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The Demise of Knowledge Management Executive Leadership: An Empirical Study of Leading Companies That Have Changed Their Knowledge Management Strategies?*

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Knowledge management is increasingly under attack to show returns on investments and profitable business outcomes. While many companies retain their executive leadership as chief knowledge officers (CKOs) and vice presidents of knowledge management, the trend toward appointing CKOs that developed in the late 1990's has been reversed at many companies and a new trend is to assign the strategic functions of knowledge management to the chief information officer (CIO). This new strategic approach has many ramifications that determine if the firm will be able to meet not only short-term objectives but firm mission strategic outcomes as well. This paper researches over 100 knowledge management executives respondents in a broad cross-section of medium and large US industries and organizations to question why the shift is occurring and what the strategic basis is for this shift? The results of this study clearly show that there are pros and cons to make this strategic shift and that many firms are doing so with little actual factual knowledge of the strategic effects on performance or intellectual capital formation. This paper and empirical firm performance and patent research is designed to give that top manager (CEO) the appropriate information to make rational decisions based on facts when considering eliminating or consolidation of CKO into the CIO function. Decisions on CLO and CKO positions should be based on the firm related performance in both measurable intellectual property and financial results. The results are presented and summarized and the statistical methodology of regression and correlation are used in this paper.

Keywords: knowledge management strategy, executive knowledge leadership

Introduction

This paper addresses the gap between the stated objectives of many companies to maintain a market leading position in the acquisition of intellectual capital and to gain leadership in financial outcomes within their industry and the actual results which are affected adversely by declining numbers of "C" level knowledge managers. Many firms fail to recognize that "follow the sun" technology strategies are a dead end. Always employing the latest information technology as a strategy does not impart a strategic advantage to a firm and

* This research is important as knowledge management attempts to continue its importance as a management approach and as top managers need better information about the results of often muddied decisions to consolidate the CKO position into the CIO position.

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replacing or consolidating the knowledge management functions and organizations under a chief information officer (CIO) may simply replace the more advantageous tacit methods of knowledge management with computer technology that can be easily replicated by competitors. Competitors may advantageously wait on your implementation to gain the same spot on the experience curve because of the vendor's learning during your latest technology implementation. Knowledge management has been increasingly relegated to the second tier of executives as companies look to streamline their decision making and gain strategic advantage using hardware while devaluing actual investments in knowledge management capability and systems.

The question is what management strategic process or methods can be applied to allow companies to direct their resources toward the most productive of these major intellectual property categories. This question is answered by the intellectual property development strategy employed by the firm and the metrics employed (G. Roos & J. Roos, 1997). Organizational capability is a part of this strategy and neglect of the knowledge management area through lack of "C" level knowledge management executives has become apparent over the past 15 years. Fewer firms have CKOs or CLOs more than 15 years ago and the results are explored in this paper. Many of the reasons for this shift involve the rationale that customers know best the knowledge needed to serve them and that the CIO manager is the best equipped to develop the resources needed to serve them (Margolis, 2011).

This empirical research develops the idea that knowledge strategy is made up of actions which include appointing chief knowledge or learning officers and other top managers to implement a strategy of knowledge management developing a firm knowledge management operational function that serves to enhance sharing and capturing of knowledge within the company (J. Roos, G. Roos, Dragonetti, & Edvinsson, 1998).

Organizations have used knowledge management as a key "C" level responsibility over the past two decades to create a cultural change in firms whilst using knowledge management as a platform for dynamic value creation and sustainability. In the past 15 years, the role of chief knowledge officer (CKO)/chief learning officer (CLO) at firms has had its time as a trend upward and a trend downward. Key to this effort is the methods to create an on-going expansion of firm knowledge management and memory for firm sustainability. While many CKOs still are resident in many companies, only 30 of the Fortune 500 companies are now listed as having a CKO (Dun & Bradstreet, 2014). Many of the firms have decided to retitle the CKO level manager the CLO or simply rolled the responsibilities of the CKO into the CIO role. A research model is developed and empirical research applied in this paper to further the idea of creating a knowledge strategy that can use both measureable inputs for knowledge development (systems of knowledge management) and the use of development of management capability at the highest "C" level in the form of a chief knowledge or CLO of the firm to create an environment that both advances and instructs the knowledge management strategy and dynamic knowledge sustainability of the firm.

Patents are the most visible major intellectual property of these companies and they serve as an example of what is happening at these firms. Only two US companies were in the top 10 filers of USA patents in 2011. IBM was number 1 with 6,180 filings followed by Microsoft at #6 with 2,311. Trends indicate that Samsung Electronics is quickly gaining on #1 IBM and may gain the #1 spot as early as 2014. According to the United States Patent and Trademark Office, the following Table 1 presents the top 10 companies filing US patents in 2011.

Table 1

Patent Filings 2011 by Company

Rank	Grants	Company name	Country	CLO or CKO
1	6,180	International Business Machines Corp	United States	Yes
2	4,894	Samsung Electronics Co Ltd KR	Korea	Yes
3	2,821	Canon K JP	Japan	No
4	2,559	Panasonic Corp JP	Japan	No
5	2,483	Toshiba Corp JP	Japan	No
6	2,311	Microsoft Corp	United States	Yes
7	2,286	Sony Corp JP	Japan	No
8	1,533	Seiko Epson Corp JP	Japan	No
9	1,514	Hon Hai Precision Industry Co Ltd TW	Taiwan	No
10	1,465	Hitachi Ltd JP	Japan	No

Six of the top 10 patent filers in 2012 were Japanese companies and all of these Japanese firms had no CLO or CKO positions at the highest executive levels. They all also had no CIO positions at the highest levels. While patent filings are important, it is important to note that the general Japanese economy has been in a steady decline over the past two decades. Some of the Japanese firms on this list are performing poorly financially over that period and have not managed to grow their core businesses in spite of a large number of patent filings.

Table 2 below presents this researcher's analysis of six top USA companies and their patent filings developed from United States Patent and Trademark Office (USPTO).

Table 2

Top 30 Rank by Year -# of Patents Filed Selected US Companies (USPTO, 2012-13)

		Top 30 rank by year: # of patents filed USA				
CLO or CKO	Company	2008	2009	2010	2011	2012
Yes	IBM (SW, HW, Serv)	1	1	1	1	1
Yes	Microsoft (Software)	4	3	3	6	6
Yes	GE (industrial conglomerate)	15	15	15	10	8
Yes	Qualcomm	45	40	39	22	16
Yes	Google	NR	NR	NR	NR	21
Yes	Apple	NR	NR	NR	NR	22

A new model of intellectual capital development and strategic creation of top level management capability is needed for top managers that matches strategy with intellectual capital management capability and that model is presented in this paper.

Edvinsson and Malone (1997) proposed a new way to explain why companies must take intangibles seriously and how to measure them as they can. One of the greatest challenges facing any business today is the gap between its balance sheet and its market valuation. This gap, representing the bulk of a company's true value, consists of indirect assets—organizational knowledge, customer satisfaction, product innovation, employee morale, patents, and trademarks—that never appear in its financial reports. This intellectual capital is the basis for developing the focus on top level organizational management, such as CKO or CIO.

Literature Review

Intellectual capital has been used as a proxy for knowledge and as a proxy for tacit knowledge as well. All of the definitions of intellectual capital imply that knowledge is both known to management and can be converted into value (Edvinsson & Sullivan, 1996) and is about knowledge and knowing capability of a social collectivity (Nahapiet & Ghoshal, 1998), packaged useful knowledge (Stewart, 1997), and "intellectual capital = competence × commitment" (Ulrich, 1998). From this notion that management knowledge can be converted to value, the idea of an intellectual property strategy can be developed.

A firm's knowledge and intellectual capital can be dynamically deployed and redeployed to form a basis for competitive advantage (Teece, 2001). Strategic frameworks have been proposed to relate the role of knowledge to strategy (Von Krogh, Ichijo, & Nonaka, 2000) with astute management of the value in a firm's competence and knowledge base is a central issue in developing firm strategies (Teece, 1998). Business has recognized that not all knowledge yields competitive advantage (Von Krogh et al., 2000).

What Is a CKO?

A CKO is an organizational leader who is responsible for ensuring that the organization maximizes its use and dissemination of knowledge through "knowledge" practices and processes within the organization. The CKO is responsible for strategic management of intellectual capital and developing the suite of knowledge management methods within an organization. CKO is not just a different way of saying—the CKO role is much broader in that it encompasses information technology as well as other processes and methods of providing knowledge in an organization.

> CKOs can help an organization maximize the returns on investment in knowledge (people, processes, and intellectual capital), exploit their intangible assets (know-how, patents, and customer relationships), repeat successes, share best practices, improve innovation, and avoid knowledge loss after organizational restructuring. (Boyd, 1998, p. 20)

N. Bontis (2001) suggested that the CKO also has skills at evangelism to promote and expand the ideas of using knowledge productively to increase firm performance.

Parker (2011) suggested a new organizational structure that is developed for firms that are information rich but knowledge poor. The replacement of the CIO by a CKO is suggested as a way to remove obstacles that often pit the CIO and CFO against the development of new knowledge capture and retention systems. A recent article in the *Economist* (Schumpeter, 2010) suggested that there are too many executives in the "C" suite and that too many chiefs dilute strategies and performance from the mission and vision of the chief executive officer. An idea was suggested by Camerena (2014) to enable training by using knowledge management methods to increase learning and develop the CLO as the senior manager. Kaplan and Norton (1996) suggested a balanced scorecard approach (Kaplan & Norton, 1992) that presented the learning perspective as a key strategic positioning approach. Kaplan (2002) suggested a step-by-step approach to managing an efficient knowledge management system based on the learning perspective metrics.

However, in many large and medium firms, a new "C" level executive is emerging that encompasses the learning and knowledge management strategic management of the firm (Earle & Scott, 1999). From a study of 20 CKOs by Earle and Scott (1999), it was presented that there were three points of agreement as to what a CKO embodied as follows: (1) Knowledge is necessary for sustainable competitive advantage and in this era of highly turbulent changing environments the dissemination, creation of new knowledge, and the ability to embed it in new products is an essential part of sustaining competitive advantage; (2) companies are not good at

managing knowledge in that they do not know what they have as knowledge, they may deter or inhibit knowledge creation and sharing, and they underinvest in knowledge creation; and (3) companies have embarked on designing techniques for knowledge creation, protection, and reuse as well as designing and creating environments to discover and release knowledge and finally to articulate the purpose and nature of managing knowledge.

One of the key challenges for business executives in the knowledge era is to manage intellectual capital. E. Bontis (2001, p. 20) drew upon: "(1) his personal experience as CKO of Knexa.com—the world's first knowledge exchange auction; and (2) the relatively nascent literature on the roles and responsibilities of CKOs in his paper on key challenges of a CKO". His research paper highlights five perspectives that a CKO must embrace to be successful: (1) CKO as knowledge sharing icon; (2) CKO as trust steward; (3) CKO as total trainer; (4) CKO as techno nerd; and (5) CKO as number-crunching accountant. The assessment of his research in this paper is that he has neglected the strategist perspective which is primary. In a learning organization, leaders play a critical role in a company's learning process. Research by Sumathi (2014) has shown that programs that had more leadership involvement were rated more highly compared to other programs that had less leadership presence. Gehl (2014) proposed that the literatures describing the CKO and CLO are caught up in larger histories of information and training, but strive to move past those histories into the production of particular knowledge via learning. This mirrors a shift from older forms of power (sovereignty and discipline) to noopower or power in and through thought (De Carlo, 2013). Noopower is an assemblage of sovereign power, discipline, and modulatory power, taking as its object minds, thoughts, perceptions, and memories. It is this noopower which makes CLOs and CKOs a key part of the general management of firms for firms at level 5 of the KMMM (Elkeles & Phillips, 2011).

Knowledge Management

A firm's overall economic, strategic, and innovation performance is dependent on the degree to which the firm can use all of the knowledge created by the firm and turn this knowledge into value-creating activities (Von Krogh, 1998). Knowledge management is a strategic process, the desired goal of which is to harness the value of information by integrating it with processes that govern the manipulation of intellectual assets (Loshin, 2001). The use of KM enables firms to have more effective decision-making and enables firms both to create new knowledge and to apply this knowledge to generate more innovation in products, strategy, and processes (Probir 2002). Greater levels of innovation and improved processes in turn lead to enhanced market and financial performance.

The dynamic capabilities view (DCV) focuses the development and retention of knowledge resources so as to sustain competitive advantage (Chen & Fong, 2012). The description of the DCV includes as a focus of knowledge management to develop the knowledge management capability through deploying knowledge governance mechanisms that are conducive to facilitating knowledge processes so as to produce superior business performance over time. Chen and Fong's study (2012) used a survey and hypothesis-testing to develop a capability-based knowledge management evaluation framework (CKMEF). Using the type of key management and governance as guides and a knowledge management maturity model (Joslin, 2007), measures were derived to understand the degree to which knowledge management implementations fulfilled its strategic objectives (Ehms & Langun, 2002).

Firms are able to develop a sustainable competitive advantage in knowledge management by developing a mix of knowledge management methods that complement and enable their core strategies (Hansen, 2002).

However, despite of large investments in knowledge management technology, many of the performance outcomes are not clear and the causal relationship between what works and what does not work has not been established empirically (Liebeskind, 1996). This gap in the causality is another rationale for this research.

Bontis and Fitz-enz (2002) described the results of research that measured the antecedents and consequents of effective human capital management. This furthers the idea of the active "C" level executive as the proper organizational tool to develop strategic focus in managing knowledge.

Organizations are implementing knowledge management systems with the assumption that the result will be an increase in organizational effectiveness, efficiency, and competitiveness (Farzin, Khareh, Mostaf, & Khalouei, 2014). Farzin et al. (2014) have developed a set of critical success factors that identify the measures needed to assess the "knowledge driven reconfiguration, integration, and innovation of organizational competencies".

Metrics are perhaps the most difficult part of recognizing the value of both a CKO and knowledge management methods. Firms are looking to use only a few financial and innovation metrics, such as patents and net income, as well as strategic objectives in measuring the outcomes of knowledge management systems as well as knowledge manager capability increases (Tiwana, 2000).

Knowledge, Intellectual Capital, and Knowledge Strategy

A knowledge strategy is necessary for a company to achieve higher than average returns. It is not sufficient to have knowledge assets, patents, or other marketable intellectual property. In a knowledge creating company, managers have the responsibility to unleash that knowledge into value-creating actions aimed at customers and to generate and exploit that knowledge-either public or proprietary-more effectively than their competitors. In addition, managers are also responsible to generate and exploit current firm knowledge better than their competitors and to use public knowledge better than their rivals (Von Krogh et al., 2000). All of the definitions of intellectual capital imply that knowledge is both known to the management and can be converted into value (Edvinsson & Sullivan, 1996) and is about knowledge and knowing capability of a social collectivity (Nahapiet & Ghoshal, 1998), packaged useful knowledge (Stewart, 1997), and "intellectual capital = competence × commitment" (Ulrich, 1998).

Research, Model, and Hypotheses

Model

Von Krogh, Roos, and Slocum (1994) suggested that there are essentially only two strategies used and that those are advancement and survival. Ansoff (1983) also used these two distinctions as operational effectiveness strategy and developing future profit potential strategies. Both authors' survival strategies target securing current firm profitability while the advancement strategy focuses on future firm profitability. As a knowledge strategy, these can be broken into a strategic knowledge framework with the role of knowledge in survival strategies one of creating trade secrets or using public knowledge in ways that competitors cannot easily duplicate. Processes associated with this type of strategy are knowledge transfer and continuous improvement with their ultimate metric profitability higher than the industry average. The role of knowledge in an advancement strategy is much different and includes new product or process knowledge and transferable new knowledge. Processes associated with the advancement strategy strategic framework include new knowledge creation and radical innovation. The goal of this strategic knowledge strategy is to attain higher than industry

average future profitability (Von Krogh et al., 2000). Firms differ in their industry life cycle stage and future direction, so employing one of these strategic knowledge strategies over another depends on the firm strategic thrust and may be based on one of Porter's strategies or the Miles and Snow strategy topology.

Figure 1 below depicts the flow of effects from the presence of knowledge management staff (CKO/CLO and number of staff) through the choice of knowledge strategies through the chosen processes and finally to the results of the choices.

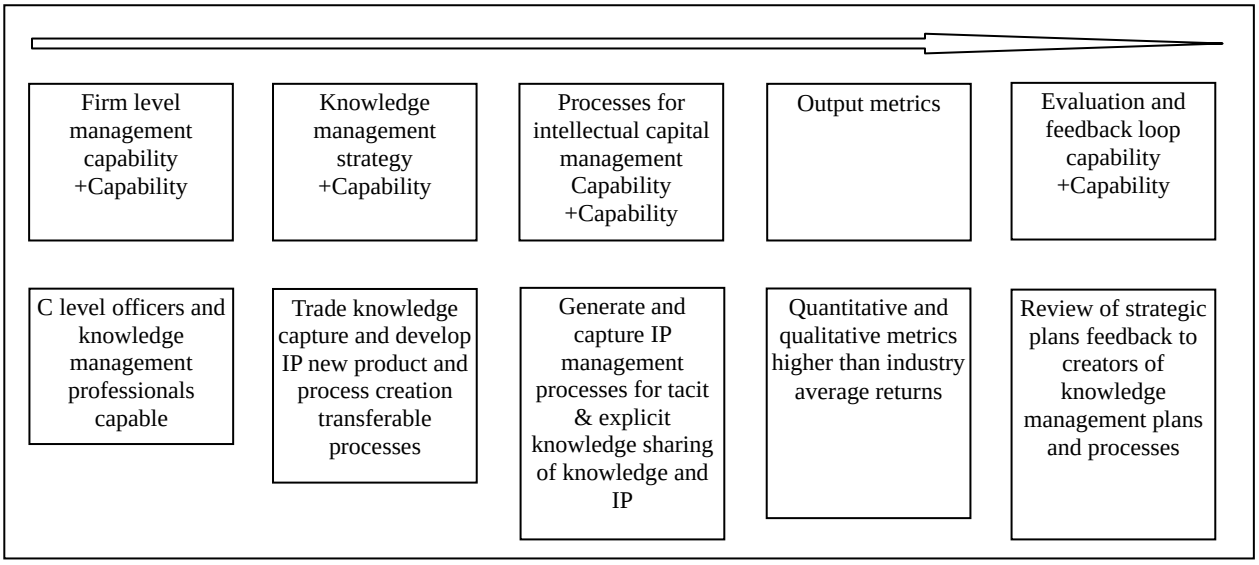

Figure 1. Research model.

The hypotheses are that having a CLO/CKO provides the management capability necessary to affect the outcomes of gathering and using intellectual capital as well as applying it in such a way as to affect financial outcomes.

H1: There is a positive relationship of the firm intellectual property acquisition performance and the organizational presence of a CKO or CLO.

H2: There is a positive relationship of firm financial performance and the organizational presence of a CKO or CLO.

Variables

The variables used were as follows:

- CLO and CKO positons present as a predictor;
- Patents as a dependent variable;
- Firm's net and total revenue as dependent variables.

Methods

Regression and correlation were used as a statistical approach to determining relationships. Secondary data were researched, organized by company, and were sorted and a research survey was sent to a sample of 1,100 managers that was sorted from a list of over 2,400 managers with the words knowledge or learning in their title. The respondents totaled 111 of which 11 had incomplete surveys and were discarded or not used on all questions.

There were 23 questions in the survey which asked a number of questions concerning demographics and performance. The demographics of the sample are as follows in Table 3.

Table 3

Sample Demographics

Management title	S/W Industry #	H/W #	Commercial #	Other products
CLO or CKO	3	5	6	6
Vice president	6	5	6	8
Director	16	10	13	11

Note. $N = 100$.

Research Questions

RQ 1: How does your firm compare to the average of other firms on your industry segment in patent filings?

RQ 2: How does your firm compare to the average of financial results of other firms in your industry segment over the past year? Over the past three years?

RQ 3: What is the extent of knowledge management at your firm? How many knowledge management managers and executives are present including the CLO/CKO? Is knowledge management extensive and part of an overall strategy or as a sideline and cost center?

RQ 4: Does your firm have a CIO?

Results

RQ1's answer was that 52% of respondents worked at a firm with a designated CIO. This compares to only 14% of respondents who worked for a firm with a CLO or CKO. For the firms with a CKO, there was a strong correlation to number of patents filed and a lessor correlation of CKO/CLO to financial performance except in the three year window. Table 4 below presents the correlation data of patents $R = 0.54$ and financial (net income) $R = 0.35$ for the presence of a CLO or CKO. The presence of a CIO presented an opposite picture with a correlation of $R = 0.48$ to financial results and a correlation of $R = 0.24$ to patents. Firms without either a CKO/CLO or a CIO performed at lower levels on both primary variables when compared to industry means.

Table 4 also presents the correlation data for the extent of knowledge management at the firm which was measured by respondents as either a comprehensive program and overall strategic initiative or simply a cost center with less focus.

The results displayed in Table 4 below show that there was a strong correlation among those companies with an extensive knowledge management system in place as evidenced by resources allocated and top level managers and executives within this function and financial performance of $R = 0.59$ as well as patent filings ($R = 0.63$) and firms who had less than the overall average of knowledge management organizational resources and less strategic with fewer resources and top managers (performance $R = 0.34$ and patents $R = 0.32$).

Table 4

Correlation Results (N = 100)

CLO or CKO patents	CLO or CKO financials	CIO patents	CIO financials	Knowledge management extensive organization patents	Knowledge management extensive organization financials	Knowledge Management not extensive organization patents	Knowledge management not extensive organization financials
$R = 0.54$	$R = 0.35$	$R = 0.24$	$R = 0.48$	$R = 0.59$	$R = 0.63$	$R = 0.32$	$R = 0.34$

Hypothesis 1: There is a positive relationship of the firm's intellectual property acquisition performance (patent filings) to the presence of a CKO or CLO.

While the sample size is a limiting factor in making strong conclusions, the research did show a positive relationship between CKO/CLO and patent filings.

From the data, it accepts the positive relationship and rejects the null of no relationship.

Hypothesis 2: There is a positive relationship of firm financial performance to the presence of a CKO or CLO.

The data show a moderate relationship for several of the years studied to both net and revenue. Firms that have CLOs or CKOs have a moderate correlation to net income and revenue over the years: It accepts this hypothesis and rejects the null hypothesis of no relationship.

While a general relationship of CKO /CLO and the extensiveness of knowledge management capability to firm patent filings and performance is accepted, further research is needed to determine if the patent filing relationship is offset by several years as patents are filed and then implemented toward new products. Sample size of CKOs and CLOs is a possible problem and may or may not be as correlated as the research indicates.

Conclusions

This research is important, since it investigates the commonsensical notion that new organizational structures promote both patents and produce positive financial outcomes. The research using this approach could be targeted toward technology companies to identify whether or not the chosen intellectual capital and knowledge generation strategy is having the intended effect and what changes need to be made to processes and people organizationally that would yield the desired outputs. Organizational influences, such as the presence of a CKO or CLO, appear to have a strong relationship to the financial and intellectual property acquisition and use of the companies in the research sample. Those firms with an extensive organization (number so senior managers and MK professionals) had had the strongest relationship to performance. Further research with larger sample sizes is needed and the further research will use a four-step process of: (1) determining which type of knowledge management organizational structures are present at firms; (2) assessing the strategic intent and strategy of the firm regarding intellectual capital development; (3) determining the strategic management capability of the firm; and (4) assessing the use of people and processes that drive the creation of those strategic intellectual and financial capital outputs that yield sustainable competitive advantage. It is far from clear that CIOs drive financial outcomes or intellectual capital acquisition and use. From this research, there are strong indications that reliance on CIOs who also develop and implement knowledge management strategy may get the results that are needed. Further research is needed to develop the model further and to arrive at more robust conclusions.

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