

An information systems ownership framework

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Abstract

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 business areas not attaining their objectives. Little guidance exists to understand what 'taking ownership of IS' entails. In the research, a framework for understanding IS ownership was developed through a process of induction. The IS ownership framework discusses the different perspectives of the role-players with respect to defining IS ownership, the rationale for IS ownership, the criteria for having ownership and the rights, obligations and expectations associated with IS ownership.

Keywords: information systems; IS ownership; psychological IS ownership; formal IS ownership.

Biographical notes

Adri Swanepoel qualified as an Aircraft Instrument Technician in an aviation organisation in South Africa. He specialised in aircraft audio and video equipment. In 1988, he joined a leading financial institution of which he spent 30 years in the information technology and informatics environment. Five years before retiring, he was appointed as an Application and Technology Manager in the Enterprise Architecture Environment. Application and Technology Management entailed acquiring architectural data on deployed applications and technologies and advising and planning the organisation's future application and technology landscape. He completed his PhD in Informatics at the University of Pretoria in 2015.

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1 Introduction

Organisations deploy business processes to achieve business objectives in support of the mission of the organisation. Information systems (IS) enhance the ability of the organisation to achieve its business objectives. As with non-IS related business systems, organisations deploy IS with the exclusive aim of achieving business objectives in pursuit of its mission (Machiraju et al., 2002; Symons, 2005; Kilpeläinen and Nurminen, 2007). Information provided by the IS should be seen as a strategic resource and not a cost of doing business (Martinho, 2015). Organisations have different opinions of how to optimally select, deploy and utilise IS (Venkatraman, 1997), but in all cases the IS should be aligned with the business goals of the organisation (Malihi and Aghdasi, 2014).

The organisation's unique application and utilisation of the business-enabling IS can provide the organisation with a competitive advantage (Le Roux, 2006; Institute of Directors, 2009; De Haes et al., 2013), provided that resources in the organisation contribute to the objectives of the organisation and staff take 'ownership' of their activities (Choppin, 1996; Lohmeyer et al., 2002). Resources include the IS of the organisation (Malihi and Aghdasi, 2014; Martinho et al., 2015). Selection and appropriation of IS in business areas need guidance from IS owners.

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 to render a service to the satisfaction of the business. The IS department, however, may have different objectives and expectations than the business unit and these objectives and expectations may depend on the accepted role of IS and the IS department in the organisation (Lohmeyer et al., 2002; Guillemette and Paré, 2012). 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 (Venkatraman, 1997; CFO Research Services and PricewaterhouseCoopers, 2004; Malihi and Aghdasi, 2014; Martinho et al., 2015). To optimally leverage their IS in pursuit of business objectives, business and other stakeholders such as the IS department, need to have at least some ownership of the IS used in the business.

Business leaders acknowledge that they are owners of the business processes of the organisation, but seem to lack the motivation to 'take ownership' of IS in their business areas (Lohmeyer et al., 2002), missing the opportunity to utilise IS optimally as a resource in the organisation. Although the reluctance of business leaders to accept ownership of IS is pertinent in this research, the reluctance of IS departments to hand over such ownership of IS that they have developed and/or implemented, is neither under-estimated, nor ignored.

In this paper we reflect on a financial services organisation where executive managers assign IS ownership to business leaders with the intention that the business leaders leverage the IS towards achieving the business objectives of their business areas. Empirical evidence of what and how individuals experienced IS ownership is acquired through a phenomenological approach to IS ownership as it exists in the organisation (Creswell, 2007). Understanding what IS ownership means to the business areas, what they believe can be achieved by business leaders accepting IS ownership and what entices the business leaders to accept ownership of IS in the organisation, contributes to the understanding of IS ownership in the organisation.

Ownership and its effects are dynamic and complex (Orlikowski, 1992; Pierce et al., 2001; Peng and Pierce, 2015; Dawkins et al., 2017; Gallagher, 2017). In the absence of literature discussing all the aspects of IS ownership (formal IS ownership together with psychological IS ownership developing, existing and being applied in the organisation), it may be argued that IS ownership is not comprehensively understood in the organisation. IS ownership is required for business to successfully leverage the IS in pursuing business objectives (Machiraju et al., 2002; Symons, 2005). The 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.

Executive managers offer IS ownership to business leaders in the business areas, while senior executive managers are held accountable for the successful achievement of business objectives in these business areas. In this research, the relationships between IS ownership stakeholders were viewed through a lens of social exchange theory.

The objective of this research was to learn about IS ownership as it exists in a financial organisation through the experiences of business leaders, executives and other stakeholders such as employees of the IT department. The paper suggests a framework for understanding IS ownership as it develops, exists and is managed in the organisation.

2 The concept of ownership

Ownership is defined as the relationship between an owner and the target of ownership (Koiranen, 2007; Verkuyten and Martinovic, 2017). Formal ownership is recognised by society as real and objective and its associated rights are protected by law (Pierce et al., 2001, 2003; Matilainen et al., 2017). The relationship between owner and target can also be of a personal nature where the individual or group has an emotional bond with the target, which is referred to as psychological ownership (Pierce et al., 2001, 2003; Brown et al., 2014; Kirk et al., 2015; Peng and Pierce, 2015; Dawkins et al., 2017).

Where formal ownership in an organisation is found in direct ownership, or in ownership arrangements such as delegation of duties and rights, psychological ownership influences an individual emotionally and is a state of the mind where the owner may feel that the target is 'mine' (Pierce et al., 1991; Matilainen et al., 2017). A group of owners may feel the target to be 'ours' (Pierce et al., 2001; Verkuyten and Martinovic, 2017), which is indicative of social interactions between parties (Furby, 1980; Peng and Pierce, 2015).

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 (Furby, 1978; Pierce et al., 2004; Avey et al., 2009; Dawkins et al., 2017). Staff members can also act as champions for the targets, promoting user acceptance of the target in the organisation (O'Driscoll et al., 2006; Kirk et al., 2015).

Psychological ownership may decline over time, as psychological ownership depends on the situation, motivational factors, personal factors and changes in the environment (Pierce et al., 2001, 2003; Peng and Pierce, 2015; Dawkins et al., 2017). Pierce et al. (2001, 2004) explain the development of psychological ownership through the motives ('roots') and the determinants ('routes') of psychological ownership.

The motives for ownership relate to the control that the individual has over space, the "personalization 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 can thus be understood as the individual's need for efficacy and effectance, projecting the 'self' to others (self-identity) and having feelings of belonging in the organisation (Pierce et al., 2001). The motives for ownership should not be viewed as a cause of ownership, but rather as facilitating ownership.

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., 1991, 2001; Peng and Pierce, 2015). 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. ‘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., 2001, 2003; Safie et al., 2017).

2.1 Ownership in the context of IS

As a specific instance of generic ownership, IS ownership also comprises formal ownership and psychological ownership. Formal IS ownership is assigned to a person or group of people through a process of delegation of authority, which is governed through a “framework for the delegation of authority” (Institute of Directors, 2009). Organisations need resources to pursue organisational objectives (Funchall, 2007; Prasad et al., 2009; Letseka and Iyamu, 2011). 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.

Formal ownership of an IS is regarded as necessary to pursue organisational objectives, but it is not necessarily sufficient. 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 attained. The roles of formal and psychological ownership of an IS are depicted in below:

IS ownership can also 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 (Pierce et al., 2001; Peng and Pierce, 2015; Dawkins et al., 2017).

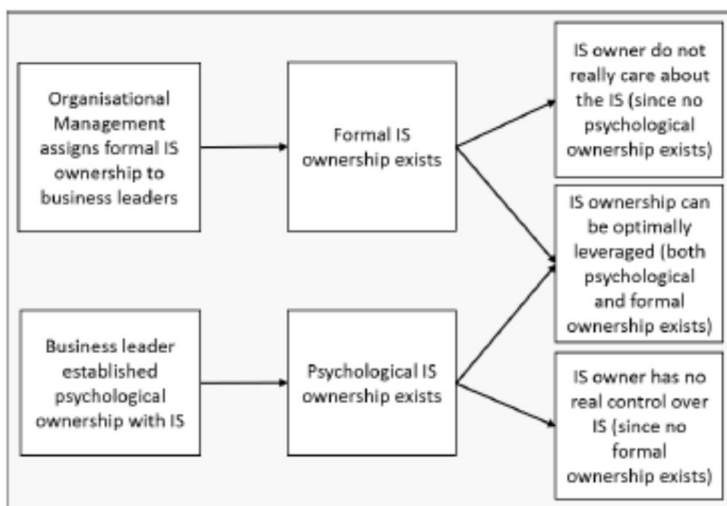


Figure 1 Roles of formal IS ownership and psychological IS ownership

IS ownership stimulates a positive attitude toward the IS and owners have greater tolerances for inadequacies and faults in the systems (Van Dyne and Pierce, 2004; Avey et al., 2009; 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 (Han et al., 2010; Hou and Fan, 2010). Kirk et al. (2015) argue that ‘pride’ in its forms of ‘authentic pride’ and ‘hubristic pride’ can originate from appropriating an IS, that in turn enhances psychological ownership and promotes the use of the IS in the organisation.

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” (Pierce et al., 2001, 2003, 2004; Lohmeyer et al., 2002; Koironen, 2007; Dawkins et al., 2017).

An IS as the target of ownership, 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)” (Orlikowski and Iacono, 2001; Melville et al., 2004; Lehmann and Fernández, 2007; Fink and Neumann, 2009; Malihi and Aghdasi, 2014). This definition of an IS implies that IS ownership involves

ownership of technologies and requires that stakeholders have to socially engage to ensure optimal appropriation of the IS (Kirk et al., 2015; Matilainen et al., 2017).

2.2 Promotion of IS ownership

Organisations can improve the conditions for developing psychological ownership by tailoring the attributes of own-able targets (Pierce et al., 2001; Avey et al., 2009; Dawkins et al., 2017). 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; Tian et al., 2017).

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 aligned with business objectives, are safeguarded, available when required and that the data has integrity, enabling them to focus on leveraging the IS in innovative and optimal manners (Carroll, 2012; Malihi and Aghdasi, 2014).

3 Research framework

The research framework was designed using the top-down 'research onion' approach proposed by (Saunders et al., 2012). In the research onion, the elements of the framework are addressed sequentially, with one element of the framework informing the next element (Crotty, 1998).

Social interactions between people using their knowledge and skills to leverage the IS towards achieving their business objectives form the core of the definition of IS ownership. The research 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. The underpinning philosophical stance for the research is interpretive in nature (Saunders et al., 2012).

The researcher used an inductive approach (Thomas, 2003; Dey, 2012) to develop a framework for understanding ownership of an IS from data acquired from literature, organisational artefacts and interviews with staff members in a financial services organisation. Phenomenology was used as strategy in the research of IS ownership in the organisation. In the research, an understanding of IS ownership was acquired based on the experiences, perceptions and actions of IS owners in the situation and environment wherein IS ownership exists (Willis, 2007; Campbell, 2011).

Social exchange theory (Homans, 1958; Cook and Rice, 2003; Cropanzano and Mitchell, 2005) assisted with 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 management offering the ownership. The lens of social exchange theory influenced the questions posed in interviews to IS owners and executive managers in a financial services organisation. The organisation has heterogeneous functions and interviewees represented various levels of seniority in the organisation.

3.1 Verification of the IS ownership framework

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. Formal and informal discussions with colleagues and management were held to determine the usability and impact of the IS ownership framework in the organisation. The need and value of the IS ownership framework in the organisation was expressed by all of the participants of these discussions.

3.2 Data collection

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 research of understanding IS ownership in the organisation. Another source of secondary data was documentation of organisation-specific practices. Documents include information such as governance structures, central decision-making, organisational structures and other organisational artefacts.

To acquire an understanding of IS ownership the researcher sought to know:

- What is IS ownership?
- Why do individuals and the organisation need IS ownership?
- Who should have IS ownership?

- How should we implement and maintain IS ownership?
- What does an IS ownership framework look like?

In this study, an understanding of IS ownership was acquired by focusing on the experiences, perceptions and actions of IS ownership stakeholders in the situation and environment wherein IS ownership exists. Primary data was acquired by conducting interviews with twelve employees at various levels of seniority in the organisation.

The questions above formed the basis of the interviews with the employees of the financial services organisation. Questions that were included in the interviews were:

- what their understanding of IS ownership is
- why do they believe IS ownership is important
- who should have ownership of the IS in the organisation
- what their experiences of IS ownership entail
- how could IS ownership be encouraged in the organisation.

A number of business units with diverse functions, including research, supervisory, regulatory and support activities were represented by the interviewees. Employing a lens of social exchange theory served to explain why and under which conditions an IS owner may be satisfied with a social exchange, such as owning an IS in exchange for the benefits associated with IS ownership, while others may not (Cook and Rice, 2003; Cropanzano and Mitchell, 2005).

The research environment comprised a single organisation. Although the research 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 research. 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. Based on the research done in a single organisation, no empirical proof exists that the framework for understanding IS ownership is generalisable and applicable in other organisations. However, the outcome of the proof of concept to test the validity of the framework elsewhere in the financial services organisation and formal and informal discussions with colleagues and management in the organisation, suggested that the framework can be used in this organisation and in similar organisations. The limitations listed for this research do not detract from the value of the research to develop a framework for understanding IS ownership in the organisation.

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. Feedback from the focus group session was used as input to refine the framework for understanding IS ownership.

3.3 Data analysis

Data acquired from the interviews, literature review and organisational artefacts was analysed inductively. The inductive approach to a study involves the construction of a theory or framework reflecting the essence of the research objective from raw data that was collected for the research (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 research. Interview data was compared and combined with data acquired from the literature review and from organisational artefacts. The acquired data was analysed using an inductive analysis process as demonstrated by Thomas (2003) and Dey (2012). The inductive analysis process commenced by acquiring data from organisational artefacts, literature and interviews with staff members in the financial services organisation. The process of data collection was followed by a coding process that rendered six themes that are pervasive in the phenomenon of IS ownership in the organisation. The coding process is depicted in Figure 2.

An understanding of IS ownership was acquired by conducting multiple iterations of coding of the interview transcripts using Atlas.ti® (see Figure 2). 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 (Muhr and Friese, 2004).

Concepts of IS ownership were identified in phase 1 of coding 'close to the data', analysing words, phrases and sentences in the interview transcripts. In phase 2, the codes from phase 1 were refined, while analysing larger segments of interview data in an interpretive manner. Phase 3 coding compared data from the

previous coding phases with literature and organisational artefacts, rendering a holistic view of IS ownership as it exists in the organisation. Nine code categories acquired during phase 3 of coding were analysed and rendered six themes of IS ownership that were pervasive in the data.

The themes of IS ownership were used to induce a framework for understanding IS ownership in the organisation. The themes were 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.

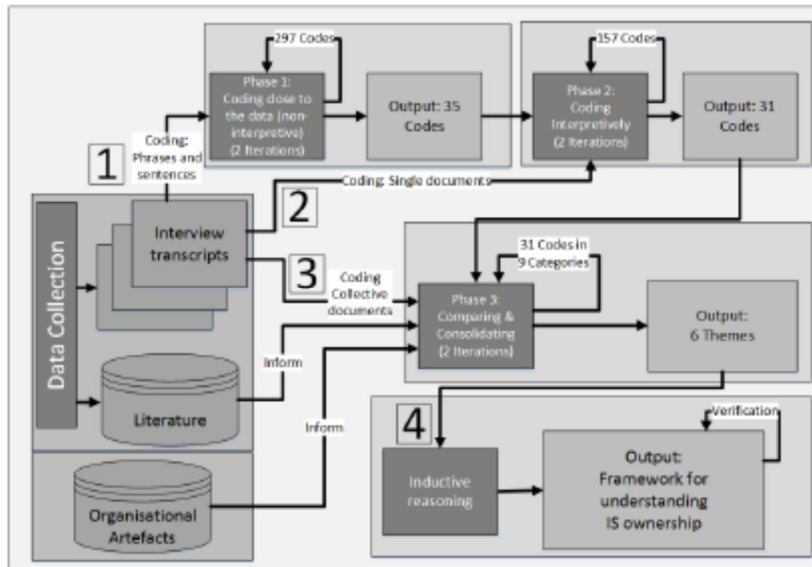


Figure 2 Inductive data analysis process

The nine identified code categories from phase 3, iteration 1 emerged from 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 expressed the topic of the codes during the interviews (Ryan and Bernard, 2003).

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

4 Findings

Using Atlas.ti® as analysis tool, three phases of coding were conducted. The description is based on Figure 2: inductive data analysis process.

4.1 Phase 1: coding ‘close to the data’

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]. During a second iteration of coding in the same literal manner, the existing codes were reduced to 35 codes that were used as an input into phase 2 of coding. 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.

4.2 Phase 2: coding interpretively

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. Phase 2 of coding was conducted by viewing IS ownership through the lens of the organisation as concern and the relationships between the executive and the IS owners through the lens of social exchange. Iteration 1 of phase 2 rendered 157 codes and was informed by the 35 code categories from the second iteration of phase 1 coding. The 157 interpretively acquired codes acquired during the first iteration of phase 2 were reduced to 31 high-level codes or code categories.

4.3 Phase 3: categorising codes and developing themes

The 31 codes from phase 2 were used as input for phase 3 that comprised two iterations. The responses of all the interview transcripts were studied individually during the first iteration and then in a combined fashion in the second iteration.

When conducting the final phase (phase 3) of coding, certain choices had to be made to materially reduce the 31 codes to a manageable number of code categories. According to Thomas (2003) and Creswell (2007), the code categories should be reduced to the minimum to capture the essence of the research. Nine categories of code emerged from this iteration expressing the essence of what IS ownership in the organisation entails. However, the categories of 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. Following the process described by Ryan and Bernard (2003), six overarching themes describing IS ownership were acquired as output of the second iteration of phase 3. Phase 3, iteration 2 comprised:

- analysing the nine categories of codes acquired from phase 3, iteration 1
- taking a collective view of the 12 interview transcripts
- using data from the literature review
- using data from organisational artefacts.

Table 1 Mapping of categories of codes to themes

<i>Categories of codes</i>	<i>Theme</i>
<ul style="list-style-type: none"> • IS as assets in the organisation • IS ownership • Expectations of stakeholders in IS ownership • Role of the stakeholders • Rights and obligations with respect to owning 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
<ul style="list-style-type: none"> • 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: concept of IS ownership
<ul style="list-style-type: none"> • Role of the stakeholders • Governance and Management 	Theme 3: rationale for IS ownership
<ul style="list-style-type: none"> • Role of the stakeholders 	Theme 4: placement of IS ownership
<ul style="list-style-type: none"> • 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: establishing and managing IS ownership in the organisation
<ul style="list-style-type: none"> • 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

The following themes emerged:

- theme 1: governance and management
- theme 2: concept of is ownership

- theme 3: rationale for is ownership
- theme 4: placement of is ownership
- theme 5: establishing and managing IS ownership in the organisation
- theme 6: relationships between IS ownership role-players.

The nine code categories that were developed during the first iteration of phase 3 coding, did not provide a one-to-one mapping with the six themes that emerged from the data as is depicted in Table 1.

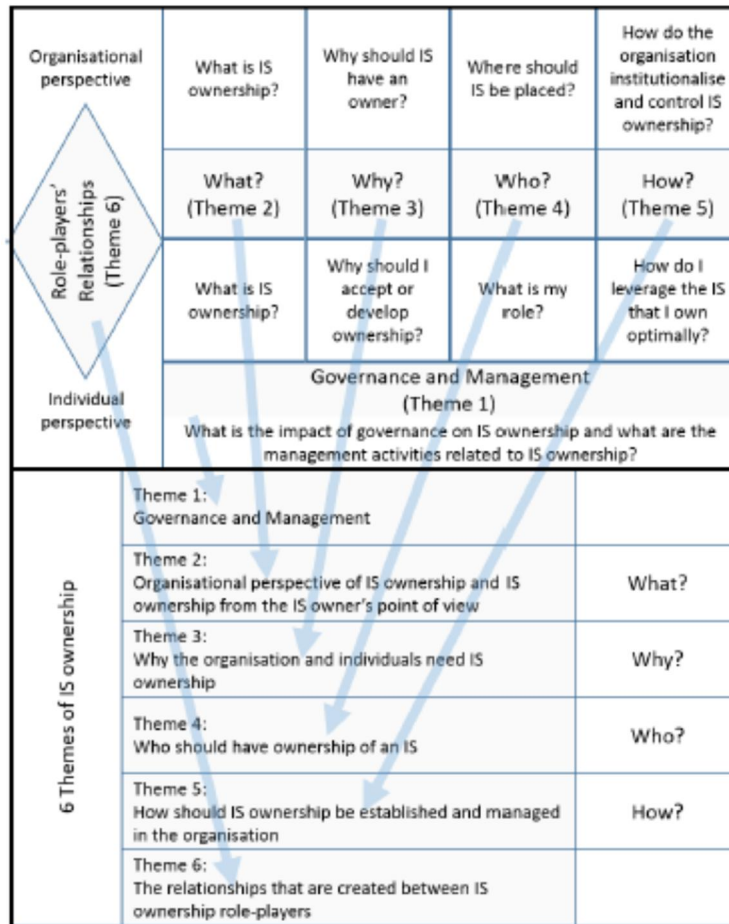


Figure 3 Initial question-based IS ownership framework (see online version for colours)

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 executive managers and the different business units of the organisation, whether they function in core business areas, or in an enabling or supporting role. IS ownership also has an impact on individuals, as IS ownership offers a personal experience to individuals developing ownership of the IS. An initial IS ownership framework was based on the development themes and questions asked from the interviewees (Figure 3).

5 IS ownership framework

The inductive analysis process commenced 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 reflected the essence of IS ownership and were used to induce a framework for understanding IS ownership in the organisation. The six identified themes were 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, where should IS ownership reside 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 (ISACA, 2012).

Table 2 Examples depicting the dual nature of IS ownership

<i>Aspect of IS ownership</i>	<i>Organisational perspective</i>	<i>Individual perspective</i>
Need for IS ownership	IS are assets that need owners to care for them	I need IS ownership to achieve 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

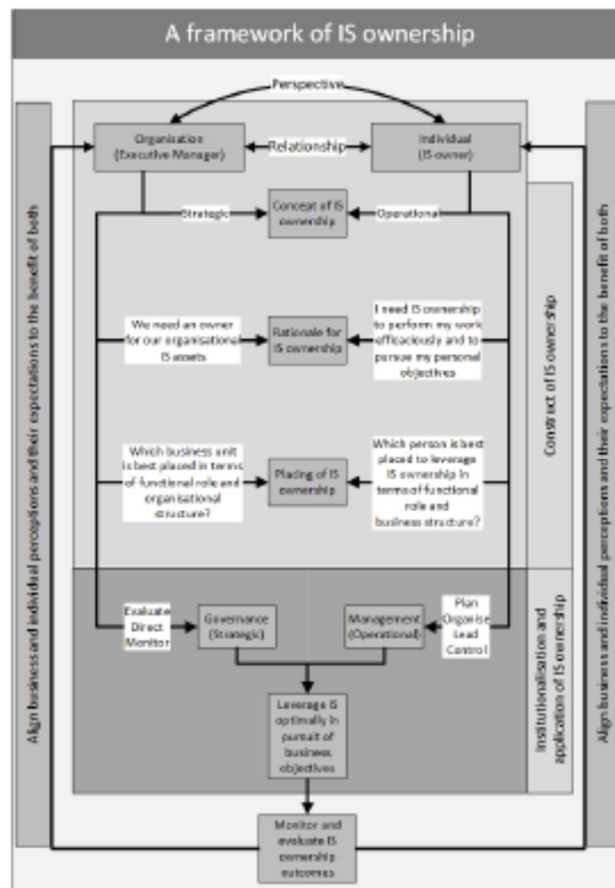


Figure 4 IS ownership framework

The views of IS ownership comprising the strategic perspective of the executive manager and the operational perspective of the IS owner, are evident in Table 2.

IS ownership can only 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. 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 views of IS ownership and not only focus on local and personal objectives. A framework for understanding IS ownership is depicted in Figure 4.

5.1 The IS ownership framework components

The framework for understanding IS ownership comprises two major parts or phases, being

- 1 the construct of IS ownership
- 2 the institutionalisation and application of IS ownership.

The construct of IS ownership pertains to the concept, rationale and the placement of IS ownership 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. 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.

IS owners and executive managers have different perspectives of IS ownership in the organisation as depicted in Figure 4. In addition to the different perspectives of the IS ownership role-players, the framework explains the role of psychological ownership that is required to leverage the IS in an optimal manner. IS ownership without psychological ownership does not provide the IS owner with the incentives to apply the IS in an innovative and optimal manner as was depicted in Figure 1.

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 by evaluating the outcomes of IS ownership.

For the IS ownership construct phase to commence, it is necessary for role-players to be aware of factors present in the organisation that may influence the development of IS ownership. Managing the influencing factors increases the possibility of IS ownership development with business leaders.

5.1.1 Perspectives of major role-players in IS ownership

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. IS owners also believe that owning an IS can be satisfying, provide them with status and can assist them to project themselves in a manner that they want others to perceive them.

5.1.2 Relationships between role-players in IS ownership

Three major role-players are involved in IS ownership. Executive managers represent the shareholders of the organisation and have the responsibility and are accountable for business units to achieve business objectives. Executive managers identify the correct individual to have control over an IS and they assign formal IS ownership to the specific individual or group of individuals. Business leaders are responsible to achieve the objectives of their respective business areas by leverage the IS in their business environments. Business leaders have to be empowered to leverage the IS successfully to achieve their business objectives. 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.

The IS department acts as the custodian of the IS. The IS department is responsible to 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 to enable business leaders to pursue their business objectives.

An executive manager and IS owner has a relationship of reciprocity, where the executive manager expects that the IS owner provides certain services in exchange for IS ownership-related privileges. Social exchange theory discusses this situation of reciprocity, 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 adequate effort in achieving the objectives of the business area. Executive managers and IS owners should acknowledge and respect the difference in perception and accept the right of the other party to perceive IS ownership differently.

Executive managers and IS owners should 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 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.

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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.

5.2 IS ownership framework methodology

Applying the IS ownership framework in the organisation comprises five phases:

- phase 1 – the pre-requisites for implementing the framework
- phase 2 – the construct of the framework
- phase 3 – the institutionalisation of the framework
- phase 4 – the management of the framework
- phase 5 – the IS ownership outcomes.

5.2.1 Phase 1: pre-requisites

It is suggested that viewpoints of different role players are aligned to one another as well as to the objectives of the organisation when IS ownership is provided to a business leader. IS ownership role-players should take cognisance of the factors hindering IS ownership as discussed in Section 5.3 below.

5.2.2 Phase 2: construct of IS ownership

The construct of IS ownership forms the basis of IS ownership in the organisation. The construct explains the difference in perspectives of the executive manager assigning 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.

- Step 1: create and communicate a single unambiguous definition of IS and of IS ownership.
- Step 2: understand the rationale for IS ownership from the viewpoints of the organisation and the IS owner.
- Step 3: decide where the IS should be placed at business area-level and at individual level.

5.2.3 Phase 3: 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.

- Step 4: assign IS ownership to an identified existing or new business unit.
- Step 5: assign IS ownership to an identified business leader.
- Step 6: negotiate the conditions for the IS ownership assignment based on the expectations of the parties and alignment to the objectives of the organisation.
- Step 7: document expectations as rights and responsibilities in a formal IS ownership agreement.
- 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.
- Step 9: the IS ownership agreement includes the mandate of the IS owner, indicating his authority, control and decision-making powers. The responsibility and the roles of IS ownership role-players should also be included in the IS ownership agreement.
- Step 10: the key performance areas of the role-players are documented in the **IS ownership agreement**.

5.2.4 Phase 4: 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.

- Step 11: the IS owner is responsible to mobilise and manage the resources assisting in leveraging the IS.

5.2.5 Phase 5: outcomes of IS ownership

- Step 12: the outcomes of IS ownership are monitored and measured to determine the success of achieving business objectives.
- Step 13: 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 are documented in the IS ownership agreement.

5.3 Factors that may negatively influence the development of psychological IS ownership

Data acquired from the literature and interviews viewed through a social exchange theory lens revealed several factors that may influence the development of IS ownership with business leaders. These factors may be present during all the phases of the IS ownership life cycle. Executive managers should be made aware of the factors that obstruct the development of ownership of an IS, affording them the opportunity to influence the conditions promoting the development of IS ownership with business leaders.

The following factors have been identified as hindrances of IS ownership development in the financial services organisation:

- Not having 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.
- Where the expectations of the IS owner are not aligned with the expectations of the executive manager that represents the organisation, one of the parties may not be satisfied in the return of IS ownership.
- Expectations of the IS owner or the executive manager that do not align to the objectives of the business may hamper the successful leveraging of IS in the organisation.
- Lack of empowerment of IS owners. IS owners should have all possible opportunities to successfully leverage the IS optimally in the organisation. An empowered 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 control over the IS and therefore needs the authority to make decisions related to the IS.
- 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, which may lead to feelings of discontent and may cause the relationship to break down.
- Lack of communication between IS ownership role-players. Executive management expects IS owners to innovatively appropriate IS in their business areas. When problems arise, the IS owner should have a clear communication channel to his manager to assist with resolving the problems. If no line of communication exists, 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.
- 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.
- 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 may also perceive themselves to be owners of the IS.
- Business leaders not having the personal attributes to own the IS. Complex IS may result in business leaders to be overwhelmed by the IS. 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.
- Environments with a blaming culture are not conducive for IS ownership, as the owners in these areas will avoid taking risks and display prevention-oriented ownership. 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.
- The IS as target does not promote IS ownership. An IS has to afford control to the IS owner, has to perceivably be important in the business and the organisation, contribute to the value of the business and has to contribute to the work and personal objectives of the IS owner.
- Not all factors influencing IS ownership are obstructing IS ownership, and executive managers and IS owners should seek and leverage factors that can in fact promote IS ownership with business leaders.

6 Verification of the research

To get an indication of the applicability of the framework in the organisation, a proof of concept was conducted in the form of a focus group session that lasted approximately 90 minutes. Four IS owners and executive managers of the financial services organisation participated in the session. Participants accepting the invitation to the focus group session, were briefed before the meeting and a presentation and description of the framework for understanding IS ownership were provided to the participants.

The participants were provided with the presentation of the framework for understanding IS ownership (Figure 4) as well as a background of the framework. Participant were invited to discuss how successful the framework created an understanding of IS ownership, what the fit of the framework in the business areas and in the wider organisation are and also what shortcomings of the framework can be detected.

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 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 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.

The proof of concept 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 own, as well as in other business units in the organisation. Valid concerns of the focus group participants with respect to the IS ownership framework were addressed. A significant shift from ignorance to the understanding of IS ownership was observed from before and after the focus group session.

The framework was also discussed with colleagues and managers in the organisation during formal and information work sessions. Issues and misconceptions were discussed, after which the framework was updated and corrections applied. General agreement was that the framework is needed and viable in the organisation and can contribute the achievement of business objectives.

7 Outcomes of the research

The objective of this study was to understand why some business leaders are unwilling to accept ownership of the IS in their business areas. This lack of ownership poses a risk that the business areas may not achieve their business objective. IS departments are sometimes reluctant to hand-over control of IS that they developed and/or implemented.

The objective of this research was to learn about IS ownership as it exists in a financial organisation through the experiences of business leaders, executives and other stakeholders such as employees of the IT department. The paper suggested that a framework for understanding IS ownership as it develops, exists and is managed, may guide the organisation to address the matter of IS ownership in the organisation. In this study, literature and organisational artefacts were visited to acquire an understanding of ownership and IS ownership in general and IS ownership in the organisation. Business leaders, management of the business areas and the IT department were interviewed to acquire information about what IS ownership means to them and in practiced and managed in the organisation.

The study rendered an IS ownership framework that explains the duality of understanding IS ownership with organisations assigning and individuals accepting formal IS ownership, as well as individuals given an opportunity of developing psychological ownership. Formal ownership and high levels of innovative psychological ownership leads to the optimal value of IS ownership in the organisation. The framework discussed the relationship between IS owners and management focusing on achieving optimal value from IS ownership.

The IS ownership framework discusses what IS ownership entails for different stakeholders, why IS ownership is required for the organisation and the individual, where IS ownership should be placed and who should have IS ownership. The framework also focuses on the governance surrounding IS ownership and also gives guidance to the organisation to prepare for, establishes and manages IS ownership.

8 Contribution made by the research

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. Guidance is provided in the framework for executive managers to address the obstacles towards developing IS ownership with business leaders.

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.

Introducing IT Governance as a guidance for IS owners to govern and manage their IS (ISACA, 2012), enhances the acceptance of IS ownership. 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.

The framework allows individuals to discover the essence of IS ownership by discussing the concept, rationale and the placement of IS ownership in the organisation and then, what to do once IS ownership has been assigned. This phenomenological research created an in-depth understanding of IS ownership in context of the business environment in the organisation. The framework for understanding IS ownership also provides guidance to establish and manage IS ownership in the organisation. The IS ownership framework enables the organisation to promote the level of IS ownership of an individual and leverage IS ownership as a resource in the organisation.

Understanding that IS ownership does not require that the IS owner has the technical ability 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.

8.1 Future research

The research 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 organisations or disciplines (such as ownership of job activities or risks) can contribute to a more generalised knowledge-base and to the pragmatic value of the framework.

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 research 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.

9 Conclusions

In this research, we identified that IS ownership stakeholders have no unambiguous understanding of IS ownership. This lack of understanding IS ownership was related to the problem experienced with business leaders being reluctant to take IS ownership of the IS in their business areas, resulting in organisations applying resources sub-optimally. This research provides suggestions to improve the understanding of IS ownership in a financial services organisation. The research used a phenomenological approach by focusing on the experiences of executive managers and business leaders in the organisation with respect to IS ownership. Data acquired from literature, organisational artefacts and 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. Viewing the relationships between IS ownership stakeholders through the lens of social exchange theory, an understanding of the interaction between IS ownership stakeholders is improved. The framework places the phenomenon of IS ownership in perspective in the organisation and provide suggestions to implement, manage and nurture IS ownership in the organisation. Applying IS ownership as a resource, increases the possibility of achieving the objectives of the business areas and subsequently of the organisation.

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Notes

- ¹ 'IS' is also used for the singular form: 'information system'.