



## Management information systems and strategic performances: The role of top team composition

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### ABSTRACT

Organizations adopt sophisticated management information systems, which provide top managers with an ample range of information to achieve multiple strategic performances. However, organizations differ in the extent to which they improve their performance. This paper analyzes the role of top management team in the relationship between management information systems and strategic performance. Using data collected from 92 top management teams, it analyses how different team compositions interact with a sophisticated management information system, and how this interaction affects strategic performances, which are focused on cost reduction and flexibility. The findings show how the effect of management information system on strategic performance (focused on flexibility) is moderated by top management team diversity.

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### 1. Introduction

The enhanced competition in the private and public sector has spurred organizations into delivering greater efficiency, quality and more flexibility of services (Kaul, 1997). This condition imposes additional demands on the organization's information processing capabilities. In trying to achieve these strategic objectives, organizations adopt more sophisticated and comprehensive management information systems (MISs) (Choe, 1996; Ghorab, 1997). These provide top managers with a comprehensive and broad range of information about multiple dimensions of the firm's operations (Choe, 1996, 2004), facilitating decision-making and performance achievement (Kaplan & Norton, 1996; Kim & Lee, 1986). Organizations, however, differ in the extent to which they achieve strategic performance successfully. This paper addresses the relationship between sophisticated MIS and top management teams (TMTs), as the set of managers ultimately responsible for strategy management and organizational performance. Management literature has recognized that TMTs with different demographical characteristics (e.g. age, tenure, experience and education) are generally expected to gather diverse information and display higher-quality decisions (Carpenter, Geletkanycz, & Sanders, 2004; Finkelstein & Hambrick, 1996). Management and information literatures have recognized (implicitly) the use of information by managers, and the question that remains is how (explicitly) different top managers use

MIS for strategic management (Lin, 2006; Hagan, Watson & Barron, 2007).

Although the effect of MIS on performance is widely recognized, prior findings on the direct and indirect relationship between and (strategic) performance far are mixed and confused (Fuller-Love & Cooper, 1996; Choe, 2004). The present study attempts to provide some clarification of the relationship between MIS design and strategic performance, by explicitly analyzing the role of TMT composition. Our general hypothesis is that diversity of TMT composition supports more sophisticated MIS in ways that contribute to multiple strategic performance, which are focused on cost control and flexibility (Gupta & Govindarajan, 1984; Lederer & Smith, 1989). We follow upper echelon literature, which views organizations as a reflection of their TMT (Hambrick & Mason, 1984). Upper echelon theory focuses on observable, demographic characteristics of TMT members to explain organizational outcomes (Finkelstein & Hambrick, 1996). This study also uses a contingency approach for analyzing the interaction fit between MIS sophistication and TMT composition. Contingency approach is the only one which asserts that performance depends on the existence of an alignment between several organizational characteristics, such as information systems, organizational structure and strategy (Choe, 1996; Kim & Lee, 1986).

Data were collected from 92 TMTs in public hospitals in Spain, where organizations have to implement strategies focused both on cost-efficiency, flexibility and quality of service (Naranjo-Gil & Hartmann, 2006). This paper attempts to contribute to the management and information literature in several ways. First, this research provides evidence of the important role of TMT composition in the

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effectiveness of MIS on strategic performance. While prior research suggests that the MIS design enables organizations to enhance strategic performance, this paper directly tests the presence of this relationship and examines a strategic performance outcome of the enabling effect. Second, the present study offers a more integral explanation of the alignment between MIS design and performance by explicit consideration of different characteristics of the TMT (Hagan et al., 2007). Third, we test our hypotheses in a setting where similar organizations have to achieve multiple strategic performances, albeit to different extents (Madorrán & Val Pardo, 2005; Brittain & Macdougall, 1995). Thus, this context provides an opportunity to analyze the interactive effect of TMT diversity and MIS design on strategic performance, as it control the diversity as an antecedent of management information use and processing (Yoo & Alavi, 2001). Fourth, this paper adds to the limited knowledge on the relevance of management information system design for firms achieving multiple strategic objectives.

The remainder of this paper is structured as follows. Section 2 develops the hypotheses about the relationships between TMT, MIS and performance. Section 3 describes the empirical survey study and the measurement of variables. Section 4 presents the results. Finally, Section 5 presents the discussion and conclusions of this study.

## 2. Theoretical development and hypotheses formulation

### 2.1. MIS and strategic performance

Managers operating in competitive contemporary environments need comprehensive information in order to manage the important parts of the organization's operations and thus achieve different strategic goals (Kaplan & Norton, 1996). Managers' perception is an important factor that influences the actual use of MIS and the acceptance of new information systems (Ghorab, 1997, p. 250). MIS can provide managers with a variety of information, thus Choe (1996) identified MIS design according to the perceived usefulness of four information dimensions: scope, aggregation, integration and timeliness (Chenhall & Morris, 1986; Choe, 1996). These dimensions have been analyzed extensively in management and information system literatures (Choe, 1996, 2004; Lederer & Smith, 1989). Scope refers to the type and extension of MIS information in time and space. Narrow-scope information is derived from financial information internal to the organization and with a historic orientation. Alternatively, broad-scope information includes external, non-financial and future oriented information (Choe, 1996). Aggregation refers to the way data is aggregated over time periods, departments or functions. Integration refers to the interaction and coordination of information among different functions in the organization. Finally, timeliness refers to the frequency and speed of reporting (e.g., short or long run). Several authors have extended the four information characteristics to describe accounting systems in terms of MIS sophistication (Choe, 1996; Ghorab, 1997; Naranjo-Gil, 2004). MIS sophistication refers to a range of information available for managers, which is perceived as being useful. The sophisticated MIS design provides information which has a high average level of information content in the four information dimensions. That is, it provides information which is broad-scope, high coordinated, high reporting frequency, and integrated among different organizational functions (Choe, 1996, 2004).

A sophisticated MIS provides managers with a comprehensive range of information to achieve different strategic goals (Fuller-Love & Cooper, 1996; Kaplan & Norton, 1996). Following Porter (1985) and Miller (1988) we distinguish two strategic goals, such as cost reduction and flexibility strategic goals. In this vein, Fuller-Love

and Cooper (1996) asserted that increases in expenditure on public firms have led governments worldwide to attempt to reduce these costs and to increase organizational flexibility to be more competitive (Miller, 1988; Madorrán & Val Pardo, 2005). A cost-based strategic objective focuses on internal efficiency and cost control, and thus tends to emphasize current organizational structures rather than adopt new ones (Miller, 1988; Porter, 1985). A flexibility-based strategic goal focuses on diversification, coordination and decentralization within the organization (Fuller-Love & Cooper, 1996; Porter, 1985). Organizations are unlikely to achieve one strategic performance (e.g., cost reduction) to the extent of excluding the other (Porter, 1985). Furthermore, organizations may often perform better on one strategic objective than the other since they have different organizational capabilities (Gupta & Govindarajan, 1984; Miller, 1988).

As flexibility-related strategic goals require cross-functional interaction and decentralization, it allows relationships between inputs and outputs of activities to be less clear (Miller, 1988; Porter, 1985). Managers will require an extended set of management information that provide more insight in the various parts of the transformation processes (Fuller-Love & Cooper, 1996; Kyung, 1990). In contrast cost-related strategic performances focus on standardization and comparability of activities and processes (Naranjo-Gil & Hartmann, 2006), which demands the use of a narrow set of information, which expresses cost control objectives in financial (monetary) and aggregated terms (Choe, 1996), facilitating comparability of tasks and outputs across the organization (Chang, Chang, & Paper, 2003, Kyung, 1990). Thus, we argue that a sophisticated MIS supports strategic performances in overall, but that this support may be more crucial for achieving flexible-related strategic performance than cost-related strategic performance. Therefore, we propose the following hypotheses:

**H1.** There is a positive relationship between a sophisticated MIS and strategic performances focused on (a) flexibility and (b) cost reduction.

**H2.** A sophisticated MIS is more positively related to strategic performance focused on flexibility than to strategic performance focused on cost reduction.

### 2.2. MIS, TMT diversity and performance

The MIS provides the same information to each manager in a TMT, but the actual selection and use of information is determined by personal preferences. Upper echelon literature argues that these preferences are based on managers' characteristics, such as experience, age, tenure and educational background (Hambrick & Mason, 1984). One important determinant of TMTs' ability to process information and optimize decision-making is the TMTs' diversity in terms of demographic background (Carpenter et al., 2004; Finkelstein & Hambrick, 1996). Heterogeneous TMTs, consisting of managers with varying skills and demographic profiles, have been argued to process different types of information and make better-informed decisions (Carpenter et al., 2004; Hagan et al., 2007). In contrast, homogeneous TMTs, consisting of managers with similar demographical characteristics, have been associated to high group cohesiveness and enhanced control over members (Finkelstein & Hambrick, 1996; Hambrick & Mason, 1984).

A heterogeneous TMT has a greater variety of professional perspectives, know more of operations, and can pay more attention to different organizational activities (Carpenter et al., 2004; Simons, Pelled, & Smith, 1999). A diverse TMT will search, interpret and gather information from a variety of sources, as determined by their background and cognitive make-up (Hagan et al., 2007; Wiersema & Bantel, 1992). We argue that sophisticated and broad

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