The Role and Requisite Competencies of the Public Sector CIO: a Two-sided Perspective

Val Hooper and Beverley Bunker
School of Information Management, Victoria University of Wellington, Wellington, New Zealand
val.hooper@vuw.ac.nz
beverley@knowledgeweavers.co.nz

Abstract: A considerable body of research exists on the role, and desired capabilities and competencies of the CIO. However, most of these studies have been executed in large, private sector organizations. It seems that the challenges faced by public sector CIOs are often very different to those in the private sector, and this might place different requirements on them in terms of knowledge and competence, as well as the roles they fulfil. To date, there has been little exploration into such requirements in public entities. To address this gap, exploratory research was conducted into the role and competency expectations of CIOs in the public sector, and into the impact of the public sector context. A dyadic approach, involving both CIOs and their business colleagues, was adopted in order to gain more meaningful insights. Semi-structured interviews were conducted with both the CIO and the head of their main internal "business" partner of 17 local government organizations. The findings indicate that the CIOs and their business partners differ significantly in their views of required competencies. The business partners require a business knowledge and focus similar to theirs, and most manifest scant regard for the technical expertise necessary or the technical requirements of the organization. IT is there to support them. The government environment often places more onerous constraints on CIOs than in the private sector, especially so in terms of reporting level; the ability to influence strategy; decision making flexibility; and resourcing. The findings from this research extend the application of the RBV and also provide greater understanding of the competencies and roles of the CIO. It also provides insights for recruiters of public service IT professionals and CIOs, human resources managers, as well as for providers of training programmes.

Keywords: CIO, competency, knowledge, role, public sector, dyadic approach

1. Introduction

The role of the CIO has been the focus of research for a number of years. Basselier at al. (2004) were among those who explored the requisite capabilities and competencies of the CIO. They identified both the types of knowledge and experience that was desired. However, their research, like many others on the role and competencies of the CIO, was conducted in large private sector organizations.

The public sector in most countries is a sizeable employer, providing a large number of diverse business activities and a wide range of services to their community. Many factors such a legislation, politics, and resourcing, place very different demands on public sector CIOs to those in the private sector. There might thus be differences in terms of the roles they fulfil and the requisite knowledge and competence. To date, there has been little exploration into such requirements. To address this gap, exploratory research was conducted into the role and competency expectations of CIOs in the New Zealand government context, and into the impact of that context. A dyadic approach, involving both CIOs and their business colleagues, was adopted in order to gain more meaningful insights. The following sections report on the underpinning literature, the data collection, the findings, discussion and conclusions of the research.

2. Literature review

The competencies required for the CIO to realise their position as a strategic partner with the business has been of particular interest to researchers (Basselier & Benbasat, 2004; Broadbent & Kitzis, 2005; Lane & Koronos, 2007; Wu et al., 2008). 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 organizsations 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 the government sector.

The role of the CIO has undergone considerable change – from data processing manager in the 1970's (Lane & Koronos, 2007) to senior executive responsible for aligning ICT with business goals (Broadbent & Kitzis, 2005). To a large extent, the role of the CIO is a reflection of the role that IS is expected to fulfil. IT/IS functions can be

divided into two key areas: those concerned with maintaining a stable and robust service (i.e. "keeping the lights on") and those concerned with delivering business changes (i.e. "adding value") (Gottschalk, 2000; 2007) he CIO role thus moves between technologist, strategist and leader – very much like a chameleon (Remenyi et al., 2005), or as Chung and Mooney (2009) saw it, from functional head, to strategic partner, to business visionary, and then a possible split between innovation leader and IT leader.

The resource-based view (RBV) of an organization provides a basis for identifying and describing competencies required to support organizational roles (Bharadwaj, 2000; Garavan & McGuire, 2001). The RBV maintains that organizations achieve and sustain competitive advantage through the acquisition and deployment of resources (Peppard & Ward, 2004). Capabilities refer to a firm's ability to assemble, integrate and deploy resources, usually in combination (Bharadwaj, 2000) thereby transforming inputs into outputs of greater worth. Capabilities subsume competencies (Bharadwaj, 2000).

Using the RBV, Feeny and Willcocks (1998) identified a set of nine core IS capabilities to support the organization's ability to successfully exploit IT: leadership, relationship building, contract facilitation, informed buying, making technology work, architecture planning, business systems thinking, vendor development, and contract monitoring. Leadership and informed buying are regarded as "lynch-pin" capabilities, (Feeny et al., 2006). Each of these capabilities requires business, technical and interpersonal skills to a greater or lesser extent. Broadbent and Kitzis's (2005) identified five critical roles with matching competencies through which CIO leadership is achieved: providing an IS vision; IT governance; integration of the IT and business strategies; IS/IT staff management; and vendor management, while Gottschalk (2000) identified nine leadership roles of CIOs: three managerial and six consultancy roles. However, he did not define the relevant competencies. Peppard and Ward (2004) identified three macro competencies (business knowledge, skills and experience, technical knowledge, skills and experience, and behaviour and attitude) which comprise an overall IS capability for the organization. Basselier and Benbasat (2004) identified the CIO's organization-specific competence and interpersonal management as contributing to business competence, and Preston et al (2008) defined four IT profiles which they matched to IT contribution to the organization, as did Weill and Woermer (2013), although they identified slightly different profiles.

In summary, models such as Feeny and Willcocks' (1998) IS Capabilities and Peppard and Ward (2004) show the link between the organizational IS capability and the individual skills and knowledge of the CIO, while others, such as Basselier and Benbasat (2004) and Wu et al. (2008) focus on defining the components that comprise business and technology competency. This has allowed a set of components for each broad competency area to be identified (see Table 1).

Only a few researchers, such as Lawry et al. (2007) and Curran (2006) have explored the role of the CIO in the public sector, where indications are that although the CIO is expected to play a significant strategic role, the range of technology management is far broader than in the private sector and the shift will be more towards government processes, people and business efficiencies. However, much is still unknown and Lawry et al. (2007) have pointed out that the public sector has lagged behind the private sector in identifying the need for someone to take on the role of a CIO, and indeed of their requisite competencies. Given the changing role of the CIO (Smith & McKeen, 2010), greater emphasis has been laid on the innovation aspect of their responsibilities (Chung & Mooney, 2009), and this has been identified as being particularly necessary in the public sector (Irani & Ellman, 2008).

In addition, drawing on the alignment literature (Chan & Reich, 2007), there might be differing perceptions between the CIOs and their business partners of the requirements of the CIO. Given that the "business" is the customer of the CIO (IT/IS) it is important that the differences in perceptions are reconciled in order for the CIO to have greatest effect. In order to address that gap, this research's objectives, within the public sector context, were to:

- Identify the key roles performed by CIOs and the individual knowledge, skills and competences required to support them
- Ascertain the extent to which CIOs and their business partners' perceptions of these roles and competences differ
- Determine how the public sector context impacts on these roles

Table 1: Business and technical competency expected of CIOs: indications from the literature

Business competence					
Business domain knowledge		Management and leadership competency		Behavioural skills and attributes	
Organizational Overview	Basselier & Benbasat, 2004	Strategic perspective	(Emiliani, 2003) (Broadbent & Kitzis, 2005)	Interpersonal communication	Basselier & Benbasat, 2004
External environment	(Broadbent & Kitzis, 2005, p. 38)	Leadership	Kotter (1990) (Broadbent & Kitzis, 2005)	Relationship building	(Broadbent & Kitzis, 2005)
Organizational units	Basselier & Benbasat, 2004	Human resource management	(Lane & Koronos, 2007)	People skills	(Kotter, 1990)
Organizational responsibility	Basselier & Benbasat, 2004	Budgetary & financial management	(Lane & Koronos, 2007)	Problem solving and creative thinking	(Broadbent & Kitzis, 2005)
IT/Business integration	Basselier & Benbasat, 2004	Business planning	(Broadbent & Kitzis, 2005)	Team work	(Broadbent & Kitzis, 2005)
	(Broadbent & Kitzis, 2005)	Decision making	(Emiliani, 2003)	Learning	(Willcoxson & Chatham, 2006)
High-level business knowledge	(Broadbent & Kitzis, 2005)	Change Management	(Broadbent & Kitzis, 2005) (Wu et al., 2008)	Openness/adaptability	(Broadbent & Kitzis, 2005)
Knowledge networking	Basselier & Benbasat, 2004			Results focus	(Broadbent & Kitzis, 2005)
Technical competence					
IT industry knowledge		IT management expertise		IT technical expertise	
Broad industry concepts	(Broadbent & Kitzis, 2005)	IS strategic planning	(Broadbent & Kitzis, 2005)	IS Risk and Security management	(Lane & Koronos, 2007)
Technologies	(Broadbent & Kitzis, 2005) (Basselier et al., 2001)	IS processes and procedures	(Lane & Koronos, 2007)	IS project management	(Lane & Koronos, 2007)
IT solutions	Basselier & Benbasat, 2004	IS Governance and regulatory compliance	(Lane & Koronos, 2007) (Feeny & Willcocks, 1998)	IS asset management	Basselier & Benbasat, 2004 (Peppard & Ward, 2004)
Architectures	(Broadbent & Kitzis, 2005) (Lane & Koronos, 2007)	Vendor and Supplier Management	(Feeny & Willcocks, 1998)	Application development and support	Basselier & Benbasat, 2004
Access to IT knowledge	Basselier & Benbasat, 2004	IT contract development and negotiation	(Peppard & Ward, 2004)		
		IS Service delivery management			

3. Data collection and analysis

Because the research was exploratory, a qualitative research method was chosen (Klein & Myers, 1999). The sample consisted of 17 New Zealand public sector organizations. Local governments, of which there are 73, were selected because they represent the largest body of public sector organizations in New Zealand. They vary in size and potential participant organizations were selected based on their size, so as to ensure a good range of in the sample. The participating organizations were also chosen based on convenience, especially geographic proximity to the capital where the researchers were based. Each CIO was initially invited to participate and if agreeable, then to nominate a "business partner" with whose area of responsibility It had

significant dealings. Only three CIOs declined to take part – mainly for temporary organizational pressure reasons.

Semi-structured interviews were conducted with both the CIO and the head of their main internal "business" partner. The interviews were recorded and transcribed. The responses were then analysed, coded and categorized according to themes and sub-themes (Cresswell, 2003; Douglas, 2003). Apart from recording the organizational demographic data, the initial categorization followed the general structure of the interviews which was according to CIO experience and knowledge (competence); organizational knowledge; and IT-business integration. The findings are reported in the following sections.

4. Findings

As part of its responsibilities under the Local Government Act (2002), each local government produces a long-term council community plan (LTCCP) that sets out activities planned for the next 10 years. Many councils do not have a separate organization-level strategy and the LTCCP forms the basis for their annual plans and budgets.

The respondents represented a range of different sized local governments, from small (<250) to large (>1250). The number of IT/IS staff varied more or less proportionately from <10 to nearly 90. The local governments cover a wide area of responsibilities – up to 50 maximum. The range of functions undertaken by the IT/IS units include business change functions (project management; business analysis; business consultancy) and operational functions (infrastructure support; telephony; applications support; GIS; web; records management). These functions are distributed in a number of different ways, and in some organizations the IT/IS function was split under two managers.

The environment is highly regulated, with activities being defined by central government through legislation and regulations. Budgets are limited and consequently, so are resources. The local councils' customers are also their shareholders and expenditure, indeed all council activity, is open to public scrutiny. The local governments are thus very risk averse, despite the presence of political agendas. However, the environment is not competitive in the same way as the private sector.

The areas in which the interviewees felt it was important for local government CIOs to have knowledge, skills and experience, fell into three categories: IT competence, business competence; and organizational knowledge. They also identified a number of areas where CIOs can provide added value to the organization, and how they can best deliver on their services and advice.

4.1 IT competence

In terms of IT competence, all interviewees thought that IT experience was essential but while the CIOs thought that hands-on experience was most useful, the business partners thought it was definitely not a requisite. This division was particularly evident in large organizations, whereas in the smaller and medium-sized councils, often the CIO had to turn his/her hand to resolving more hands-on issues. Reasons offered in support of the need for technical experience generally included:

- 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".

However, while recognizing the importance of IT experience, one CIO of a large council cautioned:

"*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"*

To complement the IT experience, the requisite technical knowledge and skills mentioned are depicted in the table below.

Table 2: Requisite technical knowledge and skills

IT industry Knowledge area	IT Management Skills	Technical Skills
Broad range of industry knowledge	Change Management	Web/Internet
Currency/future direction	Consultancy (advice/guidance)	Network architectures & connectivity
Strategic focus	Service delivery (focus)	Project Management (experience/knowledge)
Understanding of architecture	Operations management	Records Management (principles)
	Strategic Planning (IT)	Business analysis
		Applications & support

Both groups of interviewees stressed the importance of a broad range of IT industry knowledge. This includes both technology and wider information management knowledge, and reflects the variety of activities the IS function is expected to perform. It also reflects the need to be able to embrace more recent developments in the industry.

While the requisite IT industry knowledge and skills refer more to leadership roles the CIOS are expected to perform, the IT management skills refer more to the delivery aspect of the role. The CIOs emphasized the ability of CIOs to have skills in both strategic planning and in operations management so as to understand the whole range of the function's activities, but the business partners' main focus was on consultancy and the provision of advice and guidance.

Technical skills, and the variety of them, were understandably much more frequently mentioned by the CIOs than their business partners. In particular, the CIOs emphasized project management experience and knowledge, but also noted the importance of business analysis skills. Also knowledge of Web/internet was noted as important as it was considered a key enabler of the business.

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

4.2 Business competence

In terms of business competence, while most CIOs felt that local government experience was useful, the business partners were of the opinion that it was not important. In particular, the CIOs 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.

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
- The language and culture of the council

Some interviewees felt that private sector experience could add value, as exposure to a commercial environment could bring a fresh approach. However, both groups thought that it was important to learn about the organizational culture and environment.

The requisite business knowledge and skills noted are presented in the table below.

Table 3: Requisite business knowledge and skills

Broad business knowledge	General Management Skills	Leadership Skills	Interpersonal Skills
Business perspective or acumen	Managerial skills & experience	Leadership skills	People skills (Emotional Intelligence)
Customer focus	Staff/people management	Business case in relation to IT(cost-benefit)	General communication skills
Corporate view & understanding of priorities	Effective Delegation	Ability to negotiate (between contending bus. Interests)	Ability to communicate in a non-technical language
	Financial Management & Budgetary skills	Strategic perspective - big picture focus	Ability to communicate with technical staff/vendors
	Decision making skills	Future vision	Relationship building skills
	Vendor Management		Team Work (with peers)
	Strategic & business planning		
	Resource Management		

Regarding broad business knowledge, both the CIOs and particularly their business partners felt that it was important for the CIO to possess a business perspective or acumen.

"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

The business partners also felt it was important for CIOs to have a corporate view and understanding of business priorities, although this did not receive any mention by the CIOs themselves.

As far as general management skills were concerned, both groups of interviewees stressed the importance of the CIO possessing managerial skills and expertise, and especially financial management and budgetary skills. They also stressed the importance of staff/people management, and the CIOs emphasized the necessity of strategic and business planning skills.

Of the necessary leadership skills, once again the CIOs and their business partners had similar views: that it was important for CIOs to have a future vision.

"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

The business partners also emphasized the ability of CIOs to negotiate between contending business interests.

In terms of people skills, the business partners focused on interpersonal skills and general communication skills.

"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

The CIOs, on the other hand, had a more specific focus, and emphasized the ability of CIOs to communicate in non-technical language, and the ability to communicate with technical staff and vendors.

Some interviewees mentioned the personal attributes that would facilitate interpersonal skills. These included patience, tenacity, being results driven, having the ability to prioritize, and especially, having a practical approach, and being politically savvy.

4.3 Organizational knowledge

Despite not being involved in the strategic planning, the CIOs, and to a slightly lesser extent the business partners, felt it was extremely important for them to have a good understanding of the organizational goals and objectives. Although the business partners did not think it was necessary for the CIOs to be involved in setting those goals, they and the CIOs felt that the CIOs could provide meaningful input in the form of advice

on technological innovations and solutions, and on how technology could enable the organizational strategies that would achieve the goals.

"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

Both groups of interviewees felt that it was important for CIOs to understand the legal framework, but more at a higher level of 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

It was, however, important for the CIOs to know where to get the information when needed, and this was usually from business managers and experts or a legal advisor.

Regardless of size their council, the CIOs had to provide ICT services and support applications across the breadth of the business activities. Both groups of interviewees felt it was very important for CIOs to have a good understanding of the business goals and drivers of the different business units.

"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

In addition, the CIOs emphasized the importance of using the business language of the relevant unit in their communication with them.

"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.

Although the CIOs felt that their involvement in the business unit planning was not sufficient, the business partners felt that it was sufficient for CIOs to be informed of potential IT projects from the business plans. Others felt that the CIO needed to be involved before the business plans were finalized.

4.4 Roles of the CIO

The role of the CIO was also explored, particularly with regard to the integration activities whereby the CIO could contribute most significantly to the organization. The interviewees noted seven distinct, integration roles for the CIO. These fell into two categories: the strategic value-adding aspects of the CIO's task; and the more operational IT management and delivery.

4.4.1 Value add

Three areas of value-added roles were identified: communication of innovative uses of technology; communication of the impact of IT legislation and standards; and the CIO having a vision for IT.

Both interviewee groups felt it was important for the CIO to promote the innovative uses of technology, as well as new developments which might assist the organization; and that the best way to do this was for the CIO to communicate with the relevant business unit manager, in a variety of ways, and for the CIO to attend seminars with the business managers.

"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

In terms of relevant IT legislation and standards, the business managers were more emphatic that this be discussed with the relevant business managers, rather than in more general forums.

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

Both CIOs and their business partners thought it was particularly important for the CIO to have a clear vision for IS and to communicate that vision, which needs to fit in with the business vision.

"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. The IT Manager needs to lead from the front as they know where technology is going." – Business partner medium council

4.4.2 IT management and delivery

With regard to the management of the IT organization and the delivery of their services, four aspects emerged: prioritization of IT projects and expenditure; managing and reporting IT projects; communication with key stakeholders; and management of and communication with vendors. In terms of prioritization, particularly the CIOs and their business partners of the larger organizations felt it was important to have an IS governance group in place to make the key decisions. The CIOs also felt that they should prioritize infrastructure projects, and that this should be done via formal procedures. CIOs also felt particularly strongly that formal steering groups should be used for major projects and that key stakeholders should be involved in these.

In terms of communicating IS/IT matters, the CIOs felt that this was best done through formal reports to senior management but also by informal meetings with their business peers. The business partners agreed on the latter channel.

Both interviewee groups felt that informal discussions with vendors which sometimes included the business partners was the best way to go. 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 advised them on potential business changes and the resources to determine the impact of these.

"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.

Generally, the smaller councils preferred more informal integration activities whereas medium-sized and larger councils preferred more formal processes and reporting mechanisms.

5. Discussion

There has been considerable research into the competencies required by CIOs, and to a large extent, those noted in the interviews reflect the literature. While this research does not claim to have identified an exhaustive list of competencies required by the CIO in the government sector, what is particularly important is

the respective focus of the CIOs and their business partners, the extent to which the competencies relate to the different categories of roles identified, and the impact of the public sector context.

Regarding technical competencies, on the whole, high-level broad industry skills were the most often mentioned as important for the CIO role. 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.

In terms of business competencies, those specific competencies identified support the Basselier and 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 more important by the CIOs, a broad business knowledge or perspective was considered extremely important by both CIOs and their partners. A strategic and visionary perspective, and communication and people skills were valued, although the CIOs focussed more on the specific IT details than their business partners. They were very conscious, too, of the need to communicate in language that the business partners could understand.

The interviewees agreed on the importance of a CIO having a broad high-level organizational knowledge, in particular with regard to the organizational goals and objectives, organizational culture and environment, legal framework, and business unit goals and drivers. In that way they could advise on innovative uses of technology to support and enhance these areas' performance. This reflects the views expressed by Jones (2012) and Chun and Mooney (2009). They suggested that this is gained through discussion with business managers favouring informal discussion over more formal arrangements.

A key theme that emerged is the importance of the CIO's role as an advisor to the business, both during organizational strategic planning and at the business planning level. The roles of the CIO were divided into two areas:

- 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.

Regarding the value-add aspect of the IT-business relationship, there was a clear indication that the business looked to the CIO for advice and guidance on new technologies and IT-related legislation. Informal two-way communication was preferred. The majority of the interviewees felt that it was important for the CIO to have a vision for IT and that this be well communicated and aligned with the business vision.

Within the IT management and 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.

Combining competence with roles, the relative emphasis on the strategic versus the operational is depicted below.

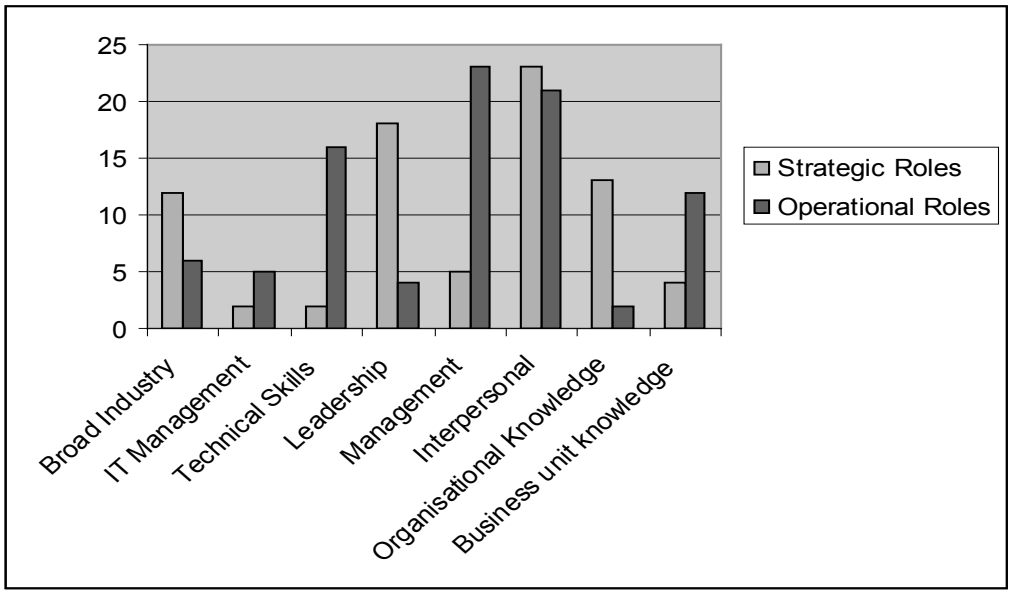

Figure 1: Areas of competence relevant to roles

The two categories of roles require different sets of competencies:

- Broad industry knowledge, leadership skills and high-level organizational knowledge were identified as more important for the strategic value-add roles
- IT management skills, technical expertise, general management skills and business unit knowledge were identified as more important for the operational value-for-money roles. General management skills and technical skills were regarded as especially necessary.
- Interpersonal skills and personal attributes were seen as being particularly important for both roles although each role might require slightly different attributes. In particular, both technical and non-technical communication were valued in both categories of roles.

As with the CIO's competencies, the findings largely reflect the competencies relevant for the various roles as identified in models such as those of Feeny and Wilcocks (1998), Broadbent and Kitzis (2005) and Lane and Koronos (2007). However, the local government context places certain demands and constraints on the role of the CIO. Some of the key points relating to local government are:

- Local government CIOs are not usually included in top council management, and consequently are not involved in setting strategic direction which is based on the LTCCP. Rather, they are required to have a strategic perspective and are involved at a later stage advising how technology can enable the business outcomes. This type of arrangement can be constraining.
- Vendor relationships are usually operational in nature rather than strategic as models like Feeny and Willcocks' (1998) IS capabilities would suggest. CIOs are more focused on managing vendor issues than seeking new opportunities with vendors.
- There are two key (lynch-pin) roles that are considered the most important by all the participants: to promote the IS plan; and deliver the IS plan.
- The management of a particularly wide range of stakeholders, or client groups, places very large demands on the CIOs, not only on the need for excellent communication skills, political skills, and the ability to prioritise between often conflicting demands, but also requisite knowledge of the frameworks within which the groups operate. Additionally, when resources are stretched, the CIO is often expected to adopt a "hands on" role, and demonstrate excellent technical skills.
- Local government CIOs communicate formally with senior management and with peers in larger organizations, but informally with peers in other organizations.

6. Conclusion

The research aimed to explore the role and competency expectations of CIOs in the public sector context, and to determine the impact of that context. A dyadic approach, involving both CIOs in New Zealand local government and their business colleagues, was adopted in order to gain more meaningful insights.

Three categories of competence were explored: IT competence, business competence, and organizational competence. Two categories of roles were identified: strategic, value-add roles, and operational IT management and delivery roles. The respective competencies were matched against the roles. In general, the competencies and roles identified reflect those noted in the literature. However, the CIOs and their business partners differed significantly in their views of required knowledge, skills and competencies. The business partners required a business knowledge and focus similar to theirs, and most manifested scant regard or concern for the technical expertise necessary or the technical requirements of the organization. Their perspective was that IT is there to support, advise and guide them. CIOs, on the other hand, were aware of the necessity of possessing not only the broad business and organizational knowledge, but also the more detailed and wide IT knowledge required to cover all the many client groups and activities of the local government.

The findings from this research extend the application of the RBV and provide greater understanding of the competencies and roles of the CIO. In particular, it indicates the value of considering different significant stakeholders' perspectives on the requisite competencies of the CIO and on the roles he/she is expected to play. By considering different perspectives, the potential for disappointment can be minimized.

The local government context places decided constraints on the CIO and consequently on the range of competencies and roles required of the position. In addition, it requires additional knowledge and skills from the CIO.

This research also provides insights for practitioners and, in particular, recruiters of public service IT professionals and CIOs; human resources managers; and providers of training programmes. However, more research is needed with a broader sample to identify the core competencies required in the public sector more precisely, and to determine whether the gaps in perceptions of requisite competencies reflect actual differences or rather different focuses of the CIOs and their business partners.

References

Andreu, R. and Ciborra, C. (1996) "Organisational learning and core capabilities development: the role of IT", *Journal of Strategic Information Systems,* No. 5, pp 111-127.

Basselier, G. and Benbasat, I. (2004) "Business Competence of Information Technology Professionals: Conceptual Development and Influence on Business-IT Partnerships", *MIS Quarterly,* Vol. 28, No. 4, pp 673-694.

Bharadwaj, A.S. (2000) "A resource-based perspective on information technology capability: An empirical investigation:, *Management Information Systems Quarterly, Vol.* 24, No. 1, pp 169-196.

Broadbent, M. and Kitzis, E. (2005) *The new CIO Leader* (1 ed.), Harvard Business School Press Boston, Massachusetts.

Chan, Y. E. and Reich, B. H. (2007) "IT alignment: what have we learned?", *Journal of Information Technology,* No. 22, pp 297-315.

Chun, M. and Mooney, J. (2009) "CIO roles and responsibilities: Twenty-five years of evolution and change", *Information & Management*, No. 46, pp. 323-334.

Cresswell, J.W. (2003) *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (2nd ed.). Sage Thousand Oaks, CA.

Douglas, D. (2003) "Grounded Theories of Management: A Methodological Review", *Management Research News,* Vol. 26, No. 5, pp 44-52.

Duhan, S. (2007) "A capabilities based toolkit for strategic information systems planning in SMEs", *International Journal of Information Management,* No. 27, pp 352-367.

Emiliani, M. L. (2003) "Linking leaders' beliefs to their behaviors and competencies", *Management Decision,* Vol. 41, No. 9, pp 893-910.

Feeny, D. and Willcocks, L. P. (1998) "Core IS Capabilities for exploiting Information Technology", *Sloan Management Review,* Vol. 39, No. 3, pp 9-21.

Feeny, D., Willcocks, L. P. and Olson, N. (2006) "Implementing Core IS Capabilities: Feeny-Willcocks IT Governance and Management Framework Revisited", *European Management Journal,* Vol. 24, No. 1, pp 28-37.

Garavan, T., N. and McGuire, D. (2001) "Competencies and workplace learning: some reflections on the rhetoric and the reality", *Journal of Workplace Learning,* Vol. 14, No. 4, pp 144-163.

Gottschalk, P. (2000) "Information Systems Executives: The changing role of new IS/IT leaders", *Informing Science,* Vol. 3, No. 2, pp 31-39.

Gottschalk, P. (2007) *CIO and corporate strategic management: Changing role of CIO to CEO.* Idea Publishing Hershey, PA.

Jones, S. (2012) "CIO to CEO: a difficult transition?, Journal of Enterprise Information Management, Vol. 25, No. 4, pp 323-327.

Klein, H. K. and Myers, M. D. (1999) "A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems", *MIS Quarterly,* Vol. 23, No. 1, pp 67- 94.

Kotter, J. P. (1990) "What Leaders Really Do", *Harvard Business Review*, pp 103-111.

Lane, M. S. and Koronos, A. (2007) "Critical Competencies required for the Role of the Modern CIO", Paper presented at the 18th Australasian Conference on Information Systems, Toowoomba, Australia, 5-7 December.

Lawry, R., Waddell, D. and Singh, M. (2007) "Roles, responsibilities and futures of Chief Information Officers (CIOs) in the public sector", Paper presented at the European and Mediterranean Conference on Information Systems, Valencia, 24-26 June.

Luftman, J. and Brier, T. (1999) "Achieving and Sustaining Business-IT Alignment", *California Management Review,* Vol. 42, No. 1, pp 109-121.

Mingers, J. (2001) "Combining IS research methods: Towards a pluralist methodology", *Information Systems Research,* Vol. 12, No. 3, pp 240-259.

Myers, M. D. and Newman, M. (2007) "The qualitative interview in IS research: Examining the craft", *Information and Organisation,* No. 17, pp 2-26.

Orlikowski, W. J. and Baroudi, J. J. (1991) "Studying Information Technology in Organizations: Research Approaches and Assumptions", *Information Systems Research,* No. 2, pp 1-28.

Peppard, J. and Ward, J. (2004) "Beyond strategic information systems: towards an IS capability", *Journal of Strategic Information Systems,* No. 13, pp 167-194.

Preston, D. S., Leidner, D. E. and Chen, D. (2008) "CIO Leadership Profiles: Implications of Matching CIO Authority and Leadership Capability on IT Impact", *MIS Quarterly Executive, Vol. 7, No.* 2, pp 57-69.

Remenyi, D., Grant, K.A. and Pather, S. (2005) "The chameleon: a metaphor for the Chief Information Officer", Journal of Information Management, Vol. 30, No. 3, pp 1-11.

Smith, H. A. and McKeen, J. D. (2010) "Developments in practice XXXV: Building a strong relationship with the business", *Communications of the Association for Information Systems*, Vol. 26, No. 1, p 19.

Willcocks, L. P. and Feeny, D. (2006) "IT Outsourcing and Core IS Capabilities: Challenges and Lessons at Dupont", *Information Systems Management, Vol. 23, No.* 1, pp 49-56.

Willcoxson, L. and Chatham, R. (2006) "Testing the accuracy of the IT stereotype: Profiling IT managers' personality and behavioural characteristics", Information & Management, Vol. 43, No. 6, pp 697-705.

Weill, P. and Woermer, S. L. (2013) "The future of the CIO in a digital economy", *MIS Quarterly Executive,* Vol. 12, No. 2, pp. 65-75.

Wu, J.-H., Chen, Y. C. and Sambamurthy, V. (2008) "The Impacts of BTM Capability and CIO Role Effectiveness on Firms' Information Technology Assimilation: An Empirical Study", Paper presented at the Twenty Ninth International Conference on Information Systems, Paris, December.

