

CIOs in the Public Sector: Their Roles, Responsibilities and Future

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This paper will identify the critical factors required of a CIO in order to fulfil their role and responsibilities successfully within the public sector. In doing so, this paper will fill a gap in the literature and utilise the predictions of both the private sector and public sector with regards to their future. An adapted model will be presented which will incorporate the suitable literature available with regards to the functions of a CIO, and integrate this within a public sector context. It is intended that this model will sit along side the numerous private sector studies and serve as the beginning of a broader spotlight on the CIO whose responsibilities touch all organisations – especially public sector.

Field of Research: Public Institutions Management

1. Introduction

The Chief Information Officer (CIO), as an official role, has been present in organisations since the early 1980s. At this point in time, organisations were undergoing a revolution regarding information technology (IT). More and more money was being invested in information technology systems (ITS) and executives were becoming increasingly aware of their competitors using information and its associated technology to gain a unique competitive advantage in an increasingly global marketplace (Porter and Millar, 1985). From this point on, executives were conscious that no longer could IT be an 'add on' to the business, but rather it was a function that must be of equal strategic importance and consideration to that of finance, human resources, operations and marketing. Hence, private sector organisations have been experiencing the benefits of the executive who manages the unique organisational asset named information, for over twenty years. While the private sector organisations were experiencing success with the implementation of the CIO in their organisational structures, the public sector had still not caught on to the new executive. It was in fact Australia, who was among one of the first nations to appoint a Whole-of-Government (WoG) CIO (Bushell, 2006).

Furthermore, Australia is considered to be leading the pack with regards to CIO implementation at all levels of government, and gaining credibility and authority for the role (Bushell, 2006). What is interesting to note is that while private sector organisations were implementing CIOs from as far back as the early 1980s, Australia's WoG CIO was not appointed until June 2005 (Nairn MP, 2005), and

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Victoria was the first state level government to appoint a CIO in 2003 (Department of Premier and Cabinet, 2006). This means that the public sector is over twenty years behind their private sector counterparts in the appointing of an information executive. This paper will attempt to ascertain the situation of the CIO in the public sector, what commonalities lay in the role and its responsibilities, and what the forecast is for the future of their role within the government's strategy. Once these factors are established it is anticipated they will form the necessary platform for which the public sector can move forward from and find alignment within the role. It would be neglectful of the public sector to ignore the benefits a CIO can add. Information is a valuable, intangible and unique asset to governments and organisations alike. Discounting the positive benefits of an executive who is responsible for the management of the most holistic asset of an organisation would be fatal to the competitiveness of an organisation against its rivals, and the responsiveness of a government to its citizens.

An exploration of the literature is now undertaken that will investigate two relevant issues. Firstly the review will provide a theoretical understanding of the key components, or function of a CIO. The literature surrounding this issue is substantial, however the role has only been established in the last twenty years and the amount of available literature reflects such a time frame. Secondly, the review will approach the context issue (private and public sector), and its impact on the CIO is explored. In this area, however, the literature is more limited. Finally the paper will conclude by exploring the similarities and between both the function of the CIO and its context in order to establish an adapted model that reflects the purpose of this paper.

2. Literature Review

Role of the CIO

Synnott and Gruber first coined the term CIO in 1981 as the 'senior executive responsible for establishing corporate information policy, standards, and management control over all information resources' (Synnott and Gruber, 1981 p. 66). Hence, the CIO was described as a manager, and no longer just a technical expert. In order to complete any responsibilities attributed with the role, the attributes and skills of the individual in the position of CIO must be considered. Since the CIO was an amalgamation of both the IT specialist and a management guru, the literature has identified several attributes CIOs must have. Rockart, Ball and Bullen (1982) conducted one of the first studies that recognised the CIO required certain attributes and skills in order to successfully accomplish the dual role of manager and technical expert. The following are the six attributes of a CIO identified: political, organisational and communication skills; involvement in, understanding of and experience in the overall management of the business; understanding of and ability to manage technological experts; development of appropriate human resource management skills; planning skills with particular importance on strategic planning and management of change; and sensitivity to the human, organisational and social impacts of new technology, and ability to proactively plan (Rockart et al., 1982).

The above identified skills and attributes as developed by Rockart et al. (1982), can be observed as having a managerial skills focus. There are little identified skills,

which could be deemed as being attributes solely of a technology manager. This study therefore concludes that the CIO is seen firstly as a management executive, and a technical expert second. Passino and Severance (1988) further corroborates the findings of Rockart et al. (1982) in their study, where they conclude the new executive was 'beginning to view themselves as business generalist first and technology specialist second' (p.38). However, Passino and Severance (1988) do not as easily brush off the technological issues of the role, which they recognise will always rightfully bedevil the CIO. For instance, they presented in their article that in survey's conducted two years apart, the top ranking issues remained technology orientated.

Feeny, Edwards and Simpson conducted an exploratory study in 1992 where personal interviews were conducted with fourteen CIO/CEO pairs from United Kingdom organisations. Wide ranges of outcomes were achieved via this study: an interview design model, attributes of excellent CEO/CIO relationships, visions for the role of IT, and CIO qualities. However one particular outcome of the study, which is of great relevance, was the identification of the qualities of an *ideal* CIO. The authors do note that the list of qualities is idealised and it is very unlikely such an individual does exist, but the list does provide the opportunity to review the respondents' opinions on the CIO role. The following are the components of an ideal CIOs profile:

'Honesty, integrity, sincerity, openness' (Feeny et al., 1992 p. 444) about the problems a CIO faces and just as equally regarding their triumphs;

'Business perspective, motivation, language' (Feeny et al., 1992 p. 444) in order to be able to explain the technology issues in a business context;

'Communicator, educator, motivator, leader, politician, relationship builder' (Feeny et al., 1992 p. 444) so as to enthuse all those on the executive team about IT;

'Continuously informed on developments in IT, able to interpret their significance to the business' (Feeny et al., 1992 p. 445) and possess the ability to choose the right technology for the business goals now and in the future;

'Change-oriented team player, catalyst to business thinking' (Feeny et al., 1992 p. 445) so as to proactively plan for the future direction of the business.

The components of the ideal CIO are strikingly similar to those first identified by Rockart et al. (1982). The only component missing is the notion that the CIO must have the skills to be a manager of managers, which is acknowledged by Feeny et al. (1992) as due to research constraints rather than unawareness of its place of significance regarding the evolving role. In Remenyi, Grant and Pather's 2005 study, the authors likened the CIO to the Chameleon with regards to their required skills and attributes. There were four specific characteristics identified which were believed dual attributes of the CIO and the chameleon: the ability to change; the ability to see in multiple directions; the ability to strike fast when required; and the ability to hang on when the going gets rough (Remenyi et al., 2005 p. 6).

These attributes, when converted from Chameleon characteristics reflect CIO situations: the notion of adapting to a constantly changing environment, being able to envision the organisation in a holistic manner, remaining ahead of the game on technological development, and sticking it out through the rough times when

unrealistic expectations and failures arise. Again, the attributes identified are of a managerial focus rather than a technological focus, however perhaps this is presenting a picture of the evolving CIO role rather than pointing out an abandonment of the authors. More recently, Capella (2006) presented in his article the 'multiple personality' dilemma for the CIO role. It was identified that the CIO was charged with the custody of the organisation's information strategy and as such it is required, in order to succeed that is, to create a vision for the role that dealt with the CIOs abilities as a technology expert, and their abilities as a strategic business partner (Capella, 2006). This no longer relies on the skills and the abilities of the individual who is to head the CIO role, but rather raises the questions on what responsibilities will comprise the CIO role. From the discussion of the attributes and skills of the CIO it is apparent that the following assumption can be made. The CIO, to successfully integrate with the organisation's executive team, cannot purely be a technology expert, but rather they must first have sufficient managerial skills. It is through the managerial skills that the CIO can effectively exploit the information technology within an organisation and gain credibility for further such investment.

Responsibilities of the CIO

The literature presents a variety of perspectives on what constitutes the responsibilities of the CIO. The first study to address this issue was by Rockart et al. (1982) who identified the role as having three, increasingly significant, parts: diminishing direct line responsibilities; increasing staff orientation; and corporate responsibility for information resource policy and strategy (Rockart et al., 1982 p. 4). These three responsibilities run fairly parallel with the definition of the CIO role given by Synnott and Gruber in 1981. As such, the three roles identified break no new ground, however they do argue that the role is moving into a managerial function rather than a role with technological responsibilities. Highbarger (1988) similarly broke the CIO role into three responsibilities: cost effectiveness; technological competitiveness; and organisation. As Highbarger (1988) himself states in the article, these are 'basic areas' (p. 53) of responsibility for the CIO, and could be critiqued as being too general. However, they do present the contentious issues of the CIO role. For example, a CIO will struggle in their tenure with the everlasting fight of money vs. value added by IT investments. They will also, in order to be successful, be required to stay ahead of the technological revolution. And overall they are required to have strong organisational skills, as at the end of the day they are an executive manager first and foremost.

Stephens, Ledbetter, Mitra and Ford conducted a study in 1992 using structured observation of five CIOs. A combination of literature and responses from the carefully selected CIOs was used to produce several outcomes, one of which was an identification of CIO responsibilities. The authors identified six long-term areas of responsibility for a CIO: policies, procedures, guidelines or standards for information resources; strategic planning for information resources, linked to business planning, to provide improved organisation functions and competitive advantage; approval/acceptance of expenditures; coordination of information technology, functional units, environment; education of management, especially top management, on potential uses of technology; and environmental scanning (Stephens et al., 1992 p. 461). Stephens et al. (1992) have elaborated considerably

on the previous two studies that identified three areas of responsibility. The responsibilities presented, demonstrate a link between the role definition and the areas of responsibilities, and manipulate the three general areas of responsibility presented by Rockart et al. (1982) and Highbarger (1988), into six specific areas that could be identified, implemented and tested in practical situations.

More recently, Polanksy, Inuganti and Wiggins (2004) presented a 10 Point Leadership Agenda for CIOs. This agenda outlines ten areas of which they believe are reflective of the commonly shared insights, concerns and expectations of CIOs. The 10 Point Leadership Agenda comprises the following:

- IT strategy;
- IT governance;
- IT organisation and staffing;
- Technology and architecture;
- Technology awareness;
- Corporate governance;
- Business intelligence;
- Business transformation;
- Customer care;
- Internet and e-business (Polanksy et al., 2004 p. 30-1).

The responsibilities outlined by Polanksy et al. (2004) are of the most specific in the available literature. There is a strong focus on the IT aspect of the CIO role, and the responsibilities are clearly incorporated with the management function of the role also. The 10 Point Leadership Agenda also points out the 'burdens' associated with the role, such as the Internet and e-business, along with governance which is so commonly pushed to the side. What is most interesting of Polanksy et al.'s (2004) agenda, is that the top five points are of an IT focus, when it has been so common in other literature for the IT aspect of the role to be pushed as a second thought. This model does not negate that the role is increasingly managerial in function, however it does present the fact that the CIO is an information technology and communications executive, and while they must manage well, their focus is to manage the information technology first, should that encompass finance and human resources is a flow on effect, not a driving factor.

The above overview of the literature highlights the nature of the role's responsibilities, and while there has been little new breaking ground in the area of responsibilities, there has been considerable evolution since Rockart et al.'s (1982) initial three components. This evolution begs the question of whether or not the future of the CIO role can be predicted given all that is now known of the role and its responsibilities. It is clear that the role has evolved considerably since its formation in the early 1980s, and the questions remains as to whether or not it is fully effective and meeting those original ideas for its place within the organisational structure.

Future for the CIO

There is very little literature where envisaging the future for the CIO is concerned. There have been several studies where the issues researched have been revisited to observe what has altered over a structured timeframe, and thus conclude by reaffirming the growing need of a CIO. One of the first studies to do so was conducted by Passino et al. (1988) who ranked twenty two issues of concern to one hundred and twenty CIOs in 1986, and then repeated the study two years later to account for the evolving nature of IS and the CIO function. This was not done in vain, as there was a significant difference in prominent issues from 1986 to 1988, which agreed with the authors' assumption that the evolving nature of the role would impact the results. For example, the study conducted in 1986 ranked the two top concerns of importance to be directly related to technology. However, two years later when the 1988 study was conducted, respondents indicated that the success of the IS and IT within the organisation was less dependent upon the technology and technical skills of the CIO, but rather more reliant upon the CIOs ability to communicate, train and educate management and users (Passino et al., 1988).

Earl and Feeny (1995) followed a similar method when they revisited CIOs whom they had interviewed in 1986 in order to 'understand their experience and learning over a five-year period' (p. 145). The objective of their study was to understand the value added by CIOs in their workplace, and Earl and Feeny (1995) fulfilled this aim by presenting the six areas of added value by a CIO, an added value framework model, and the profile of a CIO who adds value. There have however been very little studies that have actually attempted to forecast what will occur in the future for the CIO. Through research, there appears to be only one study, which has forecasted the future as seen by CIOs. Polansky et al. (2004) discussed the future as seen through the eyes of CIOs, and as such outlined nine future expectations which can be summarised as:

- Responsibilities will continue to shift from technical/operational to a strategic/management focus;
- The CIOs success will be redefined to encompass strategic, enterprise-wide business goals and objectives;
- The focus of the CIO and the mission of IT will be redirected away from internal customers, and focused more towards external customers, partners, service providers and other links in the extended value chain;
- Human capital management will become a key CIO responsibility;
- CIO responsibilities will include IT portfolio management, IT investment management and risk assessment;
- Business continuity and disaster recovery will continue to be seen as primary CIO responsibilities;
- Actionable business intelligence will become a standard deliverable from IT;
- Increasing importance on Governance will require the CIO to develop a deeper understanding and intuitive grasp of corporate finance and accounting processes;
- CIOs will assume a greater leadership role with a focus on shaping and creating a world economy fuelled by information (Polansky et al., 2004).

While at first glance the above list appears to redefine the CIO role, upon closer analysis, it is clear that it is defining the same CIO that Synnott and Gruber identified in 1981. What the list does pitch is the role in the future – it takes into account the changing business and technological environment and then applies those factors to the role. Polanksy et al.'s (2004) list merely paints the picture of the CIO in the business world of tomorrow. While the list is specific to the CIO, such a list can be constructed for any, or all, of the roles within an organisation, as all elements of the organisation must prepare and forecast for what challenges they will face within their role in the future. Polanksy et al.'s (2004) nine expectations for the future of a CIO merely reinforce the importance of the CIO role in the future and outline the areas for greatest focus. In essence the role is campaigning for a change in attitude to IT. The role is asking executives to no longer presume there are purely IT projects; instead there are business projects, which have IT components (Polanksy et al., 2004 citing Marriott International CIO Wilson). The role takes IT from being an extra of the business, to being a part of the bigger picture and contributing to the strategic goals and competitive advantage of an organisation. Thus rightfully recognising the executive stature of the CIO.

3. Organisational Context: Private Sector vs Public Sector

There is a great history regarding how the private and public sectors are viewed, and there are many varied opinions concerning the similarities and differences between the two sectors. In order to understand this research study fully, it is important to not only understand the components of the CIO, but to understand how and possibly why it has evolved differently in the private and public sector. The following serves as a definition of the two sectors including the major defining differences between the two. There are fundamentally three points of differentiation between the private and public sector, and these three areas help in understanding and defining the two sectors. Firstly, the private sector is made up of small, medium and large-scale organisations where ownership is held either by an individual or a group of entrepreneurs, more commonly referred to as shareholders (Budhwar et al., 2004). Secondly, and as a result of the ownership of private sector organisations, the funding for the organisation within the private sector comes directly from one of two sources: fees paid directly by the customer purchasing a good or service, or from shares which shareholders buy in public companies in order to claim part ownership and thus receive a share of profits. As such there is no claim for public funds in order for the business to operate (Boyne, 2002). Lastly, the control within the private sector lies in the economy, or market forces (Boyne, 2002). As such, the ability to perform, operate and succeed are constrained or imposed by the market forces, such as barriers to entering new markets, exchange rates, interest rate increases or decreases, and the like.

When defining the public sector, the same three points of difference used previously to define the private sector can be referred to in the same vein. The Australian Bureau of Statistics (1998) defines the public sector as “enterprises which the Commonwealth Government, State/Territory and local governments, separately or jointly have control over. It includes local government authorities and all government departments, agencies and authorities created by, or reporting to, the Commonwealth Parliament and State parliaments.” As such, public sector agencies

are owned, funded and controlled collectively by members of political communities at different levels of government (Budhwar et al., 2004). Funding within the public sector is generated by taxes, where citizens at the local, state and federal level pay taxes to the government in return for essential services (Boyne, 2002). Where market forces control the private sector, the public sector is subject to the imposition of political forces and the political system (Schneider et al., 1993), such as change of political party in leadership. Although the two sectors differ inherently in terms of ownership, funding and control, there does exist a considerable amount of similarities, and just as equally, differences. In essence, both the private and public sectors function similarly with regards to management (Schneider et al., 1993). For example, whether or not you are operating in the private or public sector, management still consists of establishing an organisational purpose, developing objectives, planning, managing and motivating the human resources, and controlling the organisation's performance both internally and externally (Schneider et al., 1993; Budhwar et al., 2004).

While the actual process of management is similar between the two sectors, the conditions and constraints under which the management processes are conducted is where the differences between the private and public sector lie (Schneider et al., 1993). For instance, time perspectives, performance measurement, media relations, authority, legal constraints, and personnel constraints. There are three *internal* characteristics of the public sector however, that serve as clear points of difference:

More Bureaucracy: greater amount of formal procedures for decision making, and are less flexible and more risk-averse than their private sector counterparts (Bozeman et al., 1998; Farnham et al., 1996);

More Red Tape: implies that the public sector operates with an unnecessary and counter-productive amount of rules, and relies more on rules and processes rather than results and outcomes (Boyne, 2002);

Lower Managerial Autonomy: the public sector allows managers less freedom to react as they see fit to circumstances when they arise, which is exemplified by public managers' discretion over human resource issues which generally involves complex and time consuming processes to follow in hiring, firing and promotion, that, as a preferred alternative, is generally avoided (Baldwin, 1987; Boyne, 2002).

In considering the above definitions of the private and public sector, it is clear that private sector organisations operate on the basis of filling a need or want for a good or service, where they are compensated by fees or shares, and on the contrary, the public sector provides goods and services as obligation to taxes paid to them by the citizens they serve. From these definitions it is appropriate to assume that the management of information systems in either private or public organisations is both multidimensional and complex (Loukis et al., 2002). Furthermore, the public sector plays a primary role in the life and economy of its citizens at local, state and federal levels. And despite the similarities between the two sectors, the three internal characteristics of the public sector – bureaucracy, red tape and autonomy – serve as possible impediments to the productivity and effectiveness of the CIOs role and responsibilities – namely, ICT project execution and investment. The literature up until this point with regards to CIOs has been heavily focused on private sector studies, and only very few studies have been conducted where the management of

IT and IS issues has been raised in a public sector context. It is clear that more research is necessary in this area due to the critical role the public sector plays in the economic and social life of all countries, and also the growing realisation, reliance and importance of ICT on public sector productivity and effectiveness (Loukis et al., 2002).

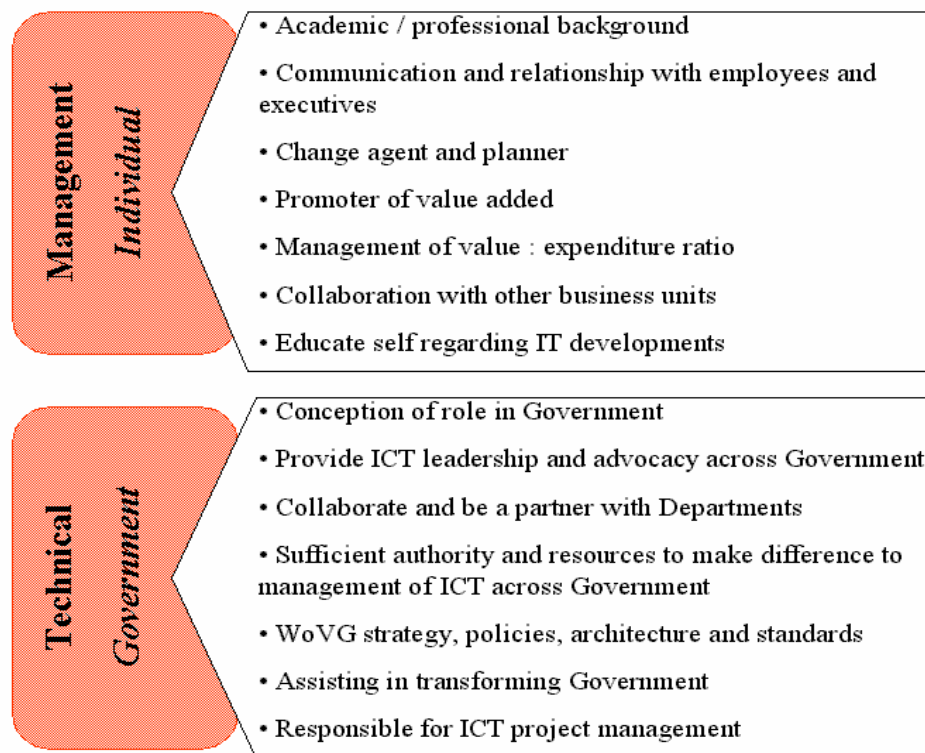
4. Conclusion

The previous discussion of the CIO roles, responsibilities and forecasted future have been sourced from academic journals. However, these academic journals are predominately composed of studies with a private sector focus. As a result, the information accumulated from these journals and articles are the opinions of those in the position of CIO, CEO or other related roles such as IT Manager, from private sector organisations. This leads to the conclusion that the vast majority of the literature available today regarding CIOs comes from private sector studies. What is absent here is academic literature with a public sector focus. What little literature that is available with a public sector focus comes from CIO magazines and consultant reports. While the value these articles contribute to the greater understanding of CIOs in government cannot be disregarded, their breadth and depth of information is inadequate considering the growing importance of the role in government and the vast range of academic literature available for its counterpart.

As can be presumed from the type of information source, the majority of the articles from CIO magazines regarding the government sector discuss hot topics or contentious issues of the day. For the most part, the magazine articles discuss issues such as how public sector CIOs are the key players in the reinvention of government (Fabris, 1996; Fabris, 1998), the degree of scrutiny public sector CIOs face from the public they serve (Holmes, 2005), and even the public sector struggle to lure IT talent (Varon, 2000; Mayor, 2003). Most articles present bold issues that are indicative of the concerns CIOs in government face, and as such the value of these articles cannot be ignored. However they are brief in depth and draw on limited substantiative evidence. On the other hand, consultant reports are specific reports composed for an explicit purpose or problem at the request of a client – in this case, government bodies. There are many consultancy organisations around the world and in Australia who provide such a service, for instance, Cap Gemini Consulting Services, Deloitte Development LLC, Gartner and The Nous Group. However, access to such documents is restricted to the client for obvious confidentiality reasons. Therefore lessons learnt in richly realistic situations are not available for others in similar situations from which to learn. Gartner provides considerable information regarding CIOs in government and while full documents are not listed for view by individuals, summaries of situations and reports are available online. Issues that are researched and reported on by Gartner range from: ideas relevant to governments contemplating creating a CIO position for the first time (Kost, 2005), tools to aid developing the credibility of the CIO role (McDonald et al., 2003), and devising an office of the CIO as leverage against the time short executive (McDonald et al., 2004). Similar to the magazine articles discussed above, while the value of such documents cannot be disregarded, the breadth of consultant reports is limited.

From the above discussion the striking difference between the development of literature from private and public sector is clear. The private sector has a twenty-year advantage over the public sector with regards to role evolution, and it appears the advantage extends to development in academic literature also. The literature available regarding CIOs has made one faux pas clear: the CIO is not a position that is exclusive to the private sector. The CIO is not an executive position that discriminates between organisations with regards to importance – regardless of being small or large in size, domestic or international in scope, or private or public sector based, the CIO is a critical executive. It is evident through the discussion on the components of the CIO and the difference between public and private sector literature, that this is an increasingly crucial role. Moreover, the position within the public sector is so new that it is impossible to claim if the role is a success or failure. As a consequence of this, those that are establishing the position in government bodies today will no doubt have a lasting impact on how the role will be seen by the public sector in the future. The early success will reinforce the CIO role for the future years to come, whereas high-profile fails will weaken the CIO outlook (Fabris, 1998). By combining the key points from the discussion on the CIO function, and the CIOs context within the public sector, an adapted model can be devised (Figure 1). This model takes the key findings from the definition of the role, responsibilities and forecasted future of the CIO, and places them within the public sector context.

Figure 1: Adapted Model for Measuring CIO in Public Sector



There are several benefits that this model will optimistically provide for managers within the public sector, and to a broader extent, CIOs in general. The implications of this model for managers within the public sector are: clarity over the function of the

CIO within a public sector context; reinforcement of the role within the public sector through realising again the benefits to be acquired through the CIO; greater ability of CIOs within the public sector to produce the greatest value for the organisation; and confirmation of collective vision for the sustainability of the role in the future.

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