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# The CIO Position at the Crossroads: Two Institutional Views of a Management Innovation

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## ABSTRACT

The term Chief Information Officer (CIO) was first coined in 1981 and has been implemented in many firms across a range of industries. Two competing institutional theory views are proposed, one leading to the institutionalization and one leading to the extinguishment of the CIO position. A pilot test was conducted examining Security and Exchange Commission filings where instances of adoption, reduction in status and abandonment were identified.

## Keywords

Chief Information Officer, Institutionalization, Adoption, Abandonment

## INTRODUCTION

The value of the Chief Information Officer (CIO) is not necessarily with the management of Information Technology (IT), but rather with the management of business value with IT (Peppard, 2007). This view has not been universally accepted and, in fact, CIOs face an environment where “senior executives [grow] weary of IT’s unfulfilled promises to create competitive advantage, enable business transformation, drive down costs, and improve customer service” (Hirschheim, Porra and Parks, 2003, p. 8). However, the conditions would also seem ripe for the position to increase its responsibility and authority. The major drivers of the current environment from the IT perspective are rapid strategic business change, pervasive IT, an experienced user base and technology complexity (Reich and Nelson, 2003). In response to this volatile environment, “the CIO is uniquely positioned to devise and disseminate visions of the role of IT and of the IT function in furthering business strategies” (Chatterjee, Richardson and Zmud, 2001).

In this paper, the CIO position is examined as a management innovation, which is defined as “a significant departure for the state of the art at the time it first appears” (Kimberly, 1981, p. 86). Other positions once thought of as management innovations have been institutionalized to the point where corporate culture takes them for granted: the Chief Financial Officer (CFO) (Zorn, 2004) and the Chief Operating Officer (COO) (Dobbin, Dierkes and Zorn, 2003). Two extremes of management innovation adoption are institutionalization (Dacin, Goodstein and Scott, 2002) and management fashion (Hirsch, 1972; Abrahamson and Fairchild, 1999). The adoption of the CIO position is tested against these two extremes to determine the degree of institutionalization of the position. This paper is presented as research in process, with findings from a small-sample pilot study discussed as illustration of the research direction.

## BACKGROUND

Early views of the CIO saw him or her as a businessperson above the senior Management Information Systems (MIS) manager, answering directly to the Chief Executive Officer (CEO) (Weiner and Girvin, 1985). The CIO is defined as “a senior executive responsible for establishing corporate information policy, standards, and management control over all corporate information resources” (Synnott and Gruber, 1981, p. 66). The MIS manager, in comparison, is seen as “a functional manager with line responsibility for information technology products and services” (Stephens, Ledbetter, Mitra and Ford, 1992). The difference between a CIO and MIS Manager can be conceptualized as the same as the difference between a CFO and Controller. Just as the MIS Manager is a technology specialist first and the Controller is an accountant first, both the CIO and the CFO are senior executives first and functional specialists second.

The location of the CIO in the hierarchy is an important sign of its status relative to other positions (Lepore, 2000). The highest level status is assumed to be membership on the board of directors, with executive committee and top management team (TMT) membership being the next highest level. CEOs can be divided into those who see IT as a strategic resource and those who see it as a cost (Earl and Feeny, 1994). In firms where IT is viewed as strategic, the CIO is often part of the top management team; in firms where IT is viewed as a cost, the CIO often reports to the CFO and is mostly excluded from

strategic planning (Lundberg, 2004). The CIO is seen as most important in competitive environments in which IT can potentially serve a strategic role (Chatterjee et al, 2001).

A cycle may exist in the institutionalization of the CIO position. The 1980s saw recognition of the growing role of IT executives, due to the increasing complexity and diversity of systems, technology infrastructures and innovation (Rockart, 1988). In the mid-1990s, the Internet made the CIO role more visible as CIOs became directly accountable to external customers through e-commerce initiatives (Murphy, 2000). There also appear to have been two backlashes against CIO positions, both tied to periods of financial difficulty – the first following the 1990 peak and downturn while the second followed the technology bubble burst in 2001. In each case, the tendency was to shift the CIO from the reporting directly to the CEO to being back under the CFO, focusing on cost control measures in economic downturns (Prewitt, 2006). This study attempts to objectively document and explain this apparent cycle.

## THEORY APPLICATION

Two theoretical lenses grounded in institutional theory are used to examine this issue, focusing on full institutionalization and weak institutionalization.

### Full Institutionalization

Neo-institutional theory suggests that firms will adopt institutional forms and practices that convey legitimacy<sup>1</sup> even in that absence of proof of their efficiency (Meyer and Rowan, 1977). The creation of the position of CIO should start the institutionalization<sup>2</sup> process, as it is “achieved by designating positions or roles for organizational activities [as the] creation of a new post legitimizes a function and forces organization members to orient to it” (Salancik and Pfeffer, 1977, p. 19). If use of the CIO position were legitimating, then the position could be seen as spreading across industries and firms, as isomorphism<sup>3</sup> is argued to generate a stable convergence around a small selection of forms and innovations (DiMaggio and Powell, 1983). This stability largely arises from the interconnectedness of organizations with each other (Rowan, 1982; Singh, Tucker and House, 1986; Tolbert and Zucker, 1983)

One of the key predictions regarding isomorphism is that early adopters are more likely to adopt innovations for reasons of technical efficiency whereas later adopters are more likely to adopt them for reasons of social legitimacy (Meyer and Rowan, 1977). Rhetoric in adoption of popular management techniques was found to be as important in addition to the reality of the implementation, supporting the neo-institutional theory view of adoption for purposes of legitimacy acquisition (Staw and Epstein, 2000). Chatterjee et al (2001) posit that “announcements of newly created CIO positions are likely to have a positive signaling effect on the market” (p. 46), however this study failed to take into consideration whether these adoptions are for efficiency or legitimacy purposes.

Related to the question of efficiency versus legitimacy is the symbolic versus substantive adoption<sup>4</sup> of innovations. Meyer and Rowan (1977) noted that visible, formal structures that give legitimacy can be often decoupled from the actual activities in a firm. In the context of CIO implementation, a symbolic adoption would be the announcement and creation of a position, but excluding the CIO from the TMT. In observing abnormal positive returns in latter time periods, Chatterjee et al (2001) explained the observation being due to IT possessing greater potential to radically transform competition within a greater number of industries. We counter this argument with an alternate hypothesis that an increasing number of firms in a range of industries may adopt CIO positions symbolically for legitimacy rather than substantively for efficiency reasons, particularly in information-intensive industries. The diffusion pattern under neo-institutional theory follows the S-shaped curve for cumulative adoption of an innovation (Rogers, 2003), but motivation for adoption changes over time.

Hypothesis 1. Under conditions of full institutionalization, the management innovation diffusion pattern of the CIO position will follow the S-shaped curve for cumulative adoption.

As there is little consensus as to the scope and responsibilities of the CIO position (Jones, Taylor and Spencer, 1995), then there is likely little consensus as to whether its adoption would be legitimating and whether isomorphism should occur. In

<sup>1</sup> Legitimacy refers to status conferred on an organization by social actors (Pfeffer and Salancik, 1978).

<sup>2</sup> Institutionalization refers to the process through which components of formal structure become widely accepted as legitimate for organizations (Tolbert and Zucker, 1983).

<sup>3</sup> Isomorphism refers to organizations within the same environment resembling each other (DiMaggio and Powell, 1983).

<sup>4</sup> Symbolic adoption refers to organizations visibly adopting institutionalized policies, forms or conventions but decoupling them from the actual functioning of the organization (Westphal and Zajac, 1994).

cases of innovation adoption where the outcomes are less discernable but there are publicized accounts of success, a faddish process of diffusion is more probable (Strang and Macy, 2001).

### **Weak Institutionalization**

Management fashion, fads and bandwagons builds upon neo-institutional theory but focus on uninstitutionalized practices (Abrahamson, 1996). Management fashion is of interest to the discussion of the CIO position as it tracks the “rise and fall of... weakly institutionalized organizational forms and techniques” (Abrahamson and Fairchild, 1999, p. 709). Fashion is where under conditions of uncertainty, organizations will imitate models of fashion-setting organizations outside of the group; fads differ from fashions in that the imitation occurs entirely within the group (Abrahamson, 1991). Abrahamson and Fairchild (1999) identify three possible triggers for fashion adoption: a fashion niche collapses, a high discourse exposure to fashion consumers or a wide-spread performance gap that the niche can address. Given the rapid rise of both personal computers and the Internet, this last trigger could have led to CIO adoption.

Management fashion demand is driven by managers’ collective aesthetic tastes (Abrahamson, 1991) and is shaped by a combination of sociopsychological, technical and economic forces (Abrahamson, 1996). This combination can result in a bandwagon effect that occurs when “certain organizations adopt an innovation because such pressures, rather than their individual assessments of the innovation’s efficiency or returns” (Abrahamson and Rosenkopf, 1993, p. 491). These fads, fashions and bandwagons have been argued to hurt organizations as they can cause organizations either to adopt inefficient management techniques or reject efficient ones (Abrahamson and Rosenkopf, 1993) or displace efficient practices that had not sufficiently matured to demonstrate their value (Abrahamson, 1991). If a successor to the CIO position were to be established that reduced the CIO’s effectiveness or ability to achieve its role, such as competition from a newly established Chief Technology Officer (CTO) or Chief Knowledge Officer (CKO) position, then this latter impact may be felt.

Innovations that confer legitimacy or social support but deliver less economic or technical performance than other available options may be vulnerable to sudden declines in approval through contagious abandonment (Staw and Epstein, 2000). In these cases, organizations may disregard bandwagon pressure in favor of reacting to technical pressure, starting the downturn in popularity of an innovation. As may seen in business press discussion of the CIO (Earl, 2000; McAteer and Elton, 2000), the tone of the discourse on a management fashion will change from “emotionally charged and largely uncritical” on the upswing and “more thoughtful and critical” on the downswing (Abrahamson and Fairchild, 1999, p. 735). Combining these elements, management fashion’s lifecycle can be characterized by a long period of dormancy followed by a short, bell-shaped, symmetric popularity curve of cumulative adoption and abandonment (Abrahamson, 1991; Strang and Macy, 2001).

Hypothesis 2. Under conditions of weak institutionalization, the management innovation diffusion pattern of the CIO position will be characterized by a long period of low adoption followed by rapid periods of adoption and abandonment.

The actual adoption of the CIO position may fall between the full and weak institutionalization extremes. This would imply that a form of partial institutionalization may exist between the taken-for-granted and the extinguished. When examining this possibility, two main factors must be controlled for in considering the degree and pattern of institutionalization: industry and economy.

### **METHODOLOGY**

A number of different measures of position popularity and value have been reported in the popular and academic literature that could be used to identify the degree of institutionalization of the position. The primary measure is the degree of adoption of the innovation itself, adapting data collection and analysis procedures developed by Fligstein (1985). A number of different titles can be used for the senior IS executive, ranging from CIO to VP Information Services to Data Processing Manager. Given the CIO was first identified in 1981, the timeframe for examining this data in the full study will be 1980 to 2008. This work-in-process paper is focused on a subset of this sample frame, within the period 1994 to 2008. This range was designed to capture the second hypothesized institutionalization cycle.

Firms in the sample frame were selected from the Fortune 500. A total of 83 firms are on the list consistently out of approximately 2100 that make an appearance at least once in the desired window. Using these 83 firms would likely introduce a selection bias, since they could be considered ‘old economy’ firms like oil or heavy manufacturing. ‘New economy’ firms such as Amazon or Dell have been on it consistently for only the last five to ten years. As such, the sample was a random selection of 25 out of the 1040 companies that have had five years on the Fortune 500 between 1980 and 2008, resulting in the firms listed in Table 1. While there are 25 firms in the sample frame, only between 15 and 21 are in the sample each year. Ten firms existed at the start and end of the period, whereas seven new firms were created and eight ceased to exist.

AGCO Archer Daniels Midland BankBoston Bestfoods Brink's	C.H. Robinson Worldwide Coltec Inc Columbia/HCA Healthcare CVS Dow Jones	Electronic Data Systems General Electric General Mills Hartford Financial Services Johnson Controls	Knight-Ridder Leggett & Platt Metaldyne Norfolk Southern Pennzoil	Rhone-Poulenc Rorer Silicon Graphics Turner Corp United Parcel Service Valspar
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Table 1. Firms in Sample

First reporting of a functional form in a firm can be used to determine its adoption (Fligstein, 1985). The reporting vehicle used for adoption is firm 10-Ks filed with the Security and Exchange Commission (SEC) on the Electronic Data Gathering, Analysis and Retrieval systems (EDGAR). Corporations are required to identify all corporate officers and directors, hence 10-Ks can be used to determine the first usage of a title and its abandonment or supercession. Grounding the study in a positivist stance, these statistics should result in an adoption curve over the reporting period which could be matched to the conceptual institutionalization profiles.

**RESULTS**

For this pilot study, results are focused on descriptive statistics of the sample data to confirm if there are indications that the full sample may provide enough data to examine the phenomenon. Additionally, three firms are examined qualitatively in more detail to explore the issues of adoption, reduction in status and abandonment.

**Initial Analysis**

Of the 25 firms in the sample, ten had CIO positions reported as corporate officers at one time during the period 1994 through 2008. A total of 22 CIOs were employed by these 10 firms. The shortest tenure was one year, the longest was 12 years and the mean tenure was four years. This mean may be deceptive, as the distribution is bi-modal, with half of the CIOs employed for two years or less and four employed for more than ten years. In the ten firms with CIOs as corporate officers, the mean, median and mode number of CIOs employed during the period was two, with a range of one to four.

The reporting of CIO positions through 10-K filings is illustrated in Figure 1. Years where the positions are identified as corporate officers for particular firms are illustrated through the use of arrows covering the years noted. For each year, a summary of the total number CIOs observed and the percentage representation in the overall sample are presented.

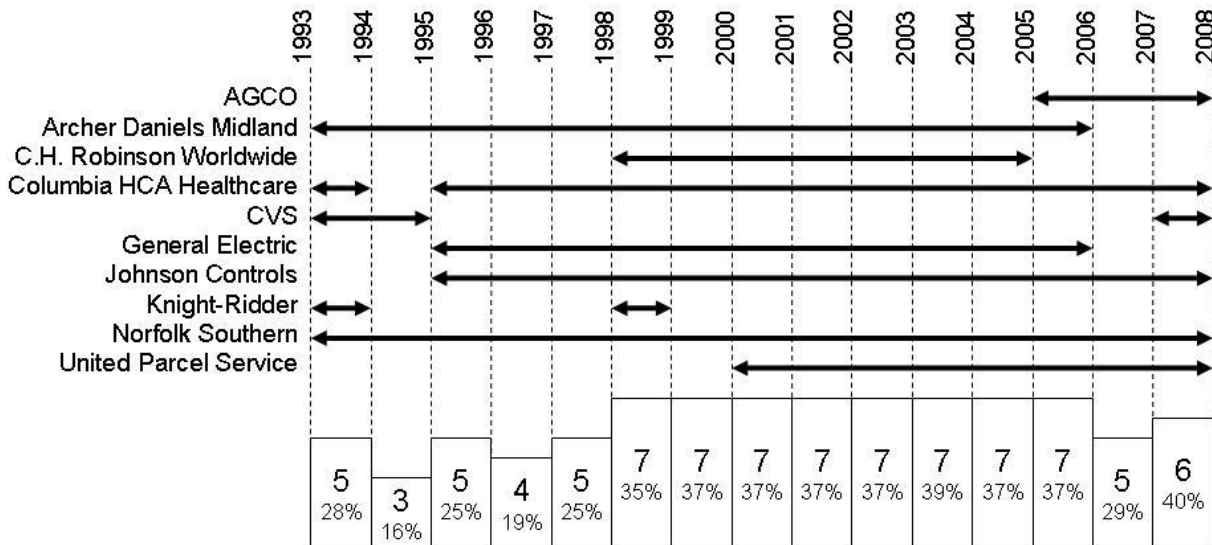


Figure 1. CIOs Reported as Corporate Officers

As illustrated in Figure 1, there is a degree of variation in the adoption of the CIO position in the sample over time. The proportion of adoption ranges from 16% to 40% during the period examined. Given that the absolute number of adopters is only between three and seven for the pilot test, fitting of this distribution to either of the hypothesized curves would not be statistically valid, however this is the intent for the future study. An observation is that only Norfolk Southern had consistent employment of a CIO position at the TMT level over the course of the sampling period. What can be addressed at this stage is illustration of the different theorized profiles shown by individual firms, as will be addressed in the next section.

### **Firm Examples**

Three examples are provided from the sample firms, illustrating cases of adoption, reduction in status and abandonment.

#### *Adoption – United Parcel Service*

United Parcel Service (UPS) has been described as company that evolved from operations-oriented to technology driven through the 1980s and 1990s (Business Wire, November 6, 1996). UPS has had only three CIOs in almost 25 years (Wailgum, 2005). The position was established in 1985, however only started being reported as a corporate officer in the 2000 10-K filing. IT in the firm has been a critical differentiator with its competition and with it has come an increase in the status of the CIO and an apparent institutionalization of the position. As an executive officer of the firm, the CIO is a Senior Vice President (SVP) with peers including the Chief Operating Officer, Chief Financial Officer, General Counsel, SVP Human Resources and SVP Worldwide Sales and Marketing. In this firm, the CIO has taken its place as a member of the TMT.

#### *Reduction in Status – General Electric*

Chatterjee et al (2001) identified General Electric Company (GE) as an instance of the appointment of a CIO with market impact, as noted in the following news release that signaled the firm's intent with respect to elevate the status of information technology in the firm.

“General Electric Company today announced that it had named Gary M. Reiner to the new post of Senior Vice President-Chief Information Officer. In this position, Reiner, formerly vice-president, Corporate Business Development, will use information technology to provide competitive advantages and growth opportunities for all of GE's businesses. ‘This new position recognizes the importance that information technology will play in GE's future,’ said GE Chairman and CEO John F. Welch. ‘It is the key to improving all our business processes from the customer to the supplier.’” (Financial News, April 8, 1996)

At the time of writing, Gary M. Reiner remained the CIO of GE and was listed as a Senior Corporate Officer on the GE website. However a change in reporting in the 10-K between 2006 and 2007 may be indicative of a reduction in status of the position. From the time of the position inception in 1996 through 2006, the position was listed in the 10-K as a corporate officer. In 2007, the position disappeared from the register. Peer Senior Vice Presidents positions were still maintained in the 10-K, including Human Resources, Chief Financial Officer and, most interestingly, Corporate Business Development, the position in which Mr. Reiner started at GE in 1991. In this firm, the CIO was a peer in the TMT, but has been reduced in stature.

#### *Abandonment – Archer Daniels Midland*

Archer Daniels Midland (ADM) is an agricultural processing firm, producing food ingredients, animal feeds and biofuels. From the start of the sample frame in 1994 through to 2006, the same individual held the top IS position in the firm, which was reported as a corporate officer in the 10-K filing. The title evolved in 1996 from Vice President – Management Information Systems to Group Vice President – Information Technologies. In 2006, the position was no longer reported. In addition, the firm website does not report any IT or IS related positions. Upon the retirement of the Group VP – IT, the IT portfolio was placed under the SVP Strategic Planning (M2 Presswire, April 11, 2007). The IT functions moved with the incumbent of as he was appointed Chief Financial Officer, which is noted as having responsibility for all Information Technology matters. In this firm, the CIO position has ceased to exist.

### **DISCUSSION**

As this was a pilot test, the results were only indicative but sufficiently encouraging for continuing the study. First, there was a discernable upward trend in adoption, followed by a plateau. This would indicate that there should be sufficient variance from year to year that can be used to fit the strong or weak institutionalization models and to assess the moderating factors. This would also indicate the value of collecting additional data for this period and extending the data collection to the hypothesized first cycle of institutionalization.

Second, the three firms noted as examples showcased the different behaviors that were of interest in the study. UPS provided the expected profile of adoption and institutionalization, where the position is introduced, grows in authority and recognition and finally becomes taken-for-granted in the firm. GE showcased a very public adoption of the position followed by gradual reduction in its status, as seen in the incumbent staying in the position, but it no longer being considered a corporate officer. ADM displayed abandonment of the position, as seen by first placing the IT function under strategic planning and then moving it to finance.

A number of actions would signal the increasing importance of the CIO position in a firm. The chief technology policy maker in an organization can be made the CIO (Thomas, 2000) instead of the COO (Earl, 2000). The CIO can be made a member of the TMT and be included in business direction debates (Earl and Feeny, 1994). The CIOs can be rotated into areas such as operations, marketing and other executive positions as a method of broadening their experience (Heller, 2006). Some even feel that because of its exposure to the breadth of a firm's strategic issues and not simply one functional area, CIOs that avoid a strict technology orientation are natural individuals to become CEOs (Earl, 2000; Thomas, 2000).

Before this can occur, CIOs may need to overcome the structural impediments to the institutionalization of the position, particularly the opposition of interest groups and the demonstration of business value (Tolbert and Zucker, 1996). In order to defuse opposition, the CIO may have to 'clean-up his or her house' of the IS department and provide clear value before being accepted as a peer in the executive suite (Strassmann, 1996). The path to the board room is dependent on showing value to the firm. In firms where IT can be of strategic value, strong executive leadership by a CIO may be recognized and valued by shareholders, which would aid an individual on that path (Chatterjee *et al.*, 2001). Just as financial CEOs are more likely to focus on profit measures, marketing CEOs are more likely to stress sales growth and manufacturing CEOs are less likely to diversify (Fligstein and Brantley, 1992), IT CEOs would be more likely to showcase IT-led value propositions for their firms. If this is the goal, then the CIO position must evolve to be strategic advantage focused during economic expansion and cost control focused during economic contraction in order to overcome the resistance to the position's full institutionalization.

A parallel can be drawn with the institutionalization of the CFO position, under which the CIO is often relegated. CFO positions are also a relatively recent management innovation, created in response to the funding crisis in the early 1970s and strengthened by regulatory changes in accounting practices in 1979 (Zorn, 2004). Similarly, CIOs were established to address the expansion of business information systems in the mid-1990s and strengthened by the rise of e-Commerce in the mid-1990s. The CFO could be seen to be fully institutionalized following its mid-1980s application for addressing issues of shareholder value (Zorn, 2004), which was far removed from its original intentions (Tolbert and Zucker, 1983). The fate of the CIO position may rest on what the next issue that the position may address.

## CONCLUSION

Based on the pilot study results, there are indications either of an upward trend or a plateau in CIO adoption. However, this will require further testing to statistically validate as a limitation of the current paper is the small sample size of the pilot test. It is clear, however, that there were cases of adoption, reduction in status and abandonment of the CIO position among firms. By using the two theory lenses to view the full data set, it may be possible to explain why the CIO position has not been uniformly successful and how to make it more relevant. The CIO is squarely at the crossroads ready to face the next challenge and prove its worth once again.

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