Title: A Critical Review of "Alignment of A Firm's Competitive Strategy and Information Technology Management Sophistication: The Missing Link"

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Abstract: A paper titled "Alignment of A Firm's Competitive Strategy and Information Technology Management Sophistication: The Missing Link" is critically reviewed in this individual report.

A Critical Review of "Alignment of A Firm's Competitive Strategy and Information Technology Management Sophistication: The Missing Link"

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1. Summary

A critical issue for general managers and Information System (IS) managers is the alignment of both Information Technology (IT) management strategies with the organization's competitive strategy.

IT has experienced an evolution in the roles that it plays inside the firm. IT has gone from its traditional role of support operations, through the evolving role of supporting strategies, to the integrated role, where IT is part of the firm's strategy. In the same way, competitive strategies are linked to these changes.

In their paper " Alignment of a Firm's Competitive Strategy and Information Technology Management Sophistication: The Missing Link", Gupta, Karimi and Somers try to measure the IT maturity of some organizations to find if there is a link between the IT management strategies and the competitive ones. The authors also attempt to determine if some IT strategies are more important for certain approaches strategies than others.

The competitive strategy is defined as the match between the risks and opportunities in the environment and the internal resources and skills that the firm has. The framework of research is based in Miles and Snow's definition of the four basic strategic types: 1) Defenders; 2) Prospectors; 3) Analyzers and 4) Reactors. This classification is used because it focuses on the total organizational behavior and the distinctive competence of the organization.

The following is a brief description of the strategic types. Prospectors are looking for new and different opportunities in the market, with products or services. Defenders usually are in a stable environment, focus on improving the technology that they already have and look for cost reduction. Analyzers combine the qualities of defenders and prospectors. They manage new technology opportunities in an unstable environment, while keeping the stable environment with the technology that they already posses. Finally, Reactors do not have consistent strategy; rather, they respond to environmental changes.

The IT maturity here is characterized by four variables: IT Planning Mode, IT Control Mode, IT Organization, and IT Integration.

The results of Gupta, Karimi and Somers's research into 213 financial institutions supports the existence of the link between a firm's competitive strategy and Information Technology maturity. Furthermore, this research identifies specific areas that must be taken into consideration for a given competitive strategy.

2. Methodology

The research's hypothesis is " Firms in the four strategic types differ with respect to the degree of their IT management Sophistication."[1] Depending on its strategy, the firm must have different levels of disctintive competition of IT planning, control, organization and integration. (IT Maturity)

The authors created a questionnaire for senior IT executives financial services industry to obtain their data. The questionnaire was answered by 213 institutions in the different sizes.

The IT maturity was measured by 20 questions related to the four above mentioned criteria. The institutions were classified by their strategy in defenders, analyzers, prospectors, reactors and unclassified.

The questionnaire collected data relating to the organization's strategy, IT maturity, demographic information, and characteristics of each respondent.

The information was divided into groups. Each construct was computed by the average of its items. The authors then evaluated the correlation of each item with respect to the maturity variables. Then, the data in each construct was evaluated using factor analysis to determine how the responses to the questionnaire cluster together. Finally, The Scheffe's range test was used to determine the results of the analysis based in the means differences in the four groups.

3. Contributions of the Paper

This paper states the importance of the connections between the firm's strategy and the IT Competitive Strategy and proves that the link exists. The paper also shows some of the challenge aspects that IT Manager must deal with.

Furthermore, this research identifies some of the relevant IT aspects that a successful competitive strategy must consider. For example as a prospector, the IT manager must focus on IT integration more than if he were a defender. However, a defender must pay special attention to the IT organization.

Finally, Gupta *et al*, also give an instrument to measure the maturity or the IT sophistication inside the organization based in planning mode, control mode, organization and Integration.

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[1] Gupta, Karimi, Sommers, " Alignment of a Firm's Competitive Strategy and Information Technology Management sophistication: The Missing Link.", IEEE Transactions of Engineering Management, Vol. 44. No.4, November 1997.

4. Comparison with other researchers

This paper is similar in many ways to the work of numerous other researchers such as: Sherman [i], Cortada [ii], Thierauf [iii], Madnick [iv], Morton [v], Venkatram [vi], Zaher [vii], Kantrow [viii]. All of those authors agree that " It is not sufficient merely to identify strategic opportunities and to establish a supportive organizational structure. It is important that the information technology strategy selected match the organization's posture as well."[2] Ultimately, the IT maturity depends on how well IT has been disseminated and used throughout the organization. Agarwal [ix] Sherman [i].

With respect to defenders, analyzers, prospectors and reactors, there is much research related to the differences and characteristics of these strategies. Argawal [ix] Camillus [x].

However, many authors still do not consider technology as a strategic part of the organization's strategy. Sharplin [xi] considers the technology inside the environment in which the strategic management takes place, in the same way that the social, political or economic aspects are involved in the firm's strategy.

Gupta *et al*'s paper has a good framework and supports its concepts and ideas well. Although its results are specific to the financial industry, they could be generalized in the future, with additional data. As the authors admit, there are problems with their research; these include the fact that the group selected is an industry highly related to technology. Furthermore, at present, their findings do not apply to other industries. Because they went only one contact per institutions, the sample may be insufficient. Additional problems were that there was no external confirmation of the information gathered. Furthermore, the respondent's perception of the strategy could be different from that intended by the firm. Finally, in the absence of a strategy, the contact inside the organization, could " develop" one in order to respond to the questionnaire.

5. Conclusions

Depending on the strategic orientation, the firms differ in their emphasis on the dimensions of IT management maturity. In relation to the company's objectives and size, there are no significant differences between banking or not banking firms, or between large and small organizations with regard to IT management and strategy.

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[2] Camillus,Lederer, " Corporate Strategy and Design of Computerized Information Systems.", Madnick ed., Oxford University Press, 1987.

As expected, the level of maturity was low for reactors and high for analyzers. Defenders differed in the control mode with the reactors and prospectors. Prospectors had a decentralized and distributed control, while defenders had centralized and vertical IS.

There is a relation between the strategic type and the size of the organization. There is not a significant relation between sales and the strategic type.

However, the research gives some unexpected similarities with the prospectors and reactors.

It is also important that the CEO understands the role of IT in the organization, gives support to the strategies that IT has, and gives the appropriate resources to align the technology with the competitive strategy.

6. References.

This paper has an exhaustive list of good references; however, there are other and more recent, papers in this area. These include:

- ***Madnick Stuart, "The Strategic Use Of Information Technology," Oxford University Press, New York, 1987 [iv].*** In this book there are many articles with contributions to the strategic use of IT. Benjamin, Rockart, Scott and Wyman [xii], the authors explains that with the introduction of Information Technology (IT) to the organization, the traditional roles of IT are changing rapidly. Because of this, it is important not only to identify the strategic IT opportunities inside an organization, but also to move the organization to take advantage of those opportunities.

Benjamin *et al.* describe three aspects that an organization must consider to achieve success through IT: 1st understand the strategic application, 2nd understand the information technology, and 3rd plan the organizational changes. There must be a match between the corporate strategy and the IT strategy. For example, a defender that is interested in cost reductions probably might work with strict policies.

The IT evolution in the organization can go trough different stages. In the initial one, IT is not linked with the corporate strategy and it is primarily used to perform tasks. In the policy support situation, IT helps to develop the corporate strategy with forecasts, charts, or tools. Finally, when IT reaches maturity, there is a full integration with the organization's strategy, where, in extreme cases, the IT strategy is the corporate strategy.

Because of a lack of understanding of the evolution of technology, in some organizations IT is

not seen as strategic. This myopia can be internal or external, internal when the organization doesn't recognize the benefits of the existing technology, and external when the organization cannot see the technological progress in the same industry. Because of this, it is important to get the support of the top managers in the technological areas, and one way to get this is to explain or show them the benefits of the technology in their specific areas. Wyman [xiii]

- ***Michael, Scott Morton, ed. " The Corporation of the 1990s. Information Technology and Organizational Transformation" Oxford University Press, New York, 1991. [xi]*** This is a collection of papers trying to establish how the organizations of the 90's differ of the organization of the 80's. In his introduction, Scott Morton claims that since investment in IT is important to keep an organization competitive, managers must align the IT strategy with the corporate strategy while repositioning the traditional role of IT inside the organization.

Once again, Scott Morton recognizes that IT has experienced an evolution in its role from support activity to strategic activity, and like. He argues that the redefinition of this strategic role is the result of the technology push and competitive pull. A successful technology push can result in better connectivity capabilities and cost performance. On the other hand, as markets become increasingly competitive, innovative IT permits applications that give the organization competitive advantages.

In his paper " IT-Induced Business Reconfiguration", Venkatraman proposes five levels of business reconfiguration in order to reconceptualize IT's role in the organization. These levels are localized exploitation, internal integration, business process redesign, business network redesign, and business scope redefinition.

- ***Allen, Scott Morton, " Information Technology and The Corporation of the 1990s" Oxford University Press, New York, 1994. [xiv].*** This is also a collection of papers of Oxford University Press that complements the previous book: " The Corporation of the 1990's". In the article "Strategic Alignment: A Model for Organizational Transformation via Information Technology"[xv], Henderson and Venkatram establish that the IT traditional role in the organization is the administrative role, where IT is used in the automation of accounting functions. The IT in this phase is independent of the organization's strategic management. The operation's role is an extension of the administrative role, where it can automate the entire

organization. In contrast, the competitive role shows that IT can develop competitive advantages in the market. To have real benefits, a firm can not merely superimpose new technology over the old structure. The manager must evaluate where to go and what technologies will accomplish all the requirements.

In *Management in the 1990's* (Scott Morton, 1991) it is shown that " successful organizations can be distinguished by their abilities to use IT capabilities to transform their business (structures, processes, and roles) to obtain new and powerful sources of competitive advantages in the marketplace."[3]

In their research " Electronic Integration and Strategic Advantage: A Quasi-Experimental Study in the Insurance industry [vii], Venkatraman and Zaheer " found that strategic uses of Information Technology not only can lead to restructuring within the firm but also can allow shifts in inter-organizational relationships that offer a strategic advantage" [4]

There is a mutual interdependence between the organizational process and the technology. Henderson and Venkatraman also define four domains in the strategy: business and IT strategies, organizational and IT infrastructure, and process.

They define the IT strategy with three dimensions: the scope, systemic competences that help create or better the existent business strategies, and the IT governance.

- ***A.M. Kantrow, "The Strategy-Technology Connection," Harvard Business Review, July-August 1980. [viii]*** According to Kantrow, " [t]he past decade reveals manager's growing awareness of the need to incorporate technological issues within the strategic decision making. They have increasingly discovered that technology and strategy are inseparable."

Technology affects all organizational levels, so it must be seen as a central part of the organization.

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[3] Allen, Scott Morton, ed. " Information Technology and the Corporation of the 1990s. Research Studies", Oxford University Press,1994.

[4] Venkatraman, Zaher, " Electronic Integration and Strategic Advantage: A Quasi-experimental Study in the Insurance Industry", The Corporation of the 1990's, Information Technology and Organizational Transformation, Scott Morton, ed. Oxford University Press, New York, 1991.

- ***Cortada, James, " Strategic Data Processing, Consideration for Management". Prentice Hall, New Jersey, 1984.[ii]*** The author asserts that IT has suffered an evolution. Consequently, it can now help to obtain the corporate objectives, define tactics, and implement and control these activities. Furthermore, IT must support all processes of the strategy with low cost reductions. There is also obvious that in the same way that the IT evolutes the organization becomes more dependent on IT.

- ***Sherman, " Strategic Planning for Technology Industries", Addison Wesley, Massachusetts,1982 [i].*** In technology based companies, corporate objectives influences R & D objectives and vice versa. Corporate objectives determine the kind of IT strategy. As an important aspect inside the organization, the IT must be evaluated in terms of the utility in the future, the organization capabilities and goals. Some times it is difficult to match the corporate objectives with the IT objectives, specially because years ago the corporate was focus on products and now it must consider technology orientation.

- ***Fouts, Brown, "Strategy and Technology : Forming Patterns of External Relationships", PICMET 1997.Portland, 1997.[xvi].*** This paper explore the different relationships between the strategic orientation of the technology and the strategic configuration theory. Usually the organizations, follow simples business strategies and develop the respective policies to support them. . Since it is not possible to a firm to generate all the knowledge needed, the firm must focus on their own core competences an out-sourcing the development of the non-core activities. This paper is based also in the definition of the four strategic types of Miles and Snow : Defenders, Analyzers, Prospectors and Reactors. This paper analyzes the contribution to the market of the different strategies, as the prospectors brings new technologies to the environment, the analyzers has the most active role in development of standards, and the defenders tries to use efficiently these dominant technologies.

7. Ideas identified for future work.

There are many ideas that can be used for future researches based on all the concepts studies in this paper, such as:

- How to integrate the IT into a corporate structure?

- Standardize procedures according to the Competitive Strategy
- How was the evolution of the roles of Top IS executives?
- How the firms can take advantage of IT and active High level of Integration between technology and strategy?
- How to manage the Challenge to treat the IT infrastructure as a Strategic Resource?
- How to develop a strategy IT alignment?
- Standardize the results of Gupta *et al*'s paper.

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