Performance Indicators and their Relationship with Organizational Strategy
A Study in Brazilian Companies

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Abstract: The institutional mission declared by an organization can be taken as baseline for management as well as a mechanism for communicating its objectives and organizational strategies. In a complementary fashion, performance indicators support the evaluation of the processes aimed to execute companies specific strategies. Thus, the present study sought, through an empirical quantitative approach, test the hypothesis of the performance indicators used by a company is associated with the content of the mission it declares. A sample of 85 Brazilian companies listed in BM&FBovespa's IbrX Index was used. Data has been extracted from the mandatory reference reports issued annually by companies and from its institutional sites. For examination of the data, the technique of content analysis was used in order to identify the characteristics present in the missions reported by the companies studied. Further, the logistic regression was used to test the association between the variables studied. In the context analyzed, no evidence of association between the characteristics of the missions reported by the companies and the performance indicators used by them was observed in the results. The results found contradict, in part, the logic and theory of organizations management control, especially regarding the congruence amongst the objectives that must be pursued, including the alignment of what an organization declared as being relevant in its mission with the indicators it uses to evaluate its performance. Finally, Business Process Management (BPM) is discussed as a fundamental support for the definition of performance indicators in order to guarantee the alignment to the organization's strategic objectives.

1 INTRODUCTION

A common goal, integrating all involved parties, is a fundamental attribute of a system. From that perspective, a company's mission can be seen as an effort to formalize one or more goals that will drive the organization towards the achievement of established strategies. A company's mission apparently is of significant importance in the organizational context, and should be able to guide the definition of strategies and goals to be pursued, reflecting the management's philosophy (Rafaeli et al., 2007).

Performance indicators are pointed out in the literature as tools used by organizations to achieve their goals and implement their strategy, in addition to their mission statement (Anthony and Govindarajan, 2008).

The unceasing pursue of their strategic objectives led companies to pay more attention to the improvement of their business processes. Key business processes should be frequently monitored and, if necessary, remodeled (Jeston and Nelis, 2008). Business Process Management, a concept defined by the Object Management Group as a set of techniques for continuous and iterative improvement of an organization's business processes, has come into widespread use (OMG, 2010). The use of process management can help organizations define performance indicators more finely tuned to their

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strategy, providing an accurate measurement of what is sought after as a company's mission.

Given that the stated mission and performance evaluation indicators used by organizations have complementary purposes, this paper aims to determine whether there is an association between the institutional mission declared by the companies sampled for the study and their performance indicators. The question that arises from the above is: is there an association between the stated mission of the company and its performance indicators?

We thus seek, in the present paper, to empirically test the following hypothesis:

H_0: the performance indicators used by a company is associated with the content of the mission it declares.

Given the multidimensional aspect, contemporarily bestowed upon organizational performance and hence its evaluation, the present study contributes to research on management control by exploring whether the sampled organizations have become alert to a fundamental requirement in the management control process: the essential need for goals, in order to develop any kind of control (Otley and Berry, 1980).

It is important that performance indicators are periodically reviewed and adapted to a company's systems and actual needs. Thus, after the analysis on the association between indicators and institutional mission, we examine how Business Process Management (BPM) can help define performance indicators that are directly linked to the organization's strategic objectives.

This paper is comprised of five sections, the first being this introduction. Section 2 presents the theoretical framework of the study and a literature review on institutional mission, performance indicators and business process management. Section 3 presents the methodological procedures used in the research. Section 4 presents and discusses the main results. Finally, in section 5 are exposed final remarks and suggestions for future research.

2 THEORETICAL FRAMEWORK

2.1 Institutional Mission

The management of organizations is driven by their main objective, which is in turn intimately connected with the organization's established mission. Business strategies are related to the interaction between the company and the elements comprising their internal and external environments, and mutate given the need to adapt the dynamics of their activities and skills (Machado, 2005); (Porter, 2002); (Sette, 1998). The institutional mission can be defined as a company's central goal, the reason behind its existence, used as guidance to goals and strategies that express its work philosophy (Rafaeli et al., 2007). Ackoff (1986) argues, accordingly, that missions reported by companies must contain measurable objectives that can differentiate a company from others toiling in the market, inform about its aspirations and inspire those directly or indirectly involved with it.

To David and David (2003), nine characteristics can be considered as key elements, and should be pondered upon, during the establishment of missions by companies. Some of them are: identification of target customers; identification of the core business; geographic specification of the market; commitment to survival, growth and profitability; Importance of employees; Identification of the company's desired public image, etc. Mullane (2002) stated that mission or any other declarations are irrelevant if used solely as billboards to be displayed in a company's. Thus, a company's mission can be used to disclose its objectives and strategies, allowing, through the commitment of all actors involved, that specific goals are achieved and the desired organizational performance is reached (Rafaeli et al., 2007). In recent times, the mission statement has been widely used by companies as a support to management issues (Analoui and Karami, 2002), thus suggesting that an association exists between the presence of features related to an organization's stated mission and the performance indicators it uses.

2.2 Performance Indicators

For Rafaeli and Müller (2007), from the moment in which the goals and mission of a company are set and strategies are being implemented, it is necessary to check whether the company is following the planned path towards mission accomplishment, therefore requiring that a system capable of performing such control is functioning. Performance evaluation systems complementarily assist in strategy implementation, also enabling the monitoring of results (Anthony and Govindarajan, 2008).

Performance indicators seek to reflect the philosophy and culture of organizations, while evaluating the achievement of established strategies. Performance indicators, to be effective, should

reflect the variations in competitiveness (Tatikonda and Tatikonda, 1998). In this context, performance indicators are defined from established strategies and exert the function of performance evaluation. Their main objective is offering subsidies to make managers decisions converge with established goals and strategies (Aguiar et al., 2012).

An extensive set of performance indicators may turn out to be necessary in developing the process of performance evaluation. The nature of such indicators can be financial and non-financial, strategic and operational, accounting and non-accounting, among others (Frezatti et al., 2009); (Kaplan and Norton, 2000).

According to Fitzgerald (2007), performance indicators, as part of the performance appraisal system, start from an organization's goals and strategies and comprise several other elements, such as: aspects of performance that should be monitored, considering financial and non-financial dimensions; aspects related to goals to be achieved, considering characteristics like degree of difficulty and participation of everyone involved.

Globerson (1985) analyzed the relationship between strategies and performance indicators, emphasizing that the latter should be inferred from the strategies and objectives of companies, and should also possess the ability to provide feedback, be objectively, concisely and clearly defined, and provide clear and specific goals as well.

2.3 Business Process Management

Business Process Management (BPM) is a methodology designed for managing an organization's key business processes, contemplating the modeling of processes in order to make them more efficient (Santos et al., 2012). The purpose of using BPM is to obtain improvements in corporate performance (Harmon, 2005). BPM has come into widespread use lately, proving to be much more than a technological tool (Jeston and Nelis, 2008).

In the present research, process is defined as a set of activities or behaviors performed by individuals or by machinery with the intention of achieving a particular goal. The core activities of the BPM cycle contemplate continuous process improvement through planning, analysis, design, modeling, implementation, monitoring and control (ABPMP, 2009).

The modeling of business processes also allows for: a) commonality of understanding on how work should be done, enabling integration, analysis and improvements in information flow; b) explicit knowledge of processes, thereby preserving an organization's know-how; c) analysis of the organization and performance indicators, and d) simulations to support an organization's decision making and management (Vernadat, 1996).

A number of critical factors merit consideration in implementing business processes management. The handling of proposed changes, where possible resistance should be properly addressed, is one of them (Jeston and Nelis, 2008). Strategic alignment, measurement and monitoring of the remodeled process and process automation can also be cited, among others (SANTOS et al., 2012). BPM can also be used to alter performance indicators in view of the need to redefine the indicators for each process (Sipioni, 2009). A major difficulty involved in the strategic management process is the choice of indicators that best reflect organizational performance.

BPM enables an organization to change processes by altering only graphical models, providing greater flexibility when compared to conventional information systems (Sipioni, 2009).

3 METHODOLOGY

In this section we describe the methodological procedures employed in this research. This is an empirical study, with a quantitative approach for treatment and analysis of collected data.

With regard to the universe studied, we sought to investigate whether there is association between the mission and performance indicators of 85 Brazilian companies traded and listed, in August 2011, on the São Paulo Stock Exchange, Commodities and Futures Exchange (BM&FBovespa). These companies are present in the makeup of the IbrX index, which measures the return on a theoretical 100 stocks portfolio selected among the most actively traded stocks, based on the number of trades and financial value (BM&FBOVESPA, 2011). The companies that make up the IbrX index annually publish, in compliance with requirements of the BM&FBovespa, a report called Reference Report, or Referral Form, containing information ranging from financial issues to human resources and control.

To carry out this research, part of the data (performance indicators) was extracted from the reference report issued annually by the companies, as required by BM&FBovespa, and another part (institutional mission) was collected from the websites of the sampled companies.

The investigation followed an empirical-quantitative approach, where we sought to determine the association between variables. Thus, in this particular case, the independent variables were the performance indicators used by companies and obtained from their reference reports. The stated mission of the company was the addressed dependent variable, and was extracted from the websites of companies. In order to test the possible association, missions collected in the websites were categorized according to the characteristics present in their statement.

For the outlining of features present in the stated mission declared by Brazilian companies listed in IBrX, content analysis technique was used (Bardin, 1977). Initially, based on the literature review, some categories were pre-defined as guidance for the content analysis. Thus, oriented by the work of David and David (2003), and following also the Rafaeli, Campagnolo and Müller (2007) reasoning, we performed a content analysis of the missions collected from the websites of the companies studied, focusing in the categories set forth in Figure 1:

M1	Identification of target customers
M2	Identification of the core business
M3	Geographic specification of the market
M4	Commitment to survival, growth and profitability
M5	Importance of employees
M6	Identification of the company's desired public image

Source: Adapted from David and David (2003) and Rafaeli et al. (2007).

Figure 1: Pre-defined categories for content analysis.

We considered as a company's declared mission statement the one published in its official website. At first, companies that published the mission in their respective institutional websites were sorted from those that did not. Subsequently, we analyzed the content of the declared missions, determining which of the pre-defined categories features highlighted by David and David (2003) and Rafaeli, Campagnolo and Müller (2007) were present in them. In a second stage, data was collected regarding performance indicators used by companies, as disclosed in item three of their respective public reference report. As shown in Figure 2, we found evidences pointing to the use of 30 different indicators by companies in the sample.

I01	Net Equity	I16	EBITDA
I02	Total Assets	I17	Service Indicators
I03	Net Income / Financial Intermediation Income / Gains with Insurance Premiums	I18	Adjusted Net Income
I04	Net Income	I19	Accounts Receivable
I05	Book Value	I20	Number of Branches
I06	Gross Earnings	I21	Basel Index
I07	Number of Shares	I22	Market Indicators
I08	Net Earnings	I23	Adjusted Net Earnings
I09	Book Value per thousand shares	I24	Inventories
I10	Number of Paid-in Shares	I25	Number of Employees
I11	Net Earnings per thousand shares	I26	Domestic Suppliers
I12	Net Earnings per Share	I27	Foreign Suppliers
I13	Net Earnings per common share	I28	Investment Funds under management
I14	Current Assets	I29	Loans (short term)
I15	Current Liabilities	I30	Loans (long term)

Figure 2: Indicators used by companies.

To verify the association between the mentioned variables, we used the statistical technique of logistic regression, according to the following model:

$$MISSION_n = \beta_0 + \beta_{01}.INDICATOR_{01} + ... + \beta_k.INDICATOR_k + \varepsilon \quad (1)$$

Where:

$MISSION_n$ - Features of missions reported by the companies, ranging from feature 1 to feature 6, as previously described, ascribed a value of 1 for companies presenting that particular feature in their missions and a value of 0 for those not presenting;

$INDICATORS_k$ - Performance indicators used by the sampled companies, ranging from Indicator01 to Indicator30, as described in Figure 2, ascribed a value of 1 when a particular performance indicator is used by the company and a value of 0 when not used.

Given the findings reported in the reviewed literature on the studied subject, it is expected to find associations between the variables, thus presenting evidences that companies use certain performance indicators to assess the achievement of their mission, i.e., the achievement of established objectives and

organizational strategies. After analysis of the results found, as a way to contribute to the management of corporate indicators, a suggestion will be offered for the application of the performance indicators revision/definition process.

4 DISCUSSION OF RESULTS

4.1 Association between the Stated Mission and their Respective Performance Evaluation Indicators

In this section we present the analysis and discussion of the results of the present research, which was developed with the purpose of ascertaining whether there is an association between the institutional mission declared by the Brazilian companies listed in BM&FBovespa's IbrX index and their performance indicators.

The descriptive statistics of the sample data is presented based on the count of companies where certain mission characteristics or particular performance indicator were present or not.

Initially, descriptive statistics for the analyzed sample, regarding the dependent variables, are shown in Table 1:

Table 1: Descriptive statistics: dependent variables.

Variable	Present		Not Present		Total	
	Count	%	Count	%	Count	%
M1	09	11	76	89	85	100
M2	51	60	34	40	85	100
M3	14	16	71	84	85	100
M4	30	35	55	65	85	100
M5	11	13	74	87	85	100
M6	36	42	49	58	85	100

As characteristics of the mission, variables M2 (identification of the core business), M4 (commitment to survival, growth and profitability) and M6 (Identification of the company's desired public image) stand out as the most frequent mission features, all being present in more than 30% of the missions stated by companies in the sample, as shown in Table 1. Characteristics represented by variables M1 (identification of target customers), M3 (geographic specification of the market) and M5 (importance of employees) are less frequent, being all present in less than 20% of the sampled missions.

Regarding the performance indicators used by companies, I01 (Equity), I02 (Total Assets), I05 (Book Value), I06 (Gross Earnings), I07 (Number of Shares) and I08 (Net Earnings) stand out as the most frequent, all of these indicators being used by more than 80% of the sampled companies.

When logistic regressions were run for each mission characteristic, most models turned out as non-convergent, making standard errors impossible to calculate, and with most of the independent variables discarded due to collinearity.

Thus, nothing can be said about the associations between the mission characteristics and performance indicators used by the sampled companies. However, for mission characteristics M4, M5 and M6 and performance indicators I03 and I04, the results showed some variability, as presented in the descriptive statistics above, allowing evaluation of models involving such variables.

Results for the logistic regression using the model depicted in equation 1 and the characteristic M4 (commitment to survival, growth and profitability) as dependent variable, are shown in Table 3:

Table 3: Logistic regression statistics: Equation 1.

$$M4 = \beta_0 + \beta_3 I03 + \beta_4 I04 + \varepsilon$$

M4	Odds Ratio	Z-Statistic	P-value
I03	0.000005	-0.47	0.638
I04	0.555555	-0.41	0.683
Number of obs =	85		
LR chi2 =	0.23		
Prob > chi2 =	0.8909		
PseudoR2 =	0.0021		

No evidences can be found of association between mission features identified as commitment to survival, growth and profitability and the performance indicators Net Income / Financial Intermediation Income / Gains with Insurance Premiums or Net Income, as well as there is no evidence that they do not occur randomly (Prob > chi2 = 0.8909). Table 4 presents the results using characteristic M5 (importance of employees) as dependent variable:

Table 4: Logistic regression statistics: Equation 1.

$$M5 = \beta_0 + \beta_3 I03 + \beta_4 I04 + \varepsilon$$

M5	Odds Ratio	Z-Statistic	P-value
I03	0.0384615	-1.87	0.062*
I04	0.1914894	-1.13	0.258
Number of obs =	85		
LR chi2 =	4.79		
Prob > chi2 =	0.0910*		
PseudoR2 =	0.0732		

Where *, **, ***: statistically significant at 10%, 5% and 1% levels respectively.

The results show that there is evidence of association between the dependent variable and indicator I03 (Net Income / Financial Intermediation Income / Gains with Insurance Premiums) and that it does not occur at random, though the association is weak (Prob > chi2 = 0.0910). Interpreting the results in light of the odds ratios, one can observe that the chance of finding a company that uses indicator I03 and declares the importance of employees as characteristic of its mission, is about 0.03 times higher than that for companies where both are not present, but the evidence is still weak to allow any conclusion.

Results using the characteristic M6 (identification of the company's desired public image) as dependent variable, are shown in Table 5:

Table 5: Logistic regression statistics: Equation 1.

$$M6 = \beta_0 + \beta_3 I03 + \beta_4 I04 + \varepsilon$$

M6	Odds Ratio	Z-Statistic	P-value
I03	0.000008	-0.15	0.879
I04	0.696969	-0.25	0.802
	Number of obs =	85	
	LR chi2 =	0.13	
	Prob > chi2 =	0.9355	
	PseudoR2 =	0.0012	

Again, there is no observable evidence as to the existence of association between the dependent variable M6 (identification of the company's desired public image) and independent variables I03 and I04. It is therefore impossible to establish an association between the facts that companies evidencing through its missions to be concerned with identifying their desired public image use the indicators Net Income / Financial Intermediation Income / Gains with Insurance Premiums or Net Income.

4.2 Revision of Performance Indicators through BPM

Given the results in Section 4.1, it is apparently necessary to review performance indicators currently used by companies in order to align them with the organizational mission.To this end, we suggest using the model of performance indicators revision process, developed by Sipioni (2009), which is supported by Business Process Modeling Notation (BPMN). It is a process founded on the BSC system principles, capable of sustaining all the organization's strategy. The model was developed with the BSC vision and BPM's methodology and integration. The model's step by step flow is shown in Figure 3 (Sipioni, 2009):

Step/ Description
Step 1 - Entry: corporate strategic objectives;
Step 2 - Deployment of strategic objectives to the business unit;
Step 3 - Unfolding of strategic objectives for each macro-process of the organization;
Step 4 - Verification: the unfolding of the strategic objectives for each macro-process is consistent with the strategic objectives of the business unit?
Step 5 - Unfolding of the strategic objectives of each macro-process for each sub-process;
Step 6 - Review of performance indicators: evaluation of strategic objectives for the sub-process, which develops new indicators in accordance with the strategic objectives of the macro-process;
Step 7 - Comparison of the developed indicators with the existing performance indicators for each sub-process;
Step 8 - Check: the new performance indicators are in line with the strategic objectives?
Step 9 - Output: new performance indicators defined in accordance with the corporate strategy.

Source: adapted from Sipioni (2009).

Figure 3: Convergence of BSC and BPM systematics.

According to Sipioni (2009) the third stage in the process is one of the most important, the critical point of this phase being the verification of whether managers actually understood the strategic objectives of the business unit and whether those in charge of each sub-process can turn these objectives into indicators that do meet the needs of the business unit. Macro-processes managers often design indicators to meet their own goals and not those of the business unit. Once the new indicators are defined, Sipioni (2009) also proposes a process for monitoring indicators, in order to ensure that all indicators still in the process of definition, at all stages, are in line with the organization's strategic objectives. This process consists of three steps, as outlined in Figure 4:

Step/ Description
Step 1 - Monthly monitoring of each business unit achievements;
Step 2 - Monitoring of strategic objectives for each macro-process of the organization, with monthly meetings held to evaluate the results and request enhancements or modifications to the indicator;
Step 3 - Monitoring of strategic objectives for each sub-process, with monthly meetings held to review results and request improvements or modification of the indicator.

Source: adapted from Sipioni (2009).

Figure 4: Monitoring process of performance indicators.

Sipioni (2009) points out that the proposed

process for revision of indicators is relatively simple and can be performed by any area of an organization. It is an easily operationalized process, as already tested by the author during a case study conducted in a Brazilian manufacturing firm.

5 CONCLUSIONS

This study aimed to check whether there is an association between missions reported by companies, and the indicators that such companies use to assess their performance.

The results, after applying logistic regressions to treat the data obtained, indicate that there is no association between the characteristics of missions declared by the sampled companies and the performance indicators they use, considering those evidenced in their reference reports. These results suggest that firms in the sample appear not to use the indicators stated in their reference reports as instruments to measure the achievement of certain goals or declared strategies. Thus, some implications can derive from the evidences found. Companies missions designed solely for purposes of public disclosure may turn out as not convergent with the indicators used to guide the achievement of desired goals, rebutting the idea that the establishment of missions can bring about real benefits for organizations (Piercy and Morgan, 1994).

After analyzing the results, the use of a model proposed by Sipioni (2009) was suggested. The model advocates a process designed to review performance indicators, integrating the BSC and BPM methodologies. According to the author, the two methods complement one another: BSC directed to the development of strategic management and BPM to model processes.

Even though the results in the present study contradict the logic underlying the management control of organizations, particularly in respect to the congruence of objectives that should be pursued, including ties between what an organization declares as relevant in its mission and indicators it uses to evaluate performance, it should be noted that this study has some limitations that cannot be neglected, which suggests that its results cannot be generalized. As a first point, in methodologies involving content analysis results could be biased by the analyst's assessment. Secondly, companies may use other specific performance indicators for internal purposes, which are not disclosed publicly, preventing access to all performance indicators used by companies. Moreover, results may have been influenced by sample size and low variability, precluding extrapolation.

It is suggested that future studies consider the possible use of other performance indicators, in addition to those disclosed by mandatory reports. We also suggest the expansion of pre-defined categories for content analysis of companies' stated missions, as well as the expansion of the sample.

It is also suggested that the business process model, presented here as tool to be used in the definition of performance indicators, can be applied in various organizations in order to assess its real contribution to the alignment of indicators with the strategic objectives defined by an organization.

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