VICTORIA UNIVERSITY OF WELLINGTON
*Te Whare Wananga o te Upoko o te Ika a Maui*

# An investigation into expectations of the Chief Information Officer's role and knowledge, skills and experience that support it: a dyadic IT-Business perspective in NZ local government

MMIM 592: Research Paper

by

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## Abstract

The CIO role is changing and becoming more strategic, in fact some CIOs even have a role in formulating their organisations strategic direction based on technology innovations. Yet the research that indicates this new role for CIOs is often reporting the experience in large private sector organisations. Is the experience similar in the public sector, especially what are the role expectations of CIOs in small local authority organisations where resources are tight and IT expenditure is subject to public scrutiny?

This research explored the expectation of the CIO role in the NZ local government context through the eyes of the CIOs themselves and their business colleagues. It found that, in this context, there was both an operational and strategic expectation of the CIO. While CIOs have a strategic role it is not in formulating strategy, but rather in advising potential technology solutions once strategies are formulated. The focus of the CIO's advice is "value-for-money" as much as it is "value-add", as councils deliver as set of defined services to a "captured" customer base. Operational aspects of the CIO role can take priority over the strategic aspects especially in smaller councils with limited resource where the CIO may need to assume a "hands on" role.

The study used resource based theory (RBT) to identify which knowledge, skills and attributes CIOs required for each role they performed. Technology skills, general management and IT management experience are valued for the operationally focused roles while leadership, and high-level organisational and IT industry knowledge are needed for the more strategic roles. Highly developed interpersonal skills and attributes are essential for both types of role.

## Preface

I wish to thank all the CIOs (IT Managers) and their business colleagues who participated in this research. I appreciate the time they gave me in what was a busy planning period for them and the openness in which they responded to my questions.

I also wish to thank Val Hooper for her patience and kind guidance throughout my research. The help she gave me was invaluable as well as her encouragement to keep moving toward my target.

**Beverley Bunker**

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# 1 Introduction

"Two paths lie ahead of today's CIOs. One leads to becoming a trusted senior executive leader of the enterprise; the other leads to a technical management, 'just keep the lights on and do it cheap' role" (Broadbent & Kitzis, 2005, p. 13).

Which path to follow? Broadbent & Kitzis suggest that this is up to the CIO, but this may only be partly true, the organisation itself and the CIO's colleagues may also influence the CIOs role. This study explores perceptions of the CIO role within a specific context, that of local government. The reason for selecting local government was two-fold. First, most research to date has been focused on large (often US-based) private sector organisations, these organisations, because of their competitive nature, may look to technology for their strategic advantage, public sector organisations have a different mandate, and cannot look to increase market share. Second, local government in New Zealand, as in other jurisdictions, are charged with providing a wide and diverse range of services to their community. The local government CIO needs to understand the different business demands and deliver an IS service that meets the overall community need.

The role of the Chief Information Officer (CIO) has been a topic of IS research interest for the last few decades since it was described by Benjamin et al (1985, p. 25). This research suggests the CIO's role is shifting focus from managing the backroom IS operations to becoming involved in setting the strategic direction (Smith & McKeen, 2006). The literature provides a variety of approaches describing this new CIO role. Some studies offer a set of CIO profiles (Grover, Jeong, Kettinger, & Lee, 1993; Leidner & Mackay, 2007; Preston, Leidner, & Chen, 2008), while others define a set of IS capabilities, where the CIO requires specific competencies deliver these (Feeny & Willcocks, 1998; Peppard & Ward, 2004).

Historically, IT Management has often been appointed from a technology rather than management background. As such, there is a perception that they may not understand business drivers and may lack the skills to successfully engage their business partners at

a strategic level. (Kaarst-Brown, 2005; Willcoxson & Chatham, 2006). The research indicates that business competence and ability to successfully engage with business colleagues are critical for today's CIO (Broadbent & Kitzis, 2005; Gottschalk, 2000; Lane & Koronos, 2007) . Marrying competencies to roles is a useful approach to understanding what is required from CIOs in today's environment.

The local government sector in New Zealand as in many other modern societies is characterized by a large number of diverse business activities. Information Services (IS) Divisions within local government must understand and balance the various business' demands within a very tight funding regime. They are also required to support a very diverse set of applications, and in the smaller councils this may be with very limited resources. The CIO may often need to take up a "hands on" role when resources are stretched. As a result the challenges for the local government CIO role can be very demanding and may be quite different from those of a CIO in a larger and better resourced private sector organisation. However this CIO, like his counterpart in the private sector, may still be expected to participate at a strategic level and assist his organisation in benefiting from the opportunities technology offers.

There has been very limited research on IS leadership in local government, and no research on what competencies a CIO might need to meet the demands of this environment. This study seeks to understand the role and competency expectation of CIOs in the New Zealand local government context from the perspective of the CIOs themselves and their business colleagues.

## *1.1 Research Question*

The purpose of this research is to explore aspects of the Chief Information Officer's (CIO[1]) roles and related knowledge, experience and leadership style considered important by CIOs and their business partners within NZ local government organizations.

[1] In this research we have used the term CIO to refer to the most senior management position responsible for IS regardless of the position title.

### 1.1.1 Research Objectives

The objectives of the project

- To identify and compare CIOs' and their business partners' perceptions of the requisite key roles performed by CIOs and individual competences required to support them
- To determine how the NZ local government context impacts on these roles
- To determine whether the NZ local government context yields different findings to private sector organisations as reported in previous research

### 1.1.2 Benefits

The key benefit of this research is to develop an understanding through the perceptions of local government CIOs and their business customers what factors of the CIO's knowledge, skills and experience contribute a successful relationship between IS and the business. This should contribute the understanding of the requirements of the CIO role within the local government context.

## *1.2 Outline of the report*

This report commences with an overview of the environment in which NZ local government CIO's operate and identifies a number of key issues and opportunities for their role. The literature review section then explores research relating to the CIO role and presents a model of competency based on Resource-based Theory (RBT). Finally it reviews how specific competencies business, leadership and technology have been discussed in IS literature.

The research approach and methodology is presented in the next section. This provides the basis on which the topic was researched within the NZ local government population and outlines how the analysis was undertaken.

The analysis of the interviews follows. This section shows results from the interviews in tabular form based on the individual competency areas. The tables show differences between the CIOs and their business partners as well as differences depending on

council size. The discussion section interprets the analysis results in light of the literature and in terms of the competency model. It builds picture of how CIOs and their business partners see the requirements of the CIO role within their organisation and compares them to the models proposed in the literature review. The final section presents conclusions from the research and provides recommendations for further research.

# 2 Background

There are 73 local government authorities in New Zealand including both city and district councils. These vary in size with Chatham Islands District Council (staff size 4) being the smallest and Auckland City Council (staff size est. 1700) the largest. Regardless of their size, all councils must perform the same functions (Local Government Online, 2008).

## *2.1 The Local Government Environment*

Local government bodies (or territorial authorities) are established under the Local Government Acts 1974 & 2002 (LGA). Local government Online (2008) describes councils' responsibilities as "Councils are required to make decisions and set directions for promoting the social, cultural, environmental and economic well-being of their communities."

In order to meet this requirement councils are involved with activities as diverse as such as managing roads, water and wastewater infrastructure and providing libraries, museums, recreation parks and gardens to their communities. Much of councils' other activity is also legislative driven, for example they provide consenting services for buildings according to the Building Act (2004), and land use (Resource Management Act) as well as licence business premises (Health Act) and dog registrations. Auckland City Council, the largest, lists more than 50 services on their website, 20 of these being described as essential services (Auckland City Council, 2007). A smaller district council, Upper Hutt lists 27 (Upper Hutt City Council, 2009). Delivering such a wide range of services puts significant pressure on council budgets.

### 2.1.1 Long Term Council Community Plan (LTCCP)

As part of its responsibilities under the Local Government Act (2002) , each council produces a long-term council community plan (LTCCP) that sets out activities planned for the next 10 years. The plan is developed through a process of consultation with the local community, . The LTCCP specifies a set of outcomes for the community which

are defined as " a desired result or state of affairs that the community considers as important" (Local Government Online, 2003, p. 31).

Many councils do not have a separate organisation-level strategy and the LTCCP outcomes form the basis for their annual plans and budgets. The council budget and annual business plans are typically developed and approved through a structured planning cycle that usually commences in November and ends around April each year when the elected members formally approve them. Individual business unit plans must contend with each other for this approval, and may be subject to political will. The approved plans and budgets commence the following June and are reported against both at council level and to central government.

## 2.2 The role of the local government CIO

The local government CIO is responsible for managing IS infrastructure and a multitude of business systems to meet the diverse business environment. For the most part they will be responsible for managing a set of applications that include as a minimum:

- A Regulatory suite for consents and licensing
- Library management system.
- Geographical Information Systems (GIS)
- Infrastructure Asset Management system
- Records Management system
- Financial and HR systems
- Planning tools (for district planning)
- Collections systems for museums and archives
- Emergency Management systems

Local government are also expected to play a role in NZ e-government initiatives. They must provide access to services through their websites and comply with standards to support centralisation of these services through portals (Locke, 2006). The Digital Strategy 2.0 sets out clear responsibilities for local government with regard to providing access to ICT within their communities (Digital Development Council, 2008),

in particular they have a role to play with supporting broadband initiatives. CIOs need to be aware of this and provide leadership within their council.

Another area of importance for local government CIOs is Public Records Act (PRA 2005) compliance. The PRA sets the requirement for government agencies to create and maintain public records and applies to local as well as central governments. Compliance with the Act is required by 2010. Archives NZ have developed standards to assist with agencies to achieve this compliance and these apply equally to electronic and paper records (ArchivesNZ, 2006). Whether or not the CIO has responsibility for Record keeping within their organisation they have a role to ply with assisting their council in achieving compliance.

### 2.2.1 Key challenges for local government CIOs

Based on the description above, there are a number of unique challenges faced by CIOs in local government. These challenges were confirmed during the interviews. They are summarised below:

- CIOs must operate within tight budget restrictions and as they are spending money, projects and IT purchases are open to public scrutiny. They are also subject to formal controls over major IT projects which have been defined for all public bodies (Office of the Auditor General, 2000).
- Some of their projects have a public profile and may be affected by political agendas. Elected members have more visibility of the day-to-day operations of local government then members of parliament.
- CIOs in smaller councils may be expected to take a “hands on” role because of the small number of resources.
- Central government may set requirements for interfaces and supply of information as in the recent centralised dog registration system, This requires the local authorities to standardise their information in order to seamlessly transfer it. Standards for information and metadata are expected to increase in the future.
- There are a small group of vendors offering solutions tailored for local government and there is potential for these vendors to drive a particular approach or solution.

However, councils are non-competitive and can form strong lobbying group to influence the vendor to develop a particular modification which they require.

## 2.3 Summary

The local government environment provides a significantly different context for studying the CIO role. It is a highly regulated environment, where the activities are defined by central government, through legislation and regulations. The councils' customers are also their shareholders and expenditure, indeed all council activity, is open to public scrutiny. The CIO, like his business colleagues, is subject to these restrictions. But with these restrictions come a number of opportunities, working closely with the community to deliver benefits for all. As one CIO interviewed quoted *"it's like working for the home team"*.

These challenges and opportunities make the CIO role in local government an interesting and valuable topic for research. This research seeks to explore how the CIOs themselves perceive the challenges to their role and how they expect to marry the strategic and operational demands on them. It will also compare this to their business partner's expectations of the CIO.

# 3 Literature Review

## *3.1 Introduction*

The role of the CIO has undergone considerable change since the concept was first introduced in the 1980s, (Benjamin et al., 1985). It has received significant focus from IS research over the last few decades (Gottschalk, 2000; Grover et al., 1993; Hoving, 2007; Kaarst-Brown, 2005; Preston et al., 2008; Wu, Chen, & Sambamurthy, 2008). Of particular interest to researchers has been the competencies required for the CIO to realise their position as a strategic partner with the business (Basselier & Benbasat, 2004; Broadbent & Kitzis, 2005; Lane & Koronos, 2007). In general this research has been based on the CIO position in large private sector (and often US-based) firms. Limited research has been undertaken in small organisations where the CIO often has to continue to manage the operational aspects of the technology as well as providing strategic advice to their business partners (Duhan, 2007). There has also been limited research that is specifically focused on the role of CIOs in government sector, they are usually included as part of a larger survey group.

This section reviews how the literature has defined the CIO role. It starts by providing some historical context for the CIO role and discusses some of the different profiles for the CIO that have been proposed. The concept of role-based competency which has emerged from a resource-based approach to strategic planning is then explored as it relates to research on IS management. Three competency areas considered important in the CIO are expanded upon and finally a summary of the concepts used for the research are provided.

## *3.2 Role of the CIO*

Several terms have been applied to an organisation's lead IS role, including IT Manager, Director of IS, Corporate Information Manager and other variants. The term CIO into prominence in the late 1980s and early 1990s. Since that time the focus of the role has undergone significant change as IS has assumed a more strategic position within organisations(Grover et al., 1993).

Lane & Koronos (2007)suggest there have been four stages to the evolution of the CIO role. At first, when IT was a typically back office function and computing was centralised around a data centre, this role was defined as Data Processing Manager. Then as end-user computing became prominent within an organisation, the IT Manager's responsibilities expanded to incorporate development and management of these end-user solutions (Benjamin et al., 1985, p. 178). However at this stage the IT Manager was still viewed as a technocrat. As organisations became more dependent on technology and IT became more pervasive within the organisation, the role of the CIO as a business executive emerged (Grover et al., 1993). In a further evolution of this stage, Lane & Koronos (2007, p 1100) suggest that the CIO role "has evolved from the technology steward to the senior executive to responsible for aligning ICT with business goals and leveraging ICT to achieve the strategic vision for the organisation". This view is supported by researchers such as Broadbent & Kitzis (2005) and Gottschalk (2000). This final stage over evolution, where the CIO takes a leadership role is considered an important contributor to IT-Business alignment (Luftman & Brier, 1999).

### 3.2.1 Alignment and CIO-business relationship

Chan & Reich (2007, p 300) suggest that there are a number of definitions and interchangeable terms used to discuss alignment. These include "linkage", "fit" and "integration" (Henderson & Venkatraman, 1993). While some alignment research focuses on structural or process elements of alignment, other research is focused on the people-oriented elements, (Reich & Benbasat, 2000, p. 82). Depending on the research focus, definitions of alignment may differ. Alignment can be defined as an outcome; the degree to which the organisation strategic goals and objectives are supported by the IT strategy, or as a relationship where the business and IT work towards a common goal (Chan & Reich, 2007).

The social dimension of alignment supports this second definition (Campbell, Kay, & Avison, 2005; Reich & Benbasat, 2000).Research on this dimension attempts to identify the aspects that improve or benefit the business-IT relationship, as it is considered an important enabler of business-IT alignment, (Luftman & Brier, 1999). Reich &

Benbasat (2000) identified four factors were all important for short term alignment. These are; shared domain knowledge between business and IT executives, IT implementation success, communication between business and IT and connection between the business and IT planning processes. However long-term alignment between IS Vision and business strategic direction is mainly supported by shared domain knowledge (Reich & Benbasat, 2000).

### 3.2.2 Leadership aspects of CIO role

While the alignment research stresses the importance of "shared domain knowledge" , the CIOs leadership ability is also critical (Luftman & Brier, 1999). It is as a leader that the CIO develops and promotes the IS Vision, builds confidence and trust amongst his business customers and influences the IS staff to deliver quality information services (Broadbent & Kitzis, 2005; Hoving, 2007; Preston et al., 2008).

Preston et al (2008) propose four different profiles for CIOs based on their "strategic" decision-making authority within the organisation and their strategic leadership capability. They studied how these different CIO profiles affected IT's contribution to the organisation. They found that while decision-making authority was often outside the control of the CIO, leadership capability on the other hand was linked to the CIO's personal competency including the following components:

- Strategic and business knowledge
- Interpersonal skills such as political savvy and communication ability

The four profiles are shown in the table below, along with the level of IT contribution, along with the degree of each component associated with the profile.

Table 3.1 CIO leadership profiles after (Preston et al., 2008)

| CIO Leadership Profile | IT Contribution 1=Low 5=High | decision-making authority | leadership capability | CIO attributes | |
|---|---|---|---|---|---|
| | | | | Strategic knowledge | Interpersonal skills |
| IT Orchestrator | 3.54 | High | High | High | High |
| IT Advisor | 3.26 | Low | High | High | High |
| IT Laggard | 2.81 | High | Low | Low | Low |
| IT Mechanic | 2.49 | Low | Low | Low | Low |

Orchestrators were defined as “an effective strategic leader” who is able to make strategic decisions. They found that Orchestrators are typically found in organisations that make large IT investments and see IT as a business transformer (Preston et al., 2008, p. 61). On the other hand IT Mechanics tend to be found in organisations that view IT as an automator of business process and adopt a “risk-averse strategy” to IT investment (Preston et al., 2008, p. 63). This research starts to link CIO competencies and leadership role with the organisations expectation of IT.

Broadbent & Kitzis’s (2005) take an holistic approach to the CIO as a leader. They define the CIO role as meeting the demand-side requirements through vision, governance and integration of IT-business strategies while also addressing the supply side through staff and vendor management. They identify five critical roles with matching competencies through which this is achieved, (Broadbent & Kitzis, 2005, p. 216). Similarly Gottschalk (2000) focused on the leadership roles performed by CIOs, but unlike Broadbent & Kitzis (2005), he did not link any competencies to those roles, nor were the roles linked to alignment or business outcomes. However he identified the presence of nine roles;

- three are based on Mintzberg’s management model; Informational roles, Decisional roles and Interpersonal roles - (Mintzberg, 1990 cited by Gottschalk, 2000)
- and six on a consultancy model; chief architect, change leader, product developer, technology provocateur, coach and chief operating strategist. (CSC, 1996cited by Gottschalk, 2000)

Gottschalk’s (2000) research indicated that CIO roles are in a state of change and that operational responsibilities may be decreasing while more time is being spent in change leadership. With regard to the Mintzberg role’s he found the CIOs spent most time in decisional roles, less in informational roles and very little in interpersonal roles. While Gottschalk’s research is useful in that it identifies the different roles CIOs perform it does not define the competencies required to perform these roles.

### 3.2.3 Management vs Leadership

While the previous studies focus on the CIO role as a leader, the CIO must also act as a manager. The CIO needs to be able to manage and allocate resources in order to deliver the IS Plan, report progress against the plan, manage the budget , solve problems and make decisions. All of these are typical management activities (Kotter, 1990).

Zaleznik (1977) suggests that managers and leaders have distinctly different personal attributes. “Managers embrace process, seek stability and control, and instinctively try to resolve problems quickly-sometimes before they fully understand a problem's significance. Leaders, in contrast, tolerate chaos and lack of structure and are willing to delay closure in order to understand the issues more fully”.(Zaleznik, 1977, p. 74)The table below is a summary of the characteristics he determined for each personality type.

Table 3.2 Characteristics of Leaders vs Managers based on Zaleznik (1977)

| Area of Focus | Leader | Manager |
|---|---|---|
| **Direction** | Develops and communicates vision | Plans to meet strategy or long term goals |
| **Goals** | Shapes goals | Organises work/resources to meet goals/targets |
| **Selection** | Selected by followers (emergent) | Appointed by organisation |
| **Risk acceptance** | Accepts high level of risk | Avoids risk/conservative |
| **Problem solving** | Seeks/develops new approaches to solving problems | Seeks compromise within existing views/solutions |
| **How developed** | Through personal mastery – one-on-one with mentor | Socialisation – learn through traditional methods |
| **Work style** | Tend to work alone, & through strong one-on-one relationships | Prefer to work with people, relationships not deep but related to getting work done |
| **Process orientation** | Avoid traditional/mundane | Prefer highly structured process & clear rules |
| **Power** | Lead through influence | Traditional reward/punishment |

(Kotter, 1990) looked at the roles managers and leaders preformed within organisations, while managers focused on organising activity to meet the business goals, leaders focus on changing the business. This leadership role of driving change is the one discussed in the previous section. Kotter (1990) suggests that good leadership is critical to businesses in a turbulent environment driven by “faster technological change, greater

international competition, deregulation of markets etc". All of these are as true today as they were when he wrote in 1990. He suggests that "Major change is more and more necessary to survive and compete effectively in this new environment. More change always demands more leadership" (Kotter, 1990, p104).

Kotter (1990) was identified that the leadership a role that could be performed by different people at different times within an organisation. This type of leadership was not an appointed position but emerged based on the individuals skills and attributes and the change context. This view is supported by others (Northouse, 2007; Sheard & Kakabadse, 2007) Avolio (2007) points out leaders do not exist without followers and in fact leaders often rely on their followers for maintaining their position of influence and power (Howell & Shamir, 2005), this is not so in the case of managers.

Northouse (2007) uses French & Raven's (1959) model of social power to clarify the difference in how leaders and managers influence. While they both use position power (coercion, reward and legitimate) to achieve their goals, when influencing others the elements of personal power (referent and expert) are important for leaders. Referent power is "based on followers' identification and liking for the leader" while expert power is "based on followers' perceptions of the leader's competence" (Northouse, 2007, p. 8).

The CIO role comprises both a leadership aspect and a managerial aspect, each requiring a different set of skills, knowledge and attributes (competences).

## *3.3 Competency Models*

In order to investigate and discuss the types of competencies that the CIO role may require it is useful to have a framework. Resource-based theory (RBT) provides a basis for identifying and describing competencies required to support organisational roles(Garavan & McGuire, 2001). RBT is the view that organisations achieve and sustain competitive advantage through the acquisition and deployment of resources through their core capabilities, (Andreu & Ciborra, 1996; Peppard & Ward, 2004). The resource-based perspective (RBT) has its basis in strategic management and suggests a firm's core capabilities may be current or future-based. As part of the strategic planning

process an organisation may determine capabilities required to enable its strategies and the set about acquiring them. This may be achieved by acquiring resources to support the capability or developing competencies within existing resources such as enhancing current management and leadership roles (May, 1999).

Using RBT as a basis, a number of researchers have defined the IS Capabilities for an organisation, either as a single IS capability (Peppard & Ward, 2004) or as a set of capabilities as in Feeny & Willcocks' framework (Feeny & Willcocks, 1998; Feeny, Willcocks, & Olson, 2006). Still others see IS resources as a key component of an organisation's core capabilities, (Andreu & Ciborra, 1996). A description of two key models Feeny & Willcocks and Peppard & Ward follows.

### 3.3.1 Feeny & Willcock's IS Capability Framework

Feeny & Willcocks identified a set of core IS capabilities to support the organisation's ability to successfully exploit IT, (Feeny & Willcocks, 1998). These capabilities were needed to overcome three challenges: alignment between business and IS vision, design of a responsive IT architecture and delivery of low cost, high quality IS services. These nine capabilities are shown in the diagram below.

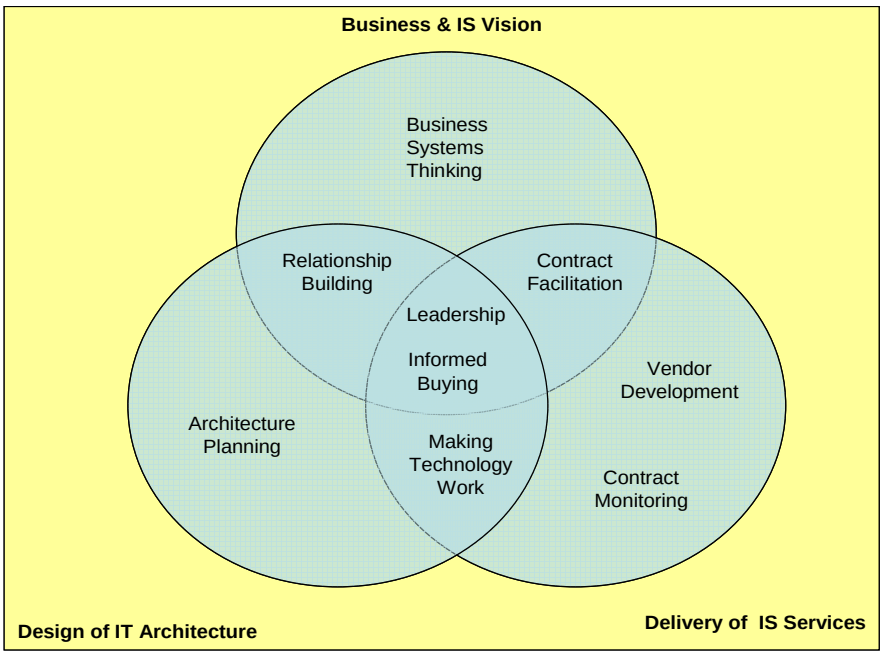


Figure 3.1 Core IS Capabilities, (Feeny & Willcocks, 1998)

In this diagram certain there are three areas; business, technology or service facing with their won unique capabilities. There are also three capabilities that provide an interface between two areas such as relationship building as an interface between the technology area and the business. Two capabilities cover all three areas and are regarded as "lynch-pin" capabilities, they are Leadership and Informed Buying (Feeny et al., 2006, p. 29)

Feeny, Willcock and Olson (2006, p 29) define "a 'capability' as a distinctive set of human resource-based skills, orientations, attitudes, motivations and behaviours that have the potential, in suitable contexts, to contribute to achieving specific activities and influencing business performance." . Further they identified these skills as technical, business and interpersonal skills. A different level of each skill was required for each capability as shown in the table below

Table 3.3 IS Capabilities and associated skills (Feeny & Willcocks, 1998)

| **IS Capability** | **Definition** | **Business skills** | **Tech. Skills** | **Interpersonal** |
|---|---|---|---|---|
| IS/IT Leadership | Integrating IS Effort with business purpose and activity | **High** | Medium | **High** |
| Business Systems Thinking | envisioning the business process that technology makes possible | **High** | Medium | Medium |
| Relationship Building | Getting the business constructively involved in IS/IT issues | Medium | **High** | **High** |
| Architecture Planning | Creating a coherent blueprint for a technology platform that responds to current and future business needs | Low-med | **High** | Medium |
| Making Technology work | Combines architectural planning with short-term delivery of IS Services | Low | **High** | Low-med |
| Informed Buying | Managing an Is/IT sourcing strategy that meets interests of the business. This includes not only understanding the external market but also leading the purchasing process. | **High** | Medium | **High** |
| Contract Facilitation | Ensuring the success of existing contracts for IS/IT services. This includes acting as a point of liaison for the business | Medium | Medium | **High** |
| Contract Monitoring | Protecting the business's contractual position. This is different from contract facilitation and includes holding the supplier to account. | Medium | Medium | Low-med |
| Vendor Development | Identifying the potential added value of IS/IT service suppliers | **High** | Medium | Med-high |

Because of its focus as a model of "the retained capabilities needed to run effective IT outsourcing deals", (Feeny et al., 2006), Feeny & Willcocks' model places significant emphasis on external contracting and vendor relationships. However it is a full model in the sense it includes both leadership and management aspects of the competencies required within an IS function.

### 3.3.2 Peppard & Ward's Model

While Feeny & Willcocks (1998) approach is top down starting with the capabilities and defining skill sets these require, Peppard & Ward (2004) could be considered bottom-up, in that they define a set of 26 competencies, which are grouped under 6 macro competencies and then comprise an overall IS capability for the organisation. In their model, shown below, skills knowledge and personal attributes contribute to competencies through roles, organisational process and structures. They suggest that understanding the components that contribute to this IS capability are essential for organisations who wish to improve there is capability and the value they derive from it.

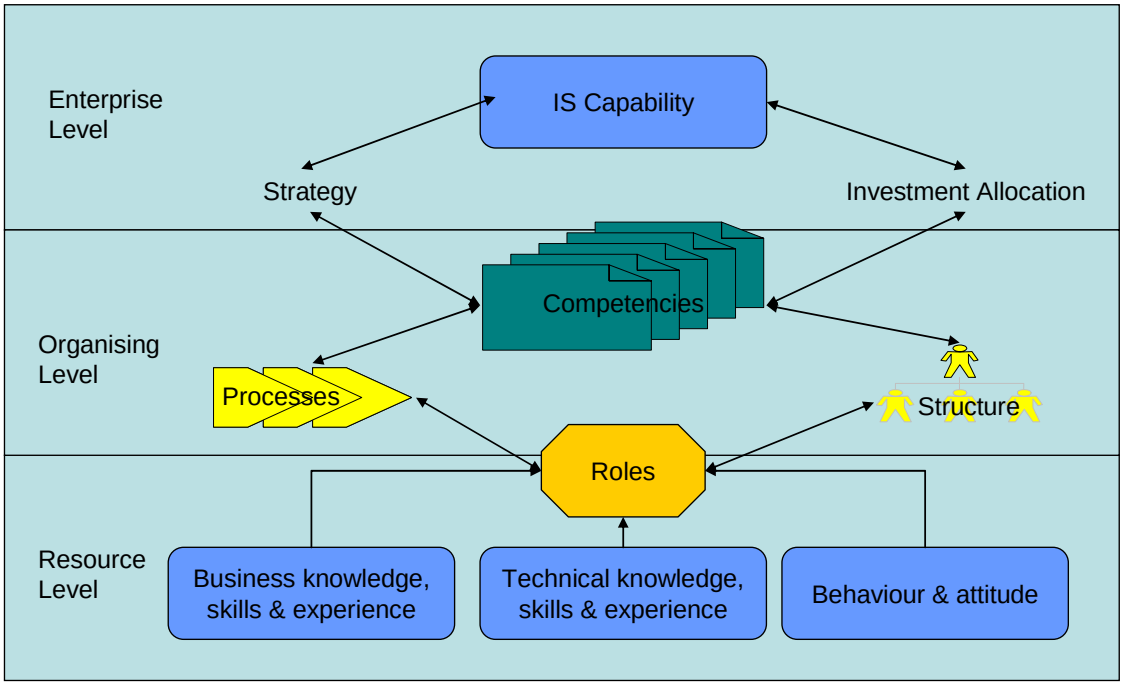


Figure 3.2 A model of IS capability – source Peppard & Ward, 2004, p180

Peppard & Ward (2004, p 183) suggest that "managing IS/IT and delivering business value is set of knowledge-based activities … incorporating different but interdependent types of knowledge". In their model the competency does not reside in a single individual but is achieved through integrating the skills, knowledge and attributes of many individuals.

The six macro-level competencies include three demand-side and three supply-side.

**Demand side competencies:**

- Formulate strategy- (includes business strategy, technology innovation, investment criteria and information governance)
- Define the IS contribution –(includes prioritisation, IS strategy alignment, business process design, business performance improvement and systems & process innovation)
- Exploitation – (includes benefits planning, benefits delivery, and managing change)

**Supply side competencies:**

- Define the IT capability – (includes infrastructure development, technology analysis and sourcing strategies)
- Deliver Solutions – (includes applications development, service management, information asset management, implementation management, apply technology and business continuity and security)
- Supply – (includes supplier relationships, technology standards, asset and cost management and IS/IT staff development)

Peppard & Ward's list of competencies read as a complete set of the activities and function covered within an IT organisation. Some of these will fall to the CIO to deliver, while others will be undertaken by staff or business management. There is a similarity between Peppard & Ward's competencies and Feeny & Willcocks IS capabilities.

## *3.4 CIO Competences*

While these models apply to IS in general, and the competencies needed within the IS function to support the organisation. Garavan & McGuire (2001, p. 147 ) suggest that as well as being view at the organisational level competencies can be viewed as "related to characteristics of individuals". Basselier & Benbasat (2004) point out competence is developed not just by "understanding how something operates" at an academic level but "through practice and experience". Competencies in this sense refer to the combined set of skills, knowledge, experience and personal attributes required to fulfil a role.

Several authors have looked at CIO competencies in relation to the role/s they must perform, these include: business competency and relationship building (Basselier & Benbasat, 2004), critical competencies for the role (Lane & Koronos, 2007; Wu et al., 2008) and leadership competencies (Broadbent & Kitzis, 2005). The term competence rather than competency is used here to separate it from the organisational level IS competencies. These competencies can be divided into two broad groups:

- Business Competence – including business domain knowledge, management and interpersonal
- Technical Competence –including IT domain knowledge, IT management and technical

### 3.4.1 Business Competence

Broad business knowledge or business competence are considered critical for CIOs who wish to assume a strategic role within their organisation (Broadbent & Kitzis, 2005; Preston et al., 2008; Reich & Benbasat, 2000), in fact it is probably essential for CIOs who just wish to deliver an excellent low cost service to their business customers. This forms part of what Reich & Benbasat (2000, p. 103) define as shared domain knowledge. "Shared domain knowledge involves the understanding by both business and IT of each others key processes and respect for each others unique contribution and challenges" Reich & Benbasat (2000, p. 86). Business knowledge is one half of the shared domain knowledge, the other being technical which will be discussed in the next section.

Business competence is broader than just knowledge about the business. Basselier & Benbasat (2004, p. 676) define business competence as "the set of business and interpersonal knowledge and skills possessed by IT professionals that enable them to understand the business domain, speak the language of business and interact with their business partners".

They found that business competence comprised two types of knowledge:

- Knowledge related to the organisation or the business
- Interpersonal and management knowledge

Wu et al (2008, p. 6) suggest business competence consists of: business domain knowledge, interpersonal skills and management practice skills

Mata, Fuerst & Barney (1995) suggest that there are a set of IT Managerial skills that can not only create competitive advantage but also help sustain it (unlike technical skills). They identify the following four sets of management skills:

- the ability of IT managers to understand and appreciate the business needs of other functional managers, suppliers, and customers;
- the ability to work with these functional managers, suppliers, and customers to develop appropriate IT applications;
- the ability to coordinate IT activities in ways that support other functional managers, suppliers, and customers;
- the ability to anticipate the future IT needs of functional managers, suppliers, and customers

Based on these definitions, business competence has been broken into the following components for this research:

- Business domain knowledge
- Management and leadership competency
- Behavioural skills and attributes

#### 3.4.1.1 Business Domain knowledge

Broadbent & Kitzis (2005, p. 37) exhort CIOs to "know your enterprise as well as, if not better than, you know technology". This knowledge is important because without it

a CIO cannot offer solutions which are useful to the business and cannot gain their trust and confidence. They suggest this knowledge comprises; the industry and external environment as well as knowledge of the organisation itself.

Business Domain knowledge is defined in several ways, a summary of the areas identified by researchers is shown in the table below

Table 3.4 – the components of business domain knowledge

| Competency area | Definition | Researcher |
|---|---|---|
| Organisational Overview | Understand what the business is about its goals and objectives, operating environment & culture | (Basselier & Benbasat, 2004) |
| External environment | Competitive environment, factors affecting change for the organisation, compliance etc | (Broadbent & Kitzis, 2005, p. 38) |
| Organisational units | Understand the functional areas of the organisation including their purpose, their language & how do they measure success. Also understand interdependencies between the different areas. | (Basselier & Benbasat, 2004) |
| Organisational responsibility | Feel ownership for business outcomes, "sense of commitment, empowerment, personal involvement & organisational pride" | (Basselier & Benbasat, 2004) |
| IT/Business integration | Act as business problem solvers & visualise ways in which IT can contribute. | (Basselier & Benbasat, 2004) |
| | Interacting with business partners at different levels | (Broadbent & Kitzis, 2005) |
| High-level business knowledge | Understanding of business practices and approaches | (Broadbent & Kitzis, 2005) |
| Knowledge networking | Knowing where to go to source knowledge and information both internally and externally | (Basselier & Benbasat, 2004) |

As the table above shows, according to IS research that business domain knowledge comprises both organisational specific and generic business elements. Naturally while a CIO may bring the generic elements from a previous organisation, the specific elements must be developed once inside the organisation. Knowledge networking is important here as it allows the CIO to expand both their organisational and business knowledge.

#### 3.4.1.2 Management and Leadership Competency

As the head of a functional area, the CIO requires a number of management skills and abilities. The strategic value of IT can mean that leadership and strategic knowledge and skills are also valuable to their role. The table below lists some of the most important

components indicated in the literature for the management and leadership competency area.

Table 3.5 – the components of management and leadership competency

| Competency area | Definition | Researcher |
|---|---|---|
| Strategic perspective | Having a clear vision around future direction and possibilities. Also strategic alignment of IT with the business direction | (Emiliani, 2003) (Broadbent & Kitzis, 2005) |
| Leadership | Ability to develop and promote a vision, to inspire followers | Kotter (1990) (Broadbent & Kitzis, 2005) |
| Human resource management | Acquiring and developing and allocating staff to roles | (Lane & Koronos, 2007) |
| Budgetary & financial management | Ability to set budgets and manage costs. Possibly includes purchasing and cost benefit analysis | (Lane & Koronos, 2007) |
| Business planning | Ability to develop business plans and report against them | (Broadbent & Kitzis, 2005) |
| Decision making | Ability to balance opposing interests and make decisions – business judgement | (Emiliani, 2003) |
| Change Management | Ability to manage business change, align with business processes and deliver business benefits | (Broadbent & Kitzis, 2005) (Wu et al., 2008) |

While the table above may not be a complete list of leadership and management skills, knowledge and abilities, it identifies those which appear most prominent in the literature about CIO competencies.

#### 3.4.1.3 Behavioural Skills and Attributes

Behavioural skills and attributes includes both interpersonal and personal aspects. As the CIO role operates in a largely social arena interpersonal skills are critical. This is, as some researchers suggest, the most difficult aspect of transitioning from a very technical role which may require less interaction (Willcoxson & Chatham, 2006). The table below shows the key behavioural attributes identified in the literature

Table 3.6 – the components of behavioural skills and attributes

| Competency area | Definition | Researcher |
|---|---|---|
| Interpersonal communication | Ability to communicate in the language and style that suits the listener. Adopt communication style to the situation | (Basselier & Benbasat, 2004) |
| Relationship building | Ability to develop and maintain effective relationships over time | (Broadbent & Kitzis, 2005) |
| People skills | Includes the ability to understand and empathically | (Kotter, 1990) |

| Competency area | Definition | Researcher |
|---|---|---|
| | respond to people. Encourage and support them | |
| Problem solving and creative thinking | Applying innovative out of the box approaches to solving problems & having a process to do so | (Broadbent & Kitzis, 2005) |
| Team work | Ability and desire to work collaboratively with colleagues | (Broadbent & Kitzis, 2005) |
| Learning | The ability to acquire new knowledge, learn from mistakes and from others | (Willcoxson & Chatham, 2006) |
| Openness/adaptability | Ability to accept and understand differences in ideas and approaches | (Broadbent & Kitzis, 2005) |
| Results focus | Ability to focus on end results and outcomes. To keep commitments to deliver | (Broadbent & Kitzis, 2005) |

While the list of interpersonal and personal attributes and skills could be endless ad vary from situation to situation the table above shows those which appear to be most often connected to CIO competencies.

### 3.4.2 Technology Competence

As with business competence a review of the research on IS competence allows for three broad divisions of technology competence, these are :

- Broad industry knowledge and skills
- IT management expertise
- Specific technical knowledge

A discussion of the various components that make up these competency areas follows:

#### 3.4.2.1 Broad Industry Knowledge

As with any other specialist field, the information technology industry has its own set of explicit (Basselier, Reich, & Benbasat, 2001)knowledge and concepts. This knowledge includes a broad knowledge of the industry, its direction and its key concepts. The table below includes components of this knowledge area that have been identified in IS research.

Table 3.7 – the components of IT industry knowledge

| Competency area | Definition | Researcher |
|---|---|---|
| Broad industry concepts | A broad overview of IS/IT including basic concepts and key areas | (Broadbent & Kitzis, 2005) |
| Technologies | Understanding of current and emerging technologies, how they work. Also | (Broadbent & Kitzis, 2005) (Basselier et al., 2001) |

| Competency area | Definition | Researcher |
|---|---|---|
| | understanding of constraints and standards associated with the technologies | |
| IT solutions | Knowledge about how IT solutions can fit into the organisation, future trends and how others are applying solutions | (Basselier et al., 2001) |
| Architectures | Understanding of the principles of IT architecture and its design | (Broadbent & Kitzis, 2005) (Lane & Koronos, 2007) |
| Access to IT knowledge | Knowing where to go to source IT/IS knowledge and information both internally and externally | (Basselier et al., 2001) |

Researchers agree that a broad IT knowledge is important for the CIO because it builds trust both with his staff and his customers. This knowledge should be strategic and future oriented.

#### 3.4.2.2 IT Management expertise

IT management is an area of change. As the environment changes, new areas of competence are required to effectively manage IT. Some of the areas identified in the table below, although similar to generic management require specialist knowledge within the IT arena.

Table 3.8 – the components of IT Management knowledge

| Competency area | Definition | Researcher |
|---|---|---|
| IS strategic planning | Aligning the IS plan with business plan, setting priorities and timeframes | (Broadbent & Kitzis, 2005) (Lane & Koronos, 2007) |
| IS processes and procedures | Understanding of IS processes and procedures for key delivery areas | (Broadbent & Kitzis, 2005) |
| IS Governance and regulatory compliance | This involves understanding regulations that apply to IS, ensuring the organisation complies and ensuring they is oversight to protect the IS investment from risks | (Lane & Koronos, 2007) |
| Vendor and Supplier Management | Managing supplier relationships and ensuring the organisation receives value for money through its IT supplier contracts | (Lane & Koronos, 2007) (Feeny & Willcocks, 1998) |
| IT contract development and negotiation | Ability to select suppliers and negotiate contracts. Understanding of the key areas in ICT contracts | (Feeny & Willcocks, 1998) |
| IS Service delivery management | Ability to define and negotiate service requirements and performance criteria. Knowledge of service and performance reporting processes | (Peppard & Ward, 2004) |

These management areas of expertise allow the CIO to build confidence and trust in his business colleagues. While the CIO may not be responsible for delivering each of these areas he needs sufficient knowledge to ensure his managers are able to effectively deliver them (Broadbent & Kitzis, 2005).

#### 3.4.2.3 IT technical expertise

While a CIO does not require in-depth knowledge of IT specialist areas, he requires sufficient knowledge to allow him to undertake his strategic and management roles (Lane & Koronos, 2007). The table below shows some of the IT technical areas where the CIO should have some level of competency.

Table 3.9 – the components of IT technical expertise

| Competency area | Definition | Researcher |
|---|---|---|
| IS Risk and Security management | An understanding of IS risk management, information security and business continuity principles and processes | (Lane & Koronos, 2007) |
| IS project management | Understanding of IS project management sufficient to provide oversight over major projects | (Lane & Koronos, 2007) |
| IS asset management | Knowledge of the organisations current IT assets and their purpose. Understanding of the upgrade and replacement principles relating to these to support strategic planning | (Basselier & Benbasat, 2004) (Peppard & Ward, 2004) |
| Application development and support | An understanding of the application lifecycle including development, implementation, maintenance and replacement | (Basselier & Benbasat, 2004) |

While the CIO may not be delivering the technical areas, he needs sufficient competency to select the right staff or suppliers and to act as an interface between his business customers and technical specialists (Broadbent & Kitzis, 2005).

## *3.5 Modified Model*

Peppard & Ward (2004, p. 174) suggest that the literature is confusing in regard to the terms and concepts used to within RBT research. This literature review found that capabilities and competencies were sometimes used to refer to similar concepts. This section proposes a modified model for IS capability and discusses how the terms have been defined for the purpose of this research.

### 3.5.1 Proposed Model

The proposed model shows IS Capability at the top level within the organisation, while the IS competencies that form part of this capability exist at the IS functional level. The are the macro-competencies as defined by Peppard & Ward (2004) or Feeny & Willcocks (1998) IS capabilities. Roles such as those performed by the CIO contribute to these competencies, through organisational or IS structures and processes. The model is shown in the diagram below.

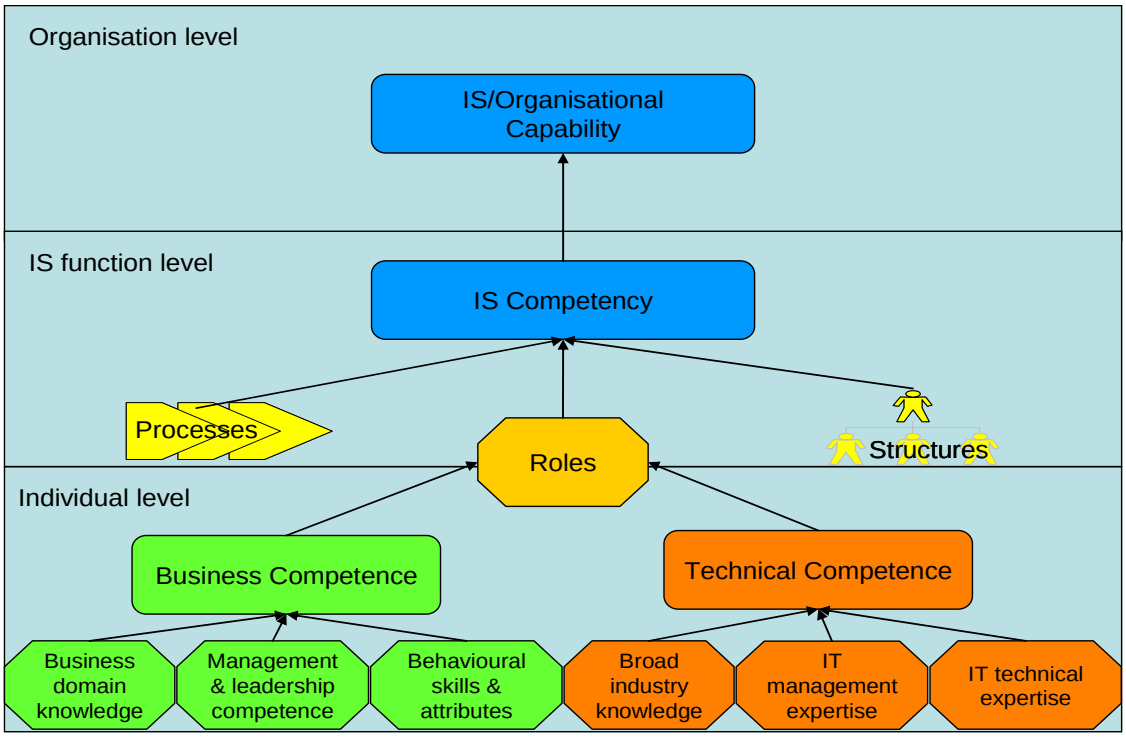


Fig. 3.3 Modified model of IS capability

As can be seen in the diagram, the terms Technical Competence as defined by Basselier et al. (2001) and Business Competence as defined by Basselier & Benbasat (2004) have been used to refer to those specific sets of technical and business skills, knowledge, experience and attributes that operate at an individual level.

### 3.5.2 Definitions

The definitions below clarify the individual components in the modified model.

#### 3.5.2.1 Capabilities

Feeny, Willcocks & Olson (2006) in their discussion of IS core capabilities define a capability "as a distinctive set of human resource-based skills, orientations, attitudes, motivations and behaviours that have the potential, in suitable contexts, to contribute to achieving specific activities and influencing business performance". Other authors view a capability as including other resources, (for example knowledge or infrastructure) which combined with some organisational process/es (routine) provides a potential strategic advantage. (Andreu & Ciborra, 1996). Peppard & Ward (2004, p. 175) on the other hand define organisational capability as "the strategic application of competencies … to accomplish organisational goals. Andreu & Ciborra (1996, p. 112) define them as "combining and using resources with the aid of organisational routines", where an organisational routine is a way of doing something that the organisation has developed and learned over time. This involves an element of the organisation's culture, making the "routine" unique to the organisation.

All these definitions emphasise that a capability:

- Acts at an enterprise (organisation-wide) level
- Provides the organisation with some strategic benefit
- Comprises human resources (and their skills, knowledge and abilities), organisation-unique processes and structures and may comprise other organisational assets.

This understanding of a capability operating at the organisational level has been adopted for this research. This could be a specific high-level IS capability or IS could form part of another enterprise capability.

#### 3.5.2.2 Competencies

While capabilities operate at the organisational level, competencies operate at a lower level. Peppard & Ward's (2007) have defined capability as the ability of an organisation to use their resources (skills and technologies) to accomplish a specific task. However in research on competency frameworks they are defined as the "combination of skills, knowledge, attitudes and experience" which enable an individual to perform, as required within the organisation (Garavan & McGuire, 2001, p. 145). Therefore

competencies can be viewed either at an organisational or individual level. For this research, both apply.

IS competency refers to the combined individual competences, realised through their roles and delivered through processes and structures.

Technical and Business Competence on the other hand refer to a set of skills, knowledge, experience and attributes within an individual. These may be utilised in more than one role that the individual performs.

#### 3.5.2.3 Roles

Lane & Koronos (2007, p. 110), define a role as "the set of responsibilities and/or expected results associated with a job". An organisational position may perform more than one role involving a number of tasks or activities that are associated with a specific set of outcomes. Grover et al, (1993) identified ten managerial roles that CIOs perform, Gottschalk (2000) identified six leadership roles. Additionally there may be more than one role involved in delivering the outcome, for example with regard to the development of the IS strategic plan, the CIO's role may be to prepare and promote the plan, while senior management's role may be to endorse it.

For this research Lane & Koronos definition has been used, with the understanding that the responsibilities apply to a single resource (i.e. the CIO).

#### 3.5.2.4 Structures and processes

Peppard & Ward (2004, 181) define structures as "the systematic arrangement of people, departments and other subsystems in the organization". That is structures relate to the formal aspects of how work is organized along with formal roles and processes. Another way of defining structures and processes in relation to competencies are what Andreu & Ciborra refer to as an organisational routine "a particular way of doing what an organization has developed and ***learned,*** and in the utilization of which that organization is very efficient and effective", (Andreu & Ciborra, 1996, p. 112).
For this research the definition of structure as the formal arrangements of individuals within roles and reporting delegations is used.

## 3.6 Summary

There has been significant research on the CIO role and required competencies over the two decades. This research has focused on the CIO as a leader and the strategic aspects of the role and this has allowed researchers to determine a set of competencies (skills, knowledge and attributes) that CIOs require to be effective in these new roles. There has been an emphasis on business domain knowledge and leadership skills being critical competencies for these roles, However as well as the strategic roles, a CIO must still manage the IT organisation and deliver the IT projects and services. For these he may need a different set of competencies.

Models such as Feeny & Willcocks (1998) IS Capabilities and Peppard & Ward (2004) show the link between the organisational level IS capability and the individual skills and knowledge of the CIO. While other focus on defining the components that comprise business and technology competency (Basselier & Benbasat, 2004; Basselier et al., 2001; Wu et al., 2008). This has allowed a set of components for each broad competency area to be defined.

Preston et al (2008) defined four IT profiles which they matched to IT contribution to the organisation. They found the IT orchestrator fit well with organisations with high IT investment and strategic use of IT. The orchestrators also had high levels of strategic knowledge and interpersonal skills. For organisations that were more conservative with IT risk and investment, the IT mechanic profile was matched. This profile typically had low levels of levels of strategic knowledge and interpersonal skills. Preston et al's research indicated that it was possible to link CIOs skills knowledge and attributes with the role the organisation wished him to fulfil.

Most of the literature reviewed was based on research in large, private-sector organisations and indicated the trend toward a strategically oriented CIO. Therefore a specific set of competencies were indicated as desirable for these CIO. Would the same type of CIO and set of competencies be required in a small public sector organisation such as a New Zealand local authority?

# 4 Research Design and methodology

## *4.1 Introduction*

This section discusses the research philosophy adopted to explore the research question and clarifies the approach used to conduct the research. Orlikowski & Baroudi (1991) suggest that IS researchers give consideration and reflection in determining their research design and select an approach and philosophy suited to the area under consideration. They found that published IS research to date had been based on a positivist paradigm and while this suited some of the "phenomena being investigated", other perspectives may be more suited to other research questions. Since their 1991 paper, more emphasis has been given to interpretive approaches (Chen & Hirschheim, 2004; Klein & Myers, 1999; Walsham, 1995). Following their recommendation the interpretive approach was explored for this research.

## *4.2 Research Paradigm*

Orlikowski & Baroudi (1991) identified three paradigms appropriate to IS research; positivist, interpretive and critical, each with their own respective set of beliefs, values and techniques. Mingers (2001) suggests that these paradigms consist of the following aspects, their ontology, epistemology, ethics and methodology. However he suggests that methodology can have several connotations; for example the specific set of methods or techniques used in a specific piece of research or a more generalized combination of approaches as in Grounded Theory (Douglas, 2003).

Chen & Hirschheim (2004) suggest that the positivist paradigm emerges from the pure sciences and is based on objectivity, dealing with physically observable phenomena and independently verifiable data. This is the predominant paradigm in IS research and is generally associated with the development of hypotheses, quantifiable analysis and often generalisation of the results across a wider population (Orlikowski & Baroudi, 1991, p5).

The interpretive paradigm on the other hand is concerned with human and social interaction and therefore is subjective and aims to develop a deeper understanding of the phenomena being within its context and in particular how its understood by the research participants (Klein & Myers, 1999). This paradigm is more commonly associated with qualitative research methods as it seeks to understand rather than measure the research area.

There has been limited IS research in the critical paradigm. Orlikowski & Baroudi (1991, p. 6) , classify studies that show "evidence of a critical stance towards taken-for-granted assumptions about organizations and information systems, and a dialectical analysis which attempted to reveal the historical, ideological, and contradictory nature of existing social practices" as fitting this paradigm.

According to Bryant (2002) preferences between the two main paradigms (positivist and interpretivist), may relate to the topic being researched. If the researcher is interested in the "soft" aspects of IS then an interpretive approach is preferred, if they are interested in physical (and therefore measurable) aspects then a positivist approach is more suitable.

The aim of this research is to develop a deeper understanding of aspects of the CIO role as perceived by the participants themselves. It fits within definition of an interpretivist paradigm which is "an intent to increase understanding of the phenomena within a specific cultural and contextual setting, and an examination of the phenomena and the setting from the perspective of participants" (Walsham, 1995, p. 384).

## *4.3 Research Methodology*

### 4.3.1 Qualitative Approach

Having determined the research question fits within an interpretive paradigm an overall qualitative approach was indicated. Qualitative methodologies include several methods or techniques for undertaking the research. These include but are not limited to; case studies, field studies, ethnography, focus groups and interviews (Klein & Myers, 1999).

A qualitative approach indicates several factors that need to be considered in designing the research. These include:

- Selection of an appropriate information gathering technique
- Context
- Researcher bias

### 4.3.2 Selection of the information gathering technique

Having determined the local government environment for this exploratory research, an appropriate technique needed to be determined. Surveys were not suitable as the research is exploratory and seeks a deeper understanding of the domain. Surveys require predetermination of the questions based on the existing knowledge. Case studies and field studies were considered not suitable as they would be disruptive of the organisations and as they are limited to only one to two organisations would not allow for comparison across councils. A qualitative, semi-structured interview method was selected. This allowed for coverage of a number of councils (giving a size comparison), opportunity to speak with both the CIO and their business partner to allow for inclusion of both perspectives and because of its semi-structured nature an ability to guide the discussion to allow for comparison between the different organisations.

### 4.3.3 Context

Context is an important consideration in developing the research approach in qualitative methodologies. Klein & Meyers (1999) refer to this as "the principle of contextualization which "requires critical reflection of the social and historical background of the research setting, so that the intended audience can see how the current situation under investigation emerged". In other words for this research it was important to be able to conduct the research with an understanding of the social and political environment within which NZ local government operate. This was achieved in two ways:

- The researcher has approximately ten years experience in delivering IT and business consultancy services to NZ local authorities and has developed a good understanding

of their operating environment. As well as having established relationships with both local government IT managers and their business partners, she also has an understanding of the terminology and governance structures within local authorities.

- Review of local government issues was undertaken in preparation for the research using available local government websites.

### 4.3.4 Researcher bias

A criticism often given in regard to qualitative approaches is "researcher bias". Researchers, by their very presence alter the perspective of the participant. This is particularly important in the interview situation where the interviewee may read the researchers body language and respond accordingly. The researcher, through their questions and responses may lead the interviewee in a particular direction. Finally the researcher may introduce bias in interpreting the answers (Myers & Newman, 2007).

While it is recognized that researcher bias is unavoidable, the researcher used standard interview techniques to reduce as much as possible the effect of this bias. Understanding and using the terminology familiar to the participants themselves was an important part of this. Also important was the ability to explain some of the concepts used in the questions, in terms of the local government context.

## *4.4 Data Collection*

This section outlines how the research information was collected and the interview method chosen.

### 4.4.1 Sample selection

A sample of ten councils were pre-selected from the 72 local authorities within New Zealand. The CIO/IT manager in each organisation was approached and asked if they would be willing to participate in the research. If not they were asked if they could nominate another suitable organisation. The sample councils were selected based on size (to ensure a range of small, medium and large councils were included) and location, to allow for a face to face interview. Once the CIO agreed they were asked to nominate

a key business manager (peer, for whom they provided significant IT services). In all eight councils agreed to participate, and a total of seventeen interviews conducted. One of the larger councils volunteered two business peers who had significantly different IT service arrangements with the CIO. Two of the original ten while originally agreeing to participate, had to withdraw due to time constraints.

### 4.4.2 Semi-structured Interviews

The semi-structured interview technique was the selected information gathering approach. An interview outline questionnaire was developed to guide the interviewees through the interview process and ensure that the same topics were covered in each interview. Each interview was booked and the interview outline sent in advance to allow interviewees to think about the proposed topic. One hour was allowed for each interview, they were recorded and transcribed by the researcher. The transcription was sent back to the interviewee for feedback and any corrections. Additional information in the form of IS organisation structure diagrams and documented strategies were also gathered from some CIOs when available.

Myers & Newman (2007) suggest that the qualitative interview is one of the most common and important information gathering tools in qualitative research. However researchers they found researchers don't often identify and consider some of the "pitfalls" with this technique. These pitfalls were addressed as follows:

- Artificiality – where the interviewee does not know the interviewer. In this case, the researcher pre-introduced herself to the interviewee by email and took the time at the beginning of the interview to establish a rapport with the interviewee.
- Lack of trust – where interviewee is concerned about the exposure of sensitive information. The information provided to the interviewee explained the security measures over the recording and transcript and the anonymity of the interview. This was reiterated at the beginning of the interview and any concerns discussed.
- Lack of time – which may lead to rushed or incomplete answers. Providing the questionnaire in advance allowed the interviewees to prepare their answers and the

researcher acted as timekeeper. Where the hour allowed for the interview was nearing an end, the interviewees were asked if they wished to conclude or continue. Most of the interviewees opted to continue the interview. There was one exception where the interview was close to the end and an organisational emergency occurred which required the interviewees' attention.

- Participant bias – other issues which Myers & Newman (2007) raise relate to access to differing positions (status) and viewpoints across an organisation or within the case of this research across a number of organisations. All the positions interviewed were at the same level within their organisation (i.e. they were all third tier managers). However because there was a variation in the size of the organisations there was a difference in the degree of status and responsibility of the participant, small organisations having significantly less staff and budget responsibility.

## *4.5 Coding*

Being semi structured, the topics within the interview were grouped into three major areas reflecting potential groupings for the CIO's competencies. These were:

- CIO knowledge and experience
- Organisational knowledge
- IT-business integration

The interview recordings were transcribed and analysed according to these areas, with sub-sections around specific questions. A coding approach as described by (Douglas, 2003) was used with the following steps:

- For each section the interviews were reviewed and comments noted in the relevant sub-sections. Sub-sections (conceptual categories) were created through this process
- Next the entries in the section were reviewed and moved into the appropriate sub-sections. A common term was established where there were a number of similar responses.
- The subsections were regrouped to form categories in their own right. As a result of this process a number of new categories emerged which formed the basis for the analysis

## 4.6 Approach to analysis

The analysis included reviewing each of the newly defined categories in turn. The common “aspects” of competence for that category were identified and recorded against CIOs and business partners. The results for CIOs and business partners as a whole were compared. Next a comparison was undertaken to identify how often across the potential nine partnerships both partners identified the same competency aspect. Finally the results were compared by council size.

Once the analysis was competed at the category level, a cross-category analysis was undertaken. This was to identify any linkages between the categories as well as to allow identification of the CIO roles and associated competences. This approach is based on w Klein & Myers, (1999) principle of the hermeneutic circle, where “we come to understand a complex whole from preconceptions about the meanings of its parts and their interrelationships.” They suggest a process is followed of moving between understanding the individual parts to looking across the whole and then moving back to the detail. This allows the researcher to build a deeper understanding of the topic through the interactions of its parts. This process was adopted to develop a deeper understanding of the roles that formed part of the expectation of the CIO and the links between the stated skills, knowledge and attributes with the individual roles.

# 5 Analysis

## *5.1 Introduction*

This section provides an analysis of the interviews and is divided into the following areas; demographics, IT competencies, other competencies, organisational knowledge, and integration aspects. In this the analysis follows the format used during the interviews (based on the questionnaire provided as Appendix B). The responses to each section of the interview have been analysed to identify the key themes and a set of sub-categories was developed based on these. These subcategories form the basis of the table rows in shown in the following sections.

## *5.2 Demographic Analysis*

Demographic information collected during the interviews has been analysed to provide a comparative basis for the responses. Two sub-categories of demographic data were identified; council size (based on staff numbers) and CIO functional responsibilities.

### 5.2.1 Council Size

The interview sample comprised 8 local government authorities ranging in staff size from 90 to over 1300 (including staff in Council Commercial Trading Organisations (CCTO)). Based on the number of business customers supported by the CIO, the councils have been grouped into small, medium or large, as shown in the table below

Table 5.1 Size categories

| Category | Number of staff | Number of IS staff | Number of councils in sample |
|---|---|---|---|
| Small | 90-250 | Less than 10 | 3 |
| Medium | 251- 450 | 10-24 | 3 |
| Large | 451 – 1300 | 25 - 86 | 2 |

An estimate of the number of positions involved in undertaking Information Services (IS) tasks was also used as an indication of the size of the IS function. These tasks include not only the standard IT functions but also the records management and web services functions which are often included under the CIO role in local government.

### 5.2.2 CIO functional responsibilities

IM functions can be divided into two key areas those activities concerned with maintaining a stable and robust IM service (i.e. “keeping the lights on”) and those activities concerned with delivering business changes (i.e. “adding value”) (Gottschalk, 2000). In order to understand whether the CIO’s actual functional responsibilities had an impact on the expectation of their role, information relating to this was gathered during the interviews.

The IS functions were distributed in a number of different ways. In two of the organisations the IT/IS function was actually split under two managers and for another some of the IT functions were embedded within the business. The table below shows where the IT/IS functions were being performed.

Table 5.2 How IT/IS functions are delivered

| | **Operational Functions** | | | | | | **Business Change Functions** | | |
|---|---|---|---|---|---|---|---|---|---|
| **Function** | **Infra. support** | **Telephony** | **App support** | **GIS** | **Web** | **Records** | **Project Mgt** | **Bus. Analysis** | **Bus. Consult** |
| Responsibility of Interviewee and team | 7 | 2 | 8 | 7 | 7 | 3 | 2 | 3 | 1 |
| Performed within another IT area | 2 | 2 | - | - | - | 1 | - | 2 | - |
| Performed within business | - | 1 | 1 | 1 | 1 | 4 | - | 1 | - |
| Consultants or contractors | - | - | - | - | - | - | 6 | 2 | - |
| Not applicable | - | 3 | - | - | - | - | - | - | 7 |

Standard “operational” functions have been grouped separately from those “business change” functions. Most of the operational functions are performed in-house and with the exception of the records management tasks, they were part of the interviewee’s responsibilities. One of the councils, as stated earlier, ran a very decentralised model with some corporate services managed by a central IT function and embedded application support activities undertaken by core business areas.

In at least half (4) of the councils within the sample, the records team have a different reporting line. This reflects the fact that those councils have not yet moved to a full Information Management model.

The business change activities were more likely to be done by external contractors or other areas (business or IT). With the exception of the two "large" councils, none of the CIOs in the sample had dedicated project management or business analyst resources. The largest council had dedicated staff to provide consulting services to the business areas. When this was done in the other councils it was the responsibility of the CIO. Based on the analysis of their CIO functional responsibilities the councils have been split into three groups for analysis as show in the table below:

Table 5.3 - Functional responsibility groups

| Function group | Description | Sample Number |
|---|---|---|
| Infrastructure only | Responsible for operational functions excluding records management | 3 |
| Split | Operational functions split and responsibility shared with another area | 3 |
| Enhanced | Responsible for operational functions plus business change functions | 2 |

## *5.3 IT competencies*

In order to understand the specific set of IT competencies that would be required for the senior IT role within each organisation, each interviewee was asked experience and knowledge they would expect of someone in such a position. The responses have been grouped into four areas:

- IT experience
- Industry Knowledge
- IT Management skills
- Specific technical skills

### 5.3.1 Importance and level of IT experience

As a lead-in question each interviewee was asked how important was it for the CIO to have IT experience and at what level this experience should be. Their summarised responses are shown in the table below

Table 5.4 –Importance of IT experience

| Response | CIO (8) | Business (9) | Small (6) | Med (6) | Large (5) | Total (17) |
|---|---|---|---|---|---|---|
| Very Important | 6 | 8 | 6 | 4 | 4 | 14 |
| Somewhat important | 2 | 1 | 0 | 2 | 1 | 3 |
| Hands on useful | 6 | 1 | 4 | 2 | 1 | 7 |
| Hands-on not required | 1 | 7 | 0 | 3 | 4 | 8 |

The majority (14 or 82%) of the interviewees considered previous IT experience important in their CIO and the remaining three thought it was somewhat important. Business partners valued general IT expertise over specific technical skills:

"*this does not need to be specific technical skills as in an organisation this size the role is more about information and resource coordination"*. – Business Partner

However there was a clear divergence on whether that experience should be hands-on: Hands-on experience was described as being able to handle support calls and resolve technical issues. It was considered important in those smaller and medium councils where the CIO may need to get involved in solving technical problems. CIOs were on the whole more likely to value "hands on" experience than their business partners, which may reflect their background in the industry. The only two CIOs did not regard "hands on" as important and they did not have technical background.

With the exception of one, all the business partners either did not mention "hands on" or stated it was not required for the role..

Reasons were offered by both CIOs and their business partners to support the need for technical experience include;

- The ability to engage with technical staff and vendors
- Ability to see through vendor hype
- Understanding the technical issues and stresses of the support staff

- Understanding how the technology "hangs together".

### 5.3.2 IT Industry Knowledge

The interviewees identified four areas of high-level industry knowledge that were important for the CIO to have. These are shown in the table below, the last column shows where both the CIO & their business partner agreed on the knowledge area .

Table 5.5 –High-level industry knowledge

| IT industry Knowledge area | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus agreement (8) |
|---|---|---|---|---|
| Broad range of industry knowledge | 5 | 6 | 11 | 3 |
| Currency/future direction | 3 | 3 | 6 | 1 |
| Strategic focus | 3 | 4 | 7 | 1 |
| Understanding of architecture | 2 | 2 | 4 | - |
| **Total for industry knowledge** | **13** | **15** | **28** | **5** |

Broad range of industry knowledge includes both technology and wider information management knowledge. It was commented that this was more important than a detailed level of technical knowledge. Interviewees in large councils in particular emphasised the importance of broad information management knowledge.

"*It can be detrimental if they have a technology background such that they want to get involved in "hands on" activities, for example trying to fix server problems"* – CIO large council

It was important for the CIO to have an up-to-date knowledge of technology solutions and their future direction. This area was raised by small to medium sized councils and none of the interviews with the large councils identified it. Equally important was a "big picture" focus. This included the ability to "operate strategically within IT" and have a strategic view of the importance of information for the organisation..

Finally a small number of the interviewees raised the importance of the CIO having an overall view of the architecture, so that they could understand how everything impacts each other. In particular, the CIO of the council with the distributed IT function considered it was a critical part of his role to provide this perspective as he did not always have control on technology purchase decisions.

### 5.3.3 IT Management Skills

In order to successfully manage the IT department, interviewees acknowledged that the CIO required some specific IT management skills and experience. This is a separate category than general management skills ( section 5.4.). Responses for IT management skills are shown in the table below

Table 5.6 –IT Management Skills

| IT Management Skills | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus combination (8) |
|---|---|---|---|---|
| Change Management | 1 | 1 | 2 | - |
| Consultancy (advice/guidance) | 1 | 3 | 4 | - |
| Service delivery (focus) | 2 | 1 | 3 | 1 |
| Operations management | 3 | - | 3 | - |
| Strategic Planning (IT) | 3 | 2 | 5 | 2 |
| **Total for IT Management** | **10** | **7** | **17** | **3** |

Most of the skills in the table relate to CIOs as managers, while the broad industry skills relate to leadership roles. These skills are delivery focused. Some of the interviewees mentioned the ability to provide an IT strategy as a key strength. This is a different skill to having a strategic perspective. It is about undertaking the IT planning activity.

### 5.3.4 Technical Skills

As CIOs have often achieved their role through an IT career, they will usually have some basic technical skills. The interviewees identified a number of technical areas that it was important for the CIO to have knowledge of . These are shown in the table below.

Table 5.7 –Specific IT Technical skills

| Technical Skills | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus agreements (8) |
|---|---|---|---|---|
| Web/Internet | 2 | - | 2 | - |
| Network architectures & connectivity | 2 | 2 | 4 | 1 |
| Project Management (experience/knowledge) | 5 | 2 | 7 | 2 |
| Records Management (principles) | 3 | 1 | 4 | 1 |
| Business analysis | 3 | 2 | 5 | - |
| Applications & support | 2 | 2 | 4 | - |
| **Total for Technical Skills** | **17** | **9** | **26** | **4** |

On the whole, technical skills were more likely to be mentioned by the CIOs which reflects their more detailed understanding of the environment. The business partners mentioned technical skills in the areas that they were more likely to be affected by; networks, projects, business analysis and application support.

Project management experience was important even where external project managers were used because CIOs were still seen as responsible for delivering the results to the business. With the implementation of the Public Records Act (2004), records management has become increasingly a concern for local government (ArchivesNZ, 2006). Therefore it is not surprising to see an understanding of principles of records management being a critical skill for CIOs. Also the CIO needs to have knowledge of Web/internet as it was considered an important enabler for the business.

*"Web and internet experience (and a knowledge of the key concepts) as business is increasingly done over the web"* – CIO medium council.

### 5.3.5 CIO-Business Partner Agreements

The CIO and their business partner agreed on the importance of some of the components of IT domain knowledge as shown in the stable below.

Table 5.8 –CIO–business partner agreements in IT competency areas

| IT Competency component | Small (3) | Medium (3) | Large (2) | Total (8) |
|---|---|---|---|---|
| Industry Knowledge | 1 | 2 | 2 | 5 |
| IT Management Skills | - | 2 | 1 | 3 |
| Technical Skills | 2 | 1 | 1 | 4 |
| **Total agreements** | **3** | **5** | **4** | **12** |

Overall medium size councils were more likely to agree and small councils least. Agreements may indicate areas where CIOs and their business partners are likely to have more interaction. Larger councils agreed more around the strategic areas and smaller councils around the specific technical areas. This reinforces the comments made by the interviewees themselves, in particular that in smaller councils CIOs were expected to be more "hands on". In larger councils, the opposite was true and CIOs were expected to be more strategic in their focus.

## *5.4 Business competence*

The interviewees identified a number of general management skills, professional experience and interpersonal attributes that were also important in building successful relationships with business and understanding their needs.

### 5.4.1 Sector experience

Interviewees were asked how essential it was for the CIO to have local government experience and if not what other sector knowledge was useful. Their answers are shown in the table below.

Table 5.9 –Sector experience

| Sector Experience | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus agreement (8) |
|---|---|---|---|---|
| Local government experience is essential | 1 | 1 | 2 | - |
| Local government is useful | 5 | 1 | 6 | |
| Local government is NOT essential | 3 | 7 | 10 | |
| Public Sector or central government | 2 | 3 | 5 | 1 |
| Private Sector | 1 | 3 | 4 | 1 |
| Awareness of external factors which affect local govt including funding | 1 | 1 | 2 | - |
| Learning the environment/culture | 3 | 4 | 7 | - |

Only two interviewees thought previous local government was essential for the CIO and another six agreed that while not essential it was useful. More of the CIOs valued local government experience than their business partners. In particular, they felt it helped in understanding both the diversity of the environment and the constraints. Some of interviewees felt that experience in central government was useful as it provided a background in terms of the decision making structures and gave the CIO some exposure to working in a political environment. Some interviewees felt that private sector experience could add value, as exposure to a commercial environment could bring a fresh approach

*Local Government understanding is not essential; historically there has been an attitude that local government knowledge is essential for any role in local government. I am not sure that this is healthy. It's good to have mangers that have a mix of experience; public & private sector.* – Business Partner

Many of the interviewees had no particular preference but saw advantages and disadvantages in all.

*No particular industry sector (is preferable) over another, depending where they come from (there are) different strengths & weakness:*

- *Private industry strengths are action oriented, results focused, but this may be dogmatic & straight-line (leading to) not understanding the complexity (of local government environment)and to relationship issues*
- *Central government will provide understanding of the processes (operating context) & need for relationships but (it) may be less results focused.* –Business partner

Particular issues CIOs need to become aware of within local government that were mentioned included

- How external factors (e.g. the economic downturn) affect the operating environment.
- Diversity and demands of the environment
- The business drivers for council as a whole and the different areas
- Funding structures and their allocation, there is a complexity in how councils earn their revenue and this differs from council to council
- The language and culture of the council

*Local government experience is not essential but it helps to understand both the diversity & demand (pressure) of the environment. It gives them a perspective of working in "rate-payer" focused environment. Size is not important* –Business partner

### 5.4.2 Broad business knowledge

The majority of the interviewees raised the importance of business knowledge for the CIO. This was described as either an overall business perspective or acumen or knowledge gained through experience. These are shown in the table below

Table 5.10 –Broad business knowledge

| Broad business knowledge | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus agreements (8) |
|---|---|---|---|---|
| business perspective or acumen | 5 | 6 | 11 | 3 |
| Customer focus | 1 | 1 | 2 | - |
| Corporate view & understanding of priorities | 0 | 5 | 5 | - |
| **Total for business knowledge** | **6** | **12** | **18** | **3** |

While CIOs and their partners agreed on the need for a board business perspective, there was less agreement in the specific areas. While several of the partners valued the ability to have a corporate view and understand the business priorities, these competencies were not identified by the CIOs themselves.

*"They also need to have good commercial experience, especially in the situation where they are delivering services to a commercially-oriented enterprise. This allows them to understand the business's commercial constraints & needs"* – Business partner

### 5.4.3 General Management skills

As discussed in section 3.2.3 there is an acknowledged difference between leadership and management skills and attributes. Kotter (1990) suggested that the leader's role was about managing change and having a vision while the manager's role was focused on controlling and allocating resources to achieve goals. The interviewees in this research acknowledged the difference and identified a set of general management skills they considered important for the CIO as shown in the table below.

Table 5.11 –General Management skills

| General Management Skills | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus agreement (8) |
|---|---|---|---|---|
| Managerial skills & experience | 8 | 8 | 16 | 3 |
| Staff/people management | 5 | 3 | 8 | 2 |
| Effective Delegation | 1 | 1 | 2 | - |
| Financial Management & Budgetary skills | 5 | 4 | 9 | 1 |
| Decision making skills | - | 2 | 2 | - |
| Vendor Management | 2 | - | 2 | - |
| Strategic & business | 4 | 2 | 6 | - |

| General Management Skills | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus agreement (8) |
|---|---|---|---|---|
| planning | | | | |
| Resource Management | - | 1 | 1 | - |
| **Total for General Management Skills** | **25** | **21** | **46** | |

Almost all the interviewees (16 out of 17) rated either managerial experience or general management skills as important for the CIO. Of these skills most important were financial and budgetary management and people management skills including the ability to recruit and retain the "right people". Strategic and business planning was also considered important as it relates to creating the IS Plan.

### 5.4.4 Leadership Skills

In this section, the skills and knowledge that fit the definition of a leadership role as identified in the research are discussed. These are shown in the table below

Table 5.12 –Leadership skills

| Leadership Skills | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus combination (8) |
|---|---|---|---|---|
| Leadership skills | 2 | 1 | 3 | - |
| Business case in relation to IT(cost-benefit) | 1 | 3 | 4 | - |
| Ability to negotiate (between contending bus. Interests) | - | 4 | 4 | - |
| Strategic perspective - big picture focus | 2 | 2 | 4 | 1 |
| Future vision | 4 | 5 | 9 | 1 |
| **Total for Leadership Skills** | **9** | **15** | **24** | |

In general the business partners raised more leadership skills than the CIOs. The focus of the business partners was on those competencies that supported the initiation of change within their business areas. They valued the ability to negotiate between the contending business interests and ability to provide a robust business case showing the cost benefit of an IT/business change. The competencies identified by the CIOs relate more to leading the successful implementation of change and fit in the management (rather than leadership) area.

Both CIOs and their business partners equally identified the importance of having a strategic (big picture) focus and a vision for the organisation. The CIO's vision discussed in a specific question at the end of the interview, but inclusion in this table indicates it was raised voluntarily as a required skill by the interviewee. Seven of the interviewees (41%) did this. Two of the interviewees also indicated that it was important for the CIO to successfully communicate this vision both to their staff and business partners.

*Leadership is an essential skill and it's important to have a vision to inspire their staff & get their buy-in (i.e. their emotional & intellectual engagement)* - Business partner

*The ability to see the big picture and have a vision that draws together the different needs and objectives. In doing so they need to be able to prioritise & be diplomatic, because they are constantly dealing with competing demands both politically & from the business.* - Business partner

### 5.4.5 Interpersonal skills and personal attributes

During the interviews a number of interpersonal skills and personal attributes were identified as important for the CIO role. These are shown in the table below

Table 5.13–Interpersonal skills and personal attributes

| **Interpersonal Skills** | **CIOs (8)** | **Business Partners (9)** | **Sample total (17)** | **CIO-Bus agreements (8)** |
|---|---|---|---|---|
| People skills (Emotional Intelligence) | 3 | 4 | 7 | 1 |
| General communication skills | 2 | 4 | 6 | 1 |
| Ability to communicate in a non-technical language | 4 | 3 | 7 | 1 |
| Ability to communicate with technical staff/vendors | 4 | 4 | 8 | 2 |
| Relationship building skills | 1 | 3 | 4 | 1 |
| Team Work (with peers) | 1 | 2 | 3 | - |
| **Total for Interpersonal** | **15** | **20** | **35** | |
| **Personal Attributes** | | | | |
| Patience (perseverance) | 1 | 1 | 2 | - |
| tenacity (fight for what you believe) | 1 | 1 | 2 | - |
| Practical Approach | 2 | 1 | 3 | 1 |

| Interpersonal Skills | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus agreements (8) |
|---|---|---|---|---|
| Political savvy | 2 | 1 | 3 | - |
| Results driven | - | 2 | 2 | - |
| Prioritisation - ability to set priorities | - | 2 | 2 | - |
| **Total for Personal Attributes** | **6** | **8** | **14** | |

While there are not a lot of common interpersonal skills and attributes identified across the whole sample there was some agreement within the individual councils. . This may reflect the fact that they were discussing their own relationships. It is not surprising there is an emphasis on communication. There was significant emphasis on communication skills, both CIOs and their business partners valued equally the ability for the CIO to communicate in a non-technical language with their business colleagues, while also being able to use technical language with their staff and technology vendors.

People skills (or emotional intelligence) including the ability to understand and support your staff and be intuitive to their business customers, was identified by an equal number of CIOs and business partners. This was seen as a separate skill to communication.

*"Communication on a personal level is critical; the CIO requires both good verbal & written communication. Ability to talk with customers and find out what their problems are plus the ability to just sit & chat. Emotional Intelligence is important, balanced with the technical knowledge."* –Business Partner

At the personal level, not a lot of common attributes were identified, most notable were the political savvy that the CIO requires to operate effectively in this complex environment and the ability to be practical with the solutions they advise to their business customers.

### 5.4.6 CIO-Business Partner Comparison

The table below shows where CIOs and their business partners agreed on the business and interpersonal competencies in regard to council size.

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Table 5.14 –Comparison of Business Competence agreement by Council size

| Competency component | Small (3) | Medium (3) | Large (2) | Total (8) |
|---|---|---|---|---|
| Sector Experience | 1 | | 1 | 2 |
| Broad business knowledge | 1 | 1 | 1 | 3 |
| General Managerial experience | 1 | 4 | 1 | 5 |
| Leadership | - | - | 2 | 2 |
| Interpersonal skills | 1 | 5 | - | 6 |
| Personal Attributes | 1 | - | - | 1 |
| **Total agreements** | **5** | **10** | **5** | **20** |

The medium-sized councils had twice the number of CIO-business agreements in the area of business competencies. The larger councils agreed on private sector experience and strategic, visionary focus, while the smaller councils agreed on public sector experience, pragmatism and technical communication. This reinforces the view that in the larger councils interviewed, the CIO role is strategic and "hands off", while in the smaller councils, the equivalent position is less strategic and much more "hands on". The medium-sized councils sit in the middle with some hands on aspects to their role and some strategic.

## *5.5 Organisational Knowledge*

Basselier & Benbasat, (2004, p. 679), in their model for business competence describe organisational knowledge as " the understanding by IT professionals of the specific organisation context in which information technologies are deployed and the connections between IT and the business". They divide organisational knowledge into the following sub categories; overview, business unit specific, responsibility and IT-business integration. This section reports the interviewees' perception of what organisational knowledge is required by the CIO, for what purpose and through what mechanisms should they gain it. Organisational has been divided into the following areas:

- Organisation goals and objectives
- Council legal framework (external view)
- Business unit level understanding

### 5.5.1 Knowledge of organisation goals and objectives

Many studies on IT-business alignment stress the importance of IT direction being aligned with that of the business and suggest that the CIOs participation in the strategic planning process being essential to achieve this (Chan & Reich, 2007). Luftman & Brier (1999, p. 111) suggest that "both IT and business executives must be present when corporate strategies are discussed. IT executives must be able to delineate the strengths and weaknesses of the technologies in question and understand the corporate-wide implications." In local government, however, the council strategic goals and objectives are based on a the Long Term Council and Community Plan (LTCCP), as described in section 2.1.1.and the CIO would not normally be involved in this process.

The interviewees were asked how important it was for the CIO to have an understanding the council-wide strategic goals and objectives, to what extent they should be involved in setting them and how this might occur. The table below provides a summary of the results.

Table 5.15 –CIO involvement with organisational goals and objectives

| Organisational Goals & Objectives | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus agreement (8) |
|---|---|---|---|---|
| **CIO understanding goals and objectives** | | | | |
| Understanding is somewhat important | 1 | 5 | **6** | - |
| Understanding is extremely important | 6 | 4 | **10** | 3 |
| **Setting goals & objectives** | | | | |
| Not involved in setting them | 1 | 7 | **8** | 1 |
| Planning is responsibility of Senior management, CEO or separate area | 3 | 5 | **8** | - |
| **Type of input** | | | | |
| Provide input to strategic direction | 0 | 2 | **2** | - |
| Input depends on senior mgt team capability CIO required if there's a lack of IT knowledge | 2 | 2 | **4** | - |
| Provide advice or recommendations on technology innovations & solutions | 4 | 6 | **10** | 4 |
| Input into funding requirements around technology | 2 | 2 | **4** | 1 |
| **How Input is given** | | | | |

| Organisational Goals & Objectives | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus agreement (8) |
|---|---|---|---|---|
| Through discussions with CEO & senior mgrs | 4 | 0 | **4** | - |
| Through discussions with other managers | 5 | 0 | **5** | - |
| Provide input through reporting manager | 4 | 2 | **6** | 1 |
| **Subsequent involvement** | | | | |
| Raise risks and constraints with use of technology | 1 | 2 | **3** | - |
| Gives CIO their direction & drivers for their own strategy | 2 | 4 | **6** | - |
| Understand what Councils customers need | 2 | 0 | **2** | - |
| Provides advice on how technology can enable strategies (after goals set) | 4 | 4 | **8** | **3** |

While 59% (10/17) of the interviewees said understanding the council goals and objectives was extremely important, 47% (8/17) said that the CIO is not involved in setting them. One of the business partners saw a role for the CIO in this process and recommended:

*"Involvement when they are being planned & discussed in the community i.e. participate in the consultation & workshops to identify the costs and possibilities (of technology and provide) technology expertise."* – Business Partner – small council.

Four of the interviewees noted there could be CIO involvement if there was a lack of IT capability at the senior management level. The most favoured role for the CIO during the planning process was to provide advice on technology innovations and solutions. This was best explained by one of the CIOs

*"The CIO is a strategic advisor on how innovations and efficiencies can be achieved. They need to be aware of the goals being sought by the community (and directors) as they are being planned. Also to be aware of (and provide input into) funding requirements where technology supports business process change and innovation. Explaining the benefits, offering the opportunity (to use technology) & explaining the "how & why". This helps to justify the commitment of resources during the planning activity."* – CIO large council

The business partners were only aware of the reporting manager as a channel for input to the strategy; the CIOs themselves mentioned a number of mechanisms. Several of the CIOs used their discussions with peers and senior managers for this purpose:

*"Another way of achieving this is to feed the ideas through a business (2nd tier) manager in relation to their area (e.g. tourism) and let them take it up to Council. It is useful to work at the business unit level because this is where the decisions about how council achieves its goals are made (i.e. where technology can support the outcome). This is the audience I can influence on how they use technology."* - CIO

Finally four areas were identified where the CIO could be involved with the goals and objectives once they had been set. The most popular role is for the CIO to provide the business with advice on how technology can enable the delivery of the goals. This was also the stage where the CIO could raise risks and constraints with proposed technologies.

*"It's crucial to be involved in delivery strategies once the business has developed the overall strategy. This should not be restricted by technology considerations. This is the time to raise technology constraints (and opportunities)"* - CIO Large council

### 5.5.2 Legal Framework

Councils operate under an extensive amount of legislation and regulations as discussed in section 2.1 Just as the commercial environment provides an external context for private sector organisations, this regulatory environment is part of the external operating context for local government organisations. During the interviews, participants were asked how important it was for the CIO to have an understanding of this legal framework. The table below shows how important the interviewees felt this knowledge was to the CIO.

Table 5.16 –Understanding of legal framework.

| Legal framework | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus agreement (8) |
|---|---|---|---|---|
| Understanding is extremely important | 3 | 3 | **6** | |
| high-level understanding only required | 3 | 6 | **9** | 2 |

| Legal framework | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus agreement (8) |
|---|---|---|---|---|
| Not necessary or of low importance | 2 | 1 | **3** | |
| Specific areas to understand the constraints in regard to IT solutions | 2 | 3 | **5** | 1 |
| **Where to get knowledge** | | | | |
| Know where within Council to get expertise | 1 | 3 | **4** | - |
| From managers, business experts or legal advisor | 7 | 6 | **13** | 4 |
| Review internal policies & management communications | 5 | 0 | **2** | - |
| External sources | 3 | 4 | **7** | - |

The majority of the interviewees (14/17 or 82%) thought that CIO's should have some understanding of the legal framework under which councils operated, although this need only be a broad, high-level understanding.

*"This is very important as this role can influence how things are done & so they need an understanding to ensure that things (technology solutions) don't impact this. This may not need to be a detailed understanding – but enough of an overview to assist with this."*- CIO small council

Some of the interviewees also said it was important to get more specific details in relation to particular business areas when they were deploying an IT solution. Also important was to know where to go to get the expertise when they needed it. The main source of this knowledge was business managers or experts within the business areas, but a variety of other options were suggested including, in-house legal expert, industry (SOLGM) courses and using external networks.

### 5.5.3 Business Unit Knowledge

The average council may operate between 30 – 35 separate business units grouped into divisions or directorates. Regardless of size their council, the CIO must provide ICT services (and support applications) across the breadth of the business activities.

#### 5.5.3.1 Requirement for business unit knowledge

Basselier & Benbasat, (2004) p 679, suggest that "IT professionals need to understand what the functional areas of their organisation are, including their objectives and problems and the language they speak. The interviewees were asked how important it was for the CIO to understand the goals and purposes of the individual business units within their council. The table below provides a summary of their responses

Table 5.17 –CIO requirement for business unit knowledge

| Business Unit Knowledge | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus agreement (8) |
|---|---|---|---|---|
| Understanding B.U. goals & drivers is important | 8 | 8 | **16** | 7 |
| Need to understand core business processes | 1 | 3 | **4** | - |
| Understand broad high-level issues only | 3 | 3 | **6** | 2 |
| Learning & using business language is important for communication | 7 | 3 | **10** | 3 |
| CIO's use of business language not important | 0 | 4 | **4** | - |

Both the CIOs and the business partners (with the exception of one business partner) agreed that it was important for the CIO to understand the business goals and objectives. The partner that did not agree was in an organisation where IT responsibility was split and as a result he assumed a lot of the responsibility for the direction of his business applications. Two key points were mentioned to support the need for this understanding. First the interviewees felt this was essential to allow the CIO to support the business to meet the business outcomes. Second that it assisted the CIO with their own business planning by allowing them to set priorities and allocate resources.

*"This (understanding the goals and objectives) is very important as it affects their resourcing. It allows them to ensure that things are prioritised – they need to know what's critical for the business."* – Business partner –small council

While understanding business issues is important for the CIO, a number of the interviewees felt that the CIO should restrict their concern to high-level issues only.

*"It's important for the CIO to not get too bogged down at this detailed level. There is a danger in getting lost (caught up by the person who shouts the loudest). These should be dealt with by her staff."* – Business partner

The majority of the interviewees said it was important to understand and use business language particularly to support good communication. However while seven out the eight CIOs thought it important, only three of the business partners agreed. Four of the business partners said it was not important; however two of these said that the CIO should avoid technical language and some preferred a CIO who could communicate in pictures.

*"They don't need to use the business language but just avoid the IT jargon. I prefer pictures. IT manager who has the ability to communicate in visual terms and reach a common understanding is critical"*. Business partner – small council

*"Using the business language is important as it helps communicate and builds rapport. It reflects knowledge of the business concerns & I encourage it with all my staff. Equally important is avoiding the use of IT jargon."* – CIO medium council.

#### 5.5.3.2 Gaining Business Unit knowledge

The interviewees offered a number of mechanisms for the CIO to gain this knowledge. These are shown in the table below.

Table 5.18 –mechanisms for gaining business unit knowledge

| **Where does CIO get this information** | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus agreement (8) |
|---|---|---|---|---|
| Informal discussions with B.U. Manager | 5 | 4 | **9** | 3 |
| Attending B.U. departmental meetings | 1 | 1 | **2** | 1 |
| Through regular meetings with B.U. managers (semi formal) | 3 | 3 | **4** | 1 |
| Through reading LTCCP & business plans (business goals) | 2 | 1 | **3** | - |
| Through IT staff | 7 | 8 | **6** | 4 |
| Through business staff | 3 | 2 | **5** | - |
| Use SLA or formal meetings as a mechanism for managing issues | 2 | 4 | **6** | 1 |

Most interviewees agreed that knowledge of business unit goals should come from the business unit manager either through informal discussion or regular semi-formal meetings. However a variety of methods were used including talking to both IT and business staff and reading individual business plans or the LTCCP, (which captures at a council-level all planned activities and projects). Small councils seem to prefer less formal methods, while the medium-sized councils equally prefer informal and semi-formal discussions. Larger councils have staff who can support the CIO in this activity and therefore favour a combination of all methods.

The most commonly identified way for the CIO to become aware of business issues was through their staff, although a number of the councils also used a formal Service Level Agreement (SLA) process or regular monthly meetings as a mechanism for identifying and managing issues. Small to medium sized councils tended to prefer feedback and escalation through IT staff, while medium to large sized councils mentioned more formal mechanisms.

#### 5.5.3.3 Involvement in B.U. planning

Many authors have stressed the importance of coordination between the IS and business planning processes to ensure that IS plans and strategies adequately support the business requirements (Lederer & Mendelow, 1999; Luftman & Brier, 1999; Teo & King, 1996).

The final question on business unit knowledge looked at how important the interviewees felt it was for the CIO to be involved in the business unit's planning process. The table below shows the results from the interviews.

Table 5.19 –CIO involvement in B.U. Planning

| CIO involvement in B.U. Planning | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus agreement (8) |
|---|---|---|---|---|
| CIO needs to be informed of potential (IT) projects from the business plans | 3 | 4 | **7** | - |
| CIO involvement is not sufficient | 4 | 1 | **5** | 1 |
| Business planning is a 2nd tier activity, CIO feeds in through formal planning process | 3 | 0 | **3** | - |

| CIO involvement in B.U. Planning | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus agreement (8) |
|---|---|---|---|---|
| Business should involve IT early in planning | 1 | 4 | **5** | - |
| CIO role is to advise & inform - through discussion & regular meetings with BU manager prior to planning | 3 | 3 | **6** | 1 |
| Semi-formal discussion with B.U. managers as part of their (CIO) strategic planning | 2 | 1 | **3** | - |

The interviewees suggested a variety of ways in which IT is involved in the business plans. No particular approach was preferred and some supported the use of a variety of approaches. With some of the interviewees (particularly in the larger councils), recommended a proactive approach, where the CIO's role was to advise and inform the business managers prior to planning, was preferred. Others felt the CIO should be informed by the business managers of projects after the business plans were developed. Three of the CIOs suggested that business planning was a second tier activity and they wouldn't normally be involved.

#### 5.5.3.4 CIO-Business partner comparison

The table below shows where CIOs and their business partners agreed on organisational knowledge competencies described in the section above.

Table 5.20 –Organisational knowledge partner comparison

| Organisational knowledge component | Small (3) | Medium (3) | Large (3) | Total (8) |
|---|---|---|---|---|
| Organisational goals and objectives | 5 | 6 | 3 | 14 |
| Legal framework | - | 4 | 3 | 7 |
| Business Unit Knowledge | 3 | 3 | 7 | 13 |
| Gaining B.U. Knowledge | 2 | 4 | 2 | 8 |
| **Total agreements** | **10** | **17** | **15** | **42** |

Most of the agreements in this area were in the medium sized councils and the least in the smaller. There was considerable agreement among large council CIOs and their business partners on what aspects of business unit knowledge were and were not important, these organisations on he whole have well established roles for the CIO, who

are supported by a number of team leaders or managers that may have more business unit level responsibilities.

## *5.6 Integration aspects*

The third section of the interview was focused on the integration aspects of the CIO role. These aspects have been grouped into two areas:

- Value-add, which focuses on the how the CIO identifies and promotes opportunities where IT/IS can add value to the organisation.
- Delivery - which focuses on how decisions are prioritised and authorised and how IT progress is reported

### 5.6.1 Value-add interactions

A value-add occurs where the CIO provides something to their business partners that changes (and enhances) the business's use of technology (Smith & McKeen, 2006). Three areas of value-add roles were identified during the research. They are

- Communication of innovative uses of technology
- Communication of impact of IT-related legislation and standards
- CIO vision for IT

#### 5.6.1.1 Communication of innovative uses of technology

When asked how important it was for the CIO to identify and communicate ways in which IT can enhance or improve the business, the interviewees overwhelmingly answered that this was an important or key part of the CIO's role. The results are shown in the table below.

Table 5.21 –CIO advice on innovation

| **Communication of innovations** | **CIOs (8)** | **Business Partners (9)** | **Sample total (17)** | **CIO-Bus agreement (8)** |
|---|---|---|---|---|
| Important part of CIO role | 6 | 8 | **14** | 6 |
| **How this can be done** | | | | |
| CIO discuss these as part of regular meetings with larger forum | 2 | 0 | **2** | - |

| Communication of innovations | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus agreement (8) |
|---|---|---|---|---|
| CIO provides information to managers informal discussion, emails, reports | 5 | 5 | **10** | 2 |
| Business approach IT with potential solutions | 3 | 1 | **4** | 1 |
| **Conferences, Technical Presentations** | | | | |
| CIO to bring ideas back from conferences | 3 | 2 | **5** | 2 |
| CIO should attend seminar with business managers | 6 | 7 | **13** | 4 |
| CIO should organise in-house presentations | 2 | 1 | **3** | - |

Three of the interviewees, emphasised that these should be pragmatic solutions only, "only in the realm of what's achievable" within the particular organisation. One CIO waited to be approached by the business with potential solutions. The most preferred method of communicating these ideas was during informal discussions with the relevant business partners.

*"The business manager's focus is on the day to day running of their business, CIO can offer ways in which technology can enhance business. Technology is a complex area and not necessarily aligned to what the business requires, CIO can reduce risk (of poor technology decisions) by providing advice within the business context"* – CIO large council

CIOs and their business partners agreed on the value of attending technical and business conferences together to learn about new technology solutions, although three of the interviewees said that time constraints or distance prevented them from doing this.

#### 5.6.1.2 Communication of IT-related legislation and standards

Another area where the CIO can add value was in reviewing and interpreting IT-related legislation. As discussed in section 2.2 a number of laws have been enacted in recent years that have an IT impact. There are specific implications for local government as a public sector organisation in complying with these acts and regulations. Interviewees were asked how important it was for the CIO to advise the business in regards to IT legislation, the results are shown in the table below.

Table 5.22 –CIO advice on IT legislation

| Communication of IT regulations & standards | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus combination (8) |
|---|---|---|---|---|
| Important for CIO to communicate impact of IT-related legislation to the business | 7 | 7 | **14** | 6 |
| This is not always the CIOs area of responsibility | 2 | 3 | **5** | 1 |
| **What's the best way to do this** | | | | |
| Communicate through senior mgt or governance body | 2 | 2 | **4** | 1 |
| Use a forum to develop cross council understanding | 1 | 2 | **3** | - |
| CIO to implement some aspects (e.g. security) through policy | 2 | 0 | **2** | - |
| Through discussion with relevant business managers | 0 | 4 | **4** | - |

While the majority of the interviewees agreed that it was important for the CIO to understand and communicate the impact of IT-related laws and regulations on behalf of the business, five indicated that this might not always fall within the CIO's area of responsibility. This may be due to the fact that in some of the councils Records Management, privacy or intellectual property may be managed in other areas. However most business partners would like their CIO to be proactive in this are

*"Yes this is very important. Central government may not always communicate these well, so IT Manager has a role in communicating the impact to the managers. It would be good for IT Manager to drive (facilitate) cross council understanding."* – Business Partner – small council

Time constraints may prohibit this role being undertaken and four interviewees pointed out that the CIO needed to take care not to assume a gatekeeper role.

*"There can be a risk for areas like IT to assume a gatekeeper role and overlook the business requirements. It's very difficult to run a business if the IT department run the infrastructure according to what's in their set of rules & overlook what the business requires. The ideal is for this to be agreed by a committee that has both IM & business representatives, issues can be discussed and avoids decisions (& policies) being made in isolation."* – Business Partner – small council

#### 5.6.1.3 CIO vision for IS

(Broadbent & Kitzis, 2005) suggest that having a "clear and compelling" vision for how IT can enable the organisation is an important characteristic of an effective CIO. Interviewees were asked how important it was for the CIO to have an IS vision for the organisation

Table 5.22 –CIO vision for IS

| Communication of CIO vision | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus agreement (8) |
|---|---|---|---|---|
| Important to have a vision for Is | 6 | 7 | **13** | 6 |
| Needs to fit with business vision | 5 | 5 | **10** | 3 |
| Needs to consider cost constraints | 2 | 2 | **4** | 1 |
| Vision should be articulated/documented | 5 | 4 | **9** | 3 |
| Develop with others (business & IT staff) | 3 | 1 | **4** | - |
| **How this can be communicated** | | | | |
| Provide presentations and high-level business focused document | 1 | 3 | **4** | 1 |
| Sells the vision through wider management forum | 1 | 1 | **2** | - |
| IT staff understand and promote vision | 1 | 0 | **1** | - |
| Promote informally -through discussion with managers | 2 | 2 | **4** | - |
| Vision sells itself through demonstrating benefits | 3 | 0 | **3** | - |
| sell through showing linkages to wider council vision using business terms | 3 | 1 | **4** | - |

Most of the interviewees (76%) felt it was important for the CIO to have a vision for the organisation and ten (59%) said this should be linked to the organisations goals and objectives. A further 9 said this vision needs to be articulated and documented.

*"It's absolutely important that the IT Manager has a vision. This is because of the importance of technology to delivering the business & the rapid change in the technical environment. The IT vision needs to be part of the Council vision. IT Manager needs to lead from the front as they know where technology is going."* – business partner medium council

Suggestions for promoting the vision varied. Business partners preferred presentations and informal discussions, whilst CIOs felt the vision could be promoted either through IT staff or by showing the benefits it delivered to the council.

"Vision should be communicated as simply as possible & as at high-level as you can get it & into a business context. Therefore the vision needs to be about business outcomes & not about IT" – CIO large council

### 5.6.2 Delivery Management

The second part of the CIO role is concerned with management of the IT organisation and of the IS Plan and vision. The following areas were identified during this research, these include:

- Prioritisation of IT Projects and expenditure
- Managing and reporting IT projects
- Communication with key stakeholders
- Communication with vendors

#### 5.6.2.1 IT Investment decisions

Given the number of contending business interests that IT systems need to support and the high level of accountability over expenditure of ratepayer contributions, IT investment decisions within local government can be complex. Interviewees were asked how they though these should be prioritised and approved. The results are shown in the table below.

Table 5.23 –Prioritisation of IT investments

| Investment Decisions | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus agreement (8) |
|---|---|---|---|---|
| **Project Prioritisation** | | | | |
| Have an IS/IM governance group in place that makes key decisions | 4 | 3 | **7** | **3** |
| Priority decisions made by IT manager in conjunction with business managers | 1 | 1 | **2** | - |
| Priority decisions made by senior management team | 2 | 3 | **5** | - |
| CIO or reporting manager prioritise infrastructure projects | 4 | 0 | **4** | - |
| **Project Approval** | | | | |
| Major projects approved through formal planning process (CEO/Council level) | 1 | 3 | **4** | - |
| Major projects approved through formal planning process (SMT level) | 4 | 1 | **5** | - |

Both large councils and two of the medium councils had an IT/IM governance group in place who were responsible for prioritising and recommending major IT initiatives and approving the IS strategic plan. This group often provided oversight over the implementation of major initiatives and the IS plan as well as approving variations to these. Where a governance body was not in place then the prioritisation was usually made by senior management.

*"There is a governance group that is a delegated sub-group of the tier 2 directors. This group looks at the proposed (projects) that resources & funding will be used for and prioritises these to come up with a balanced view. The IT plan is put to this group for approval"* – CIO large council.

While prioritisation was made by one group, formal approval was often done through the established delegations. There are no partnership agreements in this area indicating that the approval process may not clear to all parties. In four of the councils the CIO and their reporting manager could approve projects that affected the IT infrastructure.

#### 5.6.2.2 Managing and reporting IT projects

The next area looked at how projects were delivered, whether stakeholder steering groups were involved and formal project management processes followed.

Table 5.24 –Managing and reporting delivery of projects

| Project Management & Reporting | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus agreement (8) |
|---|---|---|---|---|
| Projects are typically small & progress reporting is informal | 1 | 4 | **5** | **1** |
| Use formal steering groups for major projects & involve key stakeholders | 7 | 3 | **10** | **3** |
| Use regular meetings for reporting progress to CEO/SMT level | 3 | 0 | **3** | **-** |
| Use regular meetings for reporting progress business peer level | 1 | 1 | **2** | **1** |
| Use formal project management processes for reporting through project manager | 4 | 4 | **8** | **2** |
| Have a project office function in place for oversight & combined reporting on projects to senior management and governance group. | 3 | 1 | **4** | **1** |

Most interviewees thought that a project steering group involving key stakeholders was essential for the major organisation-wide projects. CIOs were more likely to recommend project steering groups than their business partners. Both medium and large councils recommended the use of formal project management processes and only the two large and one of the medium councils indicated that a project office function was useful for oversight and consistency in project delivery. On the whole, the degree of formal project management structures recommended was based on size of the project as well as size of the council.

*"Council has a Project Management framework that is used for major projects. The business owner should be involved in setting up the projects, setting expectations and informed at regular intervals depending on the size (duration) of the project. Reporting is set up during the project initiation and followed through."* – Business partner – medium council

#### 5.6.2.3 Communication with key stakeholders

CIOs must also update stakeholders on projects and IS concerns. The table below shows what mechanisms were recommended for this activity.

Table 5.25 –Communicating IT-related matters

| CIO Communications relating to IT Matters | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus agreement (8) |
|---|---|---|---|---|
| **to Senior Management** | | | | |
| Reports through CIO's reporting manager | 4 | 2 | **6** | **2** |
| Reports through formal meeting with CEO/SMT | 4 | 2 | **6** | **2** |
| Reports provided to senior management on case-by-case basis | 2 | 1 | **3** | **-** |
| Regular informal catch-up with individual senior managers | 1 | 1 | **2** | **-** |
| Reports regularly to governance group | 2 | 1 | **3** | **1** |
| **to Business Peers** | | | | |
| Informal meetings with business managers - as needed | 5 | 7 | **12** | **4** |
| Uses formal regular meetings to communicate with business peers | 3 | 2 | **5** | **1** |
| Updates through service level or "user group" meetings | 2 | 3 | **5** | **2** |
| Attend business unit meetings | 0 | 1 | **1** | **-** |

When communicating IT-related matters to senior management, interviewees suggested this was best done either through the CIOs reporting manager or through a formal meeting with the senior management team that the CIO attended. Small councils the preferred channel was via the CIO's manager, in medium councils attending a senior management meeting was preferred while in larger councils individual meetings with senior managers and the governance group were used.

*"Communicating with senior management is done through IMSG and via regular informal conversations with GMs (one-on-one). I try to meet with each of them at least monthly but if doing work for them I'll meet with them more frequently. There's no formal agenda, I may just be responding to an issue that's been raised by one of their staff."* – CIO large council.

When communicating with business peers on IT matters, informal one-on-one discussions were the most preferred style. However other suggestions included the CIO updating the wider group of 3rd tier managers at through a regular forum or through a formal meeting such as a service-level or key users meeting.

#### 5.6.2.4 Communication with vendors

In many of the councils the CIO was responsible for managing contracts and maintaining the on-going relationship with key IT vendors on behalf of the business. Interviewees were asked what they thought was the best way for the CIO to communicate business matters to their key technology partners.

Table 5.26 –Communicating with vendors

| CIO Communications to key Vendors relating to business concerns | CIOs (8) | Business Partners (9) | Sample total (17) | CIO-Bus agreements (8) |
|---|---|---|---|---|
| Have informal updates with suppliers to communicate issues as needed | 5 | 4 | **9** | **3** |
| Expect vendors have knowledge of business concerns through their own channels | 3 | 0 | **3** | **-** |
| Hold regular meetings with key vendors to keep up to date | 2 | 0 | **2** | **-** |
| Hold combined vendor & business meetings on a regular basis | 1 | 4 | **5** | **1** |

| | | | | |
|---|---|---|---|---|
| Use a formal process to manage work requests and issues on behalf of business | 2 | 3 | **5** | **1** |
| Communicate with vendors through established user groups | 1 | 0 | **1** | **-** |

The interviewees suggested a variety of ways for communicating with IT vendors although the CIO having informal updates on an as needed basis was the most often mentioned. Business partners also mentioned that combined meetings with the vendors facilitated by the CIO were very useful in ensuring that their business concerns were understood. They then expected the CIO to follow up with the vendor.

*"This is a joint effort, I expect them to support the business around the urgency for an issue & communicate this to their technology partners."* – Business partner – small council

A number of the CIOs (in particular in smaller councils) indicated that the key vendors themselves sometimes have knowledge of business changes and the resources to determine the impact of these. Therefore they often found these vendors advised them regarding potential business changes.

*"This is a bit the other way around, the vendors have their own BAs who understand the Acts etc & how it works within their systems. These vendors are usually specialists in local government & understand the business requirements really well including changes required from new legislation."* – CIO small council.

### 5.6.3 CIO-Business partner comparison

The table below shows the partnership agreements for the value-add components

Table 5.27 –Value-add interaction partner comparison

| Value-add component | Small (3) | Medium (3) | Large (3) | Total (9) |
|---|---|---|---|---|
| Innovation | 4 | 7 | 6 | 17 |
| IT Legislation | 2 | 4 | 3 | 9 |
| CIO's vision | 3 | 7 | 6 | 16 |
| **Total agreements** | **9** | **18** | **15** | **42** |

In this area most the partnership agreements were in the medium councils and the least in the small councils. All sized councils agreed on the importance of the CIO providing innovative solutions to the business as well as their having a vision for IT that was

linked to the business vision. While there was significant agreement in all councils around the importance of the CIO in providing guidance on IT-related legislation, there was little agreement about how this should be done.

The table below shows where CIOs and their business partners agreed on Business Integration competencies described in the section above.

Table 5.25–Delivery agreements

| Delivery reporting component | Small (3) | Medium (3) | Large (3) | Total (9) |
|---|---|---|---|---|
| Prioritisation of investment decisions | - | 1 | 2 | 3 |
| Project reporting | 3 | 1 | 4 | 8 |
| Updates to Senior Management | 2 | 2 | 1 | 5 |
| Updates business peers | 2 | 4 | 1 | 7 |
| Communications with vendors | 1 | 3 | 1 | 5 |
| **Total agreements** | **8** | **11** | **10** | **29** |

Medium and large councils were more likely than small councils to agree on reporting mechanisms. However the difference is slight. The large councils agreed more around the formal governance structures such as the steering group and use of project office, this may indicate the level of visibility of these formal channels within the large councils. Smaller councils on the whole tended to agree on informal structures, this possibly reflects an agreed informal approach working within these councils.

## *5.7 Chapter Summary*

While it is difficult to draw a full set of competencies from such a small sample of participants, the depth of the interviews allows a discussion of the common areas of competency considered important by this group of local government organisations. The discussion section which follows will link competencies, communication methods and reporting structures to the identified roles which emerge from the research.

### 5.7.1 IT Competencies

On the whole, high-level broad industry skills were the most often mentioned as important for the CIO role, with the broad industry knowledge being the most important. But it was also important that this knowledge was current and business-focused. The CIOs themselves raised both IT Management skills and technical skills

more often than their business partners. The business partners more commonly mentioned those skills that would have a direct impact on them for example consultancy/advice, project management, business analysis and application support.

### 5.7.2 Other Competencies

As this was a small sample, a full set of other competencies required for a CIO role were not identified. However those specific competencies identified support the (Basselier & Benbasat, 2004) model of business competence which comprises; business and commercial knowledge, management and leadership as well as personal attributes. While local government experience was considered not essential, a broad business knowledge or perspective was considered extremely important by CIOs and their partners. Also valued was a strategic and visionary perspective as well as communication and people skills.

### 5.7.3 Organisational Knowledge

The interviewees show agreement around the importance of a CIO having a broad high-level organisational knowledge competency, in particular around the organisational goals and objectives, legal framework and business unit goals and drivers. They suggest this is gained through discussion with business managers favouring informal discussion over more formal arrangements. Another source of this knowledge was through the IS staff or by reading formal documents such as the LTCCP. A key theme that emerges in this section is the importance of the CIO's role as an advisor to the business, both during organisational strategy planning and at the business planning level.

### 5.7.4 Integration Aspects

Integration aspects were divided into two areas; delivery and value-add. Within the delivery area informal structures were favoured when dealing with business peers, while more formal arrangements suited to communications with senior management. Large councils tended to have governance groups and formal processes around IT investment decisions, while smaller used existing reporting structures.

When discussing the value-add aspect of the IT-Business relationship, there was a clear indication that the business looked t the CIO for advice and guidance with new technologies and IT-related legislation. Again informal discussion was the preferred communication approach. This communication should be two-way as the business needs to assess the impact of any decisions related to proposed changes. There was also a concern in some of the councils about the capacity (time and capability) to undertake these sessions. Finally the majority of the interviewees felt that it was important for the CIO to have a vision for IT within the organisation and that this be well communicated and aligned with the business vision.

### 5.7.5 Roles

While the summary above has focused on the separate areas of competency, there are some key themes that can be identified in all the sections. These include:

- A set of strategic roles performed by the CIO to identify where IT can add value to the council
- A set of operationally focused roles the CIO performs to ensure IT delivers the benefits within the budget constraints.

These roles will be developed further in the discussion section which follows.

# 6 Discussion

## 6.1 Introduction

This section discusses the findings of the analysis section within a wider context of the CIO's role within the organisation. It applies the proposed model from section 3.5 and identifies how the statements from the interviews fit with the individual components of the model i.e. whether they fit into one of the following areas

- CIO roles
- Organisational structures, methods or approaches deployed to deliver the functions
- CIO competences required for delivering those roles

It also discusses whether these findings support or contradict the IS research literature as described in the Literature Review section.

## 6.2 CIO roles

A number of activities and functions that should be performed by the CIO emerged during the discussions. These have been defined as CIO roles in that they combine a number of activities and behaviours performed by the CIO in regard to the delivery of a specific outcome (or set of outcomes) for the organisation. As described in section 3.5, these roles in conjunction with the organisational structures and processes provide the overall IS competency.

Eight high-level roles were identified. These may not comprise the complete set of roles performed by a CIO in these organisations, but they do reflect the key roles that emerged during the discussions.

- **Develop & promote vision for IS :** Includes activities related to establishing the vision as well as promoting this vision within the organisation
- **Provide advice on technology opportunities** Includes providing advice on technologies at both a strategic and business unit level

- **Provide advice on technology risks and constraints** Includes advising on risks and constraints both at a strategic level and in relation to legal and technology risk to business units
- **Prepare and promote the IS plan** Includes developing the long term and annual plans for the delivery of IS projects and infrastructure and promoting this within the organisation
- **Manage IS resources,** This includes allocating staff to deliver IT activities as well as recruiting, developing and motivating them
- **Manage Vendors** Includes engaging vendors and managing the delivery of their work and resolution of issues. This includes where the CIO provides liaison between the business and vendors who supply their business solutions
- **Deliver IS plan and projects** This includes reporting progress against plans to senior management and peers. It also includes the CIO's role overseeing major IT/business projects
- **Manage and communicate IT-related issues** Includes identifying and monitoring issues that affect the business. The level of the issue that the CIO should be concerned with varied among the respondents

### 6.2.1 Strategic vs Operational roles

Smith & Mckeen (2006) suggest there are two opposing driving forces in IT today; these are "the pull toward strategic use" of technology and "the pull of IT commoditisation". The first involves use of technology to add value to the organisation by providing innovative solutions and improved business processes. The seconds ensure efficient and effective use of current IT investment. (Smith & McKeen, 2006, p127).

While the importance of the competitive use of technology has been well documented, (Peppard & Ward, 2004; Sabherwal & Chan, 2001) (Broadbent & Kitzis, 2005), the focus for research in this area has been in large private sector organisations in the local government example there is less emphasis on gaining competitive advantage. In the private sector increased market share through new customers or offering new products and services to existing customers is an important competitive strategy. In local

government however the customer has no alternative supplier if they wish to live or do business within the local authority's jurisdiction. Thus, for councils, their market is already captured and councils are not able to introduce new products and services as these are defined for them (in general) by central government. This means for the councils use for competitive advantage is less important than in private sector.

On the other hand, while private sector organisations must answer to their shareholders, local government are accountable to central government and their ratepayers. Shareholders are typically interested in profitability; ratepayers are interested in expenditure and in particular keeping rates under control. They want efficient operations at the lowest possible cost and local government operates under significant public and government scrutiny of their budgets and expenditure.

While the main focus of local council IS may be on delivering low cost, high quality services, there will still be some demand for strategic, innovative IS. Based on these two different focuses the CIO's roles and higher-level IS competencies have been divided into:

- Strategically focused, value-add roles and IS competencies
- Operationally focused, value-for-money roles and IS competencies

### 6.2.2 The Value-add strategic roles

The focus on efficiency and effectiveness affects how the business partners view the strategic roles of the CIO. While they thought it important for the CIO to provide advice on technology opportunities this was only once strategies were defined and business gaols and objectives determined. It was clearly articulated within the interviews that technology innovation should be pragmatic, support business outcomes and fit within the organisational context. Four of the roles identified above can be considered "value-add" in that they contribute toward "strategic use" of technology within the organisation. They are described below

- Develop and promote a vision for IS
- Provide advice on technology opportunities (innovations)
- Provide advice on technology risks and constraints

- Prepare and promote the IS Plan.

The table below shows how often the value-add roles were mentioned during by CIOs or their partners and whether business partners and CIO agreed.

Table 7.2 –Frequency of value-add role being identified by CIO and business partners

| Role | CIO | Business Partners | Agreements | Total Times raised |
|---|---|---|---|---|
| Develop & promote vision for IS | 17 | 18 | 13 (37%) | **35** |
| Provide advice on technology opportunities | 16 | 21 | 14 (38%) | **37** |
| Provide advice on technology risks and constraints | 13 | 14 | 9 (33%) | **27** |
| Prepare and promote IS plan | 17 | 22 | 4 (10%) | **39** |
| Total | 63 | 75 | | |

More business partners than CIOs raised strategic roles during the discussion. The most agreements were in relation to providing technology advice and developing an IS vision and least on the development of the IS Plan. This may indicate that the first two roles require more interaction between the CIO and his partners, while developing the IS Plan may be considered the responsibility of the CIO on his own. This fits with the common practice in the councils that the IS Plan was the "business plan" of the IS department.

Broadbent & Kitzis (2005) suggest that developing and communicating a vision for IS that is aligned with the organisational goals and objectives is possibly the most important leadership role for the CIO. While the findings indicate that 75% of research sample agree with this, in only a few instances was this vision documented or did the CIO have an identified process for promoting their vision. In fact a number of the business partners, thought the CIO probably had a vision but were not aware of what it was. The CIOs, on the other hand, could often state what their vision was. As ability to communicate and sell the vision is considered a leadership skill, this may indicate a lack of this skill on the part of those CIOs.

IBM Centre for CIO Leadership(2007) in their survey of CIOs found a definite trend to increased strategic use of the CIO role. This included increased involvement in strategic decision-making. Although none of the CIOs in the interview sample had direct

involvement in developing their council's strategy, they are able to influence strategic decisions involving IT. They used a number of approaches for doing this, from consciously involving their business peers and senior management in discussions on potential IT opportunities, to providing more formal reports through their manager to the senior management team.

Perhaps the most difficult role for the CIO in this context is the provision of advice on risks and constraints. As Smith & Mc Keen (2006) suggest, with the trend toward interoperability and standardisation of services, compliance with external technology standards is important. Legislation in the areas of privacy and electronic commerce are also driving the need to enforce standards within the technology infrastructure. In particular, for local government, theses standards are driven from central government, via e-government and other initiatives, (ArchivesNZ, 2006). Yet within the councils this was the area which got least attention. Approximately 25% reported that it was not undertaken due to time or resource constraints and 25% also were concerned with IS assuming a gatekeeper role.

"Develop and promote the IS Plan" has been and important role for CIOs for a long time. Smith & Mc Keen (2006) indicate it as a key responsibility in their 1995 survey. This role sits between strategic and tactical levels. Although some of the interviewees saw this as a strategic planning activity, others saw it as providing a consolidated a plan for delivering projects and strategies, i.e. a tactical plan. In their approach to developing the plans, some of the CIOs were proactive, engaging with their business partners to understand their business direction and how it could be incorporated into the plan, but also explaining back to them a strategic direction for IS. Approximately 41% suggested that it was the business that determined the IT projects to be included into the IS Plan and not the other way around. Prioritisation of projects for the IS Plan most often occurred at a level above the CIO, either through a formal governance group (41%) or through the senior management team (29%).

### 6.2.3 The value-for-money roles

The other roles identified in the research form part of what Broadbent & Kitzis (2005) call the supply side of the CIO role. This is where the CIO delivers on the promises made to the business. These roles include:

- Managing the IS (human) resources
- Managing relationships with IS vendors
- Delivering the IS plan through projects
- Managing business-IS issues

The table below shows how often the value-for-money roles were mentioned during by CIOs or their partners and whether business partners and CIO agreed.

Table 7.2 –Frequency of value-for-money role being identified by CIO and business partners

| Role | CIO | Business Partners | Agreements | Total Times raised |
|---|---|---|---|---|
| Manage IS resources | 12 | 10 | 5 (23%) | **22** |
| Manage vendors | 13 | 14 | 5 (18%) | **27** |
| Deliver IS plan and projects | 27 | 20 | 13 (28%) | **47** |
| Manage and communicate IT-related issues | 14 | 15 | 7 (24%) | **29** |
| **Total** | **66** | **59** | | |

CIOs mentioned value-for-money more frequently than their business partners, this may indicate a more operational focus on the part of the CIO. The delivery of the IS plan had most agreement and it is an area of frequent interaction between CIOs and the business. Managing the IS resources and vendors had least agreement and is the area where there is possibly the least interaction between CIOs and their partners.

Agawarl & Sambamurthy (2002) identify the importance of "paying close attention to human capital and relationships with vendors and consultants". Use of the term "human capital management" recognises the importance of the IT people resources as an enabler to realising business value through IT. While the research findings indicated the importance of recruiting and retaining the right staff, there was less focus on developing those strategic relationships with vendors. The councils made extensive use of external

consultants and vendors to provide services and skills they did not have in-house, but strategic use of vendors was not reported. This contrasts to the literature review findings where vendor development and relationship management at a strategic level was considered a core IS competency (Feeny et al., 2006; Peppard & Ward, 2004). In fact Lane & Koronos (2007) suggest that vendor management may be more relevant to small organisations that do not have the capability (resources) to complete all required activities in-house.

While delivering projects and managing issues are operational-type roles it is through these activities that the CIO engages his business peers and builds their trust. Agarwal & Sambamurthy (2002, p. 8), define these activities as primary and suggest that they are "the touch points through which business clients perceive the quality, contribution and effectiveness of the IT function." This certainly reflects the perspective of the interviewees and something that the CIO had to get this right before moving to the strategic value-add roles. The business partners in particular mentioned that value-add activities such as identifying opportunities (or risks) should not detract from business-as-usual and for the smaller councils in particular this was a concern.

### 6.2.4 How the roles relate to IS competency models

In the Literature Review section a number of models were presented that identified, IS competencies (or capabilities). The table below shows how these models align to the roles identified for council CIOs.

Table 7.1 CIO value-add roles within recent research literature

| **Role** | Feeney & Willcocks (1998) | Agarwal & Sambamurthy (2002), p8 | Broadbent & Kitzis (2005) | (Lane & Koronos, 2007) |
|---|---|---|---|---|
| Develop IS Vision | Leadership Capability ( p12) | Strategic Planning | Create a vision (p67) | Leadership in CIO role |
| Advise tech. opportunities | Business Systems Thinking( p12) | Value innovation | Business enhancement (p 182) | Business Alignment and innovation |
| Advise tech. risks & constraints | - | - | Manage enterprise and IT Risks (p 223) | - |
| Develop & promote IS Plan | Leadership Capability( p12) | Strategic Planning | Weave business & IT strategies (p129) | Strategic Planning in ICT |

| **Role** | Feeney & Willcocks (1998) | Agarwal & Sambamurthy (2002), p8 | Broadbent & Kitzis (2005) | (Lane & Koronos, 2007) |
|---|---|---|---|---|
| Manage the IS (human) resources | Leadership Capability( p12) | Human Capital Management | Develop high performing team (p197) | ICT Human resource management |
| Manage relationships with IS vendors | Contract Facilitation & contract Monitoring ( p14) | Relationship Management | Vendor management (p182) | Vendor/supplier relationship management |
| Deliver the IS plan through projects | Making technology work (p 13) | Solutions Delivery | - | Project Management |
| Manage business-IS issues | Relationship Building (p13) | Services Provisioning | - | - |

While the roles and capabilities identified in the literature to not provide a complete match with the research findings, it is clear that there is the potential for a common set of CIO roles to be defined. Significantly missing from the set of roles defined in the research are budgetary and financial management (they were defined as skills) and architectural planning. Also significant is that only the Broadbent & Kitzis (2005) set included a focus on technology risk.

Feeny & Willcocks, (1998) model talks about IS capabilities and therefore their perspective is broader and higher than describing specific CIO roles. Feeny & Willcocks' model also places more emphasis on external contracting and vendor relationships, than the research sample. This may reflect the fact that their model was based in part on studying "the retained capabilities needed to run effective IT outsourcing deals", while none of the councils in this study had significant outsourcing in place. The vendor relationships in the councils were mostly in regard to supply of business software solutions, although in some cases, vendors were used to meet resourcing short falls.

Agarwal & Sambamurthy (2002), refer to primary and secondary processes within the IT function. The emphasis of their research is on potential organisational models to deliver these processes rather than the individual competencies required. While Broadbent and Kitzis (2005) do not specify a broad range of roles for the CIO, they identify five critical roles that an organisation should retain in-house. These include; IT leadership, architecture development, business enhancement, technology advancement

and vendor management. The other suggested roles from their text shown in the table relate to specific chapters in their book which is a guideline to a CIO of the "key elements" they must undertake to be effective leaders.

Lane & Koronos (2007) on the other hand, looked at the critical competencies required for the CIO position as determined through an online survey of CIOs. Of their 16 critical competencies, six have been matched against the roles from the research.

### 6.2.5 Roles in relation to Council size

Council size may have an impact on the CIO roles identified. In the larger sized organisations the CIOs have more resources available and are less like to be responsible for delivering operational tasks. In the smaller councils it was noted that they may still be required to perform a "hand on" role. The table below shows the frequency with which the interviewees discussed the various roles by the council size.

Table 7.3 –Frequency of the role based on council size

| Role | Small Councils | Medium Councils | Large Councils | Total Times raised |
|---|---|---|---|---|
| Develop & promote vision for IS | 8 | 14 | 13 | **35** |
| Provide advice on technology opportunities | 9 | 16 | 12 | **37** |
| Provide advice on technology risks and constraints | 10 | 11 | 6 | **27** |
| Prepare and promote IS plan | 18 | 8 | 13 | **39** |
| Manage IS resources | 7 | 9 | 6 | **22** |
| Manage vendors | 9 | 9 | 9 | **27** |
| Deliver IS plan and projects | 24 | 19 | 12 | **47** |
| Manage and communicate IT-related issues | 9 | 11 | 9 | **29** |

Large and medium councils were more likely to discuss the value-add roles of IS vision and technology advice. Large councils were also less likely to raise the more operational (value-for-money) and the IT risks and constraints roles. This may reflect the fact that the CIO had other managers reporting to them with responsibility for these

activities and, in large councils in particular, the CIO role was seen as more strategic than in the smaller councils.

Small councils on the other hand were less likely to discuss the value-add roles, with the exception of developing the IS Plan. Developing and delivering the IS plan were more often mentioned by this group than any of the others. This was clearly seen as an important role for the CIO. These councils also valued a CIO who could be hands on due to the limited IT resources available.

Medium councils seem to be balanced between strategic and operational roles. Of all the groups they had the least focus on preparing the IS plan and most on technology advice. The move from a focus on the IS plan in small councils to focus on technology opportunities and vision in the medium and large councils may indicate a transition to a more strategic role for the CIO.

### 6.2.6 Roles in relation to functional responsibilities

The functional responsibilities may affect perception of their role. The table below shows the frequency with which the various roles were mentioned in relation to the CIOs functional responsibilities.

Table 7.4 –Frequency of the role based on functional responsibilities

| Role | Infrastructure only (6) | Split (6) | Enhanced (5) | Total Times raised |
|---|---|---|---|---|
| Develop & promote vision for IS | 9 | 13 | 13 | **35** |
| Provide advice on technology opportunities | 9 | 16 | 12 | **37** |
| Provide advice on technology risks and constraints | 11 | 10 | 6 | **27** |
| Prepare and promote IS plan | 13 | 13 | 13 | **39** |
| Manage IS resources | 10 | 6 | 6 | **22** |
| Manage vendors | 9 | 9 | 9 | **27** |
| Deliver IS plan and projects | 18 | 20 | 9 | **47** |
| Manage and communicate IT-related issues | 10 | 10 | 9 | **29** |

Those councils where the CIOs had a split or an enhanced responsibility place more emphasis on the strategic value-add roles more than those organisations where the CIO had "infrastructure only" responsibilities. In a "split" organisation, there may be a greater effort required to have a holistic approach to the IS environment, as one CIO stated:

*"As the environment is decentralised the question is not about how you align the IT strategy with the business, because the business does their own IT planning. It's more about how you ensure* ***consistency*** *in a decentralised environment." – CIO – split role*

This consistency was achieved by developing and promoting a vision and set of standards for the technology as well as being a key advisor to his business partners and having regular strategy meetings with other IT roles embedded within the business.

For the CIO's with an enhanced role, the strategic aspects are a core part of what they do: *"The CIO is about selling a vision, so you need to spark interest at a senior level about the possibilities with technology. You do this by painting a picture that the directors can understand and this allows them to see how it lines up against the outcomes that the business is seeking." CIO – enhanced role*

Those organisations where the CIO had an infrastructure only role were more likely to discuss the operational roles of delivering the IS plan and managing issues. They mentioned strategic roles less than the other two groups with the exception of advising on risks and constraints. The CIOs functional responsibilities appear to have an impact on the types of roles considered important for the CIO.

### 6.2.7 Summary

This review of the roles found that the CIOs in local government were expected to perform both strategic and operational roles. The larger the size of the organisation the more important the strategic aspects if the CIO roles appear to be. This is in line with the literature's position that the CIO is becoming more strategic, although the New Zealand local government context may not be as advanced in this direction as larger, better resourced private sector organisations.

There was a notable lack of emphasis on IT risk advice aspects of the CIO role in the literature, and the research indicates it that it is of significance to both the CIOs and their business partners, although some mentioned it was not being done due to time constraints. Another area where the roles identified in the research differed from the literature was in regard to vendor management, the literature focus of his was strategic where as in the councils it was operational.

Council size affects the perception of the CIOs roles, with CIOs in smaller councils being more operationally focused. The CIOs functional responsibilities also affect role perception, with CIOs with a broad responsibility being more strategically focused than those with an infrastructure only responsibility.

## *6.3 Structures*

According to the proposed model, roles are delivered through structures and processes to provide an organisational competency. These can be informal and formal and are embedded within the organisational context. When discussing the roles the interviewees also discussed associated processes and structures. These included both formal and informal internal structures. In this section the significant structures identified during the interviews are related to the roles as shown in the table below.

Table 7.5 –Structures used to deliver roles

| Structures | IS Vision | Tech. Opportunities | Tech. Risks | Develop IS Plan | Manage Vendors | Deliver Plan | Manage Issues | Total |
|---|---|---|---|---|---|---|---|---|
| Use formal documents | 9 | 2 | 2 | 9 | - | 2 | - | 24 |
| Through presentation | 4 | - | - | - | - | - | - | 4 |
| Through reporting manager | 6 | 6 | - | 4 | - | 7 | - | 23 |
| Through senior management team | 2 | 4 | 4 | 6 | - | 5 | - | 21 |
| Through governance body or steering group | - | - | - | 7 | - | 13 | - | 20 |
| Through a structured process | - | - | 2 | 5 | 5 | 7 | 6 | 25 |
| Through scheduled meetings/forums with peers | 2 | 2 | - | 5 | 10 | 7 | 10 | 36 |
| **Total formal** | **25** | **14** | **8** | **36** | **15** | **44** | **16** | **153** |
| Informal discussion with peers | 4 | 6 | 4 | 4 | - | 12 | 9 | 39 |

| Structures | IS Vision | Tech. Opportunities | Tech. Risks | Develop IS Plan | Manage Vendors | Deliver Plan | Manage Issues | Total |
|---|---|---|---|---|---|---|---|---|
| Informal discussion with senior managers | - | 2 | - | 2 | - | - | - | 4 |
| Through IS staff | 5 | - | - | - | - | - | 9 | 14 |
| Informal discussion with vendors | - | - | - | - | 9 | - | - | 9 |
| **Total informal** | **9** | **8** | **4** | **6** | **9** | **12** | **18** | **66** |

Overall the interviewees mentioned the use of formal over informal structures in relation to CIO roles. Formal structures in particular seem to be well established around developing, promoting and delivering the IS Plan and related projects. This reflects the fact that these activities are well established and embedded within organisational structures and processes. However extensive use of informal communication is used to support the management of smaller projects. Small councils in particular favoured the use of informal structures.

When providing strategic advice and IS vision to senior managers, i.e. the newer "value-add" activities, formal mechanisms were favoured. However these were often supported by using informal structures to influence decisions. This reflects what (Enns, McFarlin, & Huff, 2007) found that CIOs, while expected "to provide thought leadership on the potential for IS to support and enhance the strategy", may have difficulty being taken seriously. All the CIOs in this study were third tier and used their second tier reporting manager to influence strategy. This was supported by informal communications through their peers, who also presumably communicated to their own second-tier manager.

In communicating and providing advice to peers, informal mechanisms were favoured. Another mechanism for communication with the business at lower levels was through the IT staff. This was particularly favoured for managing issues. With operational activities a mix of informal and formal structures were recommended.

## *6.4 CIO Competence required for roles*

In the literature review, two broad areas of competence were defined; business competence and technology competence. During the interviews, the interviewees identified the skills, knowledge, experience and personal attributes required by the CIO to perform their roles. Some of these were directly linked to a role or activity for example technical knowledge is required to manage technical staff, one interviewee stated: "*ability to understand & communicate in technical terms is required so that the CIO can manage their staff" – Business Partner*

In other situation a competencies such as "broad business thinking" was mentioned that might apply across a number of roles.

In the section below the skills, experience and knowledge identified by the interviewees have been matched to appropriate roles. This builds a picture of which competences are deemed important for the value-add roles and which for the value-for-money roles. It also provides an explanation as to why some skills, knowledge and experience are valued in some of the organisations and not others.

### 6.4.1 Technology competence

(Broadbent & Kitzis, 2005) suggest that competencies required for an IS role will evolve as the organisation's demands of its CIO (and IS group) move from a commodity focus to a more strategic value-add focus. They identified five strategic roles which differ from those identified in the research and matched these to the IS competencies identified in the Gartner model. For example they identify vendor management as one of the strategic roles due to its relative importance with outsourcing models. With the councils however there were no large outsourcing arrangements and vendor management tended to be operational, value for money focused.

In the tables below, the IT skills, knowledge, experience and personal attributes identified during the interviews are matched to the roles. The second column indicates the number of times that competency component was raised during the interviews by CIO, their business partner, then in total. The next four columns indicate whether the component is important for the particular role.

Table 7.6 –Technology Competence components & value-add

| Competence component | Responses | | | Value-add Roles | | | |
|---|---|---|---|---|---|---|---|
| | CIO | Partner | total | IS Vision | Tech. Opportunities | Tech. Risks & constraints | Develop IS Plan |
| **Broad Technical** | | | | | | | |
| Broad range of industry knowledge | 5 | 6 | 11 | ✓ | ✓ | ✓ | ✓ |
| Understanding of future IS direction | 3 | 3 | 6 | ✓ | ✓ | ✓ | ✓ |
| Strategic (as opposed to operational) IT focus | 3 | 4 | 7 | ✓ | | | |
| Understanding of architecture | 2 | 2 | 4 | ✓ | | ✓ | ✓ |
| **Total** | **13** | **15** | **28** | **4** | **2** | **3** | **3** |
| **IT Management** | | | | | | | |
| Skills and or experience with IT consultancy | 1 | 3 | 4 | | ✓ | ✓ | |
| **Total** | **1** | **3** | **4** | **-** | **1** | **1** | **-** |
| **Technical expertise** | | | | | | | |
| Web or internet knowledge & expertise | 2 | - | 2 | | ✓ | | |
| Business analysis skills | 3 | 2 | 5 | | ✓ | | |
| **Total** | **5** | **2** | **7** | - | 2 | - | - |

Broad, strategic IT skills are determined to be required for the value-add roles. CIOs and their business partners were mostly in agreement about these. Two exceptions were those business partners who emphasised the important of skills and experience in consultancy and two CIOs who thought Web/internet knowledge important because it was seen as relevant to delivery of online services and thus an important part of their strategy development. This supports the literature view that broad industry-wide knowledge is more important at the strategic level than detailed technical knowledge.

While a lot of research focus has been given to the strategic aspects of the CIO role ((Agarwal & Sambamurthy, 2002)), the CIO must still continue to operate an effective IT organisation, delivering the IS plan and running a robust infrastructure. Often, a large proportion of this work is outsourced, placing more emphasis on the vendor

management capabilities (Willcocks & Feeny, 2006). For the councils in this research, the CIO was mainly responsible for the management and delivery of the IS infrastructure, with only the CIOs of the large councils having sufficient reports to have team leaders in place to manage operational activities. In fact these "supply side" aspects of the CIO responsibility were as important as the value-add roles, if not more (within the small councils).

Table 7.7 –IT Competency components & value for money roles

| **Competency component** | **Responses** | | | **Value-for-money Roles** | | | |
|---|---|---|---|---|---|---|---|
| | **CIO** | **Partner** | **total** | **Manage IS Resources** | **Manage vendors** | **Deliver IS Plan** | **Manage IS-related Issues** |
| **Broad Technical** | | | | | | | |
| Previous IT industry experience | 6 | 8 | 14 | ✓ | ✓ | ✓ | ✓ |
| Understanding of future IS direction | 3 | 3 | 6 | ✓ | ✓ | | |
| **Total** | **9** | **11** | **20** | **7** | **5** | **7** | **8** |
| **IT Management** | | | | | | | |
| Service delivery focus | 2 | 1 | 3 | | | ✓ | ✓ |
| Operations management (IT) | 3 | - | 3 | ✓ | | ✓ | ✓ |
| **Total** | **5** | **6** | **6** | **1** | **-** | **2** | **2** |
| **Technical expertise** | | | | | | | |
| Hands on ability/experience | 6 | 1 | 7 | ✓ | ✓ | | ✓ |
| Understanding of architecture (detailed) | 2 | 2 | 4 | | | ✓ | ✓ |
| Project Management knowledge | 5 | 2 | 7 | ✓ | ✓ | ✓ | |
| Records management knowledge | 3 | 1 | 4 | ✓ | | ✓ | |
| Web or internet knowledge & expertise | 2 | - | 2 | | | | ✓ |
| Business analysis skills | 3 | 2 | 5 | ✓ | | | ✓ |
| Knowledge of systems & applications | 2 | 2 | 4 | | ✓ | ✓ | ✓ |
| **Total** | **23** | **10** | **33** | **4** | **3** | **4** | **5** |

Previous IT experience and in some cases hands-on (for smaller councils in particular) was deemed most important across all the value-for-money activities. It was seen to allow the CIO to understand their staff issues as well as customer issues. Project

Management skills and experience were also deemed important, whether, as in smaller councils, the CIO managed projects or as in larger size councils, specific project managers were used. This supports Lane & Koronios (2007) finding that it was considered an important for a CIO to have sufficient project management experience to recognise when a project needed intervention and bring it back on track. Detailed-level IT knowledge gives the CIO credibility with staff and suppliers and provides their business partners with confidence that they would not be "held hostage" by the technologists.

### 6.4.2 Business management and behavioural competencies

In the Literature Review (section 3.4.1) a set of business, management and behavioural skills, knowledge and attributes were identified based on the literature. Leadership and management are different and have been separated in the table below which shows the business competence requirements determined for the strategic roles.

Table 7.8 –Value-add roles and Business Competence

| **Competence component** | **Responses** | | | **Value-add Roles** | | | |
|---|---|---|---|---|---|---|---|
| | **CIO** | **Partner** | **total** | **IS Vision** | **Tech. Opportunities** | **Tech. Risks & constraints** | **Develop IS Plan** |
| **Leadership** | | | | | | | |
| Business perspective or business acumen | 5 | 6 | 11 | ✓ | ✓ | ✓ | ✓ |
| Leadership skills (non-specified) | 2 | 1 | 3 | ✓ | | | ✓ |
| Corporate view & understanding of priorities | 0 | 5 | 5 | ✓ | ✓ | ✓ | ✓ |
| Strategic or big picture focus | 2 | 2 | 4 | ✓ | ✓ | ✓ | ✓ |
| Customer focus | 1 | 1 | 2 | ✓ | ✓ | | ✓ |
| **Total** | **10** | **15** | **25** | **5** | **4** | **3** | **5** |
| **Management** | | | | | | | |
| Financial skills | 5 | 4 | 9 | | | ✓ | ✓ |
| Negotiation skills | - | 4 | 4 | | | | ✓ |
| Strategic planning skills | 4 | 2 | 6 | | | | ✓ |
| Decision making skills | - | 2 | 2 | | | | ✓ |
| **Total** | **9** | **12** | **21** | **-** | **-** | **1** | **4** |

| Competence component | Responses | | | Value-add Roles | | | |
|---|---|---|---|---|---|---|---|
| | CIO | Partner | total | IS Vision | Tech. Opportunities | Tech. Risks & constraints | Develop IS Plan |
| **Behavioural** | | | | | | | |
| General communication skills | 2 | 4 | 6 | ✓ | ✓ | ✓ | ✓ |
| Ability to communicate in non-technical language | 4 | 3 | 7 | ✓ | ✓ | ✓ | ✓ |
| Relationship building skills | 1 | 3 | 4 | ✓ | ✓ | ✓ | ✓ |
| Teamwork (with peers) | 1 | 2 | 3 | ✓ | | ✓ | ✓ |
| Tenacity | 1 | 1 | 2 | | | ✓ | |
| Practical approach | 2 | 1 | 3 | | ✓ | ✓ | ✓ |
| Political savvy | 2 | 1 | 3 | ✓ | ✓ | ✓ | ✓ |
| **Total** | **13** | **15** | **28** | **5** | **5** | **7** | **6** |

The interviewees deemed leadership competence of more relevance for the strategic aspects of the CIOs role, this supports findings of other researchers (Broadbent & Kitzis, 2005; Lane & Koronos, 2007; Wu et al., 2008). Specific management skills are mainly important for developing the IS plan. This role can be both strategic and tactical, as it depending on the council context, in some councils it provides a mechanism for articulating IS strategy and in others it is the a mechanism through which major projects are defined and planned Important skills and abilities that enable the CIO to undertake this role effectively were reported as “ability to negotiate between contending parties” and “ability to develop and argue a business case”. In this role the CIO requires all the strategic high-level skills of the other value-add roles as well as a number of the more operational skills of the value-for-money roles.

For the more operationally focused “value-for-money” roles the set of skills and knowledge comprising business competence may differ.

Table 7.9 –Value for money roles and other competency components

| Competency component | Responses | | | Value-for money Roles | | | |
|---|---|---|---|---|---|---|---|
| | CIO | Partner | total | Manage IS Resources | Manage vendors | Deliver IS Plan | Manage IS-related Issues |
| **Leadership** | | | | | | | |
| Business perspective or business acumen | 5 | 6 | 11 | | ✓ | ✓ | |
| Customer focus | 1 | 1 | 2 | | | ✓ | ✓ |
| **Total** | **6** | **7** | **13** | **-** | **1** | **2** | **1** |
| **Management** | | | | | | | |
| General management skills or experience | 8 | 8 | 16 | ✓ | | ✓ | |
| Staff & people management | 5 | 3 | 8 | ✓ | ✓ | | |
| Financial Management | 5 | 4 | 9 | | | ✓ | |
| Vendor management | 1 | - | 1 | | ✓ | ✓ | ✓ |
| Negotiation skills | - | 4 | 4 | | | ✓ | ✓ |
| Decision making | - | 2 | 2 | ✓ | ✓ | ✓ | ✓ |
| Effective delegation | 1 | 1 | 2 | ✓ | ✓ | ✓ | ✓ |
| **Total** | **20** | **22** | **42** | **4** | **6** | **8** | **5** |
| **Behavioural** | | | | | | | |
| People skills (emotional intelligence) | 3 | 3 | 6 | ✓ | ✓ | ✓ | ✓ |
| Ability to communicate in non-technical language | 4 | 3 | 7 | | | ✓ | ✓ |
| Ability to communicate with technical staff & vendors | 4 | 4 | 8 | ✓ | ✓ | ✓ | ✓ |
| Relationship building skills | 1 | 3 | 4 | ✓ | ✓ | | |
| Teamwork (with peers) | 1 | 2 | 3 | ✓ | | ✓ | ✓ |
| Patience | 1 | 1 | 2 | | | ✓ | ✓ |
| Practical approach | 2 | 1 | 3 | | | ✓ | ✓ |
| Ability to set priorities | - | 2 | 2 | | | ✓ | ✓ |
| **Total** | **16** | **19** | **35** | **4** | **3** | **7** | **7** |

The more operationally-focused "value-for-money" roles require significantly less leadership and more management skills than the strategic value-add roles. For the CIO these are essentially management roles and as Zalesnik (1977) suggests, leadership and management roles are different activities. While a manager is focused on organising activity to meet the business goals, leaders focus on changing the business. Each of these will require a different set of skills and knowledge. The value-add roles are more

change-focused, while when the CIO is performing value-for-money roles he needs to be more management focused. In addition, while a manager achieves their outcomes by using "positional" power, a leader must work through influence and relationships. Relationship building competency was considered important for all the "strategically-focused" roles. Specific management skills and experience were deemed important for these value-for-money roles as they are delivery focused.

### 6.4.3 Organisational knowledge

As Broadbent & Kitsiz state (2005, p. 37) organisational knowledge is essential for a CIO "to gain the trust and acceptance" of business colleagues. The table below shows what aspects of this knowledge the interviewees perceived as important of the CIO for to the strategic roles.

Table 7.10–Value-add roles and organisation knowledge components

| **Competency component** | **Responses** | | | **Value-add Roles** | | | |
|---|---|---|---|---|---|---|---|
| **Organisational knowledge** | **CIO** | **Partner** | **total** | **IS Vision** | **Tech. Opportunities** | **Tech. Risks & constraints** | **Develop IS Plan** |
| External environment | | | | | | | |
| High level understanding of regulatory framework | 6 | 9 | 15 | ✓ | | ✓ | ✓ |
| Awareness of external factors which affect local government funding | 1 | 1 | 2 | | ✓ | ✓ | ✓ |
| **Total** | **7** | **10** | **17** | **1** | **1** | **2** | **2** |
| Organisational level | | | | | | | |
| High level understanding of goals organisational goals and objectives | 7 | 9 | 16 | ✓ | ✓ | ✓ | ✓ |
| Understanding of the council environment and culture | 3 | 4 | 7 | ✓ | ✓ | | ✓ |
| **Total** | **10** | **13** | **23** | **2** | **2** | **1** | **2** |
| Business Unit level | | | | | | | |
| Understanding of Business Unit goals and objectives | 8 | 8 | 16 | | ✓ | ✓ | ✓ |
| Understanding of core business processes | 1 | 3 | 4 | | ✓ | | |
| **Total** | **9** | **11** | **20** | **-** | **2** | **1** | **1** |

Both knowledge of the external environment and the organisation goals and objectives are considered important for developing the IS vision and plan, as the CIO needs to have an understanding of the future influences for the council. This agrees with the findings of Luftman & Brier (1999) that IT management knowledge of the business is an important enabler for alignment of IT with business strategy. Business unit level knowledge is more important in being able to advise technology solutions that will add value to the business processes and outcomes.

A different set of organisational knowledge components apply to the more operational roles of the CIO. The table below shows those aspects of operational knowledge identified in the research that are considered important for these CIO roles.

Table 7.11 –Value for money roles and organisation knowledge components

| **Competency component** | **Responses** | | | **Value-for-money Roles** | | | |
|---|---|---|---|---|---|---|---|
| **Organisational knowledge** | **CIO** | **Partner** | **total** | **Manage IS Resources** | **Manage vendors** | **Deliver IS Plan** | **Manage IS-related Issues** |
| Organisational level | | | | | | | |
| Understanding of the council environment and culture | 3 | 4 | 7 | ✓ | | ✓ | |
| **Total** | **3** | **4** | **7** | **1** | **-** | **1** | **-** |
| Business Unit level | | | | | | | |
| Understanding of Business Unit goals and objectives | 8 | 8 | 16 | ✓ | | ✓ | ✓ |
| Detailed level understanding of specific legislation | 2 | 3 | 5 | | | ✓ | ✓ |
| Understanding of core business processes | 1 | 3 | 4 | | ✓ | ✓ | ✓ |
| Understand business issues | 4 | 3 | 7 | | ✓ | | ✓ |
| Understand business language | 7 | 3 | 10 | | | ✓ | ✓ |
| **Total** | **22** | **20** | **42** | **1** | **2** | **4** | **5** |

Understanding the organisational culture is important for the CIO when managing their staff and delivering the plan. However specific business unit knowledge is important for

all the operational roles performed by the CIO as it is often within the business unit areas that projects are delivered and issues resolved.

#### 6.4.3.1 Knowledge networking

Basselier & Benbasat (2004, p. 680) suggest that "knowing where knowledge resides within and outside the organisation" is a key component of the individual's competence. The interviewees agreed with this, stating it was as important to "know who knows" as it was to know the details about specific business areas or legislation. CIOs used a variety of informal and formal mechanisms for getting the knowledge about the organisation and business units as in the table below.

Table 7.10 – structures used for gaining knowledge

| Method of gaining knowledge | Organisational level | Business Unit level | Total |
|---|---|---|---|
| Review formal documents | 3 | 3 | 6 |
| Attend meetings or forums | | 6 | 6 |
| Management issued memos | 3 | | 3 |
| **Total formal** | **6** | **9** | **15** |
| Discussion with peers | 5 | 9 | 14 |
| Discussion with senior manager | 4 | | 4 |
| From business expert | 10 | 5 | 15 |
| From IS staff | | 6 | 6 |
| **Total informal** | **19** | **20** | **39** |
| External formal courses | 4 | - | 4 |
| Industry Networks | 3 | - | 3 |
| **Total external** | **7** | **-** | **7** |

When gaining knowledge about the organisation or business units, informal mechanisms were favoured over formal ones. CIOs most preferred method of gaining organisational knowledge was through the business experts and managers. IS staff were also a source of business unit knowledge in particular in relation to issues and opportunities. In the largest council there were two customer relationship managers whose specific role was to provide this interface in conjunction with the CIO. In those councils where IT staff were embedded within the business or worked closely with a particular business area they became an important link for the CIO with the business.

## 6.5 Summary

By comparing the roles identified to those within literature on the CIO roles and IS competencies, it was found that the roles performed are similar to those found in other organisations. However a number of the local government CIOs have a more operational focus than their counterparts in the private sector. Some of the key points relating to local government CIO roles are:

1. Local government CIOs are not usually involved in setting direction, but rather are involved at a later stage advising how technology can enable the business outcomes. Usually strategy is set at senior management and is based on the LTCCP, which is a formal document created in consultation with a number of community and central government parties that sets the direction for the council.
2. Vendor relationships are usually operational in nature rather than strategic as models like Feeny & Willcocks (1998) IS capabilities would suggest. CIOs are more focused on managing vendor issues than seeking new opportunities with vendors.
3. Local government CIOs provide communicate with senior management and their business colleagues in a number of ways. Formal communications are preferred for communicating with senior management and also most often used in medium and large size councils. In the small councils an informal approach works best given the small size of their management teams.
4. There are two key (lynch-pin) roles that are considered the most important by all the participants. They are; develop and promote the IS Plan and deliver the IS Plan. The CIO must successfully deliver these roles to build the trust and confidence of his business customers.
5. Areas of technical and business competence were identified and matched to roles. As shown in the diagram below the two types of roles require different set of skills, knowledge and attributes:

a. Broad industry knowledge, leadership skills and high-level organisational knowledge were identified as more important for the strategic value-add roles
b. IT management skills, technical expertise, general management skills and business unit knowledge were identified as more important for the operational value-for-money roles
c. Interpersonal skills and personal attributes are important for both roles although different attributes may be required. In particular communication both technical and non-technical was valued in both types of roles.

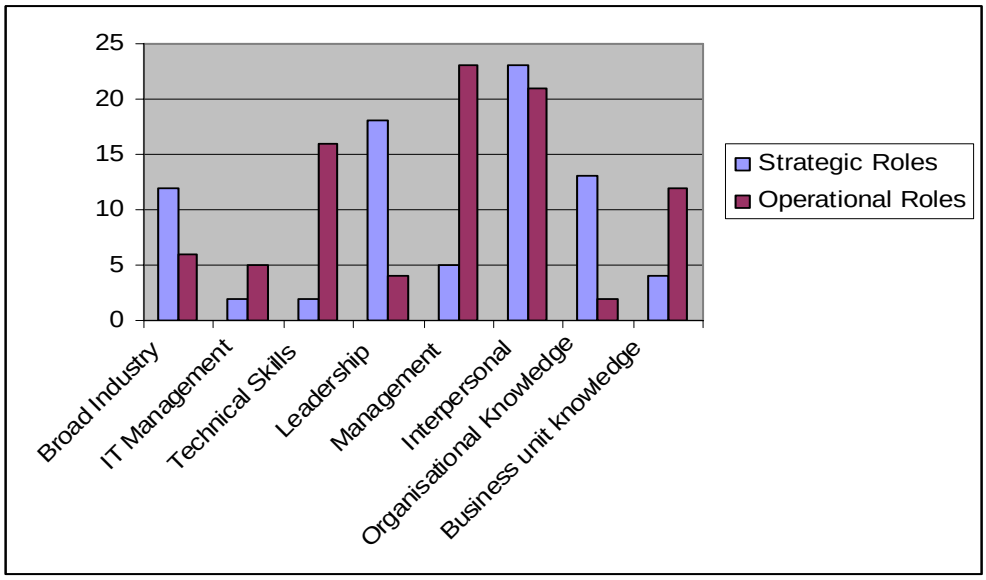


Figure 6.1 areas of competence relevant to roles

# 7 Conclusion:

This research set out to explore the CIO role in local government through the perception of the CIOs and their business partners. It found that CIOs and their business partners do not always agree on what their role should involve. Business partners in particular may be looking for more strategic input from their CIOs. CIOs themselves must struggle to balance these strategic role requirements with the operational focus on managing the IT/IS function.

Because local government follows a prescribed process for setting their strategic direction which involves external consultation, CIOs are not usually involved. Their role with council strategies relates to provision of advice on how technology can assist with delivery of outcomes. In this context technology does not provide competitive advantage and must be cost-constrained. CIOs must be able to provide value-for-money to their rate payers. Their roles may, therefore, be less strategic than their counterparts in large private sector organisations that have been reported in previous research on roles.

By using the modified IS capability model outlined in section 3.5 the underlying skills, knowledge and attributes identified during the research could be linked to the roles and capabilities required by the CIO. It supports previous research that identified business competence as critical to the CIO in their leadership roles but this must not be at the loss of their industry knowledge. Further in small organisations, CIOs must have more detailed level "hands on" knowledge (both IT and organisational) to meet the operational demands of their role

## *7.1 Recommendations*

Some of the recommendations that can be drawn from this research for CIOs and their organisations:

- CIOs need to continue to manage their IS environment, but must strive to step up to the role of strategic advisors on technology to the business. This advice needs to cover the risks and constraints from legislation and standards as well as the technology itself. Where they lack the time to deliver this they must look for creative ways to do this such as using their own established local government networks.
- Organisational knowledge both of the external and internal environment is a critical competence for the CIO. It allows the CIO to effectively prioritise the business IT requirements and well as identify and offer solutions that benefit the business. Without this knowledge the CIO is unable to develop an effective IS Vision for the organisation. Organisations need to be aware that incoming CIOs need tome to build

this knowledge and facilitate in through an on-boarding programme that introduces the CIO to the diverse business areas within council.

- Business partners want to learn about and understand the CIO's IS vision, while the CIOs have tended to keep this to themselves. CIOs need to document their vision and develop a plan to promote it within their organisation

## *7.2 Limitations and Directions for Future Research*

This research looked at the CIO role in local government context. It found that expectations of the role are affected by the public sector context and may differ from private sector. The organisations in the study were for the most part small to medium sized organisations. Therefore some of the differences identified in the roles may relate equally well to small private sector organisations. Further research comparing small public and private sector organisations would help to identify how public and private sector affect CIO role expectations.

The research identified and linked business and IT competence to the roles. But this was achieved where an interviewee mentioned the competence in the context of the role. The linking was undertaken through the researcher interpreting the interviews and requires validation. There is limited research individual skills and attributes to the various roles performed by CIOs. Basselier & Benbasat (2004) that links business competence to IT-Business relationships, Peppard & Ward (2004) define levels of IS competency at the organisational level but do not identify the individual skills, knowledge and attributes required for these and others are focused either on roles or IS competencies without identifying the underlying skills and knowledge. (Gottschalk, 2000; Grover et al., 1993; Lane & Koronos, 2007) Further research that validates the different skills, knowledge and personal attributes required for each role performed by a CIO would be useful both for CIOs and for their organisations.

Finally a call for some clarity and agreement on use of terms defining competencies, competence and capabilities within IS research on CIO roles. This research used a modified model based on Peppard & Ward (2004), to assist with defining the use of

terms in the research. This model was useful as it allowed a focus on the skills, knowledge and attributes that form a single area of competence in relation to a single individual performing a role. There is a need to understand these individual-level competences as much as the organisational level IS competencies. The closeness of the terms however can lead to confusion. Several authors have recently used IS competencies to refer to a set of roles or combined capabilities offered by the IS function. This term is used interchangeably with capability or role (or even function). Clarity on these terms would greatly assist the area of CIO role research.

### 7.2.1 Final words

This study started with Broadbent & Kitzis quote that "Two paths lie ahead of today's CIOs. One leads to becoming a trusted senior executive leader of the enterprise; the other leads to a technical management, 'just keep the lights on and do it cheap' role". They suggest it's up to the CIO to choose but this study has found that in the NZ local government context, the CIO may well have to follow both paths. They do not yet have a place in the senior management team, nor do many of them expect to. They are, however, striving toward the role of trusted advisor but this must be achieved while continuing to provide a robust, value-for-money IS environment.

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