A Value-added Organizational Knowledge Framework for Better Decisions in Wicked Environments

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An attempt is made in this paper to suggest a model that tries to augment the effective use of existing organizational knowledge repositories in the strategy-making function. The paper assumes that organizations are already in the process of developing their own knowledge repositories with the help of the existing knowledge management tools and techniques. The current framework tries to develop an enquiry system by taking help from world-class strategy experts who provide guidelines for effective thinking and retrieval of the existing learning experiences in organizations. It also addresses the conflicting issues that may prove useful in the development of the strategic intent in today's organizations. The paper specifically focuses on the suggested approach under conditions of uncertainty and argues the validity of the presented model. It is expected that this work would lead to the acceptance of the model in organizations for further efficacy in building strategy. This will also lead to valuable findings that may drive future research in this direction.

Introduction

For several years, literature on strategy has focused on searching ways of achieving competitive advantage in relatively stable environments in terms of returns to resources. Unlike the past, there seems to be an increasing number of strategy researchers working in the field of "wicked" or uncertain environments (used interchangeably in this paper). But not many of them have focused their attention to the developments taking place in the field of knowledge management. This may be a challenging task especially when the field of knowledge management is in a nascent stage in most parts of the world in terms of its implementation and fusion into organizational systems. We believe this interface between strategic management and knowledge management is all poised to bring in positive outcomes in terms of better managerial cognition leading to better decisions.

The increase in complexity and dynamics of changes in the business environment has led it to a turbulent state (Chakravarthy 1997). The most significant characteristic of this kind of environment is uncertainty. It is a Herculean task for researchers as well as practitioners to understand the traits of this wicked environment leading to different suggestions. Though

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the cognitive approaches could subjectively examine the nature of such uncertain conditions, they have failed to establish how mental models can lead to better strategy-making. The Resource Based View (RBV) theory also does not examine the process through which managerial cognitions lead to strategy-making for attaining competitive advantage. However, RBV acknowledges the importance of skills the managers possess in creating economic rents (Barney 1991; Wernerfelt 1984; Mahoney and Pandian 1992).

Past literature suggests that information from important sectors of environment may become a source of competitive advantage (Dutton and Freedman 1984). It is also taken for granted that environment is the major source of uncertainty. But, often managers fail to recognize that even extremely uncertain business environments can provide a lot of strategically relevant information (Courtney et al. 1997). The principal challenge in strategy developing function for managers under highly uncertain environments is to accurately assign probabilities to a particular future events and/or changes (Miliken 1987). In these situations, the managers suffer from a lower level of confidence that eventually may lead to inferior strategic decisions. This paper proposes a simple model essentially aiming at improving the managerial cognition such that it will lead to confident and better strategic decisions. The authors bring in certain concepts from the field of knowledge management and attempt to add value to the existing organizational practices with respect to strategic decisions. The model discussed here tries to present a simple methodology by which strategic decisions can be improved to a great extent by interfacing knowledge management artifacts with cognitions of strategy makers.

Environmental Uncertainty and Cognitive Theories

In this section, the past contributions that are reported in the literature of strategy are studied in detail and a prelude is prepared to the proposed idea of the authors. In the past, cognitive theories suggest that competitive strategies take shape primarily as a result of managerial analysis and interpretation of multiple business environments. Moreover, as stated earlier, the process in this view is not yet explained by research. The work on corporate epistemology (Krogh et al. 1994) makes valuable contribution to this direction, which focuses on organizational knowledge and knowledge development processes. Corporate epistemology is presented as the theory on how and why organizations know what they do. In fact, it is also suggested that organizations should be viewed as streams of knowledge thus replacing the traditional definition[1] it used to hold in the past. In this paper, an attemt has been made to augment this stream of knowledge (both explicit and tacit) for better managerial decisions. Essentially, our objective lies in providing better heuristics that can guide managers in wicked environments where organizations are increasingly being recognized as knowledge systems.

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[1] A concept used in a variety of ways such as (1) a system or pattern of any set of relationships in any kind of undertaking, (2) an enterprise itself, (3) cooperation of two or more persons, (4) all behavior of all participants in a group, and (5) the intentional structure of roles in a formally organized enterprise, Heinz Weihrich and Harold Koontz, *Management: A Global Perspective*, eds., McGraw-Hill, Inc., p. 717.

It is taken for granted that environment is the storehouse of all uncertainties. Managers are supposed to identify external opportunities and threats, implement strategic changes, and alignoverall organizational actions suiting to the challenges posed by the environment. It is also theorized that managerial actions are responses to their perception of situations. Strategic actions depend upon perceptions and interpretations of the environment (Schneider and De Meyer 1991). Managerial perceptions and interpretations are also influenced at different levels like individual characteristics, group processes and the environmental context (Hambrick and Mason 1984). In essence, strategic uncertainty reflects the strategic value of environmental information for organizational performance (Elenkov 1997).

One major hurdle faced by today's managers while making strategic decisions is correct premising. When decision makers fail to notice changes that turnout to be important or misinterpret changes in their environment, they may fail to make the needed adjustments to the organizations' strategy or structure (Pfeffer and Salancik 1978). The ensuing lack of fit between the environment and the organizations' strategy and structure, may result in a performance decline and other organizational problems (Lawrence and Lorsch, 1967; Lindsay and Rue 1980; Weick 1987). Moreover, there are evidences reported indicating that the greater the match between managers' perceived environmental uncertainty and true environmental volatility, the higher the economic performance of a firm (Bourgeois 1985). The authors primarily utilize these underlying concepts as the starting point to build up our framework.

Strategic Decisions and Knowledge Management

Different modes or information sources can be personal, impersonal, internal or external. Personal sources refer to direct human contact (Aguilar 1967). Impersonal sources are written and include formal reports, newspapers, survey results and output of management information systems. Personal communications are context rich and enable managers ·to detect weak signals (Ansoff 1979). When environmental uncertainty is high, personal sources may provide adequate understanding needed by decision makers to interpret unclear issues (Daft and Weick 1984). But the availability of such a source is becoming scarce as the right kind of people (perceived as credible source by the strategic decision maker) may not be available or, if available, may not be willing to cooperate at the most demanding moments. Impersonal sources are appropriate when environmental events are discrete and analyzable. Hence, when environmental uncertainty is high, the augmentation suggested by the authors in the knowledge model would provide a rich experiential learning for better decisions. Development in the field of knowledge management have made such things possible as cloning a person and benefiting from his/her experiential knowledge. As technological implementation, the "Office Assistant" in the help menu of Microsoft's Office is a good example of an attempt to develop a near-personal source for help. The complex interplay of

behavior and cognition can produce not only coordinated behavior but also coordinated meaning structures. This provides us the starting base to our thinking for the current work.

Now, let us focus on some of the developments that are taking place in the field of knowledge management. Knowledge management tools have made it possible to capture knowledge—explicit and tacitinto knowledge repositories that can be shared by many and add value to the overall organizational growth and sustenance. Till today, in many organizations, managers routinely 'forget' what they have done in the past and why. These organizations suffer from the inability to learn from the critical aspects of their past experience that they already know (see Web document GDSS). An obvious question that may arise here with respect to strategy making is whether the past knowledge and experience is of any use to the present decision contexts? The validity of the question increases when the uncertainty component is added to strategic decision-making. Under these uncertain situations, business rules frequently change thus forcing managers to undertake tough non-programmed decision tasks. But Hugh Courtney (1997) and colleagues caution against the danger of dichotomizing uncertainty. They argue that it is rare to find a situation where managers know absolutely nothing of strategic importance even in the most uncertain environments. In fact, managers normally can quite easily identify a range of potential outcomes or even a discrete set of scenarios under such situations. This simple insight is extremely powerful because determining which strategy is best and what process should be used to develop it depend vitally on the level of uncertainty a company faces.

In Figure 1, a typical strategy-making pattern in today's organizations is portrayed. This figure has three distinct divisions that keep on changing their span depending upon the type of strategic decision and the perception of uncertainty of decision makers. Three different sets of parameters—certain, uncertain and fuzzy categories—that affect the development process of the ultimate strategic intent of a given organization are presented here. The parameters in the certain category often present forecasts that stop the decision maker from

**Figure 1: Categories of Parameters that Affect Strategic Decisions**
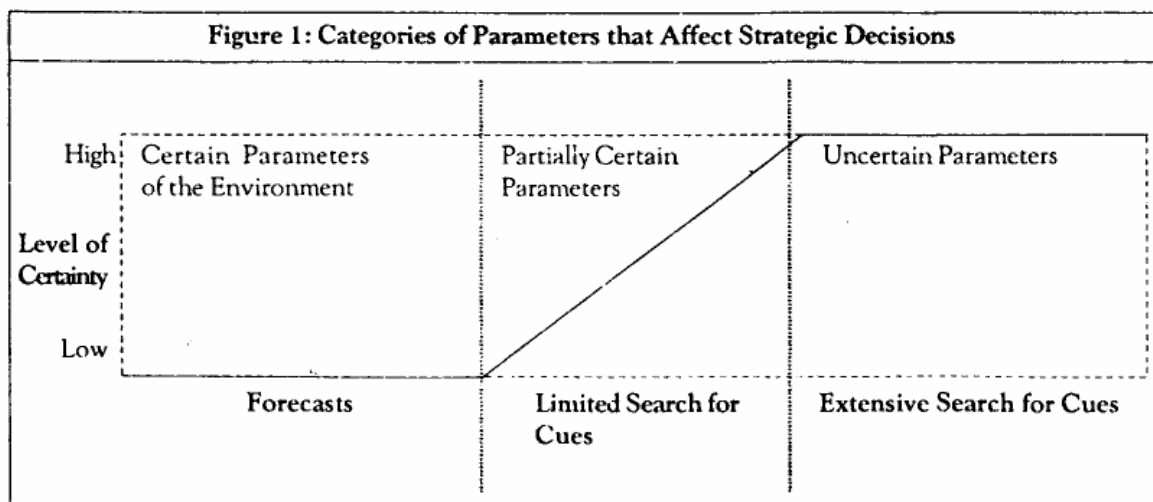
further investigations on them. But, in the other two categories, the degree of environment scanning and learning takes place at different levels as per the perception of uncertainty of the decision maker. Every strategic decision in wicked environments is an outcome of the composite perception and mental processing of these three categories, as all of them are usually present in the form of different premises but in different degrees.

To deal with such situations, very often, managers in different organizations develop different strategies that yield different results. This is primarily due to the difference in their individual perceptions of their environment and the capability to process the knowledge acquired due to these perceptions. Methods or techniques aiming at improving the said processes would certainly enhance the strategic decisions from a qualitative point of view. .

Towards an Augmented Knowledge Model for Effective Decisions under Strategic Uncertainty

Currently with the advent of knowledge management tools, concepts and technologies, the problem of documenting and retrieving experiential knowledge is comfortably addressed. Currently, a lot of research attention is focused to enhance the power of such knowledge management systems around the world. The intention here is not to propose any new theory but to utilize a simple prescription to explain how the power of the existing organizational knowledge can be enhanced; and specifically focus on the strategy-making aspect in organizations. The authors believe that this is the single most important area that involves the future of all stakeholders in an organization. Managers better not neglect it. With this as the backdrop, a mundane methodology has been exhibited in Figure 2.

Figure 2: A Simple Model for Augmenting the Organizational Body of Knowledge (BoK)
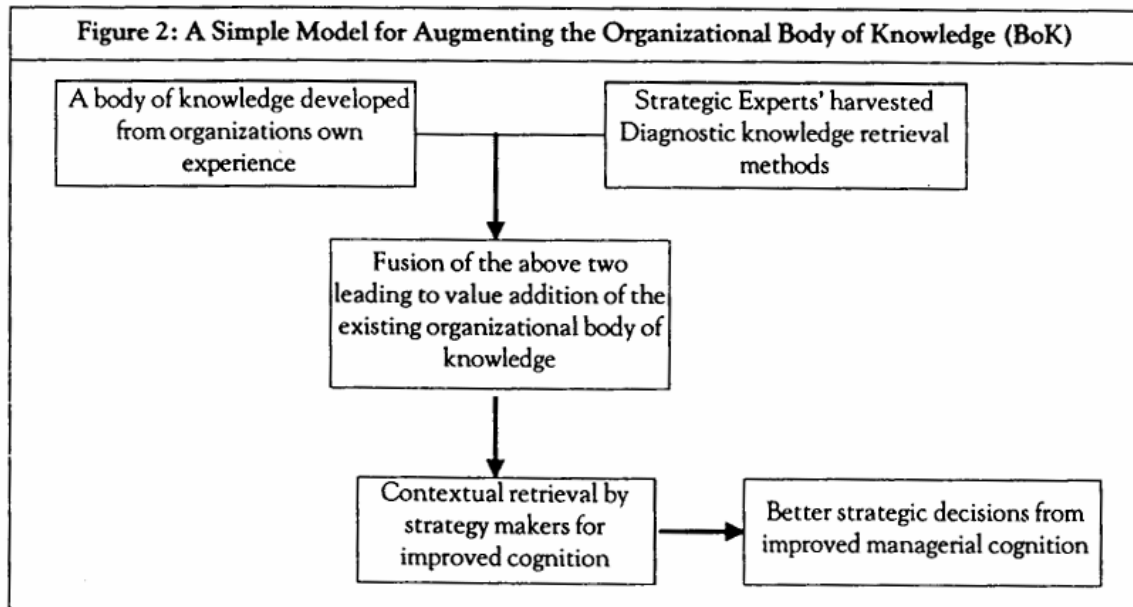
Corporations worldwide recognize the contributions made to the field of strategic management by famous strategists such as Porter, Prahlad, Hamel, D'Aveni and Senge, etc.

A latent need is always present among the strategy makers in the corporate sector to constantly find better ways of making strategic decisions. In this context, the authors strongly believe that the knowledge artifacts, especially the thinking and diagnostic skills of these historic strategists will have high acceptability if they suit to the requirements of strategy makers in organizations under uncertain conditions. Moreover, if the cue can be presented in a personalized form, they will have a still greater impact on acceptability as this is already stated elsewhere in this paper previously. This may signal that in the process of developing a knowledge product and the authors are trying to identify its marketing potential as a great efforts have already been made around the world to develop knowledge products in various other knowledge domains. The fact is quite to the contrary. An attempt is made here to identify an approach to develop strategic insights each time a strategy maker confronts wicked environments. The authors recognize the fact that strategies are unique to a given organization's structure and position, and therefore, leave the ultimate development of these to the organizational strategy makers. But, at the same time, they wish to make sure that these managers, in the presence of effective thinking models from all time strategy experts, conceive superior and effective strategies.

Strategy-making around the globe is no more regarded as an individual function. Group environmental perceptions are considered to be of much relevance before attempting to develop any sort of strategic intent. A lot of research is already focused on developing such knowledge management models for organizations. Instead of developing frameworks for creating knowledge-based systems, the focus here is on the ways to enrich the existing ways of retrieving relevant knowledge for strategy-making that already exists in organizations.

In the traditional research methodology, 'Delphi Technique' is used to become wiser from the composite knowledge of experts. The same idea is borrowed here with the only exception that the tacit knowledge (ways of analyzing information, process of thinking, method of generating strategies, ways of developing insights, etc.) along with explicit knowledge (may be pieces of information, stories, case studies, hypothetical constructs and examples, etc.) are harvested and kept in a knowledge bank using technology. These knowledge banks, made available in the form of an enquiry system, are to be used to augment the cues for a given strategic problem from the existing organizational learning experiences for better strategic decisions. Here, the emphasis is on providing a framework to the strategic decision maker with better ways of attacking strategic uncertainty at different levels, i.e., functional level, business unit level and corporate level. One may view it as an invitation of a group of external experts for consulting purpose on strategic issues and firms to get benefit from these associations. These experts may providing conflicting viewpoints to a single decision problem and may have the potential to confuse the strategy maker. But, it is argue d here that under uncertain conditions, conflicting and contradicting approaches to solving a strategic decision

problem is a necessity rather than an evil. This will enable the strategy maker(s) with a rich cognitive ability and a sense of purpose for utilizing knowledge for wisdom.
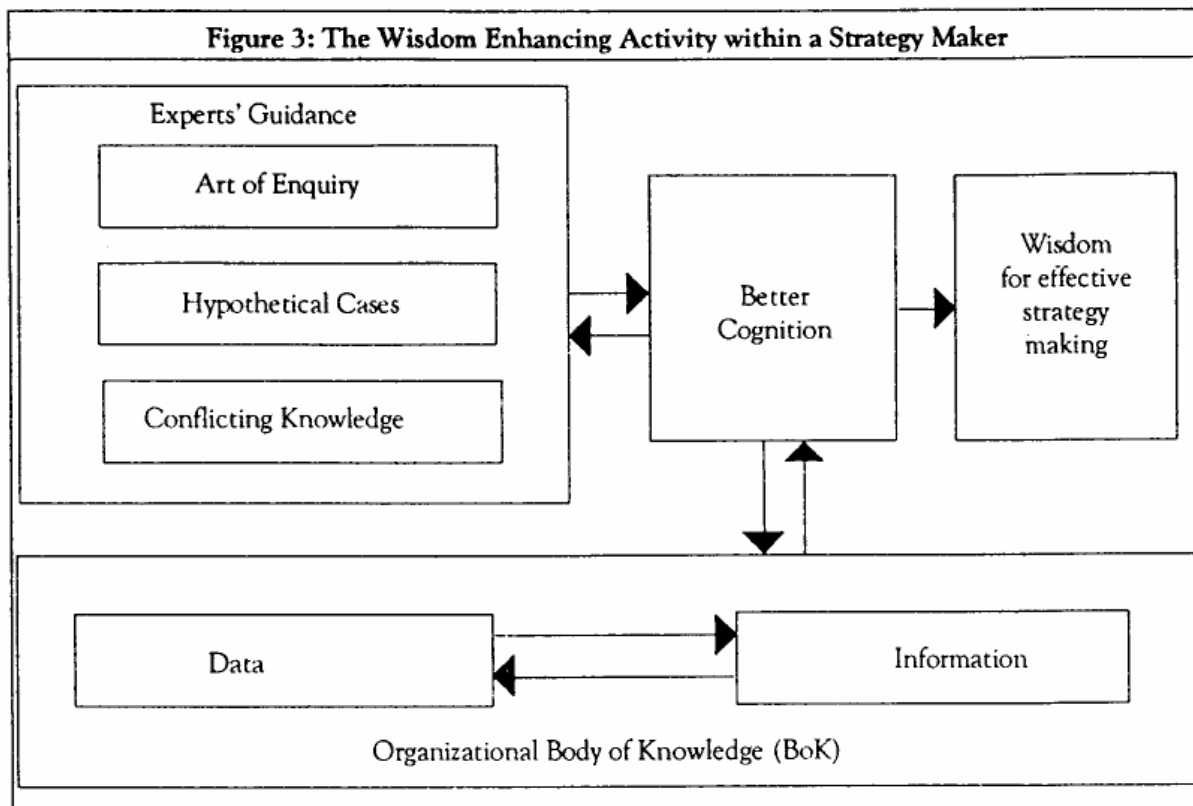
The authors claim to have never believed in a consulting model where experts made decisions on behalf of firms. Instead, they are supportive of the current trend where the consultant makes organizational members wiser to make their own decisions on a sustainable basis. In this presentation, ssues which need to create suitable cognitive maps for strategic decisions—and not a single decision that would suit to multiple players in a given business environment—have beendiscussed extensively. The reader must remember that the strategic decision is essentially an outcome of environmental perception and organizations differ in their strategic decisions because of their differences in terms of thinking, i.e.,solution generating abilities. Frameworks that help in developing better mental schemas, which in turn help in better thinking, are always welcome as they are very likely to lead to better strategic decisions. The authors also vote for the World Bank model to promote 'in-house management consultancy cells'. In such cases, the members of the organization are always in a better position to make their own decisions, once they learn to think better.

By incorporating the fundamental principles of marketing where the needs of the target groups can be studied, suitable knowledge banks can be created in the form of specialized packaged products. The authors believe that besides others, small entrepreneurs would benefit most from these products in a world of mega corporate warfare. With the increased distribution of such products, small firms would be able to afford the knowledge of these world-class strategy experts, which would otherwise have remained a distant dream for them. One distinguishing dimension of our conceived model when compared to expert systems lies in the very act of arriving at decisions. Expert systems use computer programs that eventually suggest the single best answer in a given situation by using logic derived from the decision-making techniques of the experts. The authors propose a product in the form of an enquiry system that primarily improves the decision-making process in human strategy- makers by digging relevant organizational learning experiences in the past.

Domain Experts' Harvested Knowledge Bank and Development of the Enquiry System
Business is a cognitive activity of creating a material sense of the world. This activity provides a structure of interpretation that is consistent with the corporate identity and is a match for the external environment. Wicked environments call for generation of contradictory viewpoints on new events and existing methods of dealing with them. This leads to a substantial qualitative improvement in managerial decisions. Some recent literature suggests that researchers are paying increasing attention to explicitly addressing the human meaning-creation issues in the context of designing inquiring systems. But still, it seems that not many information technology enabled knowledge repositories work against exchanging and sharing of diverse perspectives. They usually institutionalize definitions and

interpretations of events and issues. Case-Based Reasoning (CBR) tools or Artificial Intelligence (AI) may provide the solution to a certain degree. But still much remains to be done in terms of exactly cloning the human meaning-creation issues. It is ideal to provide the searching member with the ability to assess contextually relevant contradicting knowledge over and above the usual modes of symmetric knowledge and domain experts' guidance. The experts' knowledge bank and enquiry system, as suggested in the proposed model may be developed for special emphasis on looking into such requirements of the user. This will help in lessening oversimplification and premature decision closure. A further simplified version of our functional model is presented in Figure 3.

Figure 3: The Wisdom Enhancing Activity within a Strategy Maker

Experts' Guidance

Art of Enquiry

Hypothetical Cases

Conflicting Knowledge

Better Cognition

Wisdom for effective strategy making

Data

Information

Organizational Body of Knowledge (BoK)

The authors have borrowed the 'DIKW (Data, Information, Knowledge and Wisdom) and Entropy' framework used by Joe Helfer of Knowledge Management Readiness Systems (see "Order out of Chaos" at Brint.com website) to develop the ultimate idea for strategic decisions in wicked environments as presented in Figure 3. The distinction between data, information, knowledge and wisdom using a commonsense approach really brings in a structured way of visualizing knowledge in organizations. The concept of entropy is taken from the field of thermodynamics and used to describe the data, information, knowledge and wisdom disorder in the organizational systems. Here, entropy is used to describe the missing gaps in organizational DIKW systems. This concept of a knowledge bank and enquiry system is essentially an attempt to reduce the entropy of the wisdom component of DIKW, which is at the highest level in the organizational flow of entropy.

To cite, for instance, to explain this standpoint and further clarify the concept, let us imagine a situation where a patient consults multiple doctors for a tough and complex medical problem. Here, s/he may get similar or dissimilar diagnoses, reasoning and treatment advice. But the patient will choose the doctor's advice that is more close to his/her heart and will accept the treatment suggested. But listening to all doctors makes him/her more knowledgeable, which eventually leads to the development of a possible logic set that is used to identify the best treatment under the circumstances. Let us take another example, this time, of a book. A book in many ways provides explicit knowledge in terms of facts and figures, real life and hypothetical cases and illustrations, etc. This also very often carries the writer(s)' experiential learning cues and knowledge thereof. No doubt, it is helpful in shaping the cognition of a person who goes through it but the degree of match between the readers' environmental reality and the contents of the book might vary substantially. Generally, it is seen that the executives who scan for knowledge in an uncertain environment have to satisfy themselves often with inadequate search results. It happens primarily because the executives themselves perceive that still better information with higher credibility exists untapped. This can be restated as a need that remains unsatisfied with available options or products. Imagine a situation where the executive has the opportunity to select his/her preferred guide and take certain hint-lessons for the strategic problem in hand. A knowledge bank and the enquiry system suggested in this work would prove very handy in such situations. Moreover, the current framework would provide those learning experiences that the organization has faced in the past, thus assuring the strategy maker of a fitenvironment. Books, in addition, do not support quick searching for specifics and cross searches across hierarchical categories that is possible now, with the help of emerging knowledge management tools and technologies.

Further, a book may have been written by a couple of authors where the authors present a given dimension of solving the strategic problem and another book may prove an altogether different perspective. However, once a knowledge product is made these problems can very well be overcome. Imagine a condition where a full house of experts are waiting for your problem and suggesting different methods of attacking the problem. It may be argued that this would potentially confuse the executive rather than bringing in any good to him/her. But strategic decisions often require conflicting viewpoints to better shape the cognitions of the executive(s) in charge of strategic decision-making. The executive, having got all the thinking and decision-making methodologies, goes through a self-made structure for the given problem solving. This structure evolves as a result of the executive's understanding of his/her own organization and the environment around it. No attempt has been made to get into issues of making an organizational body of knowledge or to collect and maintain them. Rather, the focus is on the mining part of it from these vast repositories of information.

Conclusion and Future Research

Currently, many a work on this focuses on enhancing the capabilities of their knowledge management systems although not many have stressed on improving the strategic aspects of decision-making with the help of knowledge products. The authors strongly believe that many are opposed to this idea of developing products that is capable of enhancing the existing decision-making practices in the field of strategic management. The reasons for the same are appreciated in this paper and suitable suggestions are made to make the projects viable enough so that it attracts organizations to come forward and attempt at it.

The current work opens a lot of opportunity for future research. It questions the very possibility of creating products with the suggested approach that are profitable and sustainable for organizational growth. Hence, marketing research would play a vital role in the future development and implementation of such products. Though certain aspects relating to the valuation of experts' intellectual capital has been discussed in this paper, still a lot of questions remain unanswered as to whether the valuations are acceptable by the users that have been arrived at by employing different methods that are currently existing. One area that still remains a formidable challenge in the context of the current work is the field of distributed knowledge modeling (see distributed knowledge modeling through WWW) through the World Wide Web. This area has made possible the integration of knowledge processes of professional communities worldwide through the Internet. Can the suggested model be constantly updated as the dynamics of the environment changes by the induction of such technologies ? Such questions really put challenges for researchers to identify the sustainability of this model. ∎

Reference # 29J-2005-06-01-01

References

1. Aguilar, F J (1967), *Scanning the Business Environment*, Macmillan, New York.

2. Ansoff, H L (1979), *Strategic Management*, Macmillan, London.

3. Barney, J (1991), "Firm Resources and Sustained Competitive Advantage," *Journal of Management*, 17, pp. 99-120.

4. Bourgeois, L J (1985), "Strategic Goals, Perceived Uncertainty, and Economic Performance in Volatile Environments," *Academy of Management Journal*, 32 (3), pp. 489-515.

5. Chakravarthy, B (1997), "A New Strategy Framework for Coping with Turbulence," *Sloan Business Review*, Winter, pp. 69-82.

6. Courtney, Hugh, J Kirkland and P Viguerie (1997), "Strategy Under Uncertainty," *Harvard Business Review*, Nov-Dec, pp. 67-79.

7. Daft, R L and K E Weick (1984), "Toward a Model of Organizations as Interpretation Systems," *Academy of Management Review*, 9, pp. 284-295.

8. Dutton, J M and R D Freedman (1984), "Uncertainty and Firms' Strategic Behaviors," Working Paper, New York University.

9. Elenkov, D S (1997), "Strategic Uncertainty and Environmental Scanning: The Case of Institutional Influences on Scanning Behavior," *Strategic Management Journal*, Vol. 18:4, pp. 287-302.

10. Hambrick, D C and P A Mason (1984), "Upper Echelons: The Organization as a Reflection of its Top Managers," *Academy of Management Review*, 9, pp. 193-206.

11. Krogh, G V J Roos and K Slocum (1994), "An Essay on Corporate Epistemology," *Strategic Management Journal*, 15, pp. 53-71.

12. Lawrence, P R and J W Lorsch (1967), *Organizations and Environment*, Irwin, Homewood, IL.

13. Lindsay, W M and L W Rue (1980), "Impact of the Organization Environment on the Long Range Planning Process: A Contingency View," *Academy of Management Journal*, 23, pp. 385-404.

14. Mahoney, J T and J R Pandian (1992), "The Resource Based View Within the Conversation of Strategic Management," *Strategic Management Journal*, 13 (5), pp. 363-380.

15. Malhotra, Yogesh (1997), "Knowledge in Inquiring Organizations," in the 3rd American Conference on Information Systems; Philosophy of Information Systems Mini-Track, Indianapolis, IN, August 15-17, pp. 293-295.

16. Miliken, F J (1987), "Three Types of Perceived Uncertainty About the Environment: State, Effect and Response Uncertainty," *Academy of Management Review*, 12, pp. 133-143.

17. Pfeffer, J and G R Salancik (1978), *The External Control of Organizations*, Harper & Row, New York.

18. Schneider, S C and A De Meyer (1991), "Interpreting and Responding to Strategic Issues: The Impact of National Culture," *Strategic Management Journal*, 12 (4), pp. 307-320.

19. Web Document Address: http://ksi.cpsc.ucalgary.ca/articles/AAAI96/KMWWW/ KMWWW.html

20. Web Document Address: http://www.brint.com/papers/submit/jhelfer.htm (Originally published in *Searcher: The Magazine for Database Professionals*, July-August, 1998).

21. Web Document Address: http://www.GDSS.com/DOM.htm

22. Weick, K E (1987), "Organizational Culture and High Reliability," *California Management Review*, 29 (2), pp. 112-127.

23. Wernerfelt, B (1984), "A Resource Based View of the Firm," *Strategic Management Journal*, 5 (2), pp. 171-180.