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Linking organizational culture, structure, strategy, and organizational effectiveness: Mediating role of knowledge management

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ABSTRACT

Practices of knowledge management are context-specific and they can influence organizational effectiveness. This study examines the possible mediating role of knowledge management in the relationship between organizational culture, structure, strategy, and organizational effectiveness. A survey was conducted of 301 organizations. The results suggest that knowledge management fully mediates the impact of organizational culture on organizational effectiveness, and partially mediates the impact of organizational structure and strategy on organizational effectiveness. The findings carry theoretical implications for knowledge management literature as they extend the scope of research on knowledge management from examining a set of independent management practices to examining a system-wide mechanism that connects internal resources and competitive advantage.

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The internal characteristics of the organization make up critical sources for success (Barney, 1991). Increasing attention has been paid to identifying what characteristics are vital to organizational success and how they exert their influence on organizational outcomes. Internal organizational context focuses on broad and relatively stable categories of organizational characteristics such as structure, culture, and power and political characteristics (Pettigrew, 1979). They constitute an environment where organizational activities take place. There has been a large volume of studies that examine how the fit between organizational context and organizational strategy explains variances in organizational performance (Daft, 1995; Robbins, 1990). What is lacking in existing literature, though, is an understanding of the intervening mechanism that explains the paths of the influence from organizational context and strategy to organizational effectiveness.

Knowledge management plays a potentially mediating role in connecting organizational context and strategy with organizational effectiveness. Successful knowledge management is believed to have the potential of enhancing an organization's competitive advantage, customer focus, employee relations and development, innovation, and lower costs (Skyrme and Arnindon, 1997). In turn, knowledge management is context-specific, because context determines who participate and how they participate in the knowledge management process (Nonaka et al., 2000). Knowledge management could serve as one of the intervening mechanisms through which organizational context influences organizational effectiveness. However, the mediating role of knowledge management has not been adequately investigated. Exploration of its potential role as a mediating factor would provide better understanding of how to leverage it to achieve desirable organizational goals. This study sets out to do that.

The purpose of this study is to examine the possible mediating effect of knowledge management on the relationship between organizational culture, structure, strategy and organizational effectiveness. This study attempts to detect and explain one of the mechanisms through which organizational contextual and strategic factors are mobilized to achieve higher levels of organizational effectiveness.

1. Rationale

Knowledge management is "a systematic and integrative process of coordinating organization-wide in pursuit of major organizational goals" (Rastogi, 2000, p. 40). Scholars generally agree that knowledge management practices need to fit with organizational context in order to create a competitive edge (Davenport and Prusak, 1998).

The literature on the possible mediating role knowledge management plays reveals several important missing pieces. First, existing

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studies cover some ground of the contextual antecedents of knowledge management (Gold et al., 2001; Lee and Choi, 2003). However, these studies usually start from a micro perspective and investigate the immediate knowledge-related environment rather than the general contextual environment of the whole organization. They focus on exploring the antecedents of knowledge management rather than examining knowledge management as a mediating mechanism between general organizational context and organizational effectiveness. Specifically, both Gold et al. (2001) and Lee and Choi (2003) examine the aspects of organizational culture, structure, and technology that are directly related to knowledge management. They did not investigate the general cultural, structural, and technological characteristics of the whole organization. The restriction to only knowledge-relevant structural and contextual factors reveals the assumption that knowledge management is a set of relatively independent managerial practices rather than a central mechanism through which organizational factors are leveraged to achieve organizational goals. This assumption may have underestimated the actual influence of knowledge management. This study takes a new perspective on knowledge management in its potential capacity to transmit contextual and strategic influence onto organizational effectiveness.

Second, organizational strategy has generally been left out in knowledge management studies. In the list of antecedents of knowledge management, organizational level strategy has not been mentioned. Few studies examine how organizational strategy can influence knowledge management (Pedler et al., 1991; Senge, 1990; Watkins and Marsick, 1996), but only a simplistic relationship has been examined between organizational strategy and knowledge management. The demonstrated relationship may be biased because some potential correlates of organizational strategy and those of knowledge management have not been taken into consideration, such as organizational structural and cultural factors. It is time to construct a more complex picture of how organizational structural, cultural, and strategic characteristics exert a combined effect on knowledge management and ultimately organizational effectiveness.

Third, the connection between knowledge management and organizational level performance has not been sufficiently established. Despite beliefs in the contribution of knowledge management to organizational effectiveness, measuring knowledge management is difficult (Lee and Choi, 2003), and the relationship between knowledge management processes and organizational effectiveness has not been adequately studied (Davenport and Prusak, 1998; Shin, 2004). More studies are necessary. This study attempts to address the above-mentioned missing pieces in literature.

2. Theoretical background and hypotheses

The intersection of the resource-based view and the knowledge-based view of the firm lays the theoretical grounding for this study.

2.1. Resource-based view and knowledge-based view

The resource-based view posits that firm competitiveness comes from unique bundles of tangible and intangible assets that are valuable, rare, imperfectly imitable, and sustainable (Barney, 1991). The resources a firm possesses include management skills, organizational processes and routines, and the information and knowledge it controls (Barney, 1991). Firm resources include all assets, capabilities, organizational processes, firm attributes, information, knowledge, and others, as controlled by a firm (Daft, 1995). Organizational structure, culture, and strategy are three key organizational assets that have been studied extensively in their association with organizational effectiveness. However, how they pass their influence onto organizational effectiveness is an understudied question.

The knowledge-based view of the firm is at the center of the resource-based view (Conner and Prahalad, 1996). The knowledge-based view of the firm holds that the firm's capability to create and utilize knowledge is the most important source of a firm's sustainable competitive advantage (Grant, 1996; Kogut and Zander, 1992; Nonaka, 1991; Prahalad and Hamel, 1990). Nonaka (1991) observes that, in the current economy, where "the only certainty is uncertainty, the one sure source of lasting competitive advantage is knowledge" (p. 96).

2.2. Knowledge management and organizational effectiveness

Knowledge management encompasses the managerial efforts in facilitating activities of acquiring, creating, storing, sharing, diffusing, developing, and deploying knowledge by individuals and groups (Demerest, 1997; Rowley, 2001; Soliman and Spooner, 2000). Many frameworks for knowledge management processes have been identified. This study examines three processes that have received the most consensus: knowledge generation, sharing, and utilization (Davenport and Prusak, 1998). Knowledge generation refers to the process in which knowledge is acquired by an organization from outside sources and those created from within (Davenport and Prusak, 1998). Knowledge sharing, also called knowledge transfer or knowledge diffusion, refers to the process by which knowledge is transferred from one person to another, from individuals to groups, or from one group to another group (Davenport and Prusak, 1998). Knowledge utilization, also called knowledge application or knowledge implementation, refers to the process that is oriented toward the actual use of knowledge (Gold et al., 2001).

Organizational effectiveness is "the degree to which an organization realizes its goals" (Daft, 1995, p. 98). In this study, measures assessing organizational effectiveness were adopted from Lee and Choi (2003) which encompass organizational members' perceptions of the degree of the overall success, market share, profitability, growth rate, and innovativeness of the organization in comparison with key competitors.

How well knowledge is managed contributes to organizational effectiveness. "It is what the organization comes to know that explains its performance" (Argote and Ingram, 2000). Some empirical studies confirm a significant linkage between knowledge management and organizational effectiveness. For example, knowledge creation and sharing have been found to contribute to improved performance and innovation (Darr et al., 1995; Epple et al., 1996; McEvily and Chakravarthy, 2002). Knowledge integration could lead to product development effectiveness, reduced defect density, lowered warranty defects, and increased software development efficiency (Tiwana, 2004). Based on these and other studies, it is hypothesized that knowledge management positively contributes to organizational effectiveness.

H1. Knowledge management (including knowledge generation, knowledge sharing, and knowledge utilization) relates positively to organizational effectiveness.

2.3. Mediating role of knowledge management

Knowledge management serves not only as an antecedent to organizational effectiveness, but also a medium between organizational factors and effectiveness. Knowledge resources are an outcome of organizational culture, structure, and strategy, because knowledge is created, made sense of, and utilized in accordance with a set of cultural values and norms, embedded in structural relationships, and reflected in strategic priorities. For example, knowledge sharing practices are affected by cultural expectations such as what knowledge should be shared with the organization and what should be hoarded by individuals, by structural relationships such as how quickly the knowledge flows through formal reporting relationships, and by strategic priorities such as what knowledge is to be paid attention to and what to be ignored. In turn, organizational knowledge reflective of cultural, structural, and strategic characteristics of the organization is utilized to help produce new products and services, improve efficiency, and enhance effectiveness (Nonaka et al., 2000). Grant (1996) suggests that the challenge of the

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knowledge-based view of the organization is effective coordination among organizational members as their knowledge is specialized and needs to be integrated. The division of tasks between individuals and departments and the specification of the interface between them lies within the domain of organizational design (Grant, 1996). Organizational culture, structure, and strategy constitute critical dimensions of organizational design. Their influence on organizational effectiveness may be channeled through their interface with knowledge management.

2.3.1. Organizational culture-knowledge management-organizational effectiveness

Organizational culture refers to shared assumptions, values, and norms (Schein, 1985). Organizational culture is a source of sustained competitive advantage (Barney, 1991) and empirical research shows that it is a key factor to organizational effectiveness (Deal and Kennedy, 1982; Denison, 1990; Gordon and Di Tomaso, 1992; Ouchi and Jaeger, 1978; Peters and Waterman, 1982; Wilkins and Ouchi, 1983). In particular, Denison and his colleagues (Denison, 1990; Denison and Mishra, 1995; Denison and Neale, 1996; Fey and Denison, 2003) identified and validated four dimensions of organizational culture that are conducive to organizational effectiveness: adaptability, consistency, involvement, and mission. Adaptability refers to the degree to which an organization has the ability to alter behavior, structures, and systems in order to survive in the wake of environmental changes. Consistency refers to the extent to which beliefs, values, and expectations are held consistently by members. Involvement refers to the level of participation by an organization's members in decision-making. Mission refers to the existence of a shared definition of the organization's purpose. This study uses this framework.

Existing literature implies a positive relationship between organizational culture and knowledge management. Evidence of the positive contribution of adaptability, consistency, involvement, and mission includes Brockman and Morgan's (2003) finding of the positive relationship between entrepreneurship (which incorporates adaptability) and innovation; Young et al.'s (1999) study of the favorable influence of flexibility on knowledge transfer ability; Huber's (1991) argument that consistency helps an organization to interpret new information across units; O'Reilly's (1989) identification of the significant role of involvement in facilitating innovation; and Davenport and Prusak's (1998) focus on clarity of vision in knowledge management. Therefore, organizational culture is positively associated with knowledge management.

Organizational culture does not directly lend its influence on organizational effectiveness; rather, it exerts its influence through shaping the behavior of organizational members. In an ambiguous and uncertain world, the most important part of decision-making is to digest the information from the environment to structure the unknown (Waterman, 1990). Knowledge management practices capture the process of how new external and internal information is absorbed, digested, positioned, and integrated into an organizational memory. They constitute the sense-making mechanism where organizational members render meanings to new data and information, share alternative meanings, restructure shared new meanings, and decide on courses of actions based on their new understandings. The whole process is conditioned by organizational culture, because the values and behavioral norms held by organizational members serve as a filter in the sense-making and meaning-construction processes (De Long and Fahey, 2000). Further, the sense-making mechanisms entailed in knowledge management also serve as antecedents to other outcomes of culture such as commitment, ethical behavioral, job stress, and self-confidence (Posner et al., 1985) that have a bearing on organizational effectiveness.

H2. Organizational culture (adaptability, consistency, mission, and involvement) relates positively with organizational effectiveness.

H3. Organizational culture (adaptability, consistency, mission, and involvement) relates positively with knowledge management.

H4. Knowledge management fully mediates the relationship between organizational culture and organizational effectiveness.

2.3.2. Organizational structure-knowledge management-organizational effectiveness

Organizational structure indicates an enduring configuration of tasks and activities (Skivington and Daft, 1991). A most studied dimension is centralization (Rapert and Wren, 1998). Centralization refers to "the extent to which decision-making power is concentrated at the top levels of the organization" (Caruana et al., 1998, p. 18). Apart from a minority of studies that demonstrate a positive impact of high centralization on organizational effectiveness (Ruekert et al., 1985), the majority of scholars have agreed that a decentralized organizational structure is conducive to organizational effectiveness (Burns and Stalker, 1961; Dewar and Werbel, 1979; Floyd and Wooldridge, 1992; Rapert and Wren, 1998; Schminke et al., 2000). It is found that a decentralized structure encourages communication (Burns and Stalker, 1961) and increases employee satisfaction and motivation (Dewar and Werbel, 1979), because in less centralized environments, free flow of lateral and vertical communication is encouraged, experts on the subject had greater say in decision-making than the designated authority (Burns and Stalker, 1961), and responsiveness to market conditions is enhanced (Schminke et al., 2000).

In a similar vein, despite inconclusive findings regarding the relationship between organizational structure and knowledge management (Tsai, 2002), a decentralized structure has often been seen as facilitative to knowledge management success (Damanpour, 1991; Deal and Kennedy, 1982; Gold et al., 2001). High centralization inhibits interactions among organizational members (Gold et al., 2001), reduces the opportunity for individual growth and advancement (Kennedy, 1983), and prevents imaginative solutions to problems (Deal and Kennedy, 1982). On the contrary, decentralization facilitates internal communication (Bennett and Gabriel, 1999), adoption of innovation (Miller, 1971), and higher levels of creativity (Khandwalla, 1977).

The knowledge-based view emphasizes the importance in understanding the processes through which organizations access and utilize knowledge possessed by its individual members (Grant, 1996). Structure can influence knowledge management processes through shaping patterns and frequencies of communication among organizational members, stipulating locations of decision-making, and affecting efficiency and effectiveness in implementing new ideas. Knowledge management can carry over the structural impact onto organizational effectiveness, because the way knowledge is organized, knowledge management activities are coordinated, and the extent to which knowledge management practices are embedded in the daily work processes influence the effectiveness and efficiency of organizational performance. At the same time, structure influences organizational effectiveness through channels other than knowledge management. It influences organizational effectiveness through non-knowledge related functions, especially through routinized processes, tasks, and systems, because of their minimal involvement of active knowledge management.

H5. Organizational structure (centralization) relates negatively to organizational effectiveness.

H6. Organizational structure (centralization) relates negatively to knowledge management.

H7. Knowledge management partially mediates the relationship between organizational structure and organizational effectiveness.

2.3.3. Organizational strategy-knowledge management-organizational effectiveness

Organizational strategy refers to "a plan for interacting with the competitive environments to achieve organizational goals" (Daft, 1995,

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p. 49). Organizational strategy has been a central theme in the strategy literature and is closely related to organizational performance (Govindarajan and Fisher, 1990; Manvondo, 1999; Rapert et al., 1996; Smith et al., 1986).

Venkatraman's (1989) STROBE (Strategic Orientation of Business Enterprise) framework is utilized in this study to represent organizational strategy. Six dimensions are incorporated in the framework but only four of the six dimensions are shown in Bergeron et al.'s (2004) study to be reliable and valid: analysis, defensiveness, futurity, and proactiveness. Therefore, only these four dimensions are examined in this study. Analysis refers to the overall problem-solving posture that indicates the extent of tendency to search deeper for the roots of problems and to generate the best possible solution alternatives (Miller and Friesen, 1983). Defensiveness refers to defensive behavior that is demonstrated through cost reduction and efficiency-seeking methods (Venkatraman, 1989). Futurity refers to temporal considerations reflected in key strategic decisions, relative emphasis on long-term effectiveness versus efficiency considerations at the present (Venkatraman, 1989). Proactiveness refers to proactive behavior, such as participation in emerging industries, continuous searching for market opportunities and experimentation with potential responses to changing environmental trends (Venkatraman, 1989). Bergeron et al. (2004) found that a stronger organizational strategy that is high on analysis, defensiveness, futurity, and proactiveness is associated with higher performance. The composite of the four dimensions indicates the extent to which the organization realizes its strategic directions rather than its intended strategies (Bergeron et al., 2004).

Deductions based on previous research suggest a positive association between organizational strategy (STROBE) and knowledge management. For example, Pedler et al. (1991) highlight the importance of an analytical approach to strategy that contributes to learning. Senge (1990) stresses the ability to envision the future that is crucial to the learning organization. Watkins and Marsick (1996) emphasize a proactive approach to new learning and new markets in establishing a learning organization (Watkins and Marsick, 1996).

The knowledge-based view considers the firm as a set of knowledge assets and the role of the firm as creating and deploying these assets to create value (Grant, 1996). Organizational strategy can then be perceived as the organization's plan of creating and deploying knowledge assets. Knowledge management partially carries the influence of strategy through defining what strategic knowledge is, coordinating critical knowledge transfers, and guiding key knowledge exploitation efforts which could result in enhanced effectiveness. Apart from the path of knowledge management, strategy impacts organizational performance through other channels such as control systems and resource-sharing schemes.

H8. Organizational strategy (analysis, defensiveness, futurity, and proactiveness) relates positively to organizational effectiveness.

H9. Organizational strategy (analysis, defensiveness, futurity, and proactiveness) relates positively to knowledge management.

H10. Knowledge management partially mediates the relationship between organizational strategy and organizational effectiveness.

Fig. 1 presents the ten hypotheses.

3. Method

A self-administered survey was used to collect data on organizational members' perceptions of the five constructs: organizational culture, structure, strategy, knowledge management, and organizational effectiveness.

3.1. Survey procedure and sample

HR professionals who were members of two HR organizations in a mid-western metropolitan area constituted the target response group. HR professionals were chosen as the respondents because they usually have good knowledge of organizational members (Gilley and Maycunich, 2000) and a realistic view of what the organizational characteristics are rather than what they should be. The member base of the two organizations totaled 1585.

A mix of web-based and mail survey was carried out on the sample. A total of 384 responses were received, among which 218 were mail responses (56.8%) and 166 were web responses (43.2%). That constitutes a response rate of 24%. Among the respondents, 37.4% were at the middle management level, 27.9% at the senior management level, 26.5% at the non-management level, and 8.2% at the supervisory level. A MANOVA test was conducted on the mail and web-based survey results and no statistical differences were detected between the two samples (Wilks' lambda = 0.79, $p = 0.71$). To assess nonresponse bias (Amstrong and Overton, 1977), all responses received within the first two weeks were treated as early responses and the rest as late respondents. The two-week cutoff was based on the observed pattern of responses received. No statistical differences were detected between the two samples (Wilks' lambda = 0.77, $p = 0.45$).

The unit of analysis in this study is the organization as each organization has unique sets of cultural, structural, strategic, and knowledge management characteristics. A total of 301 organizations were represented by the respondents. Seventy-one percent of them were in the service sector, 28.7% in manufacturing, and 0.3% in the

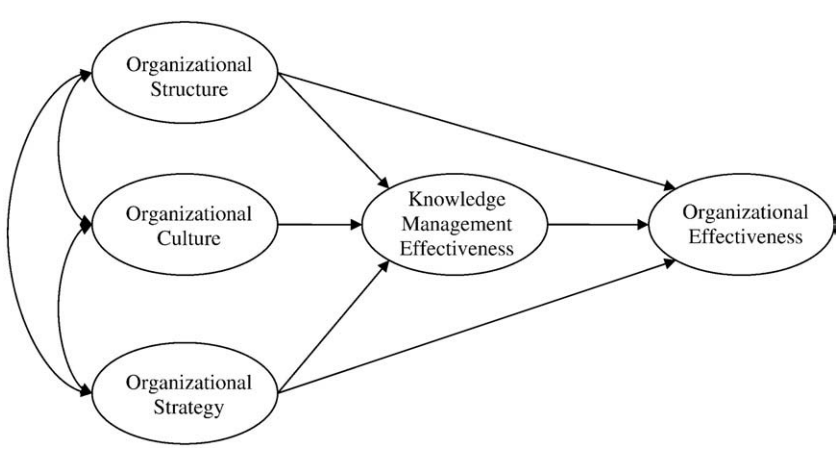

Fig. 1. Hypothesized model.

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Table 1
Evaluation of measurement models for the constructs used in the study.

Variables	χ^2	*df*	*p*	NNFI	CFI	GFI	AGFI	RMR
Organizational culture	164.35	48	<0.01	0.97	0.98	0.92	0.86	0.038
Organizational structure (centralization)	35.03	5	<0.01	0.95	0.98	0.96	0.87	0.036
Organizational strategy	148.60	164	0.08	1	1	0.95	0.94	0.08
KM effectiveness	402.03	87	<0.01	0.96	0.97	0.85	0.79	0.043
Organizational effectiveness	37.79	5	<0.01	0.94	0.97	0.95	0.86	0.034

agricultural sector. In terms of size, 46.6% had an employee base of between 100 and 1000, 22.3% between 1000 and 10,000, 15.5% between 10,000 and 100,000, 13.5% between 1 and 100, and the remaining 2% over 100,000. Average scores were used for those organizations with multiple respondents.

Among the 301 organizations, 36 of them had multiple respondents (ranging from two to five), and the rest with single informants. Responses from the same organization were averaged to derive the organizational scores on the variables. In order to assess the inter-rater reliability of the multiple respondents on the variables, intra-class correlation tests were conducted. The average Cronbach's alpha was 0.60, indicating that there is a generally acceptable inter-rater consistency among the multiple respondents. As the single informants could be seen as coming from a random selection of all responding organizations, it seems single informants are not likely to pose a serious threat to the validity of the study.

3.2. Instrument

Survey items were adapted from existing instruments used in past research. Measures assessing organizational culture were adapted from Denison and his colleagues (Denison, 1990; Denison and Mishra, 1995; Denison and Neale, 1996; Fey and Denison, 2003) that encompassed four functional dimensions: adaptability, consistency, involvement, and mission. The scale measures to what extent an organization is perceived to display the four dimensions of characteristics, for example, to what extent "we have a shared vision of what the organization will be like in the future".

Organizational structure was measured by centralization. A scale measuring centralization was borrowed from Ferrell and Skinner (1988). The scale measures how centralized an organization is based on respondents' agreement with statements such as "even quite small matters have to be referred to someone higher up for a final answer".

Venkatraman's (1989) STROBE (Strategic Orientation of Business Enterprise) framework was utilized in this study to represent organizational strategy. The reason why it was used instead of strategic typologies is that it depicts the intensity of characteristics of strategy rather than putting them into categories. STROBE measures to what extent the respondents perceive their organization's strategy as displaying four characteristics including analysis, defensiveness, futurity, and proactiveness. A sample item is "my organization usually tries to develop thorough analysis when confronted with a major decision".

Organizational effectiveness is "the degree to which an organization realizes its goals" (Daft, 1995, p. 98). In this study, measures assessing organizational effectiveness were adopted from Lee and Choi (2003) which capture organizational members' perceptions of the degree of overall success, market share, profitability, growth rate, and innovativeness of the organization in comparison with key competitors. These five items used in Lee and Choi (2003) were adapted from Deshpande et al. (1993) and Drew (1997).

Items measuring knowledge management were modified from Gold et al. (2001), assessing respondents' perception of the existence of the three knowledge management processes. A sample item is "matching sources of knowledge to problems and challenges".

As this study utilized one self-report survey to collect data on all of the variables, common method bias may be present. In order to assess the possible common method bias, Harman's one-factor test was conducted on the variables, following Konrad and Linnehan (1995) and Simonin (1997). The results of the principal component factor analysis yielded 12 factors with eigenvalues greater than 1.0, which accounted for 70% of the variance. In addition, the first factor did not account for the majority of the variance (37%). It seems that common method bias is not a serious problem (Podsakoff and Organ, 1986).

3.3. Data analysis

Following Jöreskog and Sörbom (1989), structural equation modeling (SEM) was conducted with the LISREL program, assessing confirmatory measurement models (factor analysis) and confirmatory structural models (path analysis).

4. Results

4.1. Measurement models

Results from the confirmatory factor analysis demonstrated that all of the scales used in the study formed adequate measurement models and thus provided evidences for the construct validity of the measures. Table 1 shows the fit indices of the measurement models. Table 2 shows the descriptives of the constructs.

4.2. Structural models

The hypothesized model was tested with a nested-model approach. The hypothesized model was compared to the saturated structural model (Alternative Model 1 where all paths relating to the constructs were to be estimated), as well as two alternative models, one fixing the path from organizational structure to organizational effectiveness to zero (Alternative Model 2), and the second fixing the path from strategy to organizational effectiveness to zero (Alternative Model 3). The three alternative models are shown in Figs. 2–4.

The hypothesized model demonstrates a better model fit than the three alternative models because (1) it contains no insignificant paths

Table 2
Descriptive statistics for the constructs used in the study ($N = 301$).

Constructs	*M*	SD	1	2	3	4	5
1. Organizational effectiveness	4.24	1.07	(0.88)				
2. Knowledge management effectiveness	4.13	0.88	0.52**	(0.93)			
3. Organizational culture	4.22	0.95	0.52**	0.88**	(0.89)		
4. Organizational structure	3.18	1.21	−0.24**	−0.23**	−0.43**	(0.89)	
5. Organizational strategy	3.95	0.79	0.52**	0.83**	0.82**	−0.16**	(0.85)

Reliability coefficient alphas are presented in diagonal in parentheses.
** $p < 0.01$.

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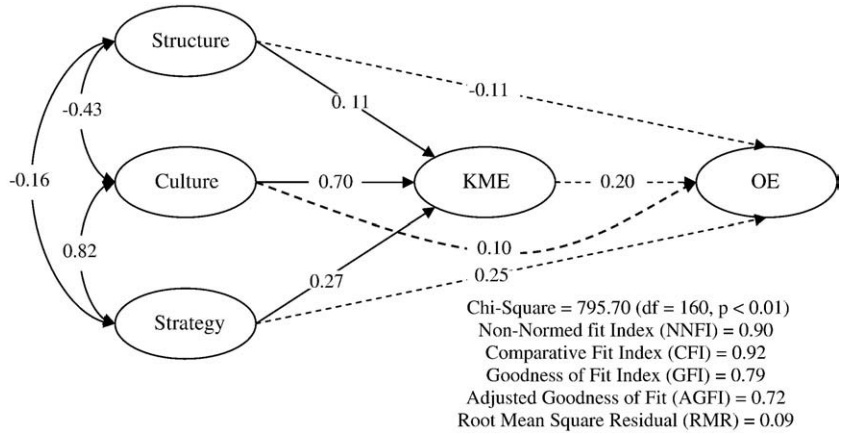

Fig. 2. Alternative Structural Model 1 (saturated model).

while other models do; and (2) chi-square/*df* ratios in the alternative models (4.97, 4.96, and 5.00) are slightly larger than that of the hypothesized model (4.94), indicating that the hypothesized model fits the data slightly better than the rest. Table 3 shows the fit indices for all the structural models. Fig. 5 shows the hypothesized model with parameter estimates and model fit indices.

4.3. Hypothesis testing

As Hypotheses 12, 5 and 8 predict, knowledge management, organization culture, structure, and strategy are all significantly related to organizational effectiveness, judging from the results of bivariate correlations (as shown in Table 2). Knowledge management ($r=0.52$, $p<0.01$), culture ($r=0.52$, $p<0.01$), and strategy ($r=0.52$, $p<0.01$) demonstrated a positive relationship with organizational effectiveness, and structure ($r=-0.24$, $p<0.01$) had a negative relationship with organizational effectiveness. As hypotheses three, six, and nine predict, organizational culture ($r=0.88$, $p<0.01$) and strategy ($r=0.83$, $p<0.01$) were both positively related to knowledge management, and structure ($r=-0.23$, $p<0.01$) was negatively associated with knowledge management.

Hypothesis 4 predicts that knowledge management fully mediates the relationship between organizational culture and organizational effectiveness. Our structural model analyses showed that organizational culture demonstrated a significant direct impact on knowledge management ($\gamma=0.71$, $p<0.05$). There was also a significant relationship between knowledge management and organizational effectiveness ($\beta=0.26$, $p<0.05$). The condition for total mediation was supported by the fact that in Alternative Model 1 (saturated model), the direct path between organizational culture and organizational effectiveness was close to zero ($\gamma=0.07$, $p>0.05$) when knowledge management was modeled as the mediator.

Hypothesis 7 predicted that knowledge management partially mediates the relationship between organizational structure and organizational effectiveness. The findings supported this hypothesis. Organizational structure had a small and positive influence on knowledge management ($\gamma=0.12$, $p<0.05$), and a small and negative influence on organizational effectiveness ($\gamma=-0.14$, $p<0.05$), while knowledge management had a positive influence on organizational effectiveness ($\beta=0.26$, $p<0.05$).

The directionality of structure's influence on organizational effectiveness and knowledge management is different. However, the bivariate relationship between structure and organizational effectiveness and that between structure and knowledge management were both negative. A possible explanation is that culture and strategy may have fully accounted for structure's negative influence on knowledge management but only partially for organizational effectiveness. In part, this is consistent with the hypothesis that there are other channels for structure to influence organizational effectiveness other than knowledge management.

Hypothesis 10 predicts that knowledge management partially mediates the relationship between organizational strategy and organizational effectiveness. The findings supported this hypothesis. Organizational strategy had a positive influence on knowledge management ($\gamma=0.27$, $p<0.05$), and a positive influence on organizational effectiveness ($\gamma=0.28$, $p<0.05$).

5. Conclusions

The study findings shed light on several unresolved issues in the literature as stated in the Rationale section. First, besides providing

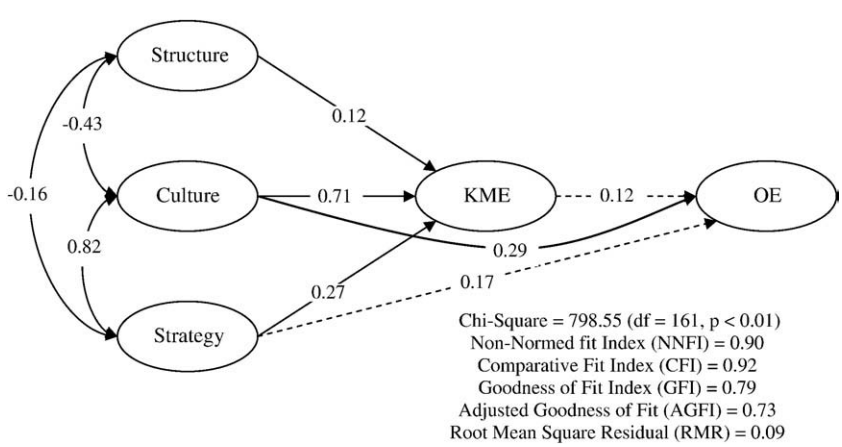

Fig. 3. Alternative Structural Model 2 (no direct path between structure and OE).

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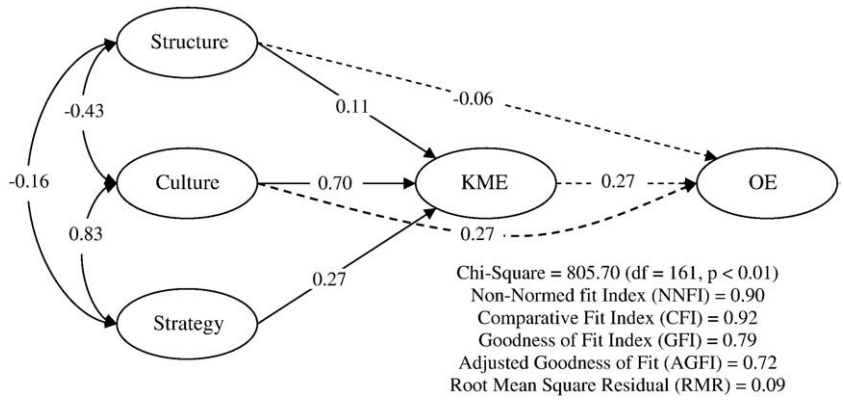

Fig. 4. Alternative Structural Model 3 (no direct path between strategy and OE).

empirical evidence to the connection between knowledge management and organizational effectiveness, this study suggests that knowledge management could be an intervening mechanism between organizational context and organizational effectiveness. The results support the knowledge-based view of the firm in that knowledge management is not only an independent managerial practice, but also a central mechanism that leverages organizational cultural, structural, and strategic influence on organizational effectiveness. It also corresponds with Penrose's (1959) opinion that the usefulness of organizational resources varies with changes in organizational knowledge. Knowledge management serves as a key leverage point in organizations.

Second, organizational strategy exerts a significant impact on organizational effectiveness above and beyond that of organizational context, although its effect is reduced when organizational culture and structure are taken into consideration. It also has a significant impact on knowledge management. These findings warrant further exploration of strategy's relationship with knowledge management.

Third, this study provides some insights in integrating the resource-based view and knowledge-based view. It reveals that the resources in an organization may be hierarchical. Knowledge may be one step closer to organizational effectiveness in the paths leading from organizational resources to organizational effectiveness. Further exploration is needed to examine this proposition.

Finally, knowledge management was found to fully mediate organizational culture's influence on organizational effectiveness. This finding suggests that how well knowledge is managed is largely associated with how well cultural values are translated into value to the organization. Further, culture has a greater contribution to knowledge management than other factors examined. This may be due to the fact that culture determines the basic beliefs, values, and norms regarding the why and how of knowledge generation, sharing, and utilization in an organization. This finding strengthens the call for attention to creating an organizational culture that is conducive to learning and knowledge management (Davenport and Prusak, 1998; De Long and Fahey, 2000; Watkins and Marsick, 1996). Many existing studies have focused on the direct relationship between organizational culture and organizational effectiveness. In the current study, however, it has been shown that organizational culture's influence on organizational effectiveness is negligible when a mediator (in this case, knowledge management) is considered. The results of this study shed light on the inadequacy of examining just the direct linkage between organizational culture and organizational effectiveness. It seems that a logical next step in research on culture and effectiveness could proceed to a deeper level by examining the specific mechanism(s) through which organizational culture influences organizational performance.

Although this study presents substantial answers to some unresolved issues in literature, the results should be interpreted in light of its limitations. A major limitation is that the respondents were mostly the only informant from their organizations. Only 36 companies of the 301 companies had multiple respondents (12%). The single informants may not represent the reality of their organizations as well as multiple informants because single informants may over-report or underreport certain phenomena (Gold et al., 2001).

Table 3
Fit indices for structural models.

Structural models	χ^2	*df*	*p*	χ^2/df	NNFI	CFI	GFI	AGFI	RMR
Hypothesized model	794.82	161	<0.01	4.94	0.90	0.92	0.79	0.73	0.09
Alternative Model 1	795.70	160	<0.01	4.97	0.90	0.92	0.79	0.72	0.09
Alternative Model 2	798.55	161	<0.01	4.96	0.90	0.92	0.79	0.73	0.09
Alternative Model 3	805.70	161	<0.01	5.00	0.90	0.92	0.79	0.72	0.09

6. Managerial implications

Many organizations still view knowledge management as launching some software programs without adequate consideration of their organizational characteristics to ensure the success of their knowledge management initiatives. Through analyzing the relevance of organizational characteristics to knowledge management success, this study brings to attention the importance of focusing on creating a knowledge-friendly environment that is made up of appropriate cultural, structural, and strategic features.

The study findings indicate that knowledge management can influence organizational effectiveness when it is in alignment with organizational culture, structure, and strategy. Focus on knowledge management practices, such as providing knowledge management tools, and supporting knowledge management initiatives, would help transfer the impact of organizational contextual resources to the bottom line.

Second, among the three organizational factors, culture has the strongest positive influence on knowledge management. This implies that knowledge management practices need to center on incorporating culture-building activities to foster an environment that is knowledge-friendly. The four dimensions of organizational culture—adaptability, consistency, involvement, and mission—when combined positively contribute to knowledge management. They could provide knowledge management professionals with a roadmap about which areas of organizational culture to invest their efforts in order to enhance knowledge management outcomes.

Grover and Davenport (2001) point out that most firms with knowledge management practices have reached the initial plateau because no substantial change has occurred in how the organization does business. In order to have long-term, complete success at using knowledge for business advantage, changes need to take place in the core aspects of the business such as strategy, process, culture, and

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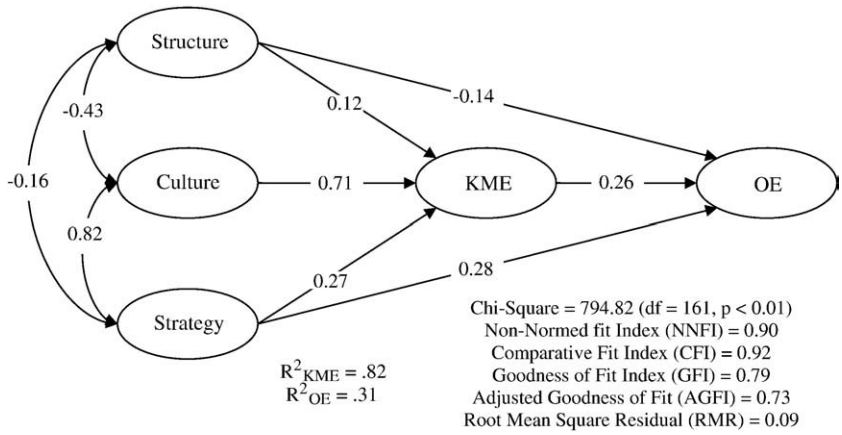

Fig. 5. Hypothesized model with path coefficients.

behavior (Grover and Davenport, 2001). This study shows that organizational culture, structure, and strategy have close interrelationships. Organizations that are adaptive, consistent in their values, engaging to employees, and embracing common missions in their cultures have a higher tendency to probe into issues, to seek methods to reduce costs, to look into the future, and to act proactively in their strategies. Such organizations are more likely to embrace a decentralized structure. The implication these correlations carry is that the three organizational factors create an interdependent system in which changes in one or two of the factors may ripple through to another factor(s). Designing knowledge management projects usually involves organizational changes. Taking a holistic view by considering all three factors in designing and carrying out intended changes is crucial.

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