

A Study of Leadership and Decision Making Towards Growth of Artificial Intelligence

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Abstract – All of the new technologies emerging in the late 20th century, the production of artificial intelligence may provide the most profound impacts on organizational decision making. Because the development of artificial intelligence technologies and models has largely been based on psychological models of human cognition, the effects of their implementation in complex social settings have not been thoroughly examined. This study is an attempt to generate research which will develop a comprehensive understanding of the impacts of artificial intelligence and its role in complex organizations. A set of the study has been developed which examine the relationships between artificial intelligence technologies and the dimensions of organizational decision making. It is argued here that the implementation of expert systems will lead to less complex and political decision processes, while the implementation of natural language systems will lead to more complex and political decision processes.

Key Words – Leadership, Decision Making, Growth, Artificial Intelligence, technologies, organization, development.

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INTRODUCTION

All of the new technologies emerging in the late 20th century., the production of artificial intelligence (AI) may provide the most profound impacts on organizational decision making. With its ability to provide large quantities of information and expertise. AI will change the dynamics of many decision situations. This study will discuss the dynamics of decision making in organizations and the impacts that the implementation of AI-based products might have. The naive view that AI will provide a panacea for decision makers will be rejected and in its place an analysis of the impacts of these technologies in organizations will be presented. Because the development of AI technologies and models has largely been based on psychological models of human cognition, the effects of their implementation in complex social settings have not been thoroughly examined. To date, most of the research reports in AI journals have focused on the technical elements of a single application or technology. The comparative examinations of AI in use have been largely a theoretic and nonsystematic. This study is an attempt to generate research which will develop a comprehensive understanding of the impacts of AI and its role in complex organizations. Due to the lack of systematic empirical research on the effects of AI in organizations, research and theory from AI and from organizational decision making will be integrated into a coherent model.

For any decision process there is associated with it a 'matter for decision' which is the problem or opportunity to be resolved. The matter for decision affects the technologies which will be brought to bear on it. In this case, it is artificial intelligence technologies which will be applied. Together, the matter for decision and the technologies utilized determine the dimensions of the decision. The decision can be characterized as having certain levels of complexity and politically associated with it. And finally, the values of these dimensions determine the nature of the decision process. This study will focus on the interactionism between two AI technologies and two decision dimensions. To elaborate the interaction between AI and the dimensions of decision making, this study will proceed in three sections. The first section will develop a framework for discussion based on a review of the management decision making literature. The framework developed by Hickson and his colleagues (1986) will be the starting point to discuss the determinants of complexity and politically. The work of earlier decision-making theorists will be drawn upon to elaborate on the determinants and introduce additional ones. The significance of the individual determinants of complexity and politically will become more apparent in the discussion of their interaction with AI. The escorted section will discuss AI-based technologies which will affect the decision making process. The emphasis here will be on

technologies which are either currently in. or hold great promise for, commercial use according to the most current research reports and findings. Two technologies — expert systems and natural language processing — will be discussed in detail with respect to their implementation in managerial settings. This discussion will be at a more general level in order to give the reader a richer understanding of the technologies discussed. The final section will examine how each of these technologies will alter the dynamics of organizational decision making.

REVIEW OF LITRATURE:

The foundation for this discussion of organizational decision making will be the framework developed by Hickson and his colleagues at the University of Bradford. Although there are a large number of conceptual frameworks available for the analysis of decision making, the Bradford studies present a general set of concepts within which the work of other researchers can be utilized. Indeed, the framework provided by the Bradford studies incorporates and extends much of the previous research on decision making. Elements of cognitive and political theories are integrated into a comprehensive conceptual model. Furthermore, Hiekson and his colleagues provide a strong empirically-based analysis of organizational decision making. The insights provided by these researchers are based on a 10-year study of 150 strategic decisions in 30 firms, the largest and most comprehensive decision-making study to date. As others have noted, the publication of *Top Decisions* was 'a significant advance in descriptive and explanatory appreciations of strategic decision making'. It provides systematic insights; building beyond past descriptions of strategic decision making ... It offers a typology that integrates across descriptive frameworks of the past.

There are, of course, limits to any work and so the *Top Decisions* framework will be extended and elaborated here drawing on the work of other decision theorists and researchers. Some of the limits of the *Top Decisions* research have been noted by Dutton (1985). Dutton suggests that despite the subjective perspective claimed by the researchers, both researchers' and subjects' perceptions enter into the construction of decision types. However, this is an inextricable element of almost all field studies; the researcher invariably contributes to the development of perceptions and typologies. Dutton goes on to argue that because the *Top Decisions* researchers used a stratified sample based on decision type, the generality of their conclusions is limited. This sampling scheme was necessary, however, due to the prohibitive costs associated with obtaining a purely random sample. Finally, Dutton argues that the *Top Decisions* research ignores the context of the decisions studied. The impact of context, however, is of lesser importance when studying decision processes. What is required for

this study is a general framework which can incorporate the insights of other decision-making scholars. The Bradford studies offer a comprehensive yet parsimonious analysis of the decision making phenomenon. For our purposes, it is the conceptual clarity and theoretical generalizability of the Bradford studies which is critical. Two dimensions of the decision making process, developed by Hickson and his colleagues (1986), will be borrowed and expanded upon. First, a problem can be defined in terms of its complexity. Highly complex problems demand large amounts of scarce data and expertise, while simple problems do not. Second, the interested parties and their objectives determine the polytonality of a situation. When the objectives of powerful parties conflict, the political activity associated with the decision process increases. "Politically arises in the approved influence of recognized departments or authority figures, as well as in less official or even underhand influence. These two dimensions are constituted by several factors. This study will draw on the factors described by Hickson and his colleagues, and develop others based on previous decision making literature.

ARTIFICIAL INTELLIGENCE

Before discussing specific technologies, a definition of AT is required. AI has variously been defined as:

- 1) Making computers smart,
- 2) Making models of human intelligence, and
- 3) Building machines that simulate human intelligent behavior.

For the purposes of this study, we will adopt the latter as our definition. For we are not so much concerned with the capacity or power of the hardware, nor with the accurate modeling of our cognitive processes, as with those tools which will be able to aid, and perhaps replace, the manager in the decision making process.

As mentioned above, this section will provide a more general discussion of two AI technologies. Along with a concise definition of expert systems and natural language processing, this section will provide a discussion of the problems of implementing these technologies in managerial applications. The discussion will be based primarily on research reports and findings, so as to reflect the current state of AI research. The final section will provide a greater number of empirical examples of both expert systems and natural language processing. These examples will be drawn both from scientific research and industrial application.

IMPACTS OF ARTIFICIAL INTELLIGENCE ON DECISION MAKING:

The manner in which decision makers operate will change in the future as a result of the technologies discussed above. With far greater access to information and problem solving expertise, the complexity and polytonality of many issues will change. A simplistic view of technological 'progress' might predict a general reduction on both of these dimensions. Certainly, this view would argue, greater access to information and expertise will enable decision makers to overcome their bounded rationalities and produce rational, comprehensive solutions. And the need for political influence will be swept away by the overwhelming presence of objective, technical knowledge. However, by delineating the determinants of the situational dimensions and examining their interactions with the new technologies, it becomes clear that the effect of AI will be far more problematic. The direction and magnitude of the change will depend on the specific interactions. This section of the study will discuss in some detail the manner in which AI technologies might interact with the decision making process. Drawing on several empirical and hypothetical examples and the research literatures discussed previously, the focus in this section will be on the impacts of AI systems which will utilize the technologies now being developed in research labs. It is important for researchers and managers to consider the social and psychological effects of the technologies they are currently developing and will be employing in the near future. If the impacts of future AI systems are likely to be significantly different from those of the smaller, current systems the potential differences will also be discussed.

DIMENSIONS OF DECISION MAKING

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CONCLUSION:

Leadership and decision making is utilized to strengthen the Organization performance and Growth Using Artificial Intelligence. The researcher will identify its influences to predict Leadership and decision making is Organization performance and Growth Using Artificial Intelligence. Hence the purpose of this research is illuminating the concept of Leadership and decision making is Organization

performance and Growth Using Artificial Intelligence.

This paper has demonstrated the complex, multifaceted nature of the relationship between AI and organizational decision making. Through the careful delineation of the two domains and their constituents, a more precise understanding of the specific interactions has been gained. Because of this detailed examination, we can also address the more general question of the overall effects of expert systems and natural language systems. In the generation of the hypotheses listed above, two patterns emerge. It is argued here that expert systems will reduce immensity, variety, rarity, and seriousness, all contributing to a decrease in complexity. As well expert systems will lessen the imbalance between participants. Increase environmental or organizational coupling, and institutionalize decision processes reducing the associated politicality. So, with a reduction in both complexity and politicality connected with the introduction of expert system technology, it is clear that these systems will change the dynamics of decision making in their subject domains. Hickson and his colleagues argue that a decrease in both complexity and politicality is associated with fluid decision making processes, which are 'steadily paced, formally channeled and speedy'. And if the complexity associated with the decision is lowered enough, the process will become constricted, or 'narrowly channeled'. The lower cognitive and social demands issued by the problem allow for a smoother choice process with fewer parties involved.

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