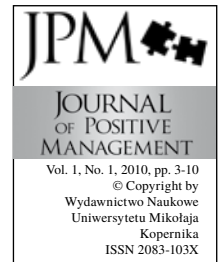


MANAGERIAL STYLES AND MANAGEMENT INFORMATION SYSTEMS FOR IMPROVING ORGANIZATIONAL PERFORMANCE

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Abstract

In a more dynamic and competitive environment, organizations are changing towards more flexible organizations, with the object of improving their performance. Thus some organizations are changing their information systems, others their managerial styles, and other both of them. This research attempts to explain how certain managerial styles and management information systems influence organizational performance. This study is developed in the Spanish public hospital sector. A three-stage analysis involving archival data, interviews and a questionnaire, was adopted thus enabling a systematic and comprehensive analysis. Results support a positive effect on performance of an interactive managerial styles and a sophisticated management information system.

Keywords: managerial style, Information systems, organizational performance

Paper type: Research paper

1. Introduction

In a more dynamic and competitive environment, organizations are changing towards more decentralized and flexible organizations, with the object of improving their efficiency and meet the demand of customers. More flexible organizations need more coordination, motivation and evaluation of the whole activities in. Thus, organizations are adopting more sophisticated management information systems (MIS), which provide managers with a comprehensive and broad range of information about multiple dimensions of the organizational operations, facilitating decision making, coordination and performance achievement (Choe, 2004; Chenhall, 2003). Organizations, however, differ in the extent to which they achieve performance successfully. Although the use of information by managers has been extensively recognized in the management literature, the question that remains is how different managerial styles of using MIS affect organizational performance (Naranjo-Gil and Hartmann, 2007). This paper attempts to provide some clarification of the relationship between MIS design and managerial style and the effect on performance. Our general hypothesis is that the design of

management information systems and the managerial style must fit well with each other to avoid friction that prevents firms from performing optimally.

Data were collected from CEO in public hospitals in Spain. A three-fold analysis involving archival data, interviews and a questionnaire was adopted thus enabling a systematic and comprehensive analysis. The interviews were used in order to provide a rich understanding of the variables and phenomena of interest, while the questionnaire enhanced generalizability. The questionnaire had a very satisfactory response rate of 51.38% (112 useful questionnaires). A total of 18 interviews were also performed. The results of this research show the importance of a sophisticated MIS design and an interactive managerial style, the combination thereof and the influence of these choices on organizational performance.

2. Management information system and managerial style

The Management Information System (MIS) can be conceptualized as the techniques used by a firm to insure the proper behavior of organizational participants (Chenhall, 2003). These techniques provide managers with information of different performance characteristics, which may be financial, non-financial, long-term oriented or short-term oriented. There is no universally appropriate MIS that can be applied to every organization, since the effectiveness and usefulness of MIS is contingent on certain external organizational circumstances (e.g. market and environment) and internal factors (e.g. technology and management style). There is a strong believing that traditional information systems are not appropriate for managing current organizations⁷. Different innovations in information systems have been developed to focus on integrating financial and non-financial measures in order to improve the information providing to managers. In this vein, the improvement in information and communication technology let organizations to adopt more innovative information management systems for enhancing flexibility and productivity (Walker and Carayon, 2009; Simons, 2005). Thus, managers would provide with richer and more comprehensive information letting them to optimize their decision making and to communicate more efficiently to the rest of organization (Lin, 2006). MIS can be defined according to the perceived usefulness of four information attributes, namely timeliness, scope, aggregation, and integration (Chenhall and Morris, 1986; Naranjo-Gil, 2009).

1. *Timeliness* refers to the speedy provision of requested information and the frequency of reporting collected information.
2. *Scope* refers to the extent to which information generated by the MIS reflects external versus internal events, future-oriented versus historical data and qualitative versus quantitative data.
3. *Aggregation* refers to the summation of temporal and functional information (e.g., cost centre, clinical services, and marketing departments).

4. *Integration* refers to the coordination of the various segments within a sub-unit or department.

A MIS can be categorized as more sophisticated based on these four dimensions. A sophisticated MIS supplies information more focused on the external environment, reports information quantified in both monetary and non-monetary terms, is more long term orientated, and relates to future data more frequently. A sophisticated MIS also supplies information aggregated by time period and functional area to a greater extent, and specifies related services or programs (Liang et al., 2004; Naranjo-Gil, 2009).

Since the MIS is intended to transmit information to the decision makers, it can influence the orientation, direction and formality of the managerial and decision making style (Desombre et al., 2006; Gupta and Govindarajan, 1984). Thus it is not so much the design of the MIS as the way it is used that facilitates the improvement of organizational performance. MIS can be used for different purposes, such as to motivate, influence, monitor and control the efforts made to achieve the organization's objectives. Besides the attention to the measurement characteristics of MIS, managers should also pay attention to their managerial style. There are two broad styles that managers use MIS in organizations: Interactive and Diagnostic (Simons, 2000). Diagnostic style reflects the monitoring of organizational outcomes to correct deviations from preset standards of performance. Diagnostic style emphasizes organizational monitoring and efficiency. Instead, the interactive style for managing hospital is defined as the formal information systems managers use to involve themselves regularly and personally in the decision activities of subordinates. The defining feature of interactive style is the continuous interaction and exchange of information between organizational members, across levels and functions which at the end encourages organizational learning and creative responses to environmental changes.

We can expect that managers using an interactive style would require a sophisticated MIS design to cope with the uncertainty and to optimize decision making. Managers using a more interactive style would be more inclined to use broader management information, in order to encourage participation and task coordination, and, on the contrary, managers adopting a diagnostic style would be inclined to use less sophisticated MIS.

3. The empirical study

Data were collected in a survey study conducted among CEOs in 218 public hospitals in Spain. Health care industry, not only in Spain but also worldwide, is undergoing fundamental shifts in managing and operating demand changes into an effective and a flexible new health care system (Mckee, 2002; Clancy, Anderson and White, 2009). A satisfactory response rate was achieved with 112 useful questionnaires returned (51.38%).

Sophisticated MIS was measured through questions regarding different informational dimensions, such as scope, timeliness, aggregation and integration. Managers had to state the extent to which they perceived that their hospital's MIS provided each of the dimensions identified (Chenhall, 2003; Naranjo-Gil, 2009). We treated all information characteristics as complementary to construct the variable sophistication of MIS design by averaging the scores for all items. The Cronbach alpha for the overall scale was 0.782, exceeding the recommended minimum level (Nunally, 1979).

Interactive managerial style was measured using a six-item likert-type instrument adapted from Simons (2000). Managers were asked about six types of managerial actions. The six items related to the use of MIS for negotiating goals and targets, for encouraging new goals and priorities, for signaling key strategic areas, for encouraging new ideas and actions, for involving subordinates in face-to-face discussions and for use as a learning tool. Cronbach alpha was satisfactory, exceeding the recommended level with 0.797.

Organizational performance was measured with the use of objective performance data. We acquired performance data from Spanish Health Care Services. The six performance indicators that we used were as follows: Occupancy rate (use of beds), Use of surgery rooms, Readmission rate, Length of Stay, Mortality rate, and Waiting time. All the six measures are important performance indicators for all hospitals regardless of their strategic positioning. Moreover, they are used by healthcare authorities around the world (Van Peurseem, Pratt and Lawrence, 1995). Hospital performance was created as the average of these six indicators.

Descriptive statistics for our sample are shown in Table 1. In order to evaluate the effect of sophisticated MIS and managerial style on hospital performance we ran a regression analysis. The following regression equation was tested:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_1 X_2 + \mu$$

Where Y denotes hospital performance, X_1 denotes sophistication of MIS design and X_2 denotes an interactive managerial style. Since the focus on interest is the appropriate fit, only the regression coefficient β_3 (Sophisticated MIS x Interactive Style) is of interest, since it indicates that a more sophisticated MIS design has a greater impact on performance when the managerial style is more interactive. The results in Table 2 show that the coefficient β_3 is positive and significant. This means we are able to support statistically the proposition that an appropriate alignment between a sophisticated MIS design and an interactive managerial style affects hospital performance positively. We included hospital size and hospital location as control variables in the regression analysis. Both variables did not have a significant effect on hospital performance.

	Mean	SD	Theoretical rage	Actual range
Sophisticated MIS design	3.52	0.29	1.00-5.00	1.00-5.00
Interactive Managerial style	3.14	0.38	1.00-5.00	1.00-5.00
Hospital Performance	0.64	0.08	0.00-1.00	0.52-0.79

Table 1.
Descriptive statistics

Variables	Coefficients (p-value)
Constant	2.584 (0.00)
Sophisticated MIS	0.115 (0.18)
Interactive Style	0.219 (0.03)
Sophisticated MIS x Interactive style	0.197 (0.07)
	Adj. R ² =0.091
	F = 7.103 (0.00)

Table 2.
Regression Analysis

Dependent variable = Performance.

To add some intuitive appeal and extend the results of the regression analysis we conducted 18 interviews with managers in hospitals. The interviews provided a rich understanding on the alignment between the managerial style and the MIS design. Below we show some representative excerpts. The interview data suggested that there was congruence between the MIS design and the managerial style adopting for managers at hospitals, as illustrated by the following remark from a manager:

The management information system reported me information from all services and levels within the hospital, which allows me to have meetings and to have discussions with other directors involved about how the hospital is performing.

Another manager stated that she was using an interactive managerial style, pointing to the importance of a broad scope of information for facilitating participation and communication in the decision-making process.

With information (from MIS) covering an ample spectrum of external and internal events, providing operational and financial information... is easy for me to use MIS as a trigger for dialogue, rather than the conclusion of a dialogue.

Yet another manager, who said he used a diagnostic style, told us the following:

This hospital is managed according to the strategy designed exclusively by the top manager. New ideas are welcome but they have to be communicated properly through the hierarchical reporting procedures (a budget system)...anyway, debates of underlying data are infrequent.

The interview data suggested that there was a great congruence between the design of MIS and the managerial style adopted by managers. For example, a manager described clearly this fit:

Our MIS provide me information frequently, which is integrated and aggregated from all services and levels of hospital, so almost every day, I discuss with other managers what kind of information is most relevant and how to operate with it...and always in a comfortable and participative atmosphere.

Most managers seemed to have adapted the managerial style to the existing MIS design, thus indicating that the MIS may be dominating in determining the alignment with the managerial style. The following excerpt from an interview serves as an example of this, showing how a manager adopted a diagnostic style based on the existing MIS:

I receive a great variety of information but once a month...I know that in other hospitals management information is available once a day...thus I can't make fast and flexible decisions...I have to focus on managing the hospital simply monitoring and controlling deviations from the monthly planning.

4. Conclusion

This paper has shown the evidence of the alignment between MIS design and a managerial style and the effect on organizational performance. Managers must develop a managerial style centered upon the corporation's relationship with many constituents in the time of a rapid change. Managers will improve performance with an appropriate fit between MIS design and a managerial style. In other words, in the case of non-congruent fit or misfit, the organization will perform worse than its competitors. The interviews conducted with the managers provided additional insight into the relationship between MIS design and the adoption of a certain managerial style. Based on the interviews, we conclude that a fit is mostly achieved by adapting the managerial style to the MIS design in place. Thus, the present paper provides insights into the dominant role of MIS design on the managerial style in facilitating management (Schultz, Pal and Swan, 2004). This finding suggests that a managerial style could be analyzed as a static variable being influenced by other organizational variables (Shortell et al., 1994; Donaldson, 2000).

The issues of management effectiveness and organizational performance are critical problems confronting managers in both public and private hospitals. This paper enables us to conclude that the board of directors, or public authorities, has to design the MIS to provide suitable information to managers in the organization. In doing so, managers can face the challenge of creating a healthier organization

that balances and coordinates customers, suppliers, financial and community needs (Porter and Olmsted, 2006).

The practical contributions of this paper lie in the fact that managers are able to determine what type of management information has to be provided by MIS in order to optimize their managerial style and decision-making. Thus, to be effective, MIS design should include performance indicators reflecting external environment, as well as data that are more long-term and future oriented. This MIS design can help managers to enhance the quality of services, and control service cost through an appropriate management of the monetary and non-monetary resources. Another important practical consequence is that not only the appropriate information characteristics matter, but that alignment between the MIS design and the management style. Therefore, organizations could drive more value from the top to the bottom line. Encouraging an interactive style, which emphasizes delegation and flexibility to face a dynamic environment, does not mean automatically more organizational effectiveness (Simons, 2000; Porter and Olmsted, 2006). Thus, organizations have to encourage a certain management style according to the MIS design in order to optimize their decision-making.

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