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A Comparison of Implementation Resistance Factors for DMSS Versus Other Information Systems

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ABSTRACT

Effective decision-making within and across organizations is of strategic importance as the global business environment becomes more complex. Business processes and their related computer based information systems (CBIS) must support integrated decision-making. While decision support systems (DSS), executive information systems (EIS), and knowledge-based systems (KBS) have been independently used to support problem solving and decision making activities, they are still not widely implemented and accepted by a broad spectrum of organizations. Identifying the reasons for the lack of widespread use, as well as integration of these technologies would enable organizations to better design and implement these support systems. Using 41 narratives, we have compared decision-making support systems (DMSS) resistance factors with those of other CBIS to better understand these factors and their impact on DMSS implementation.

Keywords: *decision-making support systems, executive information systems, computer based information systems, knowledge-based systems, implementation resistance*

INTRODUCTION

Mata, Fuerst and Barney (1995) suggest that for a resource or capability to confer sustained strategic advantage, it must be valuable, unevenly distributed and inimitable. These conditions apply to a firm's decision-making competence and competence in implementing the computer based information systems (CBIS) on which effective decision-making depends. Hence, we consider decision-making and CBIS implementation competence as competitive capabilities. Minimizing CBIS implementation resistance can provide sustained strategic advantage for a firm, as can better decision making based on decision making support systems (DMSS),

which comprise more basic CBIS.

DMSS are especially strategic in today's complex business environment where heightened global competition pushes firms to diversify their product offerings into product markets with which they have little experience, and at the same time, to compete on cost, quality, reliability and responsiveness dimensions. Managing the complexity inherent in optimizing multiple product lines on multiple performance dimensions across multiple organizations in the supply chain has heightened the organizational need for competence and timeliness in decision-making. DMSS present opportunities to streamline and integrate key decision processes regarding activities distributed within and across a firm's boundaries. Decision processes include problem identification, the proposal and evaluation of solution alternatives, and the selection and implementation of the solution (Simon, 1960).

Improved decision-making is predicated on IT-supported collection, manipulation and dissemination of data and information. Better business decisions presumably result from the use of DMSS, to the extent that the information on which they're based is accurate, complete, flexible, relevant, simple, verifiable, accessible, secure, reliable, timely, and economical (Stair & Reynolds, 2001).

Traditionally, the decision-making role was supported by decision support systems (DSS). Other systems such as executive information systems (EIS), executive support systems (ESS), expert systems (ES), data mining systems (DM), knowledge management systems (KMS), etc. have also facilitated decision making by creating and managing knowledge bases, through information aggregation, data analysis and the presentation of information in easily navigable and usable formats. These systems are becoming increasingly integrated to facilitate all stages of problems solving, enabling decision-making across functions and across firms. It has therefore become important to study the role of DMSS as a class of systems in terms of their effectiveness in supporting organizational and inter-organizational decision-making capabilities.

DMSS have been defined to include one or more of the following CBIS: DSS, EIS, ES, ESS, expert decision support systems (EDSS), data warehouse systems (DW), online analytical processing (OLAP) systems, DM systems, artificial intelligence systems (AIS), KMS and integrated DMSS (Forgionne, Mora, Cervantes & Gelman, 2002).

An organization can derive value from an information system, depending on how the system is designed and implemented within an organization. Information systems implementation issues have occupied IS researchers for several decades (Alavi & Carlson, 1992; Jian et al., 2000; Krovi, 1993; Legare, 1995). Many earlier studies focused on IS implementation in general (DeSanctis, 1984; Ives & Olson, 1984; Lucas et al., 1990), and others have focused on specialized CBIS such as DSS (Alavi & Joachimsthaler, 1992) and EIS (Tang 1991). Our study draws upon and extends prior IS implementation research by moving toward the development of a conceptual model of the differences between IS implementation issues in DMSS as compared to other information systems.

We argue that it is necessary to develop IS implementation issues in the context of DMSS as compared to other system classes such as transaction processing systems or management information systems because they support multiple stages of the decision-making process. Also,