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THE ROLE OF CIOS IN STRATEGIC DECISION MAKING AND IT USAGE: AN EMPIRICAL EXAMINATION

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In this study, we examine the relationship between CIO involvement in strategy formulation and how IT is perceived within the organization. We use the top management team literature to theorize that the higher the level of CIO strategic involvement the more likely the firm is to view IT as strategically important and we support these results with a sample of Fortune 500 firms. These findings have significant implications as many see the CIO's role in the organization by many as a key factor in the ability of a firm to benefit strategically from IT.

INTRODUCTION

In 2005, spending by U.S. companies on information technology (IT) was $1.13 trillion. By 2009, this number is forecast to exceed $1.4 trillion (Information Technology Association of America, 2006a, 2006b). For some firms, IT investments represent more than 20% of total costs (CMA Management, 1998). Paradoxically, a survey of CEOs from the largest 1,500 worldwide corporations revealed that only 25% believe these IT investments are contributing to the firm's bottom-line (Schwartz, 1999). Despite this belief, CEOs nonetheless see the future of IT as playing a prominent role in firm strategy and have high expectations regarding its ability to contribute to their firm's competitive advantage (Mattson, Beheshti & Salehi-Sangari, 2000). In a recent survey conducted by CIO Insight (2005), 52% of organizations see IT as strategic in nature and 92% plan to increase spending in business intelligence gathering and analysis.

A key factor in determining whether an organization's IT investment reaches its full potential may be tied to the role the Chief Information Officer (CIO) plays in the organization (Earl & Feeny, 1994). Generally, the person in the organization who knows the most about the firm's IT system, its adoption and uses, and technology overall, is the CIO (Cha-Jan Change & King, 2005; Applegate & Elam, 1992). Consequently, this position is an important part of the organization (Karimi, Gupta, & Somers, 1996a).

However, for a firm to capitalize successfully on IT, its CIO must be able to bridge the gap between IT and strategy - technology and business (Stephens, Ledbetter, Mitra, & Ford, 1992). Accomplishing this requires a shift in the role of the CIO from specialist functional manager to strategic contributor. Johnson and Lederer (2005) suggested that firms that regularly involve the CIO in strategic decision-making are more likely to emphasize the strategic uses of IT and work to ensure that organizations integrate IT systems into their strategic plans.

In contrast, those firms that view the CIO as a technical advisor place little value on IT's strategic importance and underestimate its strategic uses (Earl & Feeny, 1994). It is therefore likely that the role of the CIO has important implications for how IT is perceived in the organization and how it is utilized (Johnson & Lederer, 2005; Earl & Feeny, 1994; Cash, McFarlan, McKenney, & Applegate, 1992).

In light of these observations, it is surprising that little empirical research has examined the relationship between the CIO's role in the organization and the organization's usage of IT. Drawing from the top management team (TMT) literature, we theorize that the CIO's level of strategic involvement is related to the strategic importance of IT within the firm and the firm's strategic use of IT; namely, the use of IT systems for monitoring the firm's external environment; the firm's involvement in e-business activities; and the firm's development and use of proprietary software. We empirically tested these relationships with a sample of firms from the Fortune 500.

Theory and Hypotheses Development

A firm's economic environment and competitive conditions alone cannot fully explain the nature of an organization's strategic decisions or its performance outcomes (Child, 1972). In recognition of this, researchers have increasingly turned their attention to trying to understand how the characteristics of the individuals responsible for making strategic decisions affect the organization. In large public organizations, it is a team of individuals labeled the top management team that is generally considered responsible for making the strategic decisions of the firm (Hambrick & Mason, 1984). These individuals must gather the necessary information by which to make decisions, analyze and evaluate the input, derive alternative courses of action, and finally decide on and implement a specific strategic course of action for the firm.

Much of the research in this area has focused on how the characteristics of TMT members affect organizational outcomes such as innovation, strategic orientation, types of strategic decisions, and overall organization performance (e.g., Bantel & Jackson, 1989; Murray, 1989; Gupta & Govindarajan, 1984). The theoretical link between TMT characteristics and these outcomes is that individual characteristics of team members help form the overall cognitive perspective of the team. In other words, each team member brings different skills, capabilities, and knowledge to the team that are based on educational backgrounds and work and personal life experiences. These differences influence both the types and amount of information brought to bear on strategic decisions, and are argued to enhance the decision-making process because of the increased variety of information and perspectives that match the

complexity and uncertainty of the strategic decision-making task (Ashby, 1956). In addition, different skill sets and knowledge bases provide specific areas of expertise from which the team can draw when necessary. For example, team members would most likely rely on the expertise of the CFO when discussing the ramifications of various capital budgeting options for financing a growth strategy through acquisitions. Of particular interest to us in this paper is how the strategic involvement of the CIO (i.e., is considered a part of the TMT and thus, involved in the strategic decision-making process) influences both the orientation of the firm toward IT (i.e., is it perceived as strategically important) and the firm's usage of IT for strategic purposes.

CIO Strategic Involvement and IT Strategic Importance

The position or expertise of an individual member of the team influences many of the decisions made by TMTs (Finkelstein, 1992). As an authority on the technology and IT systems of the firm, as well as the strategic uses possible with the IT system (Johnson & Lederer, 2005; Rockart, Ball, & Bullen, 1982), the CIO may find him or herself with considerable influence with respect to strategic decisions concerning IT. Additionally, because of the position they hold, CIOs who are members of the TMT, as compared to those holding functional positions, are perceived as more influential by other executives (Johnson & Lederer, 2005; Karimi, Gupta, & Somers, 1996b). This influence, in turn, may be used to promote the strategic importance of IT within the firm (Johnson & Lederer, 2005; Ashmos, Duchon, & McDaniel, 1998; Grover, Teng & Fiedler, 1998).

Educational and functional backgrounds of TMT members are also an important influence on the range of strategies that may be enacted, and on the types and amounts of information that are considered salient for making strategic decisions (Hitt & Tyler, 1991). Managerial skills and capabilities are largely a function of previous work experiences and educational backgrounds. Consequently, TMT members will differ in the sets of skills, abilities, and perspectives they bring to bear on managerial decision making, which, in turn, influences the cognitive perspective within the TMT (Hambrick & Mason, 1984). This would suggest the possibility that TMTs composed of members who have IT backgrounds more readily understand the strategic importance of IT (Mattson et al., 2000). Such an understanding may be particularly relevant as the strategic benefits of IT are not always specifically quantifiable. For example, Grover et al. (1998) found that organizations are less likely to make strategic IT investments when they do not integrate the IT perspective into top management. In addition, as the number of firms that view IT as strategically important grows, an increasing number require their CIOs have business backgrounds rather than technical degrees (Acarwal & Beath, 2007; Nash, 2007).

Fenny and colleagues (1992) suggest that when there is limited dialogue between the CIO and the CEO, the CEO is less likely to view IT as strategically important. Johnson and Lederer's (2005) survey of 228 CIO and CEOs with respect to communication between the pair supported this supposition. In fact, one of the primary tasks of the CIO should be influencing and educating top managers on the strategic relevance of IT (Earl & Feeny, 1994).

Based on these arguments, the CIO's role may significantly influence perceptions of the strategic importance of IT within the firm. Specifically, when the CIO is involved in the strategic decision-making process (i.e., is considered part of the TMT), the more likely IT will be viewed as strategically important. Therefore, we propose the following hypothesis:

> **H1:** The more the CIO is involved in the strategic decision-making process, the more likely IT will be viewed as strategically important to the firm.

CIO Strategic Involvement and the Strategic Uses of IT

Like any other executive, the more involved the CIO is with the TMT, the more likely he or she will have input on the firm's strategies (Johnson & Lederer, 2005; Hambrick & Mason, 1984). As previously stated, part of the role of the CIO is to convince other executives of the importance of the strategic uses of IT (Earl & Feeny, 1994). Furthermore, as the CIO interjects his or her own biases and cognitions into the decision-making and resource allocation processes, this influence will extend to the ways in which the organization uses the IT system for strategic purposes (Johnson & Lederer, 2005; Applegate & Elam, 1992). Three strategically important uses of the IT systems are the monitoring of the firm's external environment, performance of e-business activities, and the development and use of proprietary software.

The external environment of a firm consists of those forces outside of the organization that the organization must take into consideration during the strategic decision-making process because of their potential affect on the organization (Porter, 1980). Monitoring the external environment identifies opportunities for improving the firm's competitive position and threats that may negatively influence the firm. Firms that effectively monitor the environment are better able to take advantage of opportunities and minimize the impact of threats. Thus, one of the accepted axioms in strategy is that monitoring the firm's external environment is crucial to the firm's long-term success.

Because monitoring the external environment involves gathering and deciphering large amounts of relevant information, IT systems can significantly enhance this task. For example, the use of the Internet has greatly reduced the amount of time it takes to gather data and has provided an increased availability of information about competitors through on-line access to company profiles, trade and economic journals, financial statements and annual reports, and general economic information. By using powerful search engines available on the Internet, managers may find information on their competition virtually instantaneously. Additionally, the use of professional survey groups such as NPDR allows a firm to gather consumer preferences and marketing information that pulls from a larger target market yet is less costly than traditional customer survey

methods. Direct contact with customers through web sites and e-mail also allows a firm to use the Internet to gather data about its external environment. Buyers and sellers are able to conduct business and place orders on-line through Electronic Market Places (EM), which is another way in which business can monitor the external environment (Bakos, 1991). Information regarding availability of raw materials and vendors, prices, and delivery schedules that are not only available to the firm, but to its competition as well, is also valuable for strategic decision making.

Gathering information electronically is not the only way a firm can enhance its monitoring activities, however. Once the firm gathers the plethora of data, it must be converted to useful information. The use of such internal applications as Decision Support Systems (Todd & Benbasat, 1999), Group Decision Support Systems (Jones, 2006; Liou & Nunamaker, 1993), and Executive Information Systems (Vandenbosch & Huff, 1997) allows managers to process and sort through myriad data and select only that which seems relevant to the decision or information needs at hand (CIO Insight, 2005).

Despite the relevancy and relative ease of gathering and processing information that is provided by using IT, these systems are often under utilized for environmental monitoring. One reason cited why firms under use IT for this critical strategic task is that the CIO is not actively involved in supporting this vital activity (Vedder, Vanecek, Guynes, & Cappel, 1999). Thus, one would expect that the more strategically involved the CIO, the more likely the organization will use the IT system for environmental monitoring. Therefore, we propose the following hypothesis:

$H2_a$: The more the CIO is involved in the strategic decision-making process, the higher the use of IT for monitoring the firm's external environment.

Proprietary software, which is created with the specific needs of an organization's management in mind, can aid strategy formulation and implementation by providing the information necessary for accurate and timely decision-making without creating information overload (Sweat, 1999). Research also suggests that competitive advantages may accrue to firms that develop proprietary IT systems customized to exploit firm-specific strengths or opportunities (Powell & Dent-Micallef, 1997). However, the ability of IT to exploit such strengths or opportunities hinges on successfully integrating the IT system into the firm's strategy (Clemons & Row, 1992). Wal-Mart's point-of-sale system, American Airlines' SABRE system, Jet Blue's wireless cockpit, and Netflix's logistical system have been cited repeatedly as examples of sources of strategic advantage and models of how proprietary software should be used (Margulius, 2005; Stein, 1998; Mui & Downes, 1998; Stedman, 1997; Ludlum, 1989). Sonic has found that their proprietary point-of-sale system has provided them with strategically useful data such as nearly instantaneous information regarding product mixes, success of advertising campaigns, and access to financial data of specific stores (Campos, 2000).

As previously suggested, the CIO may play a critical role in the strategic uses of IT when able to bridge the gap between IT and strategy. Thus, we suspect that when the CIO is member of the TMT, the firm is more likely to use proprietary software:

$H2_b$: The more the CIO is involved in the strategic decision-making process, the higher the use of proprietary software by the firm.

Finally, advances in information technology allow firms additional strategic options that may have been previously unavailable. In particular is the use of electronic business or e-business. Most companies see E-business projects as vital to their long-term success, and developing e-business strategies, investing in e-business infrastructure, and integrating e-business into current business strategies is a top strategic priority (Strebinger & Treiblmaier, 2006; Scannell, 1999). For example, firms may chose to use EDI for business-to-business e-business (Sullivan, 1998) or IOSs for direct interorganizational data and information exchange in order to exploit additional markets that may not be available without the use of an IT system (Strebinger & Treiblmaier, 2006; Riggins & Mukhopadhyay, 1994).

Successfully developing and implementing e-business initiatives, however, is both technologically and strategically difficult. Firms must rethink existing business processes, supplier and customer relationships, data access, logistics, and marketing tactics (Strebinger & Treiblmaier, 2006). Yet, the biggest problem affecting the success of e-business initiatives, according to a four-year survey conducted by systems integrator Computer Sciences Corporation, is the "organizational schism" between the strategic and technological aspects of companies (Berry, 1999). When strategically involved, the CIO is best in the position to narrow this schism by increasing the awareness and understanding of other key decision makers on how e-business fits with existing business strategies and how it benefits the organization. Therefore, we suggest the following hypothesis:

$H2_c$: The more the CIO is involved in the strategic decision-making process, the higher the use of e-business by the firm.

METHODS

Sample

We took the sample pool for this study from the companies listed on the Fortune 500 for the year 1998. After accounting for mergers, acquisitions, and privately held firms, we reduced the initial number of firms from 500 to 440. We first mailed the CIO of each firm, identified from the Directory of Top Computer Executives, an introductory letter describing the study and asking for his or her participation. Approximately one week later, we sent the CIOs a survey with an attached letter guaranteeing their anonymity and instructing them to complete the survey and return it in the provided prepaid envelope. Participants were also given the option to complete

the survey on-line and were provided a password and user ID with which to access the survey. Two weeks after mailing the survey, we mailed the non-respondents the survey again along with a letter urging their participation.

We created the on-line version of the survey with Interactive HTML coding that interfaced with a Microsoft Access database maintained on the server. The on-line survey was available to all potential participants of the study. We furnished a unique password and user ID to each firm so that participants would be able to access their data as well as to deny a participant access to any other firm's information, thereby providing anonymity to the firms that participated on-line. We designed the on-line version to look as much like the paper version as possible, with page breaks, formatting, and question placement in the same positions as on the original, thus reducing any bias between those that used the paper survey and those who participated on-line. In fact, when we compared them to each other, there were no significant differences between those firms that participated on-line and those that completed the paper version of the survey with respect to Fortune 500 ranking, total sales, return on assets, and number of employees. Of the 440 CIOs surveyed, we received responses from 102 for an overall response rate of 23%, with 15.8% of these responding via the on-line survey. Of these approximately 56% were usable, resulting in a final sample of 57 firms.

We compared our final sample of firms with the larger population of Fortune 500 firms on the dimensions of total sales, return on assets, and number of employees to assess possible non-response bias. The differences were not significantly different, suggesting that the sample was adequately representative of the larger population of Fortune 500 firms in terms of these key dimensions.

Measures

CIO strategic involvement: We adapted a three-item scale from Grover's (1993) study of firm adoption of customer-based interorganizational systems. The items measured whether the CIO was considered part of the top management team, and the level of the CIO's involvement in strategy formulation. We recorded the responses on seven-point, Likert-type scales with anchors ranging from 1 "strongly disagree" to 7 "strongly agree". The reliability coefficient of the measure was .94.

IT strategic importance: We measured the strategic importance of IT to the firm with a single item, dichotomous variable taken from Grover (1993). We asked each CIO whether IT was considered integral to his or her firm's strategy. Responses affirming IT as integral to firm strategy were coded 1, and negative responses were coded 0.

Environmental monitoring: We measured the extent to which the firm uses its IT system to monitor its external environment with two items. We derived these items from Fedorowicz and Konsynski's (1992) taxonomy of IT system usage. Specifically, the items asked whether the firm's IT system was used to monitor market conditions and competitor actions. Responses were recorded on seven-point, Likert-type scales with anchors ranging from 1 "strongly disagree" to 7 "strongly agree". The reliability coefficient for these two items was .66.

Proprietary software: We also derived the measure of firm development and use of proprietary software derived from Fedorowicz and Konsynski's (1992) taxonomy of IT system usage. Each CIO responded to three items that asked whether his or her firm primarily used software created in-house and developed for firm-specific applications. Each item was measured on a seven-point, Likert-type scale with anchors of 1 "strongly disagree" and 7 "strongly agree". The reliability coefficient of this measure was .84.

E-business: We developed three items to assess whether or not the firm used e-business as part of its firm strategy. Specifically, each CIO was asked if his or her firm used e-business to support business-to-customer, business-to-business and interorganizational relationships. These items were measured on a seven-point, Likert-type scale with anchors of 1 "strongly disagree" and 7 "strongly agree". The reliability coefficient of this measure was .73.

Control variables: Prior research has suggested that firm size affects competitive strategies and organizational adaptation (Miller & Chen, 1996; Chen & Hambrick, 1995). Thus, although larger firms may recognize the potential strategic importance of IT, they may be slower in utilizing IT for strategic purposes. In this regard, perhaps it is not surprising that smaller, entrepreneurial firms appear to be first movers with many strategic IT applications such as e-business. Therefore, following the lead of previous research we used each firm's total number of employees as a measure of firm size (Miller & Chen, 1996). We also deemed it necessary to control for firm level performance since profitability has been linked, empirically and theoretically, to IT usage (Powell & Dent-Micallef, 1997). Using COMPUSTAT data, we measured firm performance as return on assets averaged over the years 1996-1998.

Analysis

Prior to discussing the results, we feel it important to acknowledge that our decision to use perceptual self-report measures raises the legitimate concern that the relationships between the independent and dependent variables could be attributable to common method variance. That is, the variables in this study may be correlated simply because of common method variance derived from being collected with the same method. Thus, we conducted two analyses to assess the potential impact of common method variance. First, a confirmatory factor analysis was estimated on the items measuring CIO strategic involvement, IT strategic importance, environmental monitoring, use of proprietary software, and use of e-business. This particular model constrained each factor to load only on the factor for which it was proposed indicator and permitted no correlations in error structure. Overall, results of our analysis indicated that a five-factor structure was good fit of the data (χ^2/df=1.63; CFI = .97; NFI=.94). Our second analysis involved factor analyzing the independent and dependent

variables and extracting the first factor, which should contain the best approximation of common method variance (Podsakoff & Organ, 1986). We then re-tested the hypotheses while controlling for the first factor extracted. After conducting this procedure, we found that both the nature and significance of the results remained unchanged. Our analysis, combined with the CFA results, suggest that common method variance was not overly influencing the results.

Because IT strategic importance is a categorical variable, we tested hypothesis 1 using logistic regression. Unlike ordinary least squares regression, logistic regression utilizes a maximum likelihood estimator, which provides coefficients indicating the likelihood of the dependent variable given a unitary increase in the independent variable. In most respects, however, there are sufficient similarities with more common regression techniques to preclude further comment. We tested Hypotheses 2a through 2c using OLS regression.

Results

Table 1 shows the descriptive statistics and intercorrelations between the variables. Table 2 shows the results of the logistic regression analysis used to test Hypothesis 1. The χ^2 statistic is significant at the .01 level which suggests that the overall model is a good fit of the data ($\chi^2 = 25.82$, $p < .01$). In particular, CIO strategic involvement is found to be significant and positively related to IT strategic importance ($b = 1.31$, $p < .01$). Thus, in support of our first hypothesis, the more the CIO is strategically involved, the greater the likelihood of IT being viewed as strategically important.

Table 1: Descriptive Statistics and Intercorrelations Between Variables

Variables	Mean	s.d.	1	2	3	4	5	6	7
Firm size	53.99	73.74	na						
Average ROA	4.89	3.97	.09	na					
CIO strategic involvement	4.67	1.59	-.05	-.16	.94				
IT strategic importance	.40	.50	.24+	-.06	.58**	na			
Environmental monitoring	3.20	1.39	.12	.22	.33*	.27*	.66		
Proprietary software	3.68	1.47	.19	.03	.30*	.12	.19	.84	
E-business	4.91	1.51	.06	-.04	.50**	.34*	.35*	.28*	.74

n=57; reliabilities reported on the diagonal
\+ p<.10
* p<.05
** p<.01

Table 2A: Logistic Regression Results for CIO Strategic Involvement on IT Strategic Importance

Variables	-2 Log likelihood	χ^2	b	s.e.
Firm size			.02*	.01
Average ROA			-.01	.10
CIO strategic involvement			1.31**	.39
	40.59	25.82**		

[a]unstandardized coefficients reported; n=57; *p<.05; **p<.01

Table 3 shows the results for hypotheses 2a through 2c. Hypotheses 2a stated that the level of CIO strategic involvement is positively related to the use of IT for environmental monitoring. The overall regression model is significant and with an explanatory power of approximately 21% (F-value = 4.14, $p < .01$). CIO strategic involvement is also significant and positively related to environmental monitoring ($p < .01$). Thus, there is support for hypothesis 2a.

Table 3A: Results of OLS Regression Analyses

Variables	Environmental Monitoring	Proprietary Software	E-Business
Firm size	.12	.20	.02
Average ROA	.26*	.06	.05
CIO strategic involvement	.38**	.31**	.51**
R^2	.21	.13	.25
F-value	4.14**	2.44+	2.88**

[a]standardized regression coefficients are reported; n=57; +p<.10; *p<.05; **p<.01

We found moderate support for Hypothesis 2b, in which we predicted that the level of CIO strategic involvement would be positively related to the development and use of proprietary software. The predictor variable, CIO strategic involvement, is significant and positive in support of the hypothesis, but the overall regression model is only marginally significant ($R^2 = .13$, F-value = 2.44, $p < .10$).

Our last hypothesis in the paper (2c) predicted that the level of CIO strategic involvement is posiitively related to the firm's usage of e-business. We found strong support for this hypothesis. The overall model is significant, explaining 25% of the variance in the dependent variable (F-value = 4.88, $p < .01$). CIO strategic involvement is also significant and positive ($p < .01$).

Discussion

Theoretically, the findings from our study are supportive of previous top management team literature examining the relationship between TMT composition and strategic decision-making; namely, that the managers do make a difference with regard to strategic decisions and strategic orientations. More interestingly, however, this study adds to our general knowledge of the relationship between the CIO's role and firm strategy. Our results show that when the CIO is involved in the strategy process, IT is more likely to be perceived as strategically important for the firm. Our finding has important implications since IT is viewed by many managers as having high operational, but little strategic, value. Thus, it might behoove firms wishing to elevate the strategic importance of IT to give careful consideration to including the CIO as a member of the firm's TMT.

Also, our findings support the view that the when the CIO is strategically involved, the firm is likely to use IT for strategic purposes. The CIO's involvement in strategic decision-making provides expertise in an area with which other TMT members may not be familiar or comfortable. The knowledge of the CIO, when added to the strategic decision-making process, appears to increase the likelihood that IT will be used in a strategic manner. Anecdotal evidence suggests that when top management better understands IT they give a higher priority to investing in strategic IT systems (Grover et al., 1998).

Limitations and Future Directions

Several limitations of this study warrant future research. The first is that our results may not generalize beyond the large corporations of the Fortune 500. Organization researchers have long noted that what applies to large firms may not apply to small ones (Pugh, Hickson, Hinings, & Turner, 1968). Thus, a replication of this study in a different context is warranted.

Another limitation is our use of perceptual self-report measures from a single respondent, which raises the possibility that common method variance is influencing the results. While we believe the CFA results combined with rerunning our analyses while partialling out the variance accounted for in the first factor suggest that common method variance is not overly influencing the results, future research would nonetheless benefit from additional means of data collection. One method that would increase the reliability of the results would be to have multiple respondents from each firm and check the inter-rater reliability among respondents. Unfortunately, financial and time constraints precluded this approach in this study. Other methods might include using archival sources such as proxy statements or annual reports to determine if the CIO is part of the firm's TMT. Content analysis of similar documents may also be helpful in identifying how a firm perceives the strategic importance of IT and how it is strategically used by the firm.

Another limitation is the cross sectional nature of the study. We relied on past research and theory to argue that a CIO's strategic involvement affects IT decisions. The opposite, of course, may also be true. That is, firms that perceive IT as strategically important are more likely to have the CIO as a member of the TMT. A longitudinal research design examining the relationship between changes in TMT composition and IT usage would allow for such causal inferences.

Future research should also address the following issues. First, researchers should continue to examine the links between the role of the CIO and the strategic use of IT. For example, a survey of 100 CEOs of Fortune 1000 companies revealed that the majority lacked the knowledge to evaluate critically new IT systems, software, and technological trends (Garner, 1998). This same survey also found that 56% of the respondents felt that the CIO did a poor job of communicating how IT systems benefited their companies. Thus, the way the CIO and TMT members interact and respond to one another may be an important determinant of how IT systems are perceived and used in the organization.

Along this same line of inquiry, researchers should directly investigate the relationship between CIO functional and educational background and IT use. For example, many CEOs believe that a CIO's technical skills are less important than his or her understanding of business strategy (Acarwal & Beath, 2007; Nash, 2007; Chabrow, 1999). In the same survey cited above, CEOs responded that only 29% of their CIOs had a clear understanding of company strategy. This perception may not be unfounded; a National IT Survey conducted by InformationWeek found only 78% of CIOs see understanding their company's business strategy as important. Perhaps not surprising, then, is the trend among many companies to hire CIOs from outside the IT area (Acarwal & Beath, 2007; Chabrow, 1999).

Lastly, if , the CIO is a key player in enhancing the value of the organization, then future research should address the performance benefits of CIO strategic involvement. As IT increasingly becomes a competitive weapon, CIOs with both technical and business strategy skills are in a position to enhance the competitive options available to the organization.

Conclusion

Our study suggests that the CIO's role in the organization may be critical to how IT systems are perceived and used by the organization. The study shows that the more actively involved the CIO is in the strategy process, the more IT systems are perceived as strategically important by the firm and the more likely the firm will use IT for strategic purposes. Our findings are show that as IT is playing a more prominent role in firm strategy, while many top managers admit they do not fully understand the business ramifications of their IT investments. Results from our study suggest that organizations with a strategically involved CIO more clearly understand the strategic importance of IT, and are more apt to use IT strategically.

REFERENCES

Acarwal, R., & Beath, C. 2007. Grooming the 2010 CIO. **Society for Information Management Advance Practices Council**, 2007.

Applegate, L., & Elan, J. 1992. New information systems leaders: A changing role in a changing world. **MIS Quarterly,** 16: 469-490.

Ashby, W. 1956. **An introduction to cybernetics.** London: Methuen.

Ashmos, D., Duchon, D., & McDaniel, R. 1998. Participation in strategic decision making: The role of organizational predisposition and issue interpretation. **Decision Sciences,** 29: 25-51.

Bakos, J. 1991. A Strategic analysis of electronic marketplaces. **MIS Quarterly,** 15: 295-310.

Bantel, K., & Jackson, S. 1989. Top management and innovations in banking: Does the composition of the top team make a difference? **Strategic Management Journal,** 10: 107-124.

Berry, J. 1999. Why web sites fall short. **Internetweek,** 765: 27.

Campos, P. 2000. **Private interview with the HR director of Sonic.** April 30.

Cash, J., McFarlan, F., McKenney, J., & Applegate, L. 1992. **Corporate information systems management: Text and cases.** Irwin: IL: Homewood.

Chabrow, L. 1999. CIOs focus on business. **Informationweek,** 754: 398-400.

Cha-Jan C., & King, W. 2005. Measuring the performance of information systems: A functional scorecard. **Journal of Management Information Systems,** 22: 85-115.

Chen, M., & Hambrick, D. 1995. Speed, stealth and selective attack: How small firms differ from large firms in competitive behavior. **Academy of Management Journal,** 38: 453-482.

Child, J. 1972. Organizational structure, environments and performance: The role of strategic choice. **American Sociological Review,** 6: 1-22.

CIO Insight. 2005. **Time to think like Rainmaker.** 62: 11.

Clemons, E., & Row, M. 1992. Information technology and industrial cooperation: The changing economies of coordination and ownership. **Journal of Management Information Systems,** 9: 9-28.

CMA Management. 1998. **CEOs unable to justify IT spending.** 72: 28-29.

Directory of top computer executives. 1997. East edition – Fall. **Applied Computer Research,** Phoenix, AZ.

Directory of top computer executives. 1997. West edition – Fall. **Applied Computer Research,** Phoenix, AZ.

Earl, M., & Feeny, D. 1994. Is your CIO adding value? **Sloan Management Review,** 35: 11-20.

Fedorowicz, J., & Konsynski, B. 1992. Organization support systems: Bridging business and decision processes. **Journal of Management Information Systems,** 8: 5-21.

Fenny, D., Edwards, B., & Simpson, K. 1992. Understanding the CEO/CIO relationship. **MIS Quarterly,** 16: 435-448.

Finkelstein, S. 1992. Power in top management teams: Dimensions, measurement, and validation. **Academy of Management Journal,** 35: 505-538.

Garner, R. 1998. CEOs to IT: Teach us. **Computerworld,** 32: 84-85.

Grover, V. 1993. An empirically derived model for the adoption of customer-based interorganizational systems. **Decision Sciences,** 24: 603-640.

Grover, C., Teng, J., & Fiedler, K. 1998. IS investment priorities in contemporary organizations, **Communications of the ACM,** 41: 40-48.

Gupta, A., & Govindarajan, V. 1984. Business unit strategy, managerial characteristics, and business unit effectiveness at strategy implementation. **Academy of Management Journal,** 27: 25-41.

Hambrick, D., & Mason, P. 1984. Upper echelons: The organization as a reflection of its top managers. **Academy of Management Review,** 9: 193-206.

Hitt, M., & Tyler, B. 1991. Strategic decision models: Integrating different perspectives. **Strategic Management Journal,** 12: 327-351.

Information Technology Association of America. 2006(a). **The U.S. information technology industry: A brief overview.**

Information Technology Association of America. 2006(b). **Global ICT spending tops $3 trillion; total tech spending to rise throughout decade; spending rate cools in near term.**

Johnson, A., & Lederer, A. 2005. The effect of communication frequency and channel richness on the convergence between chief executive and chief information officers. **Journal of Management Information Systems,** 22: 227-252.

Jones, K. 2006. Knowledge management as a foundation for decision support systems. **Journal of Computer Information Systems,** 46: 116-124.

Karimi, J., Gupta, Y., & Somers, T. 1996 (a). The congruence between a firm's competitive strategy and information technology leader's rank and role. **Journal of Management Information Systems,** 13: 63-88.

Karimi, J., Gupta, Y., & Somers, T. 1996 (b). Impact of competitive strategy and information technology maturity on firms' strategic response to globalization. **Journal of Management Information Systems,** 12: 55-88.

Liou, Y., & Nunamaker, J. 1993. An investigation into knowledge acquisition using a group decision support system. **Information and Management,** 24: 121-132.

Ludlum, D. 1989. IS Services keep airline aloft despite AMR's new competition. **Computerworld,** 23: 20-22.

Margulius, D. 2005. Breaking away. **InfoWorld,** 27: 28-34.

Mattson, M., Beheshti, H., & Salehi-Sangari, E. 2000. Competitive Strategy: Sweden and the United States. **Competitiveness Review,** 10: 98-113.

Miller, D., & Chen, M. 1996. The simplicity of competitive repertoires: An empirical analysis. **Strategic Management Journal,** 17: 419-440.

Mui, C., & Downes, L. 1998. **Unleashing the killer App: Digital strategies for market dominance.** Boston, MA: Harvard Business School Press.

Murray, A. 1989. Top management group heterogeneity and firm performance. **Strategic Management Journal,** 10: 125-141.

Nash, K. 2007. Making the leap. **Baseline,** 69: 17-22.

Podsakoff, P., & Organ, D. 1986. Self-reports in organizational research: Problems and prospects. **Journal of Management,** 12: 531-54.

Porter, M. 1980. **Competitive strategy.** New York: The Free Press.

Powell, T., & Dent-Micallef, A. 1997. Information technology as competitive advantage: The role of human, business, and technology resources. **Strategic Management Journal,** 18: 375-405.

Pugh, D., Hickson, D., Hinings, C., & Turner, C. 1968. Dimensions of organization structure. **Administrative Science Quarterly,** 13: 65-105.

Riggins, F., & Mukhopadhyay, T. 1994. Interdependent benefits from interorganizational systems: Opportunities for business partner reengineering. **Journal of Management Information Systems,** 11: 37-57.

Rockart, J., Ball, L., & Bullen, C. 1982. Future role of the information systems executive. **MIS Quarterly,** 6: 1-15.

Scannell, E. 1999. CTOs steer e-business. **InfoWorld,** 21: 44-45.

Schwartz, E. 1999. CEOs dis IT investments. **InfoWorld,** 21: 1, 32.

Stedman, C. 1997. Wal-Mart mines for forecasts. **Computerworld,** 31: 63-64.

Stein, T. 1998. Extending ERP. **InformationWeek,** 686: 75-72.

Stephens, C., Ledbetter, W., Mitra, A., & Ford, F. 1992. Executive or functional manager? The nature of the CIO's job. **MIS Quarterly,** 449-467.

Strebinger, A., & Treiblmaier, H. 2006. The impact of business to consumer e-commerce on organization structure, brand architecture, IT structure, and their interrelations. **Schmalenbach Business Review,** 58: 81-113

Sullivan, C. 1998. Beyond traditional EDI: Electronic commerce demystified. **Inform,** 12: 22-25.

Sweat, J. 1999. Companies cope with real-time operations. **InformationWeek,** 764: 88.

Todd, P., & Benbasat, I. 1999. Evaluating the impact of DSS, cognitive effort, and the incentives on strategy selection. **Information Systems Research,** 10: 356-374.

Vandenbosch, B., & Huff, S. 1997. Searching and scanning: How executives obtain information from executive information systems. **MIS Quarterly,** 21: 81-107.

Vedder, R., Vanecek, M., Guynes, C., & Cappel, J. 1999. CEO and CIO perspectives on competitive intelligence. **Communications of the ACM,** 8: 108-116.

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