

Strategic Information Management Profiles in Brazilian Companies

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ABSTRACT: Preliminary bibliographical researches identified in the managerial literature a lack of studies on the adequate comprehension how information, as a singular and valuable managerial resource, can become a competitiveness improvement factor and how companies are using it for improve their own competitiveness. This paper had two objectives: i) identify, in the theoretical and conceptual points of view, the ways through out the information can become a competitiveness factor for the companies and ii) identify the shapes within companies are using information to improve their competitiveness, sharing them out by their size. For the first objective it was developed a bibliographical research which identified the SIA (Strategic Information Alignment) framework. For the second one it was developed a field research in the survey format applying the mentioned framework to identify the strategic information management profiles in the analyzed companies.

Keywords: information, competitiveness and strategic information alignment.

Received in 03/02/2005; revised in 12/04/2006; accept in 20/06/2006.

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Editor's note: This article was accepted by Alexandro Broedel Lopes.

1. INTRODUCTION

The last two decades have witnessed spectacular development and spread of information technologies (ITs) within organizations of all sizes. An expensive and rare resource little more than a dozen years ago, the computer has become an obligatory fixture in the workplace and has inculcated itself to the point that its need and utility are no longer questioned. This near omnipresence has made companies highly dependent on this resource for their very existence.

The huge potential of ITs for business, however, at times raises doubts about the importance of the information itself in business processes and competitiveness. Although it is the information, not the technology, that has the capacity to aggregate value to business processes, it has become common to attribute to ITs the power to improve companies' management and competitiveness: "*the sheer pace of change in the information technology industry tends to keep attention turned more to what technology can do than to how to obtain better information,*" argue McGee and Prusak (1999: pp. 4-9). Hence, understanding the strategic character of information is a key element in companies' management and competitiveness, since strategic advantage results from the effective management and use of the information that is processed by technology.

In preliminary bibliographical research, a shortage of studies was identified in the current management literature on the adequate identification and comprehension of the ways information can be a factor to improve firms' competitiveness. The present work intends to help overcome this lack by presenting a conceptual model to understand information as a competitive factor, and also presents the results of a survey to evaluate the strategic information management profiles of a sample of Brazilian companies.

2. INFORMATION AS A FACTOR IN COMPETITIVENESS

Preliminary bibliographical research indicated two main pioneering Brazilian works and four foreign ones specifically addressing the question of information as a factor for competitiveness, which can be used as a theoretical reference for later works. These works make very different contributions regarding theory, structure, characteristics and proposals, mainly due to the recent nature of this topic as a field for theoretical formulation and research. In the context of Brazilian academic output on the theme of information and competitiveness, two authors stand out, Henrique Freitas and Humbert Lesca. In an initial work in 1992, these authors developed various elements seeking to contextualize and understand the role of information in the decision-making processes and management of organizations, concluding with a set of recommendations for these organizations:

- i) Adapt to customers and anticipate their expectations;
- ii) Enhance the company's reaction through rapid and selective information;
- iii) Develop the ability to evolve to ensure survival;
- iv) Develop the ability to innovate to prepare for adaptation;
- v) Develop the ability to perceive what is occurring *abroad* and about the company's *future* so as to adapt better;
- vi) Adapt the company with and for people: information and knowledge involve people more than systems;
- vii) Make the company more communicative in order to standardize knowledge and information, enabling it to adapt better;

- viii) Informatics is not an end in itself. Orient the management of information as an integrated element of the company's overall strategy;
- ix) Seek qualification by the experience acquired, to assure a successful future for the company (FREITAS; LESCA, 1992: pp. 99-101 – original emphasis).

In a follow-up work, Humbert Lesca, together with Fernando de Almeida (LESCA and ALMEIDA, 1994), further developed the question of information's role in competitiveness, based on three hypotheses, which the authors assume as postulates:

- I) Companies that develop effective information administration are part of the best performing group. These firms dominate the competition;
- II) It can be demonstrated that in companies where there is no information management, performance erodes imperceptibly. They become easy prey for the competition;
- III) A company can significantly improve its performance by developing an information management process with strategic orientation, to obtain a competitive advantage.

From these hypotheses, the authors direct their efforts at developing the question of “**managing the quality of information flows** to obtain competitive advantage, stressing its importance for the company's good performance” (LESCA and ALMEIDA, 1994: p. 75 – original emphasis). These information flows are defined by the authors as existing within companies in three spheres:

- i) Flow of information gathered outside the company and used by it;
- ii) Flow of information produced by the company, for use by the company itself; and
- iii) Flow of information produced by the company and directed to the market.

As the authors see it, however, the strategic management of information in organizations, at the time of writing, was still embryonic, and there was a need first to wake executives up to its fundamental and growing importance. In this sense, they presented some elements to help managers, by formulating the following questions: i) how to make managers aware that so far they have not had an opportunity to question the importance of strategic information management?; ii) how to enable a unified vision of the dispersed efforts made by companies?; and iii) how to evaluate the coherence of the efforts undertaken so far by the company in administering information? (LESCA and ALMEIDA, 1994: p. 75).

The first international contribution published in Brazil [??] came from McFarlan, in a pioneering work originally published in USA in 1984 and in Brazil in 1997. The basic structure of this work consists of two parts. In the first the author analyzes the various impacts caused by the (then recent) information technologies. In this analysis, the author basically uses the framework of competitive forces of Michael Porter (1991), identifying impacts on relations with customers and suppliers and assessing the chances of overcoming or creating barriers in the segment. In the second part, he offers his specific contribution to the theme, first by presenting a structure for understanding the contribution of existing information systems and those possible to develop according to their role in the organization and its segment. Next he offers another reference to evaluate the priorities for investment in information systems, according to the strategies adopted by the organization and the situation of its segment (growing/competitive, stable/low competition and stagnant/declining). An evaluation of the frameworks offered by McFarlan in light of current reality reveals a certain

conceptual simplicity, but at the time of the work's publication, his ideas had a significant impact by presenting a vision of information technology then little disseminated within organizations.

The second contribution comes from the work of Porter and Millar (1997), originally published in 1985. In this work, the authors initially do not explore what type of information approach they take. They instead go directly to the model proposed for interaction between information and competitiveness, without lingering on comprehension of the information environment of organizations. In this sense, from a conceptual standpoint the work does not make a more specific contribution to an understanding of the current importance of information to organizations, and instead is a rereading of the current moment of transformations in light of the theory of competitiveness of Porter (1991), promoting an adaptation of the broader and more complex scenario of the current transformations to the scope of the so-called theory of the "five forces". Although it provides important elements to understand the strategic role of ITs in business and is a pioneering work on the theme, because they do not deal in more detail with the characteristics of information within organizations, the authors failed to make a lasting contribution to the theory's evolution regarding the current importance of information to organizations and its relationship with competitiveness.

The third theoretical contribution comes from the model of McGee and Prusak (1999), published in the United States in 1995, and advances in the sense of conceptual and contextual understanding of information. The work starts with an analysis of the macro-environment, then examines technology and ends up relating information to the business environment. The author's analysis is more ample and profound, seeking to understand the various faces of information and to situate it in the company's strategic process. In this case, they suggest a definition of information in two senses: one, of working with information (gathering, organizing and ordering); and two, giving it meaning and context. This definition demonstrates a procedural and interpretive focus for information, to the extent it is considered as an input to be employed to aggregate value. The reservation regarding this approach is that to a certain extent it is vague in the concepts and instruments suggested, hindering its transfer to the business environment as an effective tool for strategic information management. Another drawback is that by not more rigorously addressing the question of competitiveness, the model proposed by the authors becomes diffuse in its intention of linking information to competitiveness, and thus winds up supplying somewhat indistinct paths.

The fourth and last foreign theoretical work is that of Marchand (2000d). In this work information has an instrumental character, as the way the company's people carry out their activities and attain the organization's objectives.

The comprehension of the information management model proposed by the author needs to be realized at two moments, based on three previous works published. In the first of these works (MARCHAND, 2000d), the focus of the proposed methodology was predominantly instrumental. At this moment, the model was presented in its finished format and complemented with concepts and tools for its implementation, with little or no contextual reference or theoretical foundation. In the second and third works, coauthored with other researchers (MARCHAND, KETTINGER and ROLLINS, 2001a and 2001b), besides expanding the scope, the authors present the model's basic theoretical foundations and the management tools proposed. The first work is a more instrumental text, apparently aimed at managers, while the other two are more theoretical and conceptual, apparently intended more for an academic readership.

Among the theoretical references cited above, the works of Marchand (2000) and Marchand, Kettinger and Rollins (2001a and 2001b) stand out for their technical foundation, serving as instruments for research and collection of empirical data, which is detailed further below.

2.1 The Strategic Information Alignment (Sia) Model

Initially, the work of Marchand (2000b: pp. 19-24) calls attention to the need for a new model of managing businesses in face of the transformations that are occurring, points out the need for an adequate understanding of the information environment, and seeks to clarify a confusion between management “with” information and “of” information, stressing the importance of managers’ including information as one of their most valuable resources. Having made these observations, the author then presents the ways that information can contribute to companies’ competitiveness by creating value. The four ways identified form what he calls the “Strategic Information Alignment” (SIA) framework (MARCHAND, 2000a: p. 6). As mentioned before, this model was first presented in a work published in 2000 and later developed with the participation of other researchers (MARCHAND, KETTINGER and ROLLINS, 2001a and 2001b). The framework presented here is based on these three works.

Each of the paths suggested is based on the literature on strategy, which indicates four general strategic priorities that upper management should pursue in leading companies (MARCHAND, KETTINGER and ROLLINS, 2001b: p. 174). The choice of these four strategic priorities emphasizes those with practical character, which represent managerial actions, in detriment to a merely descriptive character. This type of focus is in harmony with the conceptual developments of Miles and Snow, whose typology of strategies classified companies by their propensity to take strategic action, besides other theoretical considerations, which also support their classifications of strategic priorities in schemes based on action, such as Snow and Hrebiniak, Miles and Cameron, Hambrick, Cameron and Segars, Grover and Kettinger (in MARCHAND, KETTINGER and ROLLINS, 2001b: p.197).

2.1.1 CREATION OF NEW REALITIES (CNR)

Innovation is one of the most important competitive strategies in the current business environment. Through it, the company creates new products, offers better services and creatively utilizes new and emerging technologies to mine business opportunities. As a process fundamentally based on knowledge, innovation relies on information as a fundamental element. In this aspect, information management seeks to mobilize people to generate new ideas, apply them rapidly and share information to promote creativity throughout the company (MARCHAND, 2000a: p. 7).

Historically, this way of using information for innovation was more intense in specific company departments, such as Marketing, responsible for collecting and analyzing market information and suggesting new products and services, or Research and Development, tasked with following up on technological, economic and social trends and developing new products to meet these demands (MARCHAND, 2000b: p. 27).

Companies that place emphasis on this type of strategic priority – innovation – normally follow a strategy of differentiation that aims to offer innovative and exclusive products or services, to obtain and sustain competitive advantages. Companies with this profile incessantly endeavor to create and quickly develop new products, services, distribution channels and markets. When the organization innovates creatively to introduce better products and services, it helps create new market realities (MARCHAND, KETTINGER and

ROLLINS, 2001b: p. 174). The type of innovation strategy is basically derived from the differentiation strategy of Porter (1991) and various other renowned authors, such as Miles and Snow, whose prospecting strategy is characterized by an extremely proactive orientation, and Miller, who identifies differentiation by innovation as a discrete strategic priority (in MARCHAND, KETTINGER and ROLLINS, 2001b:p.197).

2.1.2 Addition of Value (AV)

Another way firms maintain their competitiveness is by aggregating value to their customers and consumers, aiming to ensure their loyalty. In this sense, the main focus must be building relationships with customers, knowing their behavior and meeting their expectations before, during and after the sale. The information management goals in this case are knowledge about the customer and exchange of information with customers, partners, suppliers and employees to solidify the relationship with and satisfaction of the first (MARCHAND, 2000b: p. 26).

The focus on customers is nothing new in business thinking, and since its origins the marketing discipline has systematically emphasized the need to collect and analyze information on customers. The difference is that until the start of the 1980s, the objective of such work was to persuade and influence consumers to consume mass products. Since then, the emphasis has shifted to adapt the products and services offered to customers' needs and desires, inverting the direction of the strategic action. A similar change has occurred in the previous focus, based on "transactions" with customers, to one of "relationships" with them, expanding the base of information necessary to execute the strategies to include knowledge about their habits, likes and dislikes, desires, characteristics and histories. These changes of focus lead companies to invest in resources to capture and exchange information *about* and *with* customers at a wide array of moments, generating technologies and applications such as point-of-sale terminals, call centers, telemarketing, database marketing, etc. (MARCHAND, 2000b: p. 27).

The benefits and advantages of loyal customers are indicated and recommended by other authors. Sheth, Mittal and Newman, for example, indicate as competitive advantages coming from a focus on the customer: i) increased profitability because of improved efficiency of costs by repeat orders, the willingness to pay higher prices and protection against abrupt revenue oscillations; and ii) growing revenue, because of increased word-of-mouth, centralization of purchases and product innovations (2001: pp. 39-46).

2.1.3 Reduction of Costs (RC)

The third way information contributes to competitiveness is in the possibility of cutting costs by improving processes and operations through information systems and process monitoring to make them as efficient and economical as possible. The focus in this case is concentrated on reducing the total costs of business processes, management by integration and elimination of unnecessary activities and wastes, and by automation of optimized processes (MARCHAND, 2000a: p. 7).

In their first stage of development (until the 1980s), ITs were responsible for improvement of organizational processes. With their further development and intensified use, a second phase began (from the mid-1980s) that truly permitted processes to be totally remodeled, generating new ways of organization and management. This second stage became known in the literature as process reengineering (DAVENPORT, 1994; O'BRIEN, 2002).

The search for continuous improvement in the total quality movements (TQC/TQM in the 1970s and '80s) and the reengineering and management by processes ('80s and '90s) centered on the need to reduce and simplify the use of information in companies' processes and activities, seeking to cut costs. In this respect, ITs profoundly impacted processes in various aspects. Davenport (1994: pp. 60-5) relates nine of these aspects: automational, informational, sequential, tracking, analytical, geographical, integrative, intellectual and disintermediating.

This type of strategic priority, of cutting costs, finds conceptual support in the cost leadership strategy of Porter (1991), in the defensive strategy of Miles and Snow, and in the concept of efficient misers of Hambrick, as explained by Marchand, Kettinger and Rollins (2001b: p. 198).

2.1.4 Minimization of Risks (MR)

Minimization of risks is the oldest form in which information can create value for an enterprise and contribute to its competitiveness. The evolution of risk management has provided a huge impetus to the development and growth of the functions of finance, accounting, auditing and control, which manage information seeking to control revenues and expenses, protect against unexpected contingencies, hedge against accidents and check books and ledgers to protect against fraud and mistakes in their information and results.

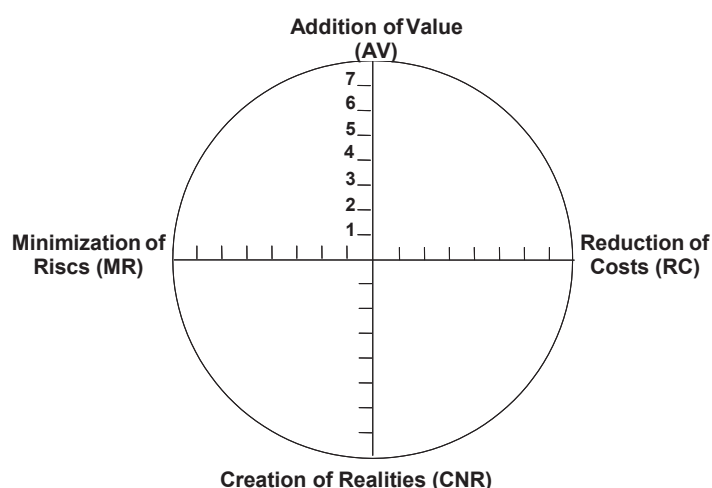
All organizations are exposed to risks. Hamilton (2000: p. 215) identifies six types of risk to which organizations are subject: strategic, financial, operational, commercial, technical and environmental. Many of them are small and cause negligible business impacts. Some, however, are large enough to provoke huge damages and even bankruptcy. The set of organizational information and controls must – besides orienting actions, decisions and course corrections – identify and prevent the occurrence of business risks. Given the degree of organization and operationalization of all these types of controls, it is quite common today for companies to forget how much information management is determined or influenced by the controls necessary to manage commercial, operational and financial risks. Indeed, only at moments when the risk actually occurs – as in the cases of Barings Bank, Enron, Worldcom, and more recently Parmalat – can it be seen clearly how much the company's success and survival depend on daily monitoring and control of risks (MARCHAND, 2000b: p. 25).

The traditional theories on strategy commonly do not include risk management as a specific strategic priority. On the other hand, the importance of foreseeing, managing and, in the final analysis, minimizing risks is recognized as one of the strategies employed by executives. In this line of thought, some traditional authors, such as Kaplan and Norton, mention the question of risk in strategies. To these authors, companies must balance, from a financial standpoint, the returns expected and the control of risk: *"We observe that, besides increasing profits (...) the majority of companies are concerned with risk and the variability of their profits. When this becomes important from a strategic perspective, companies should incorporate explicit risk management objectives in their financial perspective."* (KAPLAN and NORTON, 1997: pp. 53 and 63-4). Other authors can be cited, such as Miles and Snow, who speak about defensive strategy – which includes minimizing risks to enable companies to establish secure and stable market niches in their sectors (in MARCHAND, KETTINGER and ROLLINS, 2001b: p. 198).

2.1.5 The SIA framework as an empirical research model

As mentioned previously, the SIA framework proposed by Marchand (2000), besides furnishing a theoretical reference to understand information as a factor for competitiveness, also offers an empirical research model that can be applied in other works, as this one¹.

The SIA framework is composed of four analytical axes, as described above, which when represented in the form of a diagram permit visualizing the situation of an organization or business unit regarding use of information for competitiveness. Figure 1 shows this diagram.



Source: Marchand (2000a: p. 233).

Figure 1 – Four ways to use information as a factor for competitiveness

This method of evaluating the contribution of information to an organization's competitiveness, along the four axes, reveals an information management profile of the enterprise or business unit. This profile can be compared with that of other organizations or units, in the same or other sectors, as a form of benchmarking. As an analytical tool, the diagram enables managers to compare the actual performance against that desired, evaluating the effectiveness of the strategies used to manage information. The model also permits evaluation of the points where the company has greatest difficulty and capacity to manage information. The model can also be used as a way to plan strategies to shift from one information management profile to another, more suitable to the desired goals (MARCHAND, 2000a: p. 233).

The company's or business unit's profile is assessed on a scale of seven information management practices (relating one of the strategic priorities to each) along each axis, with 1 representing the least effective practice and 7 the most effective one.

¹ The author wishes to acknowledge his debt to Prof. Donald Marchand of the IMD in Lausanne, Switzerland, who kindly authorized the use of the SIA framework in this work.

3. STRATEGIC INFORMATION MANAGEMENT PROFILES

The typology developed by Miles and Snow identifies four types of strategic behaviors resulting from organizations' dynamic of adapting to their surroundings (in ROSSETTO and ROSSETTO, 2002: p. 311):

i) **Prospective stance:** characterized by companies that continually develop an attitude of searching for market opportunities, taking risks and responding to emerging trends. Frequently this profile creates change and uncertainty in the external ambient, to which competitors feel obliged to respond. On the other hand, this movement, through constant innovation in markets and products, prevents establishing enough stability to perfect operating efficiency.

ii) **Analytical stance:** companies of this type are characterized by simultaneously maintaining part of their strategic objectives focused on stable markets and part in more aggressive markets, subject to greater changes. This second type of market helps companies keep their "finger on the pulse", to follow trends and develop those opportunities they judge suitable to their objectives.

iii) **Reactive stance:** in this case, companies perceive the changes that are occurring around them, but are unable to respond to them in a structured and active way, and only do so when the circumstances make this essential to their survival.

iv) **Defensive stance:** this last category includes companies that dominate a certain market slice, in a product-market relationship in which they are efficient, and endeavor to maintain that position, forgoing the search for new opportunities outside their area of specialization. Thus, companies with this business profile have more stable structures and constantly seek to increase their operating efficiency.

Marchand, Kettinger and Rollins (2001b) delved more deeply into the SIA framework based on the typology of Miles and Snow and identified what they call strategic bias in managing information. They found that, regarding companies' strategic behavior, some of them have a tendency to respond to outside demands by seeking innovation and focusing on customer satisfaction. This group's stance the authors call strategic "proactivity". Other companies adopt a strategic behavior seeking to increase operating efficiency, reduce costs and contain business risks, with basically an inward-turned bias. This second group's stance the authors label strategic "reactivity" (MARCHAND, KETTINGER and ROLLINS, 2001b: p. 181). From a conceptual standpoint, "proactivity" can be understood, within the typology of Miles and Snow (in ROSSETTO and ROSSETTO, 2002), as akin to a prospective stance, and according to the competitive strategies model of Porter (1991) as being near the differentiation strategy. In turn, "reactivity" is similar to the defensive stance of Miles and Snow and the cost leadership strategy of Porter (MARCHAND, KETTINGER and ROLLINS, 2001b: p. 202).

Starting from the concepts of strategic reactivity and proactivity, Marchand, Kettinger and Rollins (2001b) apply the SIA model as a way to measure the strategic bias of organizations in relation to information management. Hence, within the SIA framework, the Reduction of Costs (RC) and Minimization of Risks (MR) vectors indicate an inward focus of the organization and translate into the concept of strategic "reactivity". On the other hand, the Creation of New Realities (CNR) and Addition of Value (AV) to customers vectors indicate the organization's focus is outward-looking and translate into the concept of strategic "proactivity". Since the SIA model also proposes to measure strategic behavior, the "strategic bias" (SB) measurement can be calculated as follows:

$$SB = (CNR + AV) - (RC + MR)$$

From these two concepts (strategic behavior and strategic bias in information management), Marchand, Kettinger and Rollins (2001b: pp. 184-5) proposed to classify the bias profiles into three categories:

i) **Reactive bias:** companies that have SB measures less than or equal to zero. In this case, the organization's focus is basically inward-looking. Because of this, it is aimed at cutting costs, and the authors dubbed this category "cutters". They associate this category to the "defensive stance" typology of Miles and Snow (in MARCHAND, KETTINGER and ROLLINS, 2001b: p. 202).

ii) **Moderately proactive bias:** organizations that have SB indices between 1 and 2. The authors explain this type of company as moving toward a proactive stance by increasingly seeking new business opportunities and customer satisfaction. They originally named this category "makeovers". This category is akin to the "analytic stance" of Miles and Snow (in MARCHAND, KETTINGER and ROLLINS, 2001b: p. 202).

iii) **Strongly proactive bias:** companies with SB indices equal to or greater than +3, whose senior managers deliberately place priority on the outside environment as a way to create new business opportunities and increase customer satisfaction, relegating to secondary importance the inward focus of cutting costs and containing risks. Since this type of stance leads to aggressive behavior in terms of a strategy focused on the outside environment and oriented toward growth, the authors call these firms "growers". Just as with the previous categories, the authors associate this to the "prospective stance" typology of Miles and Snow (in MARCHAND, KETTINGER and ROLLINS 2001b: p. 202).

4. SURVEY METHODOLOGY

Starting from the theoretical framework discussed above, the empirical study sought to identify the strategic information management profiles currently present in Brazilian companies, stratifying them according to size, by applying the SIA model. The method was a survey, whose main characteristic is to produce quantitative descriptions of a population (FREITAS *et al.*, 2000: p. 105). From a temporal standpoint, the survey was cross-sectional, where the data are collected in a single time period (FREITAS *et al.*, 2000: p. 106; LIMA, 2004: p. 27).

The sample of companies was drawn from a database of roughly 80,000 electronic addresses of Brazilian companies. This database was analyzed first to eliminate inconsistent addresses. Then it was organized by state, and a random group of 22,408 e-mail addresses of different companies was chosen, from official data published by the Brazilian Institute of Geography and Statistics (IBGE) for 2001. The database used did not have addresses for all states, so some of them had to be left out of the survey.

A non-probabilistic quota method was used to compose the sample (BABBIE, 2001: pp 152-5; FREITAS *et al.*, 2000: pp. 106-7). Since extending the survey results to the entire universe of companies would require working with a probabilistic sample, the analyses and results of this study can be taken as significant only for the companies analyzed.

The survey was conducted using the Internet to communicate with the target public, as explained by Scornavacca Jr., Becker and Andraschko (2001). The electronic questionnaire was posted on the Internet and invitations to participate were sent out to the initial sample of 22,408 addresses. Of this total, 13,126 came back undeliverable for various reasons, leaving

9,282 valid addresses, which actually received the invitation to participate. At the end of the data-collection period, which lasted 31 days, there were 544 responses, 541 of them obtained via the Internet and 3 by printed form via regular mail, when the respondents had trouble accessing the survey site and asked for an alternative way of participating.

After an initial analysis of the 544 responses received, 37 questionnaires were disregarded for diverse reasons, leaving 507 valid ones, 5.5% of the initial sample of valid e-mail addresses.

4. ANALYSIS OF THE SURVEY DATA

The survey data are analyzed below. First, however, some of the main characteristics of the sample of companies should be described, before analyzing their strategic information management profiles.

4.1 The Sample

Regarding the company size (SEBRAE, 2003: p. 2) and sector of activity, the sample had the following profile:

Table 1 – Distribution of companies by size and sector

Sector(no. of companies)	Micro	Small	Medium	Large	Total	%
Commerce	20	17	5	7	49	10%
Industry	44	71	40	23	178	35%
Services	115	81	23	51	270	53%
Agribusiness	2	2	0	6	10	2%
Total	181	171	68	87	507	100%
	36%	34%	13%	17%	100%	

Source: Author

Regarding the number of employees, the sampled companies were distributed as follows:

Table 2 – Distribution of the companies by number of employees

Number of employees	Number of companies	%
0 to 9	164	32%
10 to 19	65	13%
20 to 49	90	18%
50 to 99	61	12%
100 to 499	76	14%
500 or more	51	11%
Total	507	100%

Source: Author.

The companies were broken down as follows according to turnover in 2003:

Table 3 – Distribution of the companies by turnover in 2003

Turnover in 2003	Number of companies	%
Up to R\$ 120 thousand	97	19%
R\$ 121 thousand to R\$ 250 thousand	45	9%
R\$ 251 thousand to R\$ 500 thousand	42	8%
R\$ 501 thousand to R\$ 1 million	46	9%
R\$ 1.01 million to R\$ 5 million	122	24%
R\$ 5.01 million to R\$ 20 million	66	13%
R\$ 20.01 million to R\$ 100 million	54	11%
Above R\$ 100 million	35	7%
Total	507	100%

Source: Author.

The distribution of the positions of the survey respondents, in Table 4, shows that most of them (86%) were at least at the managerial level (department heads).

Table 4 – Distribution of the companies by position of the respondent

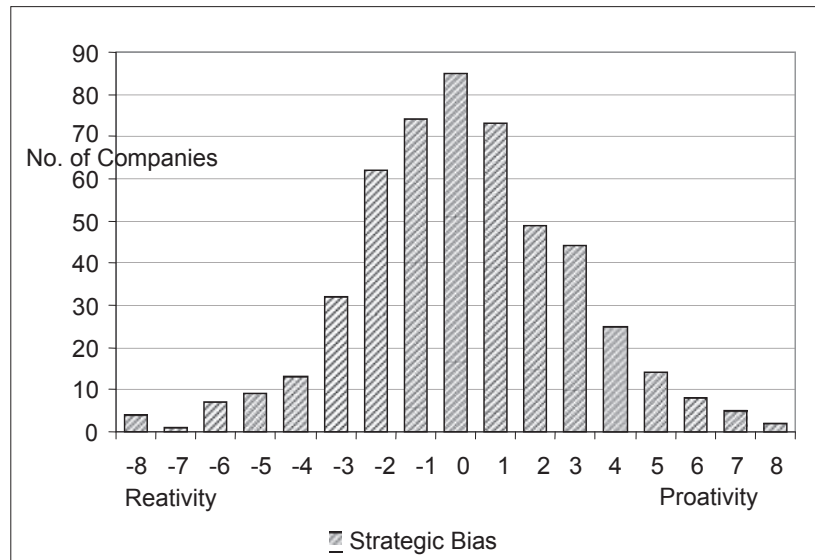
Position of respondent	Number of companies	%
Partner / Shareholder	214	42%
CEO / Officer	109	21%
Superintendent / Manager	111	22%
Supervisor / Foreman	37	7%
Others	36	7%
Total	507	100%

Source: Author.

4.2 Strategic information management profiles

The first step in analyzing the strategic information management profile was to determine the “strategic bias” (SB) index, as explained previously, for all the responding companies. The SB range was 17 points, from –8 (most “reactive” stance) to +8 (most “proactive” stance). The distribution of the SD index for the entire sample is shown in Graph 1.

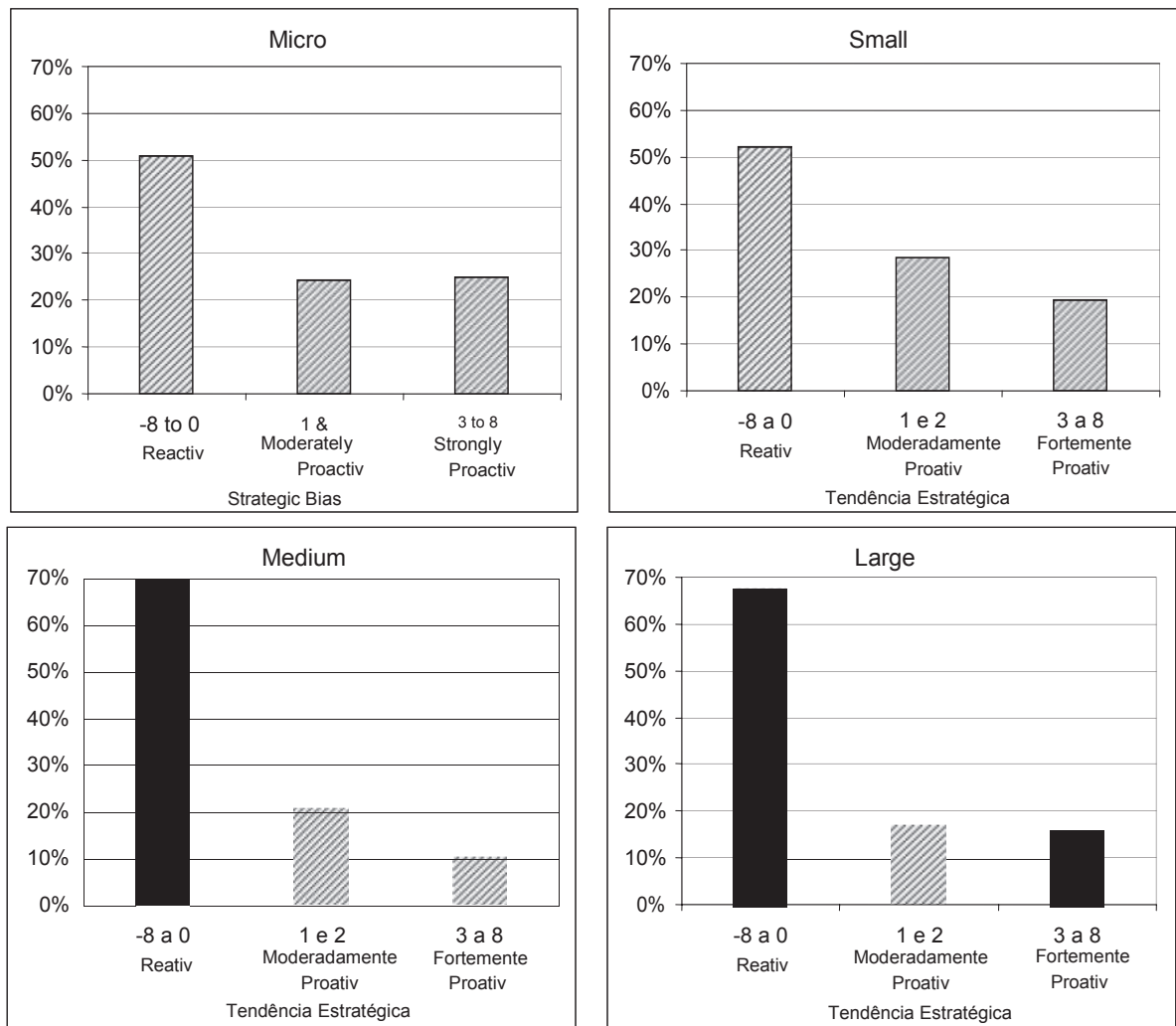
The next step was to determine the management profile according to the “reactive”, “moderately proactive” and “strongly proactive” categories, as discussed earlier, with the sample stratified in terms of company size. The results, presented in Figure 2, allow some considerations:

Graph 1 – Strategic Bias (SB) Distribution

Source: Author. Base = 507 companies.

i) For the set of companies analyzed, the predominant bias is “reactive” (SD indices between -8 and 0), regardless of the company size (micro = 51%, small = 52%, medium = 69% and large = 68%). Hence, it can be seen that there is a clear change in the level of this bias when comparing micro and small firms, on the one hand, with medium and large ones on the other. In this case, the average difference between these two groups of companies is 17%. An examination of these indicators, on the other side of the coin, shows that the micro and small companies are significantly more proactive than the medium and large ones. Graph 2 illustrates this tendency more clearly.

ii) An analysis of the outcome of the proactive stances shows that for the set of all companies in the sample, the biases considered “moderately proactive” (SD indices between $+1$ and $+2$) and “strongly proactive” (SD indices greater than or equal to $+3$) also show a difference according to size. Thus, analysis of the behavior of the “proactive” stances of the micro and small firms shows that although these are stronger than the stances shown by the medium and large companies, there is a sharp drop-off when the size passes from micro to small. Although taken together the “proactive” postures maintain their magnitude, individually they lose intensity, going from “strongly positive” to “moderately positive” when the size goes from micro to small. Graph 3 depicts this situation.

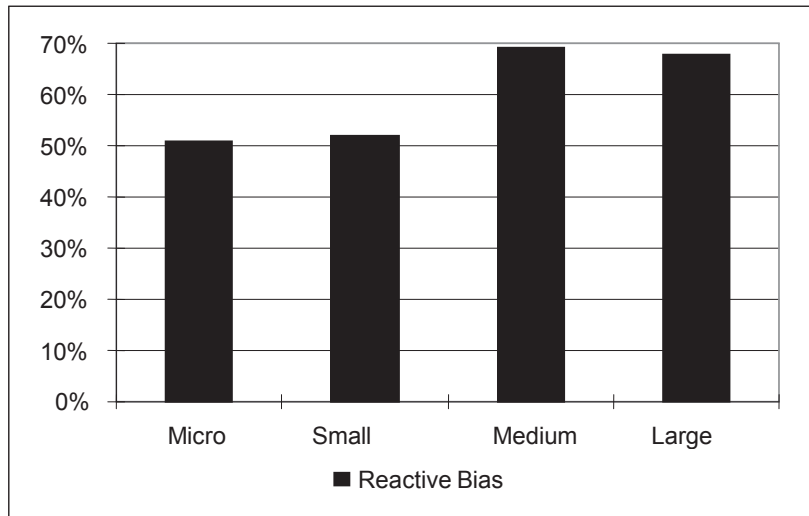


Source: Author. Base = 507 companies.

Figure 2 – Strategic bias (SB) distribution according to company size, classified as “reactive”, “moderately proactive” and “strongly proactive”

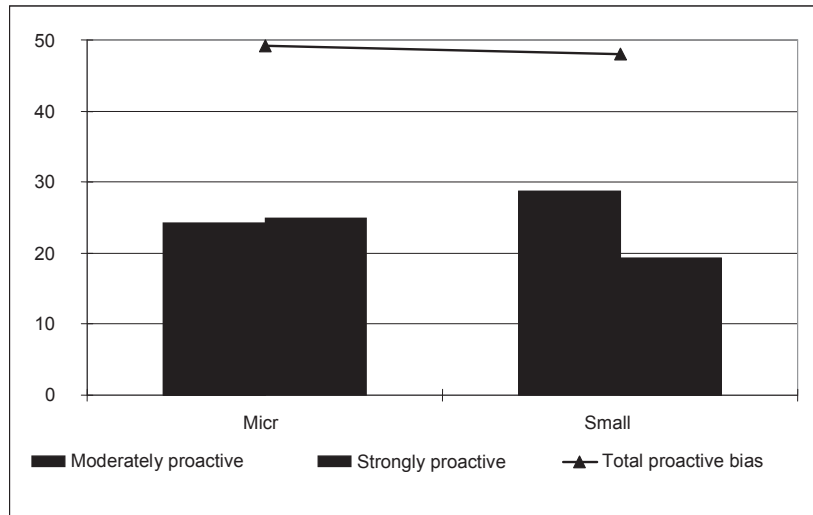
iii) Regarding the “proactive” postures of all the sampled companies, there is a clear difference of intensity and magnitude when comparing the micro and small firms against the medium and large ones. While there was a decrease in intensity between the micro and small firms (not affecting the overall magnitude), in the comparison between the two groups the loss of magnitude is accentuated. For the micro and small companies the share of “proactive” stances is on average 49%; among the medium and large firms “proactive” postures represent on average only 32%. Graph 4 shows this clearly.

Graph 2 – “Reactive” strategic bias distribution according to company size



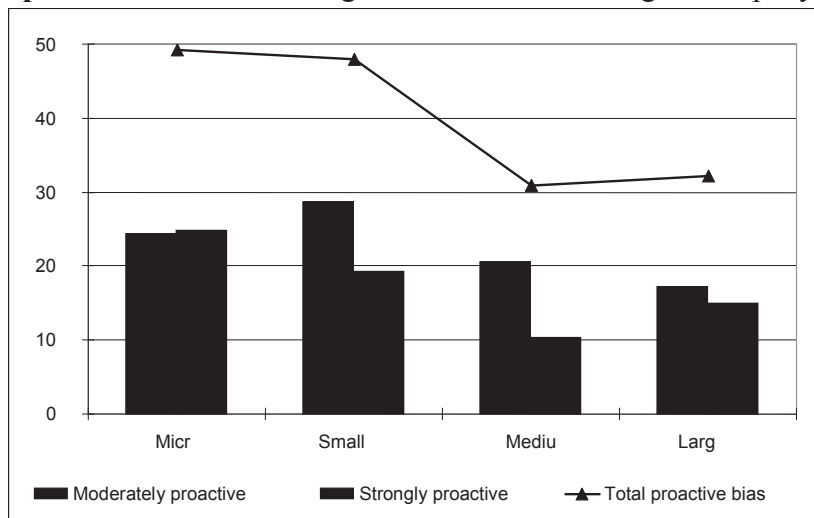
Source: Author. Base = 507 companies.

Graph 3 – “Proactive” tendencies in micro and small companies



Source: Author. Base = 352 companies.

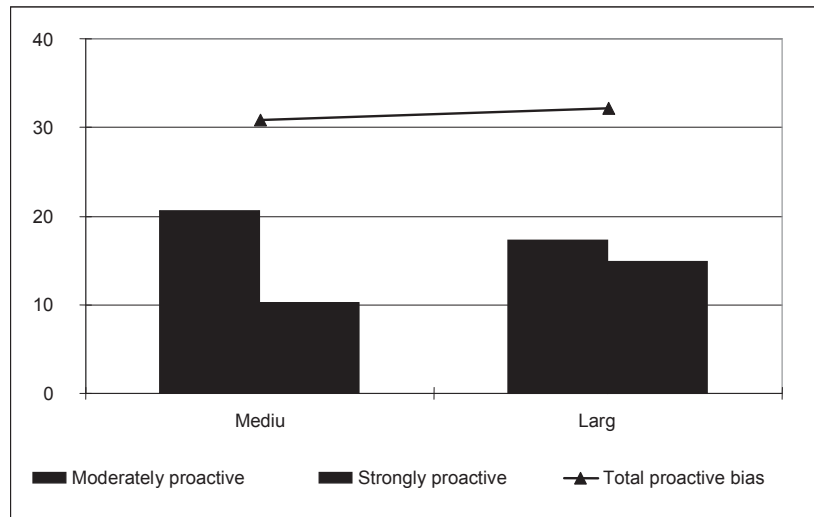
Graph 4 – “Proactive” strategic tendencies according to company size



Source: Author. Base = 507 companies.

iv) Finally, a comparison of the “proactivity” between the medium and large companies shows that although the general magnitude of the “proactive” stances is maintained in companies of both sizes (medium = 31% and large = 32%), the general intensity picks up when comparing the large and medium firms by the difference in the “strongly proactive” postures (medium firms = 10% and large ones = 15%). Graph 5 illustrates this case.

Graph 5 – “Proactive strategic tendencies in medium and large companies



Source: Author. Base = 155 companies.

5. CONCLUSIONS

The analysis of the strategic information management profiles of the companies sampled, as explained above, permits some concluding remarks.

Within the concept of strategic bias (SB), the micro companies appeared more proactive than the small ones, which in turn were more proactive than the medium firms. These last, surprisingly, were less proactive than the large companies (see Graph 4). On this point, the study identified the propriety in not grouping companies of different sizes to analyze the strategic information management profile, under penalty of incurring evaluation errors. Unexpectedly, this part of the study also shows that the medium companies in the sample were more reactive than the small ones, with which they are generally lumped (under the moniker “small and medium firms”). Instead, they turned out to be much closer to the large companies.

The greater “proactivity” indicated by the survey for the micro and small firms is also in line with other types of evaluations that point to companies of this size as being more likely to have a more entrepreneurial bent than larger enterprises.

Specifically in relation to medium companies, if on the one hand they have an organizational structure enabling them to make better use of information as a competitive factor, on the other hand they appear to be more conservative in their information management profile. In contrast, small and medium companies, less structured for full use of information, show more proactive practices. These facts point to the importance of

organizational values and culture as important influences of the types of information management practices, along with size and organizational structure variables. This confirms the need for a more complete approach for effective information management as a competitive factor, an approach supported by three components: i) behaviors and values regarding information; ii) strategic information management profiles and practices; and iii) information technology management practices.

This study more specifically addressed the second item, but the differences in the information management profiles among the variously sized companies point to the need for evaluation and alignment of other components for information to be an effective competitive resource used by these organizations.

6. RECOMMENDATIONS FOR FURTHER RESEARCH

Some interesting points were identified while developing this study, but that could not be dealt with and thus present opportunities for future works, among them:

i) An interesting question to be examined is the causes of the high reactive indices in the companies surveyed. Would this repeat in a fuller sample? What are the causes of the high degree of reactivity in companies of all sizes? Some comparative studies of companies of various sizes have shown that micro, small and medium firms are more enterprising than large ones. If this is really so, why were the reactivity indices so high in the sample analyzed here? And why did this index rise sharply in the medium companies? What happens to them when they reach this level?

ii) Leone (1991) advises against grouping micro, small and medium companies together as a single subject for research. This survey pointed to a substantial change in strategic information management bias between small and medium firms. A better definition of company size, of what this actually represents in conceptual and research terms, and of the advantages and disadvantages firms of various sizes have regarding organizational competitiveness in the information age is a big challenge. If faced creatively, the answer could suggest new interpretations and paradigms for understanding the characteristics and economic and social insertion of companies in this era of dizzying change.

REFERENCES

- BABBIE, E. *Métodos de pesquisas de Survey*. 1st reprinting. Belo Horizonte : Ed. UFMG, 2001.
- DAVENPORT, T. H. *Reengenharia de processos: como inovar na empresa através da tecnologia da informação*. 3rd Ed. Rio de Janeiro : Campus, 1994.
- FREITAS, H.; LESCA, H. Competitividade empresarial na era da informação. *Revista de Administração*. São Paulo, v. 27, n. 3, pp. 92-102, July-Sept. 1992.
- FREITAS, H. *et al.* O método de pesquisa *survey*. *Revista de Administração*. São Paulo. v. 35, n. 3, pp. 105-112, July-Sept. 2000.
- HAMILTON, S. Controlling risks. In: MARCHAND, D. A. (ed.), *Competing with information: a manager's guide to creating business value with information content*. Chichester : John Wiley & Sons, 2000. pp. 209-228.

IBGE. Fundação Instituto Brasileiro de Geografia e Estatística. *Tabela 7 - Unidades locais, pessoal ocupado em 31.12 e salários e outras remunerações – 2001*. Available at http://www2.ibge.gov.br/pub/Economia_Cadastro_de_Empresas/2001/Tabelas_2001.zip. Accessed on 12/172003.

KAPLAN, R. S. and NORTON, D. P. *A estratégia em ação: balanced scorecard*. 4th Ed. Rio de Janeiro : Campus, 1997.

LEONE, N. M. C. P. G. A dimensão física das pequenas e médias empresas (P.M.Es): à procura de um critério homogeneizador. *Revista de Administração de Empresas*. São Paulo, v. 31, n. 2, pp. 53-59, April-June 1991.

LESCA, H.; ALMEIDA, F. C. Administração estratégica da informação. *Revista de Administração*. São Paulo, v. 29, n. 3, pp. 66-75. July-Sept. 1994.

LIMA, M. C. Monograph: *a engenharia da produção acadêmica*. São Paulo : Saraiva, 2004.

MARCHAND, D. A. Why information is the responsibility of every manager. In: MARCHAND, D. A. (ed.), *Competing with information: a manager's guide to creating business value with information content*. Chichester: John Wiley & Sons, 2000a. pp. 3-16.

_____. Creating business value with information. In: MARCHAND, D. A. (ed.), *Competing with information: a manager's guide to creating business value with information content*. Chichester: John Wiley & Sons, 2000b. pp. 17-30.

_____. Competing with information: a diagnostic for managers. In: MARCHAND, D. A. (ed.), *Competing with information: a manager's guide to creating business value with information content*. Chichester: John Wiley & Sons, 2000c. pp. 231-41.

_____ (ed). *Competing with information: a manager's guide to creating business value with information content*. Chichester: John Wiley & Sons, 2000d.

_____, KETTINGER, W. J. and ROLLINS, J. D. *Information orientation: the link to business performance*. Oxford : Oxford University Press, 2001a.

_____. *Making the invisible visible: how companies win with the right information, people and IT*. Chichester: John Wiley & Sons, 2001b.

MC GEE, J. and PRUSAK, L. *Gerenciamento estratégico da informação: aumente a competitividade de sua empresa utilizando a informação como uma ferramenta estratégica*. Rio de Janeiro : Campus, 1999.

O'BRIEN, J. A. *Sistemas de Informação e as decisões gerenciais na era da Internet*. São Paulo: Saraiva, 2002.

PORTER, M. E. *Estratégia competitiva: técnicas para análise de indústrias e da concorrência*. 8th Ed. Rio de Janeiro: Campus, 1991.

_____ and MILLAR, V. E. Como a informação lhe proporciona vantagem competitiva. In: MCGOWAN, W. G. (pref.) *Revolução em tempo real: gerenciando a tecnologia da informação*. Harvard Business Review Book. Rio de Janeiro: Campus, 1997. pp. 61-84.

ROSSETTO, C. R. and ROSSETTO, A. M. Comportamento estratégico segundo a teoria de Miles e Snow em empresas familiares de edificações na construção civil: um estudo multicaso. In: COSTA, B. K. and ALMEIDA, M. I. R. (coords). *Estratégia: perspectivas e aplicações*. São Paulo: Atlas, 2002. pp. 303-323.

SCORNAVACCA JR. E., BECKER, J. L. AND ANDRASCHKO, R. E-Survey: concepção e implementação de um sistema de *survey* por Internet. *Anais do XXV Encontro da Associação Nacional dos Programas de Pós-Graduação em Administração*. Campinas : September 2001.

SEBRAE – Serviço Brasileiro de Apoio às Micro e Pequenas Empresas. *Empresas brasileiras: quantas são, quanto produzem, quantos empregos geram e onde se localizam*. Observatório Sebrae de MPE. s. l. Mimeo : MPE Study n. 1, July 2003.

SEBRAE-SP – Serviço de Apoio às Micro e Pequenas Empresas do Estado de São Paulo. *Sobrevivência e mortalidade das empresas paulistas de 1 a 5 anos – relatório final*. São Paulo: Mimeo, October 2001.

SHETH, J. N., MITTAL, B. e NEWMAN, B. I. *Comportamento do cliente: indo além do comportamento do consumidor*. São Paulo: Atlas, 2001.