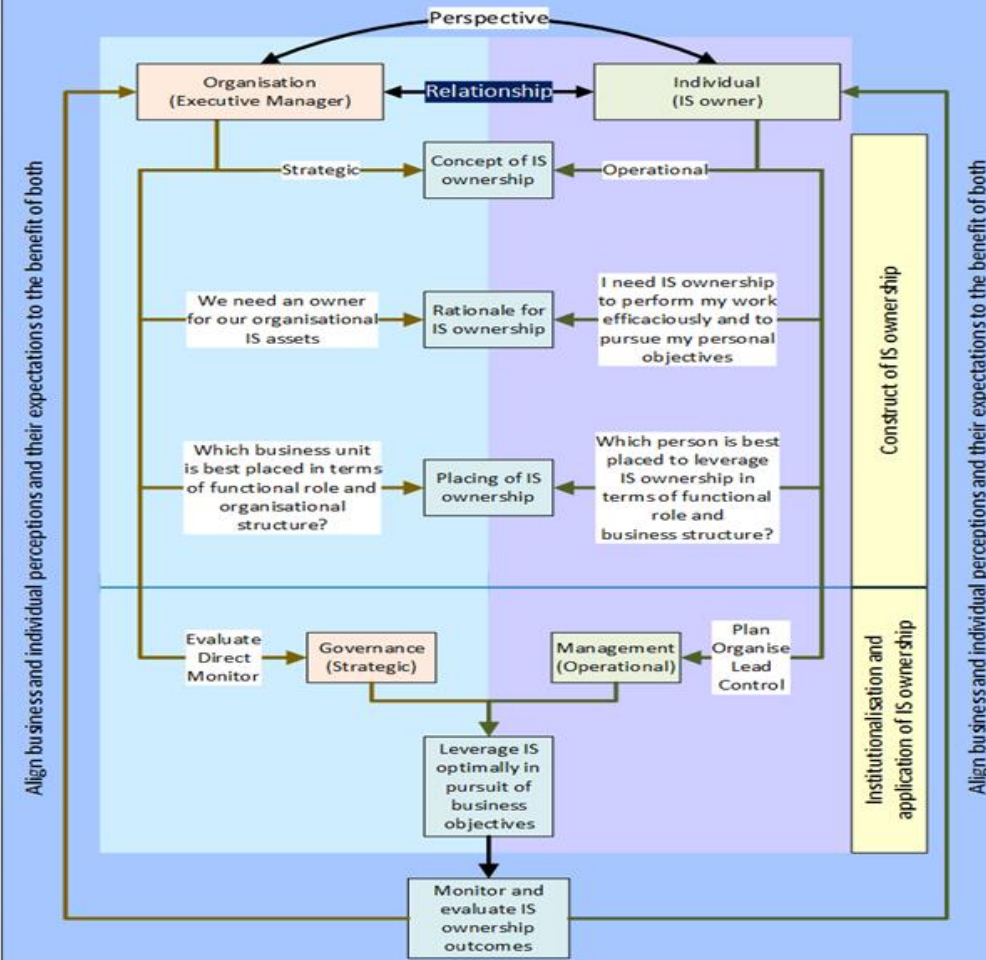- Self-efficacy
- Locus of control
- Expectations

Annexure C

Development of IS Ownership as a positive organisational resource

Individual

Receives formal ownership

Is empowered
Working towards business objectives
Agrees to render services
Has associated rights

Develops psychological ownership

Accepts responsibility
Makes personal sacrifices
Owns risks
IS Ownership as a resource

Organisation

Assigns formal ownership

Defines authority
Assigns resources
Defines rights and obligations

Creates fertile conditions for psychological ownership

Ownership culture
Collaborative job design
Management involvement

Formal ownership   **Psychological ownership**

A framework of IS ownership

Discussion

1. Does the framework provide an understanding of IS ownership in your business environment?
2. How applicable is the IS ownership framework in your business environment?
3. How applicable is the IS ownership framework elsewhere in the organisation?
4. Which additions would you like to see in the IS ownership framework?
5. What would you like to see left out of the framework?
6. Which other changes would you like to see in the framework?
7. Is there anything else you would like to discuss?

Annexure C

This page left intentionally blank