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## The role of Information Systems in creating Strategic Leadership Model

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### Abstract

Recent articles claim that the management Information Systems (IS) [1] function should no longer be faced in its classic role, but in terms of a strategic role for exploiting IS-based competitive advantages. Rooted in such a strategic role perspective, this paper develops a research with the aid of a Dynamic Simulation Model [2] of IS and creates an effective plan of Strategic Leadership. Such modeling has been frequently used in similar studies [3-17]. The effectiveness of this plan is the supporting mechanism to strategic management of an organization.

In the research we conducted on this paper, we focus on the significant role that the IS function plays in the complete strategic management. Based on the requirements of the IS strategic role, an important planning system indicates the major factors which are identified to evolve a Dynamic Simulation Model of IS. At this point, the effectiveness of IS design is proved by the complete support, provided by IS in strategic management. Additionally, this model is tested through the results that arise by using information from companies, in order to estimate the importance of the design factors of different systems, presumed to affect IS design efficiency.

This paper is based on two cases. The first one is that official IS-based planning systems play a predominant role in the capacity of organizational improvement. Although the role of other factors is not discounting, we believe that formalized systems play a determinant role in providing mechanism to reclaim such advantages. The second case is that the operational role of the IS [18] has changed. The IS constitute, in our days, a general management tool.

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### 1. The Management Information System

The Management Information System (MIS) [19] offers information that is needed to administer organizations efficiently and effectively. MIS involve three basic resources: people, technology, and information or decision

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making. MIS are recognizable from other information systems in that their purpose is to analyze operational activities in the organization. Academically, the term is usually used to refer to the complex of information management methods tied to the automation or support of human decision-making, for example decision maintenance systems, specific systems and executive information systems.

Old days business computers were used for easy functions such as tracking sales or payroll data, with little detail or structure. With the passage of time, these computer applications became more complicated, hardware storage capacities grew and technologies refined for connecting previously isolated applications. As more and more data was stored and linked, managers attempted greater detail as well as greater abstraction in order to create entire management reports from the raw, stored data. The term "MIS" revealed to describe such applications providing managers with sales information, stocks and other data that would help in managing the company. Today, the term is used generally in a number of contexts and includes: decision support systems [20], resource and people management applications, company resource planning [21], company performance management, supply chain management, client relationship management, project management and database improvement applications.

A successful MIS claims the long range plans of a company, providing reports based on performance analysis in fields critical to those plans, with feedback loops that allow for decoration of every aspect of the company, including induction and training regimens. MIS not only indicates how things are moving, but also why and where performance is failing to identify with the plan. These reports include real-time performance of rate centers and projects with detail adequate for individual accountability.

## **2. The Planning Systems necessity**

The role modification requires proper changes in management structure (such as responsibility and good relationships between members) and management systems and procedures (especially, IS planning systems and its connection to business planning). A logical finding is that appropriate changes should be made in the aims set for IS planning as well as the criteria for evaluating IS planning efficiency.

When accused with a "service role", IS planning actions focus largely on the technical and organizational requirements to support information propagation for decision making at alternative levels of the organizational hierarchy. Here, the aim is to effectively "contact" the organization's information needs while managing the incertitude that approaching to surround the information resource. Therefore, IS planning effectiveness [22] can be evaluated using indicators such as (a) system use or (b) user information satisfaction.

In conflict, the aims for IS planning and approaches to appreciate IS planning effectiveness are vastly alternative when the IS function is charged with a "strategic" role. IS planning activities matching organizational strategic planning activities that seek to take advantage of opportunities in the marketplace by appropriately matching them to internal skills and resources. Specifically, IS planning activities are not narrow to hardware configurations and software support but stretch to scanning relevant technological branches to identify possibilities that can be exploited. Alike, IS planning efficacy should be evaluated in terms of the degree of completion of IS planning objectives - which reflect the redefined "strategic" role.

## **3. Problematic**

In order to better analyze Strategic Leadership model in IS we conducted a survey with a two questions problematic. Firstly, we want to analyze the dimensions of IS planning indicating five dimensions, with five theoretical guidance. Secondly, we will analyze the Strategic Framework of Information Management which provides guideline to a company related to business processes, which should use and corresponding information elements for optimal results.

### 3.1 What are the dimensions of IS planning?

The research flow on IS planning can profit from the progress resulted from the research flow on strategic planning systems and several routes have been suggested. Especially, if one is interested to comprehend the composite nature of the relationship between planning activities and effectiveness, a unidimensional conceptualization of planning is to be avoided. Based on an overview of the planning literature, we acknowledge five theoretical guidance. Our interest was to balance avarice on the one hand and coherence and consequence on the other hand. These dimensions are:

- I. The level of perceived rigging on IS.
- II. The liability assigned for the IS planning function.
- III. The degree of connection between IS planning and business planning.
- IV. The duration of technology coverage in IS plan development.
- V. The content of the IS plan.

Each dimension mentioned in the following paragraphs:

I. Perceived rigging on IS: A major impulse to view IS from a strategic role prospect is likely to be the perceived chance or a vision in the aims of senior managers that IS-based strategic advantages can result to the company. Otherwise, we note that managers' comprehension that their strategies are critically dependent on IS, is an important requisite to redirect the role of the IS function. Managerial perceptions have long been agreed to be an important variable in strategic management research. The fundamental logic is that, it is the managerial notion (rather than some abstract notion of objective reality) that leads managerial function and decision making. Based on the above arguments, our perspective is that this perceived reliance is likely to be positively related to IS planning effectiveness. Stated more formally, we have our first assumption as follows:

Assumption 1: Perceived reliance on IS will have a positive and significant effect on IS planning effectiveness.

II. Planning liability: A key element of the role modification lies in effectively organizing the planning activities that request to integrate different "technology oasis" as well as identifying new avenues for recovery comparative advantages. Efficient planning requires the concession of managerial charisma and resources proportionate with the importance attached to the activity. If a company realizes the potential of IS in its own context and construes the importance of IS planning, then it would be reflected in grant senior-level managers to carry out the planning function. Otherwise, if the planning responsibility is located with ad hoc and impermanent planning staff, then the planning activities are not likely to be concerted, which is not likely to enhance IS planning effectiveness. Thus, our second assumption is:

Assumption 2: Planning liability will have a positive and important result on IS planning effectiveness.

III. Planning connection [25]: This is possibly the dominant dimension affecting IS planning effectiveness by virtue of linking the functional level IS planning activities with business planning. Such a connection serves as an important two-way conductor. By ensuring appropriate connections across the two levels, the demands and constraints of the IS function can be reflected in business-level estimates the concerns of the business level can be suitable translated at the level of the IS function. A similar theme in strategic planning is the emphasized need for providing connection between the various cycles of the planning process, which is important for strategy implementation. Many conceptual arguments as well as the effects of exploratory studies highlight the consequence of this dimension in the overall IS planning process. Based on these, our prospect is that the degree of connection between IS planning and business-level planning will be positively related to IS planning effectiveness. Thus, our third assumption is:

Assumption 3: The degree of planning connections between IS planning and business planning will have a positive and considerable effect on IS planning effectiveness.

IV. Duration of technology coverage: This dimension intended to capture the width of coverage of the technological environment in IS planning. Regulative and schematic writings in the strategic planning literature emphasize the weight of environmental scanning in strategic planning including the requirement to recognize and reply to weak signals. In the framework of IS planning (with a specific focus on exploiting information technology-based strategic advantages), it is severely critical to detect the technological issue to identify potential mechanisms that can be used to gain strategic advantages. Our anticipation is that the span of technology coverage will be specifically related to IS planning efficacy. Thus, our fourth assumption is:

Assumption 4: Span of technology coverage will have a positive and considerable effect on IS planning effectiveness.

V. Content of IS plan: Although the previous dimension focuses on the technological sector, this dimension depicts the degree of conciseness of the IS plan document. We view an inclusive plan document as one that integrates a wide array of strategic coefficients such as alternative technological projections and alternative business projections, as well as specific projects for sectors such as equipment, software, systems development, etc. The fullness of the plan document may not be as crucial as the planning process that generates the final plan document. Since the content of the process cannot be sufficiently captured, except perhaps through participant observation or laboratory studies, we make the assumption that the content of the plan document is at least an appropriate indicator of the underlying process and will be positively related to IS planning effectiveness. Thus, our final assumption is:

Assumption 5: Content of the IS plan will have a positive and significant effect on IS planning effectiveness.

### 3.2 Analysis of Strategic Framework of Information Management

Strategic Framework of Information Management [26] suggests a standardized approach to business process adjustment. It provides guideline to a company related to business processes, which should use and corresponding information elements, it should also generate, receive and analyze for optimal results. On an ongoing basis, it offers a business a yardstick to comparative analysis its operations.

The benefits of Strategic Framework [28] of Information Management are compelling. At an organizational layer, the businesses have perceived that there is a merit in adopting information technology frameworks. What these frameworks are to information technology implementation, Strategic Framework of Information Management is to Information Strategy and Management. Strategic Framework of Information Management will help leaders to realize the necessity and make better their business processes before automating them.

Here are the benefits of adopting Strategic Framework of Information Management as viewed through the eyes of interested people at each level responsible for overall productivity and profitability enhancements:

- ▲ Middle Level Management [29]
  - ▲ Will provide customizable strategic solutions for new business process implementation
- ▲ Executive Level Management
  - ▲ Will expand into new business segments by reviewing the business processes involved and how will they interface with the existing processes
  - ▲ Will import business process initiatives with visible aims
  - ▲ Will allow company global view of the business processes and performance deviations
- ▲ Functional Personnel
  - ▲ Will supply ongoing validation mechanism for what they are implementing
  - ▲ Will normalize approach to implementation resulting in increased productivity
- ▲ IT Management consulting organizations
  - ▲ Will accommodate faster understanding of the business processes to be automated and



The results of the Dynamic simulation model are shown in figures (Fig.2, Fig.3 and Fig.4) that we provide.

Months	ISR2K	Knowledge	K2SK	New Technologies
Initial		32.00		0.00
1	26.59	27.14		26.50
2	19.07	21.25		22.46
3	14.38	16.36		17.34
4	11.83	13.15		13.53
5	10.17	11.03		11.07
6	8.77	9.41		9.35
7	7.55	8.07		8.00
8	6.48	6.93		6.86
9	5.58	5.96		5.89
10	4.78	5.09		5.05
11	4.06	4.34		4.33
12	3.55	3.76		3.71

Fig. 2. Knowledge in conjunction with the New Technologies

Months	Satisfaction Knowledge	Satisfaction Technology Coverage	Satisfaction Employees	Satisfaction System Development
Initial	27.00	32.00	38.00	38.00
1	53.50	63.41	71.34	71.34
2	68.44	71.08	101.29	101.29
3	69.58	72.18	124.41	124.41
4	67.29	69.12	142.46	142.46
5	70.95	69.06	157.21	157.21
6	65.29	67.35	169.68	169.68
7	65.64	70.31	180.35	180.35
8	64.90	66.07	189.50	189.50
9	70.88	66.68	197.36	197.36
10	68.38	66.33	204.10	204.10
11	65.23	65.29	209.87	209.87
12	68.83	66.68	214.81	214.81

Fig. 3. Satisfaction Technology Coverage in conjunction with Satisfaction System Development, Employees and Knowledge

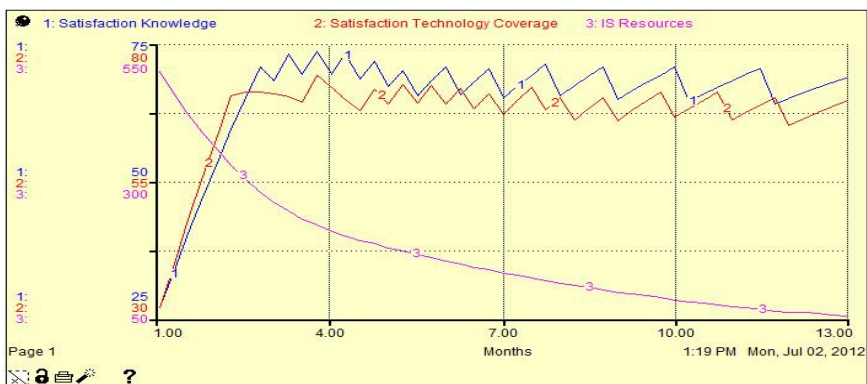


Fig. 4. The resources of the Information Systems in conjunction with the Technology Coverage and Knowledge Satisfaction

### 5. Support for decision makers

During creation of the model there is needed to verify the theoretical review and the requirement to create the user interface, that the user can manage the parameters of dynamic simulation model. There are three main sections on this user interface: Knowledge, Business Planning, and Technology Coverage.

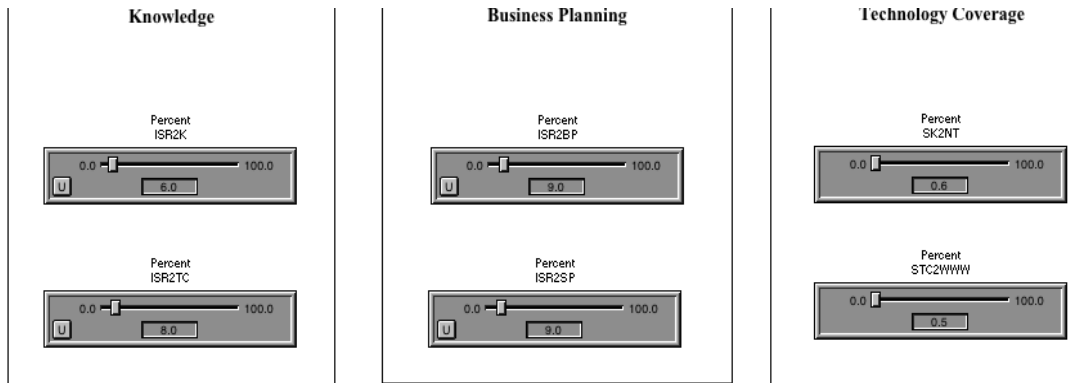


Fig. 5. Strategic leadership in IS simulation interface

The Knowledge section allows the decision maker to determine the amount of satisfaction of knowledge and new technologies development. The Business Planning section allows the decision maker to define the level of employee satisfaction. In the Technology Coverage section, the decision maker can define the satisfaction of New Technology products and further the development of the WWW. To begin the simulation, the user chooses all the values of the inputs that are desired, and then clicks the run button. The simulation runs for a period determined by the user and pauses to allow the user to review the effects of the decisions made.

The prototype provides the decision maker with various forms of support that guide them through the decision making process [32]. These guides range from the use of status alarms and notifications to the use of visual aids to enhance learning and understating of various relationships in the context of Information Systems. To aid the leaders executives in making strategic decisions [33], the user interface of the sustainability model alerts the user with various notifications during the course of the simulation.

For example, if the Technology Coverage and Business Planning are low a message pops up to notify the user, that their System Development is unsustainable. It also alerts the user if the employees are over worked. When IS Resources satisfaction System Development, Knowledge, Technology Coverage and Employees of the Company, a message pop up to notify the user and some of the resources returning to the Organization, etc. New Technologies and World Wide Web (WWW) were also kept in mind while designing the prototype and user interface.

This prototype caters from novice users, who may only navigate through three or four main pages, to the expert users who may take advantage of the advanced functionality available in the prototype. The interface was kept simple and designed with ample “help” or “?” buttons that provide the decision makers with a description of various concepts or explanations to improve user autonomy. Colour templates as well as repeated and common items were kept consistent so as not to confuse the user and improve usability.

## 6. Conclusions and future research

In this paper we made a research on the role of Strategic Leadership in Information Systems. Nonetheless that research on strategic leadership is still not well explored. A theoretical model of important characteristics of IS planning that seek to enhance the attainment of a "strategic" role of the IS function was developed and tested using data from organizations. Characteristics seem to be the degree of linkage between IS planning and strategic planning [34], perceived dependence on IS, the comprehensiveness of IS plan, and the span of technology coverage. These pose administrative challenges both at the level of the IS function and at the level of the

corporate management. Implications for functional level planning and future research directions on planning systems are also noted.

Yet, past strategic management literature and research in dynamic simulation have provided evidence that several other factors besides leadership, such as organizational culture [35,36], R&D strategy [37], business environment and structure [38,39] are associated with increased firm performance, therefore their interplay should be investigated in future studies.

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