

Essays on Causal Performance Measurement Models

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а: Рагон
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Foreword

This dissertation deals with the modern performance measurement models such as the Balanced Scorecard, which intend to drive the company performance toward improved strategic and economic outcomes. For the latter purpose they rely on existence of cause and effect relationships between strategic objectives incorporated in a given model. However, whether performance measurement models can exhibit causal properties and deliver promised strategic and economic gains to their users or not it is largely untested and unjustified proposition. Another largely unexplored area regarding to the causal models is the implementation and usage of these models in organizations. Three essays included in this thesis address different research questions related to this topic.

Paper 1 “*Causal Performance Measurement Models: Myth or Reality*” provides a discussion on the cause-and-effect assumption in multidimensional performance measurement models. The primary objective of this paper is to explain the determinants of causal “weakness” of real-life applications of such models. In this paper I employ analytical methodology and draw on the literature from the diverse disciplines.

In Paper 2 “*Analyzing the Balanced Scorecard Assumptions on the Empirical evidence from the Dynamic Enterprises*” by means of statistical analysis I test the relationships between the BSC perspectives on the survey data coming from the dynamic Catalan industrial companies. The primary objective of this study is to reveal the character of association between the Financial and other perspectives of the Balanced Scorecard.

In Paper 3 “*Implementing the Balanced Scorecards in Spanish City Councils: an Institutional Perspective*” I describe and analyze two cases of the Balanced Scorecard implementation in the city councils. Here, I use case-study methodology and interpret my findings in the light of institutional theory. The primary objective of this study is to show multiple facets hiding under the label of “the Balanced Scorecard implementation”, in two public organizations.

Although all the articles are interrelated and complementary, each of them represents an independent unit of research with its own motivation, literature review and research questions. I encourage the readers to choose the order which suit them better.

Causal Performance Measurement Models: Myth or Reality?

Abstract: This paper provides a discussion on the topic of causality in performance measurement setting. A number of managerial accounting models such as the Tableau de Bord, the Balanced Scorecard and the Action-Profit linkage explicitly rely on the causal assumption. However, most of the real-life models' applications appear to be causally "weak". I analyze and synthesize the evidence from managerial accounting, philosophy of science, organizational theory, strategic management and causal scientific modeling. The analysis indicates that dynamic, complex and uncertain environment may greatly challenge the elaboration of valid causal models. Besides, due to the cognitive limitations and judgmental biases, managers may fail to trace correct cause-and-effect understanding of the value creation in their organizations. However, even lacking the validity, causal models can perform as organizational guides if they are able to mobilize managerial action.

Disclaimer

This paper does not argue against the use of causal performance measurement models.

Keywords: cause-and-effect relationship, performance measurement models, organizational theory

Background

Performance measurement models similar to the Balanced Scorecard represent one of the most important managerial innovations. Substituting traditional performance measurement systems, causal performance measurement models¹ (PMM) are meant not only to measure and control but, also guide the companies' performance. For the latter purpose the company's strategy is translated into a set of quantifiable cause and effect linkages between financial and non-financial indicators representing value creating activities and their outcomes. While being central to the causal PMM, such as the BSC, the Tableau de Bord, and the Action-profit linkage model, the assumption of causality appears to be problematic in real-life applications. It is important to understand the reasons of such causal "weakness" since without workable causal links the mission of these models in organizations changes.

The objective of this paper is to provide the discussion on this topic. This discussion is literature-based and analytical. I draw on literature coming from the diverse disciplines such as the philosophy of science, organization theory, strategic management and scientific causal modelling. First, I will briefly overview the existed PMM relying on causal logic. Second, I will review the managerial accounting studies on the issue. Third, analysis of academic literature will be done, and the implications of the findings for causal PMM highlighted. In the concluding session I will make a synthesis of the conducted analysis.

1. Causal performance measurement models

1.1 The Tableau de Bord

It is the first among the documented in literature casual PMM². According to Bourguignon et al. (2004), the origins of the Tableau de bord or dash board³ can be traced back to 1932. It was developed by process engineers in order to improve the internal processes and control the performance (Epstein and Manazoni, 1998). From its origins the Tableau de Bord has been undergoing changes in its architecture and

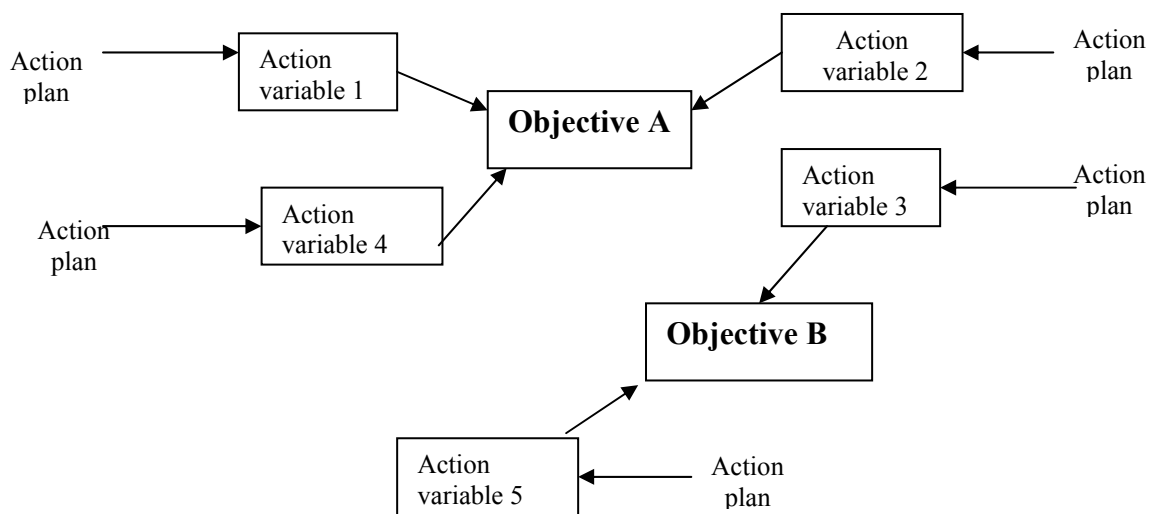
¹ Other definitions are also applicable to these models such as multidimensional performance measurement models, strategic performance models or managerial systems.

² Tableau has not a unique author/s. And most of the literature about Tableau de Bord is in French and published in French journals. Therefore, in this section I rely on secondary sources of information, the articles published in international journals.

³ Here the analogy is with the pilot panel of planes

methods of implementation. In the beginning, it was mainly used as a reporting and control tool, providing managers with the relevant financial and non-financial information about the diverse levels and range of activities in companies. In the early nineties, the Tableau de Bord became more closely aligned with the strategy making. The Tableau de Bord is based the premise of existence of the causal relationships between strategic action variable and strategic objective enacted by correspondent strategic plan (see Figure 1).

Figure 1. Relation between objectives, action variables and action plans



Reproduced from A. Bourguignon et al. Management Accounting Research 15 (2004) p. 117

For example, the increase of sales (objective) can be achieved by ensuring greater loyalty of the customers (action variable) by means of special marketing programs (action plan). Alternatively, from the point of view of production manager, increase of sales (objective) can be achieved by improvements in product quality (action variable) by means of improved quality control procedures (action plan). At least one quantifiable indicator should be specified for each objective, action variable or action plan. Furthermore, reference values should be attached to the indicators, based on their historical performance or external benchmarking.

Typically, top managers define the global strategic policy. The choice of the action variables and plans is delegated to the managers of the departments and business sub-units. In such way, the Tableau de Bord represents a multi-level information system comprised of an extensive net of diverse metrics. In this global net information can flow vertically and horizontally. The bottom-level managers typically dispose of the

wide range of operational metrics while the top-managers focus on the financial metrics.

The information of the Tableau de Bord is used to inform and control the activities of the subunits. In addition, it helps to manage the areas of their interdependencies and align the subunits policies with the global strategy of the company. The Tableau de Bord contains financial as well non-financial indicators, such as quality measures, human resources measures, customer-oriented measures and process-oriented measures.

1.2 Balanced Scorecard

The Balanced Scorecard (BSC) is, perhaps, the most popular and widely known among casual performance measurement approaches. Recent surveys conducted on the topic of the BSC implementation revealed that approximately half of larger USA and Western Europe companies use its framework in some way (Russell, 2003). It was developed by the academics Kaplan and Norton after they conducted research in several American companies and presented to the audience in 1992 (Kaplan and Norton, 1992). A series of subsequent publications refined BSC concept and put it in the centre of strategy making (Kaplan and Norton, 1996a, 2001b, 2004).

According to Kaplan and Norton (2001b, p.65) “strategy cannot be executed if it cannot be understood, however, and it cannot be understood if it cannot be described”. If a company is able to describe comprehensively its strategy and communicate it effectively throughout the organizational levels, the chances to implement it successfully will increase considerably.

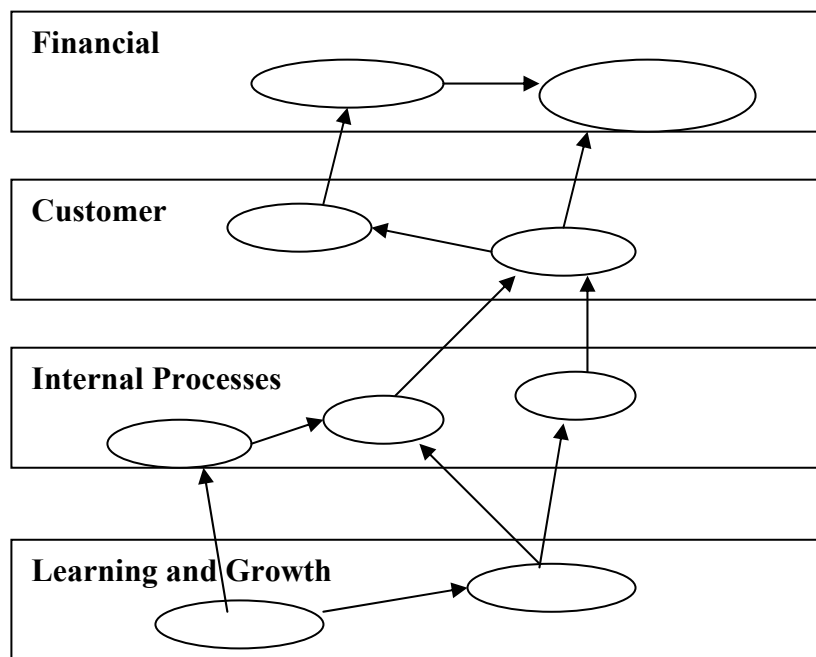
Therefore, once a company defines its strategic vision it should translate it into a strategy map (Kaplan and Norton, 2001b). A strategy map visualizes and communicates a strategy via hypothesized cause-and-effect links between value-creating activities and desired strategic outcomes. Figure 2 represents a generic structure of a causal map.

Relationships, included into a strategy map are quantified with indicators chosen upon four major organizational perspectives: Learning and Growth, Customers, Internal Business Processes, and Financial⁴. The Learning and Growth perspective reflects the

⁴ The canonical form of the BSC includes four perspectives, but the number and content of the perspectives can be adjusted for particular organizational contexts. For instance, the Supplier perspective can be found in a number of known BSC applications.

company's priorities for creating and supporting a climate of change, innovation, and growth. Some examples of the indicators of this perspective are the measures of seniority, staff training, employees' attitudes and motivation. The Internal Business Processes perspective describes the way, in which business processes are adapted so that the needs of customers and shareholders are satisfied. For example, order execution time, delivery time, production period, and stock turnover indicators can be used in this area of measurement. The Customer perspective reflects the company's value for its customers. The market share, customer satisfaction and customer retention indicators can be located within this perspective. Finally, the Financial perspective identifies how the company wishes to be viewed by its shareholders. Some examples of the indicators of this area are return on equity, economic value added (EVA), return on assets, paybacks periods and revenue volumes.

Figure 2 Generic structure of the Balanced Scorecard



Source: author elaboration

Each area of measurement should contain up to five objective and quantifiable indicators. Non-financial indicators are used to represent intangible factors, for instance, employee attitude and development, and customer satisfaction. Financial indicators are mostly placed within the Financial perspective, reflecting the aggregate result of the company's performance. Selected indicators are linked into the cause-and-effect links. Some of them serve as lead indicators, driving a certain activity of

the company. Others perform as the lag indicators, signalling about the outcome of this activity. For instance, if the order execution time is a lead indicator, the increased turnover is a lag one. If the company directs its effort to the shortening of order execution time it will attain an increased turnover.

Linked into causal relationships, the indicators not only measure certain factors in isolation but also tell a story about how the value is created in order to fulfil the strategic objective. For example, employee training (measured as the number of training hours per employee) leads to their excellence when doing the job (productivity or quality of the product). A good job done by employees gives rise to satisfaction of the company's clients (index of the customer satisfaction). If the customer likes the product or service delivered he will likely buy it again (customer retention) and recommend it to his or her friends (new customers acquisition). Finally, growing sales will result in better financial performance of the company (return on investment).

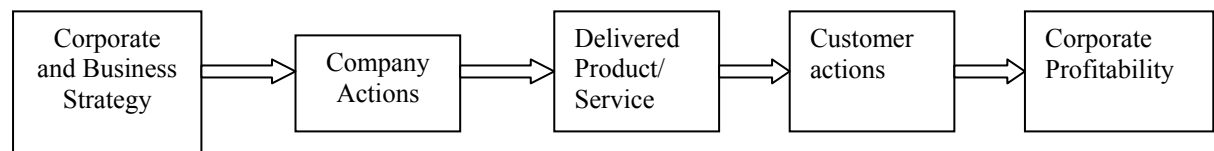
According to the BSC logic, the indicators of Learning and Growth perspective are at the same time the drivers for the indicators of the Internal Business Processes. The measures of processes are in turn the drivers for the indicators of the Customer perspective. Finally, the latter indicators are the drivers for financial results. In addition indicators can be tied horizontally within each perspective (Kaplan and Norton, 1996 a). The idea to convert strategy into a set of plausible and coherent causal relationships between leading and lagging indicators constitutes the essence of the BSC philosophy. Managers are expected to understand then the strategic objectives of the company and the mechanism of their achievement. Furthermore, the targets should be set for the indicators, selected by a company, and incentives schemes tied to the realization of these targets. In this way, the managerial effort and attention would be directed towards critical issues for accomplishing the organization's goal.

1.3 Action-profit linkage models (APL)

The action-profit linkage model was proposed by two academics of Rice university, Marc Epstein and Robert Westbrook (Epstein and Westbrook, 2000, 2001). According to the authors, APL permits managers to "identify and measure key drivers of business success and profit, develop causal links among them and estimate the impact of actions taken to bring them about"(p. 41).

It starts with the premise that strategy is a set of diverse activities company chooses to perform. Actions may be originated in different company domains, such as Operations, IT, Human Resources, Marketing and Sales, Finance and Accounting, External relationships. Actions affect the product or service delivered by company, including product attributes, brand, customer-service activities (see Figure3). Delivered product or/and service influences customer behaviour, manifesting in customers' perceptions, attitudes and reactions. Customer behaviour ends up reflected in the corporate profitability, which represents the sum of the revenues corrected by the cost of undertaking strategic actions.

Figure 3. The Action-profit Linkage model – simplified representation



Based on Epstein, Marc J. (with R. Westbrook). 2001. "Linking Actions to Profits in Strategic Decision Making." *MIT Sloan Management Review* p. 42-43

Managers are encouraged to set-up the metrics for the relevant links across this chain, collecting the data and tracing the most important links for corporate profitability through statistical analysis. “Developing and testing their customized models, companies begin to limit their investments to those that improve profitability; the model’s output discourages investment in unprofitable areas” (Epstein and Westbrook, 2001, p. 45).

All of the described above PMM have the following features in common:

- they support strategy making in companies
- they are multidimensional (include financial and non-financial indicators)
- they employ the notion of cause-and-effect relationships describing how strategic objective can be achieved.
- they emphasize that only key performance dimensions and limited number of the performance indicators should be selected to control the performance and set the strategic objectives.

Linear cause-and-effect chains₂ are the powerful element of the architecture of such models. They demonstrate how the desired results can be achieved and where the company should concentrate its efforts and investments. These models assume that both company activities and external environment are to the greater degree controllable, measurable, and predictable. Engaging in active learning and measurement procedures, companies can execute ambitious strategies and constantly improve its market position. The philosophy of “achievement”, “best results”, “excellence”, and “superior profitability” underpins causal performance measurement movement.

2. Literature on causal PMM

2.1. Practitioners’ literature on causal PMM

Causal PMM represent a very popular topic in practitioners’ business publications, which expose the anecdotic evidence of astonished success, and “heat” the enthusiasm regarding causal models (see for instance, Eccles, 1991, Magretta, 2002, Crosby and Sheery, 2006). Causal performance measurement movement is spreading over the world through numerous practitioners’ conferences and seminars and consulting companies actively sell and propagate causal PMM, especially BSC⁵. The following citation from one of practitioners’ journals is characteristic of it:

Causal relationships among PMM measures are an important design criterion and feature of a successful customer loyalty strategy. Conversely, a PMM without valid causal relations is ineffective or counterproductive to communication and motivation (Crosby and Sheery 2006, p.13)

Rucci et al. (1998), Kaplan and Norton (2001b, pp.309-311) describe the business model of Sears Roebuck Company, which is built upon the assumption of existence of causal linkages, going from employee attitudes through customer satisfaction to profits. On the basis of statistical elaboration of the collected data, Sears came up with the following cause and effect chain: 5 points improvement in employee attitudes drives 1.3 points of increase in customer satisfaction, which in turn drives 0.5% up the

⁵ For instance, the search on Google about the BSC will give over 5 million links

revenue. Sears claims that after implementing the model, customer satisfaction increased by 4%. This increase resulted in \$200 million increase in revenues⁶.

Epstein and Westbrook (2001) describe causal business models implemented by the Canadian Imperial Bank of Commerce (CIBC) and the Browning Ferris Industries (BFI), the large trash hauler company. The CIBC managers arrived at the following model: a 5% increase in employee commitment drives a 2% increase in customer loyalty, which results in 72\$ annual increase of profit. Similarly, in the BFI, which faced in its past the problem of high customer-defection rate, causal analysis allowed to detect the drivers of customer satisfaction. The investment programs aligned with the results of causal analysis brought a 3% decline in customer-defection rate. The latter had a profound impact on company profitability.

2.2 Academic literature on causal PMM

Academic literature, however, provides mixed and contradictory evidence on causal PMM⁷. In particular, the assumption of causality of the BSC model has generated a lot of debates among managerial accounting researchers.

Using experimental methodology, Webb (2004) investigates the importance of causal structure in the models of strategic performance measurement. He demonstrates that well-articulated causal links help organizational actors to understand the mechanism by which corporate objectives can be achieved. Better understanding of the goals leads to greater commitment by managers to achieve them. Hypothetically, then, a causal model has advantages over ordinary scorecards. Luft (2004) in her discussion of Webb's article indicates, that, in reality, most of the applications are causally weak and hypothesizes several types of such "weaknesses". In particular, these are the high cost of the analysis, uncertainty of the processes of value generation, and conflicting views on "true" cause-and-effect relationships managers may have.

Indeed, empirical studies on the BSC implementation document problems with the assumption of causality. Malmi (2001) conducted the interviews on the BSC implementations with the managers of seventeen Finish companies. The author points out that most of the interviewees misunderstood the cause-and-effect logic.

⁶ Despite being very encouraging, the stories of Sears, CIBC, and BFI companies are not conclusive. Probably for confidentiality reasons, no information is disclosed in the cited above articles, to allow a proper scientific judgement of the exposed evidence.

⁷ Most of the studies done are related to the BSC

Specifically, some of the companies replied that “we do not know how much some factors and measures affect other factors and that there might be a chance to establish such relationships in future” and “we are not so far along yet” (p. 210). The interviewed managers perceived the BSC perspectives independently from each other. Malmi suggests further research has to be done on cause-and-effect weakness of the BSC applications. Similarly, Speckbaher et al. (2003) performs a survey among stock-listed companies in German-speaking countries and finds that only every second BSC user reports the presence of the cause-and-effect linkages in its model.

Otley (1999, p.375) considers the causal assumption of the BSC simplistic: “...a linear chain is suggested whereby better trained employees(now in the Innovation and Learning Growth will lead to better business processes being designed (one input to such changes, but surely by no means the only one); these in turn will lead to more satisfied customers and then to happier shareholders. Although a plausible chain of events, it is again very much simplification of reality”.

Norreklit (2000) criticizes causal assumption, suggesting that the character of relationship between the BSC perspectives is logical in nature, since some of them cannot be observed and involve financial calculus or abstract thinking. Besides, according to the author, it is unrealistic to assume the relationship between the perspectives to be unidirectional. Instead, circular logic underpins many of the relationships (p.75). For instance, innovation may lead to increased sales and better financial results. However, in order to boost innovation companies may need to undertake considerable financial investment.

The evidence on the successfulness of the BSC implementations is scarce and contradictory. Ittner et al. (2003) in their extensive survey study of the financial service industries found a positive association between BSC usage and perceived organizational performance but a negative association with its financial performance. Similarly, Malmi (2001) indicates that all interviewees in his study had positive attitude toward their BSC, however the effects of using the models were not quantified. And yet, Davis and Albright (2004) conducted a quasi-experimental study in the banking organization and found that the bank branches, which implemented the BSC, outperformed branches, which relied only on traditional financial indicators.

To conclude, while practitioner's literature is very supportive of the idea of causal PMM, academics express caution with regards to them. This study is aimed to continue the analytical line of research on causality in performance measurement.

3. The concept of causality in the philosophy of science

There is no clear definition of causality applicable to the social sciences. To begin, some social research methodologists deny any possibility of causality in social phenomena, stating that "it would be very healthy if more researchers abandon thinking of and using terms such as cause and effect" (Mueller, 1996, p.xii). Other methodologists admit the possibility of establishing causality within the social context (Pearl, 2000, Karpinski, 1990). However the opinions diverge when it comes to the proper methodology for establishing causality, the concept and the appropriate language for expressing a causal relationship.

Speaking of methodologies, some researchers assume that non-experimental studies allow making causal inferences while others postulate that causality can only be claimed in experimental settings under the rigorous control of all variables impacting the studied phenomenon (Mueller, 1996, p.xiii). Conceptually speaking, some researchers focus on the regularity of occurrence of the studied phenomena while the others recognize as true causes only those, which generate or produce effect in a fashion similar to mechanics laws in physics (Mulaik, 1987). The latter approach to causality remains largely theoretical in the social sciences due to the complexity and multiplicity of background variables in social phenomena. Finally, there are two main approaches to expressing causal relationships (Pearl, 2000). The probabilistic approach treats causal relationships quantitatively via mathematical and statistical analysis. The structural approach relies on processing of qualitative information, which is obtained and transmitted linguistically.

The concept of causality depends largely on the beliefs the researchers have about the nature and on the philosophical school they belong to. It remains largely theoretical and attempts to validate causality empirically are scarce. Because of this, the word "causality" is carefully avoided in most of the scientific publications in social sciences. Paradoxically enough, being one of the building blocks of human understanding of how the things work in the world, causality is meant, but seldom voiced.

Consider the criticism of the BSC assumptions, given by Norreklit (2000). The author refers to the definition of causality based on Hume's criteria (Norreklit, 2000, p.70). One event is said to cause the other when: a) the first event necessarily or highly probably implies the occurrence of the second event; b) the first event precedes the second event in time; c) the second event cannot be rationally inferred from the first one.

Point a) of the definition implies that for the relationship to be causal it should be observed in real life and proven empirically. Point b) requires the existence of a well-defined temporal lag between events tied into a cause-and-effect relation. Point c) means that a causal relationship is distinct from a logical one. For example, there is a causal relationship between smoking and life expectancy, however a logical one in two by two making four.

Following the definition of causality cited above, Norreklit points out that empirical evidence on BSC links is scarce and mixed; the time dimension is not specified in the model design; the relationships among perspectives are likely to be logical in their nature. One could consider this critique as sound and well-grounded, however, the theoretical framework does not seem to apply to a managerial setting. The usage of the notion "event" reduces the scope of applicability of the definition within the social context. Here causality is more often interpreted as a relationship, which holds between the features of events or variables representing some abstract social concepts. Sometimes, it is not events, but the changes of events that are taken as causes (Karpinski, p.16, 1992).

If the first event⁸ necessarily implies the occurrence of the second, then the relationship is unambiguous. That can hardly be the case in social sciences. In empirical analysis we often assess the degree of intensity of a relationship between events. So, the hypothesised causal relationship is interpreted as statistical and not unambiguous (Karpinski, 1992, p.113). Some researchers don't treat temporal precedence as the necessary condition for causal relationship (Mueller, 1996, p. xiii , Karpinski, 1992, p.115). In special cases cause and effect events can occur almost at the same moment without measurable time lag between them. It can also be assumed that cause cannot begin later than effect, treating them as processes, which last and overlap in time.

⁸ Here and afterwards the notion of "event" is used in its broad sense as possible feature, state or change.

The point about the pure observational nature of the causal relationship (point (c) of the definition is problematic in the BSC context. According to Norreklit (2000, p.71) the BSC is an accounting model and thus is built on logical arguments. For instance, the relationship between sales volume and profitability is logical. The volume of sales drives revenue and revenue, in turn, drives profitability. The entire chain can be calculated with the use of accounting formulas. But what about the relationships where there are no formulas available, as for instance, the relationships between employee attitude and their performance, the quality of the product and customer satisfaction? What is the nature of such relationships?

Overall, one can try to define a concrete causal relationship within a given business environment following the cited above formal causality definition and, most probably, will fail to do so. Causal relationships similar to “if the temperature falls below zero then the water will freeze” common in natural sciences, can hardly be stated in the managerial context. The statement “employee training improves their performance” is true when several conditions are met. For instance, it is true when employees want to learn and actively participate in the training process, when a trainer is able to deliver knowledge effectively and so on. The time lag between these two events depends on the company’s activity, the complexity and the duration of training, the goals of the training program, the individual capabilities of employees and so on.

It turns out that the complexity of business environment implies that a relation found at one time and under a given set of conditions will not necessarily be observed in the future or under another set of conditions. Therefore, if the possibility of causal relationships is admitted in the managerial context, they cannot be treated as unambiguous and exception-free in their nature but rather considered probabilistic.

4. Insights from the organizational theory

4.1 Organizations as rational and natural systems

Our overview of causal PMM suggests these models are aimed to set a clear and definite set of goals for organizations, measured by explicit standards. Therefore, such models allow for a possibility of exerting control over the internal and to a greater degree the external organizational domains.

In his book “Organization in action” (1967) James Thomson described two main organizational approaches. The first one, which he calls “closed-system logic”, refers

to the deterministic system with complete knowledge about cause-and-effect relationships about in its structure. The closed-system logic is originated by the Scientific Management Movement dating back to the Taylorist movement of the beginning of the century. It is based on the notion of rationality and the pursuit of rational goals.

The rational model of an organization results in everything being functional-making a positive, indeed an optimum, contribution to the overall result. All resources are appropriate resources, and their allocation fits a master plan. All action is appropriate action, and its outcomes are predictable (p.6).

Another approach treats organizations as open-nature systems. It rather views organizations as parts of a wide social and economic system, having its own dynamic and often unpredictable outcomes.

Approached as a natural system, the complex organization is a set of interdependent parts which together make up a whole because each contributes something and receives something from the whole, which is turn, is interdependent of some larger environment (p.6).

“Close-system” strategists think about organizations in terms of rational pursuit of optimal and maximizing results. “Open-system” strategists are just interested in naturalistic organizational behavior. According to Thomson, there is an important truth in both approaches since much of the organizational action is “purposeful and rational”, but at the same time, part of it resides in informal interaction, is unpredictable and depends on the external environment. “The fact is that our culture does not contain concepts for simultaneously thinking about rationality and indeterminism (p.10)

Thomson distinguishes three levels of control and responsibility in organizations, technical, managerial and institutional (p.10). Technical level comprises controls directly related to the technical and production tasks in organizations. Managerial level provides services for the technical level, and interacts with external environment, undertaking selling and procurement activities. Institutional level encompasses rules and norms of the external environment, for instance, industry regulation, and social expectations. Only technical level can approximate closed systems, where all the relevant variables and their interrelationships are known⁹. Managerial level interacts

⁹ Thomson suggests an example of mass production technology to make an analogy for close system

with the institutional level. Therefore, it can be influenced by external environment and rarely can resemble close system. Institutional level is the one, which brings more uncertainty and unpredictability, since organizations have no formal control and authority in this domain.

4.2 Organizational decision strategies and possible roles of accounting techniques

Furthermore, Thomson argues, that, as rational entities, organizations seek to evaluate their performance and plan their future. In doing this, they would prefer unambiguous efficiency tests over all other assessment techniques. However, the usage of efficiency tests may be appropriate mostly for closed-systems with complete knowledge of cause-and-effect relations (p.84-98). Beliefs about cause-and-effect relations and preferences regarding possible outcomes of decision call for different strategies in organizational decision making and control (see Table 1).

Table 1 Decision strategies by James Thomson

		Preferences regarding possible outcomes	
		Certainty	Uncertainty
Beliefs about cause-and-effect relations	Certain	<i>Computational</i>	<i>Compromise</i>
	Uncertain	<i>Judgmental</i>	<i>Inspirational</i>

Adopted from Organizations in action, Thomson, 1967, p.134 .

When causal relations are believed to be certain and so are the preferences about possible outcomes, computational strategy is appropriate. When causal beliefs are uncertain, but preferences about outcomes are determined, judgmental strategy is enacted by decision makers. When casual beliefs are certain but preferences about outcomes are not defined, decision by compromise takes place. Finally, if neither casual beliefs no preferences over the outcomes are certain, decision is taken (if any) based on inspirational strategy.

Thomson suggests that “available principles of administration or management are essentially statements derived from rational-model assumptions, and tend to be normative rather than always realistic” (p. 144). Uncertainty, incomplete knowledge and dynamic nature of the external environment pose major challenges to rationality.

Under these conditions, closed-system logic is inappropriate, yet, it seems to be a dominant paradigm in the administration process.

Following Thomson’s idea about the variety of decision strategies in organizations, Burchell et al. (1980) suggest that accounting techniques may play different roles depending on the uncertainty of cause and effect and organizational objectives (See Table 2).

Whilst they may be introduced in the name of particular conceptions of social and organizational efficiency, rationality and relevance, in practice accounting systems function in a diversity of ways, intertwined with institutional political processes and the operation of other forms of organizational and calculative practice (p. 13).

Table 2 Uncertainty, decision making and the roles of accounting practice

		Uncertainty of objectives	
		Low	High
Uncertainty of cause and effect	Low	Answer machines	Ammunition machines
	High	Answer machines/Learning machines	Rationalization machines

Reproduced from Burchell, S., Clubb, C., Hopwood, A.G., Hughes, J. and Nhapiet, J. 1980 “ The role of Accounting in Organizations and Society, *Accounting, Organizations and Society*, Vol. 5, N1, p. 14

When uncertainty is low and objectives are clear, accounting techniques can act as “answer machines”. Involving computation and formulas, they produce reliable solutions and give an accurate feedback. As uncertainty is growing accounting systems would perform as “learning machines”. Organizational actors then need to formulate hypotheses, analyse, and make final judgments. Low uncertainty about cause and effect and unclear objectives means that different organizational actors and groups hold conflicting views on organizational goals. Then, accounting models are employed as “ammunition machines”, defending different policies and advocating interests. High uncertainty about cause-and-effect and objectives can lead to the situations where accounting models play the role of “rationalization machines”. In other words, they are employed for creating the meanings and portraying organizational rationality.

4.3 Building palaces versus camping tents

Hedberg et al. (1976) in their seminal article “Camping on Seesaws” elaborate further the topic of rational decision making tools in organizations. Following Thomson, Hedberg et al. suggests that some management scientists and designers promote rational organizational logic, based on “clear objectives”, “unambiguous authority structures” and “explicit decision criteria”. And indeed, “in constant surroundings, one could confidently assemble an intricate, rigid structure combining elegant and redefined components - an organizational palace” (p. 44).

However, in changing environment, this rigid structure may serve as an obstacle for successful organizational adaptation. “Evolving cause-and-effect relationships render today’s method obsolete, and what has been learned has to be replaced” (p. 44). The authors suggest that “residents of changing environment need a tent”. They need open and flexible organizational structures. Unclear and vague goals and ambiguous authorities’ structures can benefit and support organizations in the process of change. Organizations can plan their future but never rely on their plans. Rigid and systemic programs can weaken the organizational reactions and suppress the appearance of the alternative strategies. “Moreover, plans and goals are frequently too systemic and rational; useful goals are somewhat unclear, and useful plans are somewhat disorganized, erratic, and uncertain.” (p.44)

According to the authors, rational models are often oversimplified, incorporate false assumptions for analytical convenience and, thus, inevitably abstract organizations from reality.

Although an exceptionally talented model builder can oversimplify and distort and still retain the essential characteristics of reality, an organization cannot count on having exceptional model builders, and even very good models beget mistakes after the modeled situation evolves. When adopting a model means suppressing alternative formulations, as nearly always does, an organization binds itself to fallacy (p.62.)

In sum, in reality organizations are balancing between “erecting rigid palaces” and “camping tents”. Casual performance measurement models belong to the family of rationalized managerial techniques, encompassing the logic of closed systems. Clearly, they rely on the assumption of predictability and certain controllability of external environment, and certain beliefs about cause-and-effect relationships. When the knowledge about cause-and-effect relations is certain and environment is stable

and predictable, casual PMM can potentially benefit its users. However, in dynamic and complex environments such approaches, can induce organizational “myopia” and simply not to be reliable and realistic.

Covalevski and Dirsmith (1981) conducted the study of the implementation of Management by objective technique (MBO) in two large hospitals. The author use the framework advanced by Thomson and define these organizations as complex and dynamic entities. MBO (similar to causal PMM) promotes rational and purposeful decision making in organizations. It assumes that knowledge about cause and effects or means and ends exists, goal-directed behavior is valid and performance evaluation based on efficiency measures is appropriate. Covalevski and Dirsmith found that MBO did not performed well at the institutional level, however, served as decision-making and performance evaluation tool at the sub-unit level. One of the hospitals abandoned their strict version of MBO in favor of a looser version that emphasized the roles of middle and first-line management. The authors conclude that “the dominance of control-oriented elements of MBO can be especially dysfunctional in complex, dynamic environments, where unambiguously ordering of outcomes may be inappropriate, where knowledge of causes and effects is uncertain, and where efficiency and effectiveness measures are inappropriate”(p. 420).

The architecture of the causal PMM, encompasses all three levels of control, technical, managerial, and institutional. It can be expected that major problems with the models reliability will appear in their external domain, such as customer, provider and institutional relationships, technological change. These are the areas which are not easy measurable and predictable.

5. Causal PMM as strategic tools

Causal PMM represent analytical tools, which support formulation and implementation of strategy. They can perform as a decision aids within what Henry Mintzberg and his colleagues defined as the prescriptive school of strategy, actively promoted in MBA and business schools (Minzberg et al., 2005). Prescriptive school includes the Design (Andrews, K. 1987), the Planning (Ansoff, H. 1965) and the Positioning School (Porter, M. 1980). The Design School is famous for its SWOT (Strengths, Weaknesses, Opportunities, Threats) technique. The Planpping school brought to the managerial agenda the idea of detailed plans with its culmination of

Master plan and quantification of numerous objectives and targets. The Positioning School is based on the industrial analysis and put forward the idea about generic market strategies and value chain. Kaplan and Norton (2004) suggest that SWOT and industry analysis can be used as the first step of BSC design.

These schools share a number of common premises (Mintzberg et al, 2005, p. 24-122). First, strategy formation is viewed as a deliberative, conscious and controlled process. It is supported by rational, analytical and calculative techniques. Second, assisted by planners and analysts, chief executive managers bear the main responsibility for strategy formation. Third, strategy must be formulated, formalized and made explicit before its implementation.

The critique delivered to these schools parallels the reasoning of organizational theory writers overviewed above. Prescriptive approach is built on the ambitious assumption “that environment can always be understood, currently and for a period well into the future, either by senior managers or in ways that can be transmitted to the managers; and that the environment itself is sufficiently stable, or at least predictable, to ensure that the formulated strategies today will remain viable after implementation”(p.57).

According to the authors, prescriptive approach to strategy separates thinking and action. First, the strategy is conceived, and, as the next step is implemented. As such, it ignores the possibility for strategy to be emergent and incremental. In the pursuit to make the strategy explicit inflexibility may be promoted, and learning is suppressed in organizations. “Moreover, even uncertainty is low, the danger of articulating strategies must still be recognized. Explicit strategies are blinders designed to focus direction and so to block out peripheral vision. They can thus impede strategic change when it does become necessary”(Mintzberg et al., p.36)

Another danger stems from the reliance on the “hard” data in prescriptive strategy formulation. Hard information is lacking contextual richness; it does not include gossips, rumours and intuitions.

The expression of a customer face, the mood in the factor, the tone of voice of governmental official, all this can be information for the manager but not for the formal system. That is why managers spend a great deal of time developing their own personal information systems, comprising networks of contacts and informers of all kinds (p.69).

Besides, “hard” data may arrive late, be unreliable and cannot be easily aggregated. So, when it arrives to the top managers it can give a distorted or incomplete picture of reality.

Several studies revealed the problems resulting from the strategic determinism of causal PMM. Norreklit (2000) criticizes the BSC for its static strategic vision. According to the author, the model does not monitor competition and possible technological changes. It does not take into consideration strategic uncertainty and possible risks of the strategy to be invalid. The approach is too heavy in participation of high management, and undermines the participation of low level managers.

Laitinen (2005) developed a microeconomics model, which shows that with the change of strategy, the causal links may give a confusing signal to the users of BSC. When Nokia changed its strategy focus from profit growth to revenue growth, all the non-financial indicators leading to higher profitability were positive. Profitability indicators, however, declined contrary to the modelled relationships, since prices decreased as Nokia increased its revenues.

Kasurinen (2002) describes a failed attempt to implement the BSC in a strategic business unit in a multinational Finland based group. One of the major obstacles to successful implementation was the difficulty to select a unique strategy. According to the managers of this business unit, a variety of products, which could not be classified into the specific market niche, and a large number of small customers, challenged the strategy formulation.

Hansen (2006) describes the interaction of the process of new product development and the causal business model in Electrolux Group. Six situations of new product developments illustrate how different strategic objectives can enter in conflict with each other contrary to their hypothesized relationship in the model. Trade-offs between the goals appear, and managers should choose the ones for the sake of the others. The author concludes that business models offer only a partial image of value creation in organizations and the actual process may differ from one situation to the other. The author suggests that there are two sides of causality in performance measurement: symbolical (as portrayed in the model) and real (enacted in a real decision-making process).

In sum, representing the analytical tools of the prescriptive school of strategy, causal PMM bear the criticism of being inflexible and unfriendly to the incremental, informal and participative approaches to strategy making. One of the major premises of the causal PMM to formulate and describe the strategy through the causal links can be obstructed by uncertainty, difficulties to elaborate a unique strategy, and possible conflicts between equally important strategic goals.

6. Insights from the scientific approaches to causal modeling

Casual modelling has a long-lasting research tradition in social sciences. Human understanding of a particular problem can be represented in a form of a mental model we bear in mind about the issue. A mental model can be represented visually by drawing a key set of variables (mental concepts) and interrelationships between them. Often, such modelling involves the construction of a casual map (Huff, A. 1990). Causal map represents a set of variables (concepts) linked by causal beliefs or assertions explaining the relationships between the variables. One of the pioneers of the scientific causal (cognitive) mapping, Axelrod (1976, p.52) states the attractiveness of this approach:

Regardless of philosophical difficulties involved in the meaning of causation, people do evaluate complex policy alternatives in terms of the consequences a particular choice would cause, and ultimately of what the sum of all these effects would be. Indeed, such causal analysis is built into our language, and it would be very difficult for us to think completely in other terms, even if we tried.

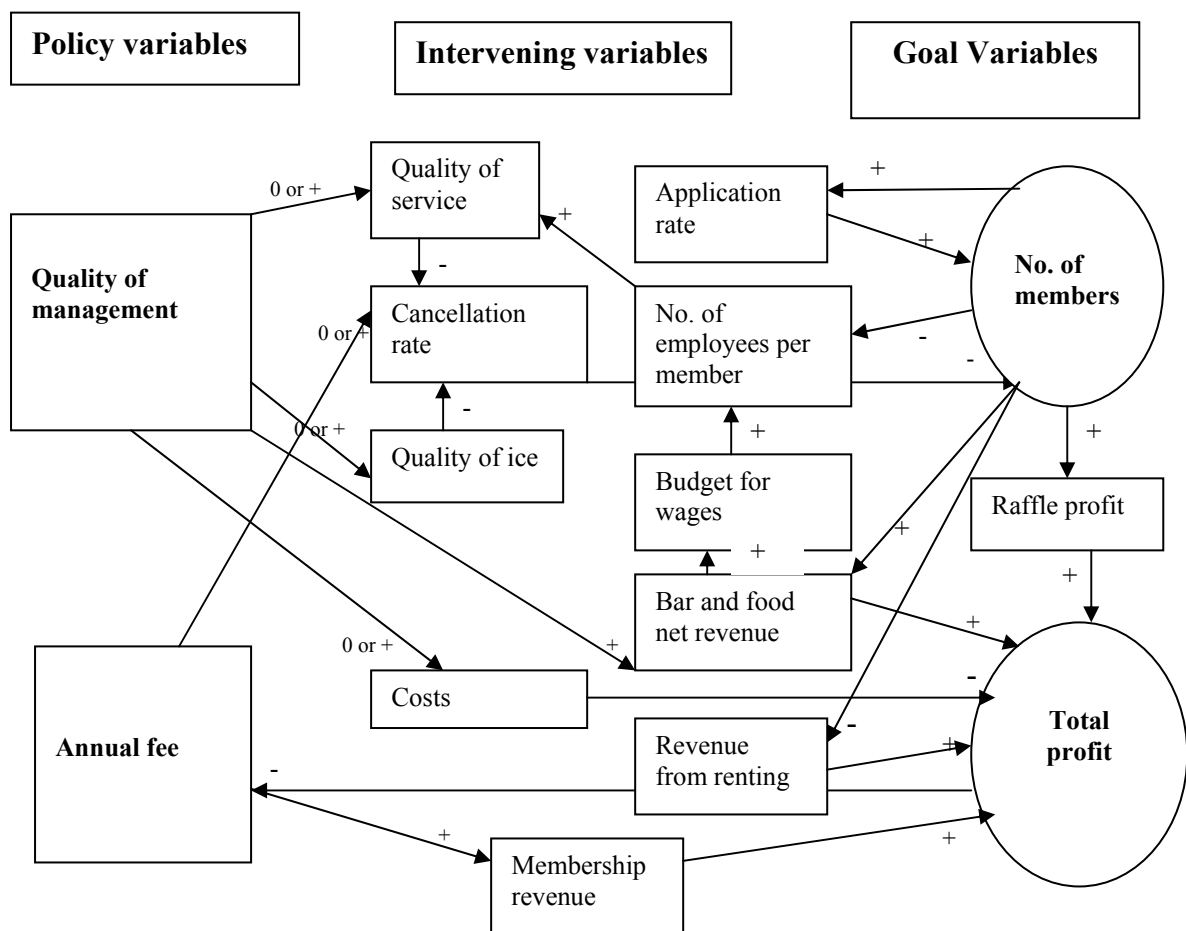
In fact, the BSC strategic map is an example of a collective causal map, of elaborated by a group of top managers. Such map represents a set of a company' strategic objectives linked causally. Causal mapping techniques are actively employed by the researchers of strategic management (see complete overview of the techniques in Mapping Strategic Knowledge, edited by Huff A.S. and Jenkins M.). Some of the findings in this area can be relevant for explaining "weakness" of real- life casual PMM. Roger Hall (1976, 1984, 2002) is working in causal modelling applied to business policy decisions. He was the first to highlight that causal maps are group effort of what he calls a dominant coalition in organization (CEO and influent managers). In his study of the business policy of curling sports club he developed¹⁰ the following map (Figure 4).

Two policy variables are defined as strategically relevant for the club, *Quality of management* and *Annual fee*. Through eleven intervening variables policy variables are believed to influence goal variables, such as to maintain *Number of members and to earn enough of Total Profit*.

¹⁰ Hall interviewed the elite of sports club and applied then Artificial Intelligence method to select the relevant variables. Scientific casual modelling may also employ interviewing, imaging, the use of images and storytelling by key organizational authors.

Despite representing the business policy of simple by its nature sports club, the resulted map contains considerable number of causal beliefs (arrows) and paths (sequences of arrows going from policy variables to goal variables). There are 24 direct causal influences among 15 active variables representing chains of cause-effect in the operations of a sports club. The map contains 21 chains of influences (paths) and 8 feedback loops.

Figure 4 Map of cause-and-effect operation of a sports club (in Mapping Strategic Knowledge, edited by Huff A.S. and Jenkins M, A complex cause-effect policy domain, p.95)



Feedback loops are the circular paths of cause-and-effect. They can lead to unpredictable results if they go unnoticed (Axelrod 1976, Hall 2002, Huff, A. 1990). In other words, they can confound simple cause-and-effect logic¹¹. Positive causal feedback loops can lead to the uncontrolled growth and result in managerial problems.

¹¹ The notion of feedback loops is borrowed from cybernetic. See more on feedback loops in Morgan, G. (1997) Pp. 274-283.

For example, increase in the *Application rate* results in increase of *No of members* and this in turn increases *Application rate* (new members may bring their friends). As a result, *No of members* may grow rapidly to the uncontrolled magnitude. Negative loop: if *No of members* increases, the *number of employees* (an index of service) declines, reducing the *Quality of Service* perceived by club members, thus increasing the *Cancellation Rate* and decreasing the *Number of members*. The problem is that circular casual paths are largely ignored by managers (Axelrod, 1976, Hall, 2002).

In large companies, the results of causal modelling are likely to be more complex and voluminous in comparison with the presented example. “*This is not stuff for the action-oriented managers who wish to make quick decisions and get on with other things*” (Hall, 2002, p. 105).

In his bestseller book “*The fifth discipline. The art and practice of the Learning Organizations*” Peter Senge (1990) sustains that thinking based on causal linearity is deeply embedded in our mental models and language. “Contemporary research shows that most of our mental models are systematically flawed. They miss critical feedback relationships, misjudge time delays, and often focus on variables that are visible or salient...”(p. 203). Many business situations can be defined as situations of dynamic complexity, i.e. balancing market growth, capacity extension, developing a profitable mix of prices. According to Senge, circular instead of linear reasoning may greatly benefit managers.

Another shortcoming of causal maps is that causal linkages are assumed monolithic, without time delays and disruptions which can be different in reality (Huff, A. 1990). Also, they do not show points of uncertainty: “none of the paths between two given points, A and B, has an indirect effect opposite to any other path”(Axelrod, 1976, p.264). In addition, a causal map elaborated by group is subject to all types of individual judgmental biases. For instance, when making judgments, people (managers are not an exception) were shown to underestimate uncertainty, base their judgment on non-existent causal relations (See complete list of decision making biases relevant to strategy in Makridakis, 1990, p.36-37)

How the described above evidence can be interpreted in the light of the causal PMM? On the one hand, causal modelling can support and foster learning in organizations. For instance, Tuomela (2005) found that defining the causal links the managers of Finish branch of ABB Company engaged in the discussion about strategic uncertainties. However, if done in a rigorous scientific way, this exercise can be very

time and effort consuming. Large companies and complex environments would bring a lot of boxes and causal linkages in their models. All of the described in the first section causal PMM rely on linear casual logic and largely ignore the existence of circular casual relationships. The unidirectional relationships in the BSC were criticized by Norreklit (2000, p.75) and Otley (1999, p. 375). In addition, all of the causal PMM recommend the inclusion of the limited number of performance indicators and objectives. While being a reasonable element of the design of “workable” and comprehensible PMM, this inevitably abstracts models from complex reality. There is no doubt that casual PMM can serve as superior information and control tool in comparison to the traditional managerial control systems. The question, however, is the feasibility to trace correct and complete cause-and-effect understanding of the environment.

7. Causal PMM as organizational guides

The previous sections of my analysis express rather cautious and sceptical view on the potential of causal PMM to objectively evaluate and “drive” organizational performance. It is a legitimate, then, to ask how do organizations exist, act and learn if they are often guided by flawed models and wrong assumptions about their environment.

A famous organizational scientist Karl Weick argues, that there two major organizational solutions for coping with complex and uncertain environments (Weick, 2001, p.50). The first one consists in investing considerable time and effort in evaluating all the possible scenarios and their outcomes. Engaging in rational decision process, organizational actors should consider as many details as possible and carefully evaluate numerous alternatives. However, this approach is costly and may lower the motivation needed for the implementation of the chosen alternative. Another possibility is, neglecting the “subtle nuances”, to simplify the reality, make a crude picture of it and concentrate the efforts on action rather than decision.

The advantage of the second approach consists not only in the potential savings of organizational resources. Many managerial actions suit to the phenomenon of *self-fulfilling prophecies* (Merton, 1968). This is to say, even if the impact of organization action to environment is estimated wrongly initially; it may become true in the future (Weick, 2001, p. 46). Prophecies (expectations or predictions made by managers)

impact behaviour, mobilize action and in this way may come to realization. A following parallel can be drawn regarding to the causal PMM. Even the models, built on the wrong assumptions and predictions (prophecies), will matter, if they can mobilise organizational action.

Karl Weick described how a small Hungarian military detachment, which lost its way due to the snowstorm in Alps, found it using map of Pyrenees (Weick, 1990). The morale of this story has important implications for the organizations. In some occasions, argues Weick, it does no matter how accurate the map is. Strategic plans, business models, causal maps can serve as important “binding mechanisms”. If perceived as credible, they can impose order, influence the actions and help to elaborate the organizational identity.

The important feature of a cause map (or any map) is that leads people to anticipate some order “out there”. It matters less what particular order is portrayed than that an order of some kind portrayed. The crucial dynamic is that prospect of order lures the manager into ill-formed situations than then accommodate to forceful actions and come to resemble the orderly relations contained in the cause map. The map animates managers, and the fact of animation, not the map itself, is what imposes order on the situation (Weick, K, 1990, p.7).

According to Weick and Bougon (2001, p. 323) causal maps “should exert influence when situation is non-routine and requires something more than standard operating procedures. Maps will have more effect when key authors are relatively free of organizational constraints, when overload necessitates simplifying strategies, when stress impairs the performance of cognitively complex tasks, and when ambiguity is high”.

Maps can contain inconsistent and equivocal relationships. Yet, it may be a valuable tool for construction of meanings and communication in organizations:

Maps are not only products, they are guides. They are guides in the sense that they assimilate uncertain events into an existing structure. Because maps relate an uncertain event to existing concepts, they generate meanings for the event. ..The cause map contains the structure, the process, and the raw material from which agreements and conflicts are built when people coordinate action (Weick and Bougon 2001, p. 327).

Thus, even being crude pictures of reality, maps can perform as guides, especially if portrayed “territory” is unknown and complex. Going back to the described above by Burchell et al. (1980) possible roles of accounting techniques, Weick’s and Bougon

“guides” would correspond to the “rationalization machines”. Both lines of reasoning converge on the idea that accounting models can create meanings and portray organizational order. It can be suggested that some empirical studies give support to this mission of causal models.

Malina and Selto (2004) describe the process of building a causal PMM by the large American manufacturing company specializing in the manufacturing of equipment. Managers of this company believed in numerous cause-and-effect relationships in performance model. However, statistical test of hypothesized causal relationships demonstrated that only few of them are significant and overall the model has no predictive ability. The authors are puzzled with their findings because apparently the model is still used for strategic communication and setting of the incentives in the company. Thus, according to the authors, it is not clear whether a “valid” causal PM is a necessity or whether just a convincing story based on prevailing causal beliefs would be sufficient.

In the cited above study by Hansen (2006) the author arrives to the conclusion about two sides of causality between organizational goals, symbolical and real¹². Every time when managers of the company designed new product the causal ordering of the goals was reversed. However, engineers recognized the importance of the initial template of causal model:

The business model is of course, a simplification of what it is like to design a new product. However, I think it is informative. At least a reminder of what we should think about when we design here in Electrolux (p. 41).

To conclude, even inaccurate causal PMM potentially may serve as guides in organizations. Causal arrows of PMM visualize strategic vision, and therefore can support the organizational sensemaking. The concern about their truthfulness and validity here is not primary. Causal links may be a mere artifact. The most, important issue, here, perhaps, would be how credible and convincing the story behind the causal arrows is. And whether the “prophecies” stated in the model could come to their realization through mobilization of managerial commitment. In this case, ideally, causal chains should reproduce the prevailing beliefs and individual mental models of managers in organization. A number of important research questions then arise. How

¹² Allan Hansen defines them as obstensive and performative

are individual maps assembled into the collective causal map in practice?¹³ What are the prerequisites for collective cause map to be a guide and inspire the coordinated action?

8. Summary

The objective of this paper was to discuss the problematic of cause-and-effect chains in performance measurement. Three of the known managerial accounting models, such as the Tableau de Bord, the Balanced Scorecard, the Action-and-Profit Linkage rely on causal logic. Causal performance measurement models are one of the important latest trends in managerial accounting, which generate a great deal of interest between the practitioners and academics. However, most of their real-life applications appear to be causally “weak”. The analysis of the literature from diverse discipline, such philosophy of science, organizational theory, strategic management and scientific causal modelling coupled with the findings from the empirical studies suggests the following.

First, there is no agreement on the issue across different schools of scientific thought. While some researchers deny any possibility of establishing causality in the social setting, others have diverse opinions about its definition and the range of applicability. At the same time in real life causality exists in the form of personal beliefs and manners to rationalize, which are difficult to test. As a result, the big discrepancy between theoretical and practical meanings of causality persists. It is concluded that if the possibility of a causal relationships is admitted in the managerial setting, these could hardly be considered unambiguous.

The analysis of the organizational theory pushes forward the importance of uncertainty both in external and internal organizational environments. Complete knowledge about causes and effects is hardly possible in complex, dynamic and uncertain environments. The latter, however, today are the working conditions for many companies. In this case, causal PMM may become unreliable and unrealistic. Tracing of true cause-and-effect relationships will become very costly and effort-demanding. Besides, in order to keep in touch with reality, the models will require constant revision and adjustments. All this may lead to the possibility for the causal

¹³ Scientifics elaborate composite causal maps (by aggregating individual maps) and *average* causal maps (by algebraic averaging of the strength of perceived relationships). It is unknown how collective maps are elaborated in practice.

PMM to play roles different from those prescribed by their authors. For instance, they can perform as “ammunition machines”, advocating some vested interests or “rationalization machines”, creating organizational order.

Strategic management literature would place causal PMM among prescriptive strategic approaches. This literature contains an important critique, which in part parallels with the findings from the organizational theory. The assumption of predictability of environment, which underpins causal PMM, is considered very ambitious. Some concerns are expressed with regards to formalization and quantification of strategy, which can undermine informal and spontaneous emergence of strategy. Besides, an emphasis which prescriptive school put on the usage of “hard” data and quantification is criticized for its potential danger to miss important “soft” information, such as gossips and intuitions.

Findings from scientific causal modelling point out to the great potential of this methodology for policy making in organizations. At the same time, they illustrate that causal models simplify reality and their elaboration is subject to human cognitive limitations. Most of managers don't see circular causal relationships inherent in the nature of many business processes. None of the overviewed causal PMM acknowledges their existence either. Causal PMM should incorporate a limited number of causal paths and indicators, avoiding possible disruptions, delays or reverse causal paths, which could be a case in reality. The bigger and more diverse the organization, the more causal arrows and boxes may be needed to capture its true cause-and-effect structure.

In sum, it is not a trivial task to elaborate a valid causal PMM, which represents reality accurately enough. As uncertainty and complexity increase, this task becomes less feasible and models will provide less accurate feedback. It could be argued, that under these conditions, it will be quite problematic to set incentives for the managers and make viable predictions. Instead, if perceived truthful by managers, causal models may perform as organizational guides. The importance of them rather stems from giving a reference point and inspiration for managers. The latter, though, is different from the philosophy of achievement and objective evaluation of performance which promote causal PMM.

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The Analysis of the Balanced Scorecard Assumptions on Empirical Evidence from Dynamic Enterprises¹⁴

Abstract: Nowadays enterprises actively adopt new approaches to their performance measurement systems. The Balanced Scorecard is among the most widely used approaches and constantly generating debate in the academic and business literature. One of the unresolved issues in the BSC research domain is the empirical validity of its assumptions. In this regard, the present work contributes to the literature in the field by testing statistically the relationship between Financial and Learning and Growth, Business Processes and Customer perspectives. Our findings give little support to the existence of stable BSC links between the perspectives and their consonance with the strategic choice of the companies.

Keywords: Balanced Scorecard, model assumptions

¹⁴ The first version of the study was produced in 2003 in collaboration with Ester Oliveras. The article was revised during 2005-2006.

1. Introduction

The recent changes in the business environment revealed the limitations of the traditional financial measures in reflecting adequately the companies' performance. The latter encourages the enterprises to try and adopt new approaches to their performance measurement (Otley and Fakiolas, 2000). One of the approaches - that has been attracting a lot of attention from both the practitioners and the academics- is the Balanced Scorecard (BSC). It has been widely adopted by both manufacturing and service companies around the world (Kaplan and Norton, 2001, p.87).

One of the important issues in the current BSC research agenda is the validity of its core model assumptions, the cause-and-effect linkages between the perspectives. The causality assumption has been criticized in literature for not being properly justified and tested empirically. The objective of this study is to develop an appropriate methodology and to test statistically the relationships between the Financial Perspective and the other BSC perspectives on the basis of empirical data obtained from dynamic Catalanian enterprises, the so-called "gazelle" companies.

This paper proceeds as follows. Section 2 gives an overview of the BSC topic. In Section 3 we present the study and the data we use in our research. In section 4 we develop the methodological framework for our study and formulate the general hypothesis. Section 5 reports the results of the correlation and factor analysis, which we use to prepare the data for the objectives of our investigation. In section 6 we refine the research hypothesis. Section 7 reports the results. In section 8 we summarize and discuss our findings. In section 9 we identify the research limitations of our study. Finally, we conclude and point out directions for further research.

2. Background

2.1 Need for new performance systems

During the last decades of the 20th century, it has become evident that getting and sustaining a competitive advantage could not be achieved only by the efficient handling of tangible assets (plant, inventory, equipment, etc.). The management of intangible assets such as skills and knowledge of employees, customer relationships, and innovative processes became the major source of competitive advantage.

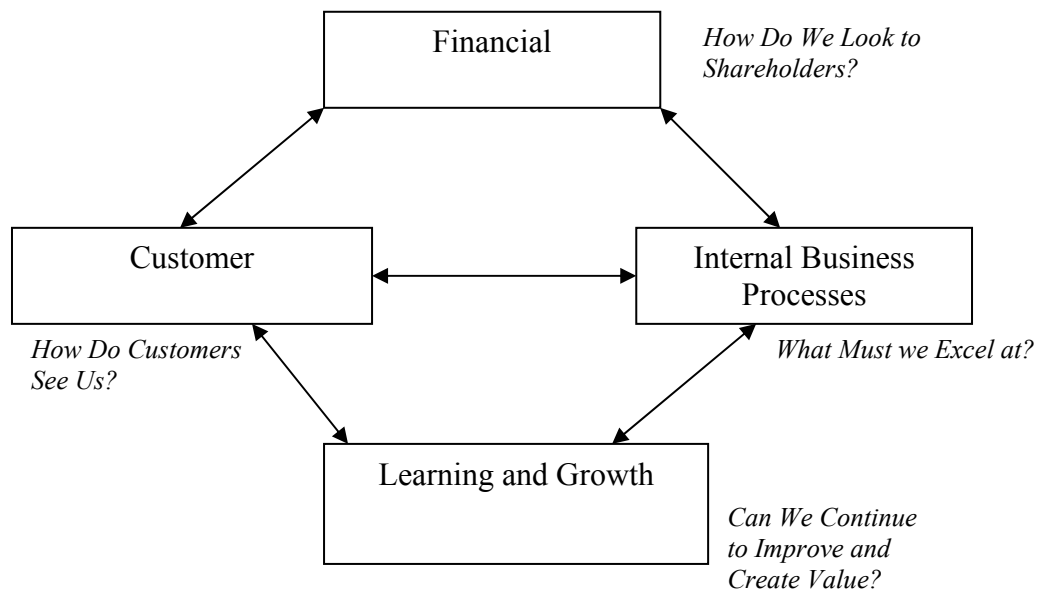
Traditional systems of performance measurement, which are based solely on financial indicators, started failing to measure adequately the overall performance of the enterprises due to ignoring the impact of the intangible assets.

Consequently, there have been various attempts to solve this problem by developing new performance measurement techniques, such as Strategic Measurement and Reporting Technique – SMART (Lynch and Cross, 1991), the Balanced Scorecard (Kaplan and Norton, 1992) and the European Foundation for Quality Management’s (EFQM) Excellence Model (Lewis, 1999).

2.2 The BSC philosophy

The Balanced Scorecard Approach was introduced by two academics of Harvard Business School, Kaplan and Norton, in 1992. The Balanced Scorecard is built upon four major interdependent perspectives: Learning and Growth, Customers, Internal Business Processes, and Financial. Figure 1 represents the BSC logic.

Figure 1 The Balanced Scorecard model



Adapted from Kaplan and Norton (1992, p. 72; 1996, p. 76)

The Learning and Growth perspective reflects the company’s priorities for creating and supporting a climate of change, innovation, and growth. Some examples of the indicators of this perspective are the measures of seniority, the number of employees’

suggestions, staff training, employees' attitudes and motivation. The Internal Business Processes perspective describes the way business process is adapted in order to satisfy the needs of their customers and shareholders. The diverse measures of quality, productivity and innovation can be located in this area. The Customers perspective reflects the company's value for the customers. The various indicators reflecting customer satisfaction can represent this perspective. Finally, the Financial perspective identifies how the company wishes to be viewed by its shareholders. Some examples of indicators of this area are return on equity, economic value added (EVA), return on assets, revenue volumes.

In 1996 Kaplan and Norton suggested to use the BSC as a strategic management system (Kaplan and Norton, 1996a, b) and this idea has become central in the subsequent publications (Kaplan and Norton, 2001a and 2001b). The selected performance indicators should reflect the main strategic goals of organization. A good BSC should put on work the strategic objectives of the company. To put the company's strategic objectives on work, the indicators of four perspectives are linked together into the cause-and-effect chains. For example, employee's training leads to their excellence when doing job. A good job done by employees gives rise to satisfaction of company clients. The increased customers' loyalty leads to the increase of company product sales. Growing sales result in better financial performance of the company, which in turn is the good news for the shareholders.

In this way the BSC perspectives can be represented sequentially in a chain. The model contains both, outcome measures (lag indicators) and performance drivers (lead indicators). For instance, if the increased quality is a lag indicator, employees' skills is a lead one. The indicators of Learning and Growth perspective are the drivers for the indicators of the Internal Business processes. The measures of processes are in turn the drivers for the indicators of the Customer perspective. Finally, the latter indicators are the drivers for financial results (Kaplan and Norton, 1996 a). Each perspective should contain up to five objective and quantifiable indicators. The indicators can be linked into causal chains horizontally within each perspective and vertically between them. So, the strategy of the company is converted into a set of cause-and-effect hypotheses.

3. The BSC literature

There is a large and constantly growing body of literature on the BSC topic. Practitioners and academics often hold opposite views on the effectiveness of the BSC. Consultants, for example, widely support the approach. They attribute possible BSC failures to the misunderstandings of the model philosophy and wrong organizational procedures supporting its implementation (Mooraj et al., 1998). In contrast, academics are more cautious to conclude in favour of the model's effectiveness. For example, some of them claim that 70% BSC implementations fail (McCunn, 1998, p. 34).

The BSC assumptions is one of the most widely discussed questions in the academic literature. A number of the empirical studies report, that links between BSC perspectives are often omitted in the practitioners' applications (Malmi, 2001; Speckbaheer et al. 2003). According to some authors the cause-and-effect relationship between the perspectives is very much a simplification of reality (Norreklit, 2000; Otley, 1999, p.375).

Norreklit (2000) argues that empirical evidence with regard to the BSC linkages is mixed and inconclusive. According to the author, the BSC similar to other accounting models is based on logical arguments. Thus, following the philosophical foundations of science, the BSC relationships can hardly be defined as cause-and-effect. Several empirical studies, conducted on the "the measures of customer satisfaction-financial perspective" part of the chain, have produced mixed results.

Ittner and Larcker's (1998) investigation demonstrated that greater customer satisfaction lead to greater customer retention, revenue and market value indicators, but for some industries the relationship appeared to be negative or insignificant. Anderson et al. (1997) conducted study in 77 Swedish firms and reported that on average customer satisfaction was positively related to return on investment but for the service companies the relationship was negative.

Considering the discussion so far, we can conclude that the assumptions underlying the BSC model and the nature of the relationships between non-financial and financial indicators give a broad avenue for further research. The empirical tests of BSC linkages are considered by the BSC ideologists to be one of the promising and important research directions in performance measurement field (Kaplan and Norton, 2001, p.159). Few studies attempted to test the BSC links statistically.

Bryant et al. (2004) investigate the BSC framework on the sample of 125 firms included in American Society for Quality and Compustat databases. The authors collected seven indicators over five years. They use pension benefits variable to proxy for employees' skills in the Learning and Growth perspective, new product introductions variable for Internal Business Processes, customer satisfaction and market share variables for Customer Perspective and revenue, operating expenses, profitability variables for Financial Perspective. All the listed above indicators represent outcome measures of the BSC perspectives which can be found in many BSC applications. The authors use structural equation modelling and they arrive to a number of interesting conclusions.

Two types of the models are compared: one gives a complex and one a simplistic representation of the BSC links. The simplistic version of the BSC represents its links as vertical vector going through the four perspectives. The complex version admits that each lower perspective, in addition to influencing the following perspective, can also directly impact the other perspectives. It is concluded that the complex model better fits the data. For example, employee productivity is not only directly associated with new product introductions, but also with market share, revenue, and operating costs. In companies, which base their compensation schemes on both financial and non-financial indicators, financial outcomes are associated positively and significantly with customer satisfaction and product innovations. This relationship is not valid for the companies which base their compensations solely on financial indicators.

Similar to the study by Bryan et al. (2004), this work provides an empirical test of BSC links on the sample data. Although a particular BSC is unique in its nature, some indicators are common to most of the companies' scorecards (Bryant et al., 2004, Kaplan and Norton, 1996, 43). In particular, these are the indicators of the return on investment, customer satisfaction, market share, employee productivity, and new product introduction. Therefore, it can be suggested that the BSC perspectives can be characterized with some generic variables for a given sample of companies. Our study contributes to the literature by incorporating in the analysis some variables which are not available in the external databases and also choices of strategies reported by companies which are important in the BSC framework. The next session presents our study.

4. The study of dynamic and profitable companies

This study draws on the survey of dynamic and profitable manufacturing companies, so-called “gazelle” companies, in Catalonia (Hernández et al., 1999). The study was conducted by the equivalent of the Ministry of Industry at the autonomous Government of Catalonia¹⁵, Spain with the purpose of highlighting the characteristics of dynamic Catalonian companies rather than causes of their profitable growth (Hernández et al., 1999 p. 11).

The questionnaire of the gazelle companies has an introductory part where general information about the firm is presented, such as its name, the number of employees, the main activity and so on. The remaining parts of the questionnaire are organised around six blocks of information about strategic management and investment decisions, marketing, internalisation, innovation, human resources and training¹⁶.

Gazelle companies, when compared to the control set of Spanish enterprises, were found to give a higher priority to the training and variable remuneration system of their employees. They also have a greater degree of excellence in internal business processes as reflected in the usage of quality and environmental certificates and innovation policies. Finally, gazelle companies appear to be more sensible to their clients’ needs by means of using customer satisfaction measurement procedures and implemented promotion policies.

Oliveras and Amat (2002) provide a comprehensive overview of possible drivers of business growth for gazelle companies and link them to the Balanced Scorecard assumptions. The paper concludes with a set of hypotheses about the existence of linkages between non-financial and financial indicators leading the companies to successful performance. In particular, strong backing for the training and performance incentives can contribute to greater employee involvement. This should give rise to an improvement in business processes. The improvement in internal business process, i.e. support for total quality, greater innovation, etc., should lead to greater customer satisfaction and therefore to greater sales. Greater sales accompanied with proper solvency levels might explain high profitability and value creation level of gazelle companies (Oliveras and Amat, 2002, p. 12).

¹⁵ Direcció General d’Indústria de la Generalitat de Catalunya

¹⁶ We do not disclose the questionnaire of this study in order to preserve the property rights of research body. Instead, the information of the variables used is provided bellow.

The present study is aimed to conduct a preliminary statistical analysis on relationships among the Financial perspective and the other BSC perspectives. The main purpose of this analysis is to determine whether the indicators of the Learning and Growth, Business Processes and Customer perspectives can serve as reliable predictors for the financial performance. The BSC assumptions imply that lead indicators should explain outcome (lag) indicators. In continuation we give a brief overview of the sample used for analysis.

4.1 Sample description

The gazelle companies were selected among Catalonian manufacturing companies according to the following criteria. They had to achieve an annual growth in sales of 15% or more during, the years 1995, 1996, and 1997 or at least double their turnover between 1994 and 1997, even if, in some years their turnover did not increase by at least 15%. Each of the companies had to achieve the turnover of more than 2.4 million euro in 1997 and a minimal financial return of 8% in 1995, 7% in 1996 and 6% in 1997. It is the minimum, which could be reasonably expected by the shareholders in those years, given interest rates at the time.

In total 254 companies were identified as meeting these criteria. The questionnaires were sent out to all of them and 161 companies answered the questionnaire (response rate is 63%). Seven questionnaires resulted unusable due to name change, reorganization and other reasons. Furthermore, at the stage of the statistical analysis the final sample reduces as a result of the list-wise deletion of the cases with the missing values to 101 observations¹⁷. The respondents' financial data was obtained from the actualised SABI database¹⁸

Appendix 1 provides the information about industry type and size of 154 gazelle companies and also describes their core strategic advantages. Gazelle companies represent 10 diverse industries (See Table 1A). The most important sectors are metallurgy and metallic products, chemical industry, machinery equipment, rubber and plastic industry. Most of the gazelle companies are small to medium. The

¹⁷ We have 11 explanatory variables and we had to exclude the cases with at least one missing variables

¹⁸ SABI: is the financial database of Spanish and Portuguese companies. Includes with the financial data of more than 190 000 Spanish enterprises. Generally for each company the data is available for 6 -10 years time period.

companies with the number of employees ranging from 11 persons to 100 comprise 80% of the sample.

Each company had to select two main strategic areas among Strategic Investment Decisions (Investment)¹⁹, Marketing, Internationalization, Innovation, Quality and Productivity, and Human Resources. Table 2A reports of the strategic choice by the gazelle companies. Quality and Productivity (88 companies) along with Investment (69 companies) are the most frequent strategic choices, followed by Innovation (49) and Internationalization (49). The most frequent combinations of strategies are Quality and Productivity along with Investment (37 companies), Innovation along with Quality and Productivity (16), and Internalization and Innovation (15).

The described above sample represents is of special interest for the analysis for a number of reasons. First, following Oliveras and Amat (2002) we can verify to which extent the BSC assumptions can explain profitable growth of the companies. Second, most the gazelle companies are small and medium, which implies that these companies are most likely to execute a unique strategy. Big companies often have a variety of production lines and divisions resulting in numerous, non-compatible strategies. Third, the survey of the gazelle companies provides a unique opportunity to use internal companies' data, not-available in the external databases for the description of the non-financial BSC perspectives. We now describe the variables selected for the representation of the Perspectives.

4.2 Perspectives Variables

For the purpose of our study we classified the available information into the blocks of variables across the BSC perspectives: the Learning and Growth, Internal Business Processes, Customers and Financial.

4.2.1 The Learning and Growth Perspective (“Can We Continue to Improve and Create Value”)?

The Learning and Growth Perspective is the bottom perspective in the chain of value creation and it reflects the employees' capabilities, skills and organizational climate needed for growth and improvement. The following variables are selected into this perspective. Unless otherwise stated, all variables refer to 1998.

¹⁹ For instance, Investment in new machinery and equipment production facilities and etc.

The percentage of employees with the university and post-university qualification (UQ) characterizes the educational quality of human resources and proxies for the amount of employee's general knowledge. The training expenses of personnel (TE) stated as percentage of total labour cost measure the amount of resources invested by the companies into the acquisition of specific skills and capabilities. Apart from the survey indicators, the operational revenue to employees' cost (Prod) ratio is calculated from SABI database in order to proxy for employees' productivity²⁰. Employees' productivity is one of the most common outcome measures of Learning and Growth Perspective (Niven, 2002; Kaplan and Norton, 1996, p.129). We compute Employees' productivity for the years 1998 and 1999 (Prod98 and Prod99).

4.2.2 Internal Business Processes perspective (“What we must excel at?”)

The indicators of Internal Business Processes perspective should provide the measurement of the internal processes relevant for value creation. Kaplan and Norton (2001a) suggest that this perspective can emphasize innovation, customer management, and operational excellence. Taking into consideration the strategic choice of the gazelle companies and data availability, several dimensions are chosen for this perspective.

Given the significance of Quality and Productivity strategic choice, the first dimension chosen is quality. Percentage of employees participating in quality circles (PEQ) and the binary variable of availability of ISO certification (ISO) represent this dimension. Companies' innovation effort is measured with the internal and external expenditure R&D in percentage to the total sales (RDexp) and percentage of R&D employees (RDemp). The customer management dimension is proxied with two variables of marketing effort. Promotional expenditures in percentage of total sales (PE) indicate how much resources are spent in product promotion. Binary variable of the change of product presentation (PrP) informs whether company recently changed its products presentation.

4.2.3 Customer perspective (“How do customers see us?”)

The indicators of Customer perspective inform whether the companies are successful in satisfaction of their customer needs. The variable percentage of sales returned (RE)

²⁰ This measure is preferred to operational revenue per employee because the latter has many missing values

reflects the degree of customer dissatisfaction with the quality of products. The percentage of the sales of new products (NS) reflects the acceptance of new products by market. Sales variation variable (VS), calculated as percentage change of the sales of the current year respect to the past, is included from SABI database. This is an outcome measure of the sales dynamics, which reflects overall companies' market position. We compute sales variation variable for 1997-1998 (VS97_98) and for 1998-1999 (VS98_99).

4.2.4 Financial Perspective (“How Do We Look to Shareholders”?)

Three ratios of profitability of SABI database represent Financial perspective. Financial ratios are frequent in the BSC applications (Kaplan and Norton, 1996). Return on shareholder funds (RSF) shows the overall efficiency of the company in employing shareholders resources. It is calculated as a ratio of profit or loss before taxes and interest respect to shareholder funds. A company that has a high return on equity is more likely to be one that is capable of generating cash internally. Return on total assets (RTA) shows how effectively companies use its assets. It is calculated as a ratio of profit or loss before taxes and interest respect to total assets. Profit Margin (PM) is calculated as a ratio of profit and loss before taxes and interest respect to revenues. It measures how much out of every euro of sales a company actually keeps in earnings. A higher profit margin indicates a more profitable company that has better control over its costs. If a company has costs that have increased at a greater rate than sales, it leads to a lower profit margin.

Appendix 2 provides a summary of variables by perspectives, their sources and years available for analysis. Appendix 3 reports the summary of descriptive statistics for the original variables.

5. Research methodology and questions

According to the BSC logic, the variables of lower BSC perspectives perform as lead variables for the variables of the higher perspectives. For instance, employees' training may lead to greater productivity and better financial results. However, Bryant et al. (2004) found that statistical fit of the BSC model, with simultaneous dependence (statistical association) among the BSC perspectives, is superior to the one of sequential model. This finding and also BSC perspectives dependency in initial

representation of the model (see Figure 1) suggests the following main research hypothesis: *Companies' Financial Perspective can be explained by their Customers, Business Processes and Learning and Growth Perspectives.*

We use the multivariate OLS regression in order to check to which the variables of lower BSC perspectives (Customers, Business Processes and Learning and Growth) can explain financial results. Statistical tests will be carried using the financial results of 1998 and 1999 in two separate specifications. We first build 1998 specification in order to check contemporaneous association between variables. In the 1998 specification, all variables refer to 1998 with the exception of Sales Variation (VS97_98) which also depends on 1997 sales. In order to explore the effect of time-lags and delayed effects, e.g. innovation, we perform another specification for 1999. In the 1999 specification, explanatory variables will be included with one-year lag with the exception of Employees' productivity (Prod99) and Sales variation (VS98_99).

In both specifications we add the financial results of the preceding year as a control variable intended to capture omitted effects that may have an influence on financial results. Finally, we control for the industry type, type of strategy executed by the company and size of the company by including in the model, industry type and strategy dummies and size variable.

Our hypothesis is formulated in terms of the BSC perspectives. The BSC perspectives are social abstract concepts, which are multidimensional in their nature. In social science research such dimensions are called latent because they cannot be directly observed and measured. Factor analysis is an appropriate statistical technique to generate the latent variables starting from observables (Bartholomew et al., 2002, p.143).

We employ factor analysis on continuous variables²¹ in order to construct our new latent variables. More specifically, we use the Principal Component method of factor analysis with the Varimax rotation. Selecting appropriate factors we take into consideration the proportion of variance explained by the model and our knowledge of the subject (Johnson and Wichern, 1988, p.415). A requisite for constructing latent variables is that their associated observed variables are relatively coherent. For this

²¹ Binary variables cannot be included into the factor analysis along with continuous.

reason, after performing factor analysis we check whether possible factors are reliable representations of underlying factor concept.²²

Taking into consideration that assumptions of linearity are important for the factor analysis and OLS regression analysis (Hutcheson and Sofroniou, 1999), prior to running factor analysis we have chosen to normalise the continuous variables by the logarithmic and Box-Cox power transformations²³. Having constructed the factors for perspectives when it is appropriate, we store factor scores on the observations and use them as our new variables. In the final step, the OLS regression analysis is used to examine the extent to which the dependent variable (financial factor) can be explained by the independent (those of learning and growth business processes and customer) factors and variables.

6. Data Preparation

6.1 Correlation analysis

We analyse correlations with the purpose of discovering possible links between and within the BSC perspectives. Also, the usual starting point for a factor analysis is to examine the correlations matrix between variables.

Appendix 4 provides it for the variables, which refer to 1998 and 1999 years specifications with the exception of control variables. The analysis of Pearson correlations coefficients suggests that the strongest and most significant correlations are observed between the variables within the same perspectives. These are University qualification (UQ) and Training expenses (TE) in Learning and Growth Perspective; R&D expenses (RDexp) and R&D employees (RDemp) in Internal Business Processes; and financial variables, Return on shareholder funds (RSF), Return on Total Assets (RTA) and Profit margin (PM) in Financial perspective. The variables, which are most strongly correlated to each other, are most likely to form factors.

We also observe some moderate and significant correlations between the variables of the different perspectives. Employees with university qualification variable (UQ) is positively correlated with R&D employees and expenditures, suggesting that companies, which are more active in innovation, hire more qualified personnel. New

²² We compute Alpha-Cronbach scores as a measure of factor reliability

²³ We applied transformation to continuous variables with severe skewness: UQ, TE, PROD, RDexp, RDemp, PEQ, PE, RE, NS, TA

sales variable (NS) is positively and significantly correlated with the innovation variables (RDempl and RDexp), suggesting that more innovative companies sell more of the new products. New sales variable is also positively correlated with the promotional expenses (PE), which may be due to the fact that new products often require additional advertisement and marketing expenditures. The sales variation in 1998 (VS97-98) is positively and significantly correlated with the innovation variables, especially with the R&D expenditure (RDexp). The latter suggests that those companies, which achieved a greater increase in their sales revenues in 1998, might allocate greater budget for innovation activities. The sales variation in 1998 and 1999 (VS97-98 and VS 98-99) is positively related to financial variables for both years, suggesting that an increase of sales revenues is an important precursor for the increasing profitability. The sales variation in 1999 (VS98-99) is also positively correlated with the employees' productivity (Prod99). Thus, increasing employees' productivity might lead to the increase in sales.

6.2 Factor analysis

We then proceed to factor analysis of the variables of 1998 specification. The factor analysis gives 5 principal components with eigenvalues greater than 1 (See Table 1). Variables of the Financial Perspective have the highest loadings on the first component²⁴. All of the loadings are greater than 0,7. The latter suggests that they are sufficiently coherent so as to form a unique financial factor. The second component has the highest loadings from R&D expenditure and R&D employees variables, suggesting that these variables can form an Innovation factor. Apart from innovation variables this component takes the highest loadings from the Promotional Expenses (PE), New Sales (NS) and Sales Variation (VS97_98). This is consistent with the correlations observed between these variables. However, the loadings of these variables are not high, suggesting that big proportion of their variance is spitted among the other components. University qualification (UQ) and Training expenses (TE) have the greatest loadings on the third component. These variables potentially can form Employees' skills factor. Fourth component is presented by Employee productivity (Prod98), and Employees in quality circles and teams (PEQ). However, the correlation between these variables is weak and insignificant and we don't have

²⁴ The factor loading is the correlation between the observed variable and the factor variable. The greater the value of a particular factor loading is the bigger is the contribution of this variable to the common factor.

straightforward interpretation for this component. Finally, the fifth component is presented by Returned Sales variables (RE), given that this variable is not correlated to any other.

Table 1 Rotated Component Matrix: Perspective Variables (1998)

	Component				
	1	2	3	4	5
UQ	-,016	,263	,767	-,061	,095
TE	,023	-,028	,850	,067	,035
Prod98	-,157	-,098	-,005	,666	,111
RDexp	,051	,786	,244	,075	-,060
RDemp	,097	,817	,178	,131	-,149
PEQ	,096	,111	,015	,704	-,143
PE	-,379	,439	-,165	-,101	,290
NS	,052	,539	-,094	-,318	,133
RE	,029	-,060	,150	-,050	,880
VS9798	,347	,434	-,067	,336	,388
RSF98	,768	,024	-,239	,034	,028
RTA98	,900	,054	,102	-,040	,050
PM98	,907	,099	,119	-,088	-,002

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

As the next step, we compute Alpha Cronbach statistics for the potential Employees' Skills, Innovation, and Financial factors to verify how reliable these factors represent the underlying variables. In social sciences the factors are considered to be reliable if their respective Alpha-Cronbach values are greater than 0,7. The respective Alpha Cronbach values are 0,47, 0,79 and 0,71. Similarly, to the financial factor of 1998, we extract one factor out from three financial ratios of 1997, RSF97, RTA7 and PM97. The corresponding Alpha-Cronbach value is 0,74. Therefore, we will introduce in our analysis Innovation and Financial factors. Factors scores will be stored on the observation and used as new variables Innovation (RD) and Financial (Fin98 and Fin 97).

Next we run factor analysis for the variables of 1999 model specification. The results are similar to the previous. Financial ratios of 1999 have the greatest loads on the first component. The RD variables form the second component. The loading of NS on this component is not high (0,47), suggesting that a big proportion of variance is not explained by this factor. The fourth component contains the variables underlying different concepts, employees in quality circles and promotion expenses. The fifth component is formed due to the positive correlation existing between employees'

productivity and sales variation in 1999. We will not retain this factor because the respective Alpha-Cronbach statistics is not high and it is of special interest to estimate the impact of each variable on profitability.

Table 2 Rotated Component Matrix: Perspective Variables (1998-1999)

	Component				
	1	2	3	4	5
UQ	,014	,293	,764	,101	,070
TE	,154	,048	,791	-,155	-,026
Prod99	-,170	-,142	,167	-,103	,781
RDexp	-,051	,822	,191	-,020	-,072
RDemp	-,010	,874	,120	-,043	,057
PEQ	-,124	,243	-,052	-,747	-,039
PE	-,133	,287	-,049	,468	,013
NS	-,024	,471	-,081	,453	-,042
RE	-,059	-,161	,395	,341	-,380
VS9899	,297	,106	-,207	,316	,660
RSF99	,884	-,129	-,018	,044	,162
RTA99	,959	-,029	,083	-,021	-,049
PM99	,928	,043	,107	-,041	-,082

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

Therefore, similar to the first specification we will retain for the regression analysis Innovation (RD) factor and Financial (Fin 99) factors. The Alpha-Cronbach statistics for the financial variables of 1999 is 0.74 (greater than 0,7). As the result of the correlation and factor analysis we replace the original innovation and financial variables with the Innovation (RD) and Financial (Fin97, Fin98, Fin 99) factors. Also, basing on the analysis of correlations between the variables of different perspectives, we can conclude about the dependency between some variables of our BSC perspectives, namely between the innovation variables and new sales on the one hand and innovation variables and employees' skills variables on the other hand.

7. Refinement of the Research Hypothesis

In the previous section we conducted the factor analysis with the purpose to find an appropriate approximation of the BSC perspectives for our data. Two factors are emerged from our analysis, Innovation (RD) and Financial (Fin). All the other variables remain independent because their variance is largely splitted between several

factors factors. We now refine general research hypothesis, giving it more precise business interpretation. The main research hypothesis is formulated as follows:

H: The companies' Financial Perspective (Fin99, Fin98) is explained by the Innovation factor (RD) and variables of their Customers, Business Processes and Learning and Growth Perspectives.

In particular, in a line with the BSC logic we hypothesize the following directions of statistical association for the variables:

H1: Companies, possessing greater amount of employees' skills (UQ and TE), have greater profitability.

H2: Greater employees' productivity (Prod) leads to better financial performance.

H3: Greater concern about quality (ISO, PEQ) gives rise to profitability.

H4: Innovative companies (RD) have better financial results.

H5: Greater amount of marketing effort (PrP, PE) done by the companies leads to their greater profitability.

H6: Greater amount of new products sales (NS) increases profitability.

H7: The companies' profitability diminishes as amount of returned sales (RE) increases.

H8 Companies' financial performance improves as they have greater acceptance in the market and increase their sales (VS).

8. Regression analysis results

We carry out the OLS regression analysis to examine the extent to which the dependent variable (Fin 98 and 99) can be explained by the independent (those of learning and growth resources, business processes and customer perspectives variables). We also include in the specification several control variables, such as companies' previous financial results (Fin_{t-1})²⁵, companies' size measured with amount of total assets (TA), industry type dummies, and strategy-type dummies. The inclusion of the latter control variables will account for the possible differences in relationship between the main variables depending on the industry type and strategies executed by the companies. The model can be summarized as follows:

²⁵ The lag-dependent factors Fin 97 and Fin 98 do not cause the problem of autocorrelation in our models.

$$Fin_t = \beta_0 + \beta_1 UQ + \beta_2 TE + \beta_3 Prod_t + \beta_4 RD + \beta_5 PEQ + \beta_6 ISO + \beta_7 PE + \beta_8 PrP + \beta_9 NS + \beta_{10} RE + \beta_{11} VS_{t-1,t} + \beta_{12} Fin_{t-1} + \beta_{13} TA + \beta_i Dindustry_i + \beta_j Dstrategy_j + e ;$$

Where: *t*-year 1998 or 1999,

i=1...9

j=1...14

When estimating our model we take into consideration the R-squared adjusted value to assess the extent to which companies' profitability can be explained by the independent variables. We analyze the significance of the variables coefficients to assess which variables concretely impact the companies' profitability. We inspect the signs of the coefficients to reveal the direction of the relationship. We also conduct analysis of residuals and outliers in order to assess the robustness of the results.

The results of the 1998 model specification are reported in Table 3. The R-squared value indicates that the variance of companies' profitability is explained by 81%.

Tab 3. Regression results – Specification 1998

Predictor	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	-1,228	,670		-1,832	,071
UQ	,011	,019	,044	,605	,547
TE	-,019	,034	-,038	-,570	,571
Prod98	,071	,199	,024	,358	,721
RD	,081	,071	,084	1,142	,257
PEQ	-,017	,013	-,084	-1,276	,207
ISO	,041	,152	,019	,269	,789
PrP	,047	,137	,026	,338	,736
PE	-,010	,012	-,061	-,892	,376
NS	,007	,012	,043	,612	,543
RE	,000	,026	,000	-,007	,994
VS9798	,008	,004	,146	2,181	,033
Fin97	,760	,060	,832	12,629	,000
SS=81,92	R²=81%	Adj. R²=71,6%	F =8,38	F-sign=0.00a	

Controlling for size, industry type, strategy type

Only a limited number of the explanatory variables resulted to be significant predictors for the financial results of 1998. Only one perspective variable, the

Variation of Sales (VS97_98), is significantly and positively associated with the financial performance. All the other variables do not have contemporaneous association with financial results. The control variable financial results of the year 1997 (Fin97) is highly significant and positive predictor. This suggests that financial performance in 1998 depends strongly on the past financial performance because this variable accounts for the most of the variation in the financial performance of 1998. Therefore, based on the regression results of Model 1, we obtain confirmation for the hypothesis H8 and reject all the other hypotheses. Controlling for all the effects, only one variable of the Customer perspective can perform as a reliable predictor of the financial results in 1998 specification.

We proceed to estimate the specification with lagged effects of the main explanatory variables. The results are given in Table 4.

Tab 4. Regression results – Specification 1999

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	,031	,932		,034	,973
UQ	-,009	,026	-,032	-,326	,745
TE	,128	,048	,246	2,700	,009
Prod99	-,075	,276	-,023	-,270	,788
RD	-,074	,100	-,072	-,736	,464
PEQ	-,020	,018	-,093	-1,068	,289
ISO	-,344	,209	-,150	-1,647	,104
PE	,009	,017	,053	,569	,572
PrP	-,076	,193	-,040	-,394	,695
NS	-,004	,017	-,025	-,258	,797
RE	,045	,036	,104	1,246	,217
VS9899	,018	,005	,295	3,327	,001
Fin98	,685	,087	,721	7,833	,000
SS=90,25	R²=67,1%	Adj. R²=49,9%	F =3,895	F-sign=0.00a	

Controlling for size, industry type, strategy type

All the independent variables explain together about 67% of the profitability variation. The F-value is highly significant. Among the perspective variables and factors, the Training expenses (TE), the Sales variation (VS98-99) variables are significantly associated with the financial results (Fin99). ISO is statistically significant at 10% cut-off level. The analysis of coefficients signs demonstrates that companies' financial results in 1999 depend positively on Training expenses made in

1998 (TE) and Sales Variation (VS98_99), which confirms the hypotheses H1, H8. However, Fin99 negatively depends on ISO contrary to the hypothesized direction. And we cannot confirm H3.

Our test does not provide any evidence in favor of the existence of a statistical relationship between financial results and productivity, innovation, returned and new sales variables. None of the control variables resulted significant in this specification with the exception of financial performance in 1998 (Fin98). This means that results are robust across the industries and types of strategy.

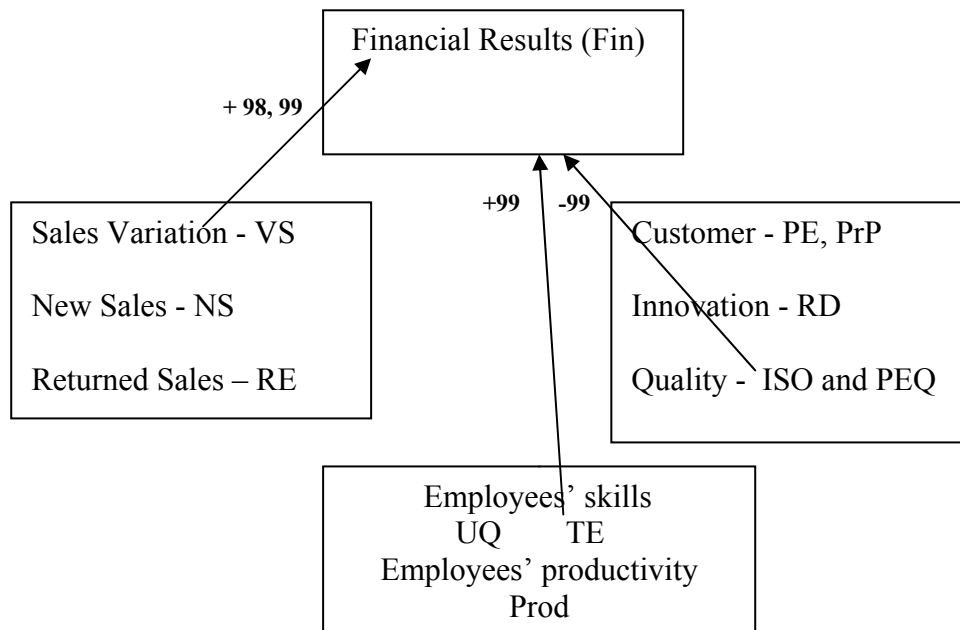
9. Discussion of the results

In the previous section by means of regression analysis we have determined which variables of the Learning and Growth, Business Processes, and Customer Perspectives are statistically associated with the Profitability factor and what is the direction of the relationships. In the present section we discuss the obtained results.

Figure 3 illustrates our findings. We have built our chart in the style of original BSC chart (see Figure 1). The arrows depict the relationships between the variables and profitability which we have found to be significant statistically. Each arrow (relationship) has the label of corresponding year (98,98) and sign of association (plus or minus).

Comparing 1999 and 1998 results we conclude that one predictor is common to both specifications, the Sales Variation (VS97_98, VS98-99). Training expenses and, tentatively, ISO have delayed effects on the financial results. The sales variation shows change in companies' sales in comparison to the previous year. We should acknowledge here, that the change of sales could be driven by endogenous and exogenous factors to the companies. It can reflect customer satisfaction with the products and, therefore, to subsume all the internal efforts and policies aimed to improve product and client service. At the same time the sales variation can reflect exogenous factors, such as appearance of new competitors, current stage of economic cycle (expansion or reduction), purchasing capacity of clients and e.t.c. We cannot judge to which extent the sales variation depends on internal companies' policies and to which extent to uncontrollable and external factors. The latter are largely ignored in the BSC framework (Norreklit, 2000).

Figure 3 The results of the regression analysis



The other measures of Customer Perspective, such as New Sales and Returned Sales do not have a statistically significant impact on the financial results. The New Sales may show the outcome of innovation policies in companies. According to our analysis of correlations, New Sales variable is significantly and positively correlated with the innovation variables (RDexp and RDemp). These variables are also resulted insignificant in our estimations. Therefore, our results do not provide confirming evidence to the proposition of better financial performance of the innovative companies. The latter could be due to the fact that innovation can impact both, the revenues through the increasing selling prices of new products (Kekre and Srinivan, 2002) and operating costs due to increasing complexity, investment into new technologies and e.t.c. (Bayus and Putsis, 1999). Besides, many innovation projects are risky and some of them are not successful. These arguments can serve as an explanation for the fact that R&D investment has a non-significant effect on companies' profitability in our sample.

The amount of training expenditures (TE) made in 1998 is significant and positive predictor for the financial results of 1999. This finding is consistent with the BSC logic and some previous studies. For instance, Huselid (1995) found that human resources practices such as trainings programs, incentive compensation and

recruitment procedures had an economic and statistically significant impact on companies' profitability. However, we acknowledge here that a small fraction of the companies in our sample (19) has chosen human resources policies as their core strategic advantage (see Appendix 1).

Despite to the fact that Quality and Productivity is one of the main strategic advantage quoted by companies (88 companies), quality related variables (PEQ and RE) and productivity (Prod98, Prod99) variables are not statistically associated with the financial results. Quality can be viewed as one of the main contributors to the company image and an important precursor for the sustainable customers' loyalty to companies' products and services. However, the positive causality between quality and financial results has been questioned empirically. For instance, some of the winners of the Baldrige prize faced financial problems (Kaplan and Norton, 1996a, pp.150-151). The results of the survey conducted by Ittner and Larcker (1998, p.12) show that 75 % of the senior quality executives in major American companies felt pressure to demonstrate the financial consequences of their quality initiatives. No more than 55% of directors could directly relate them to operational, productivity and revenue improvements, and only 12% could relate them to stock returns. Our results for 1999 suggest tentatively (ISO is significant at 10% level and PEQ have negative sign in both specifications contrary to hypothesized direction), that quality initiatives may impact negatively financial performance. Perhaps, due to the fact that quality assurance may be costly and corresponding investment needs longer time periods to be returned.

Similarly, an outcome measure of Learning and Growth perspective, employees' productivity (Prod98 and Prod99) does not perform as a reliable predictor in our estimations. This may be due to the fact, that employees' productivity has only indirect effect on the financial performance through the other more relevant variables. For instance, in the year 1999 employees' productivity is significantly and positively correlated with the sales variation, which has significant and positive impact on financial performance. However, it is not the case in 1998 specification. A possible explanation could be that apart from employees' productivity other factors, for instance, such as technology use, degree of automatization, may intervene in the process of value creation in gazelle companies.

Customer management variables, promotional expenses (PE) and change of product presentation (PrP) do not have statistically significant impact on financial results in

both specifications. The empirical evidence regarding the impact of promotional expenses on financial and market performance is mixed and not conclusive (see Cheng and Chen, 1997 and Erickson and Jacobson, 1992). The latter may be due to the possible uncertainty embedded in consumer reactions to promotions. Conchar and Crask (2005) suggest that advertising and promotional expenses need longer periods of time to bring expected benefits and shareholder wealth.

Generally, we can conclude that our test provide little support to the proposition of existence of the stable BSC links for the gazelle-companies. The only stable predictor of financial performance, Sales Variation, is in part exogenous in their nature and does not depend entirely on the companies' internal policies. Training Expenses is shown to have a delayed and positive effect on financial performance. This is despite to the fact that most of the companies did not consider human resources as their core strategic advantage. Other variables, which have a greater consonance with the strategic choice of companies, are shown to be insignificant predictors.

The results of our study may have important implications for managers. Not only should the BSC indicators represent a "balanced" picture of important facets of the BSC-user organizational life, but also incorporate externally-oriented measures and account for the environment uncertainty. Also, the contra-intuitive associations between the indicators are possible, i.e. quality or innovation, because some managerial initiatives are costly and it is important to realize all its possible outcomes before undertaking it. Unknown time lags between lead and outcome variables may challenge the construction of metrics. In addition, our numeric analysis provides little support to the importance of some core strategic advantages, chosen by the gazelle companies. The latter suggests that not all the reported (believed) strategic strengths may be important to value creation.

10. Research limitations

The major limitations of the present study are rooted in the data availability and quality. First, part of our explanatory variables refers only to the year 1998. We assume that these variables reflect the continuous progress in the measured areas over preceding years. However, it would be useful to analyze longitudinal data, so as to test the relationships between the non-financial perspectives.

Second, we do not know the time lags between the leading and outcome variables. They are likely to differ. For instance, the effect of a training program for employees productivity may be almost immediate, the effect of a new product launching may yield increased sales in three months, while the effect of innovation may appear in only a couple of years.

Third, the financial indicators we have used are extracted from the financial external reports. We assumed that reported results give us a reliable picture of the companies' financial performance. However, it could be the case that financial results have been adjusted for the needs of external reporting.

Finally, a large number of missing responses reduced our final sample at the stage of regression analysis. This limits the generability of our results. Given the dynamic and complex nature of value creation, our results are valid for the sample of gazelle companies in 1998 and 1999.

11. Conclusions and directions for further research

The BSC model is a high-profile managerial model, which attracts a lot of attention from both, practitioners and academics. One of the unresolved issues of the BSC research domain is the empirical validity of its assumptions. The main objective of this study was to develop appropriate methodology and to test statistically the relationships between the Financial Perspective and the other BSC perspectives on the basis of empirical data obtained from dynamic Catalonian enterprises, the so-called "gazelle" companies.

We have developed the following methodological approach. First, we have performed the correlation analysis in order to produce preliminary evidence about the statistical association between and within BSC perspectives. Second, we run the factor analysis of original variables in order to create new factors, which would represent adequately each Perspective. Then a multivariate regression was carried in two specifications with the financial factor being the response variable and other perspectives variables and factors as the explanatory variables.

Our results do not support the proposition of the existence of stable BSC links. In particular, we found that companies' profitability depends on limited number of the perspectives variables, namely, the sales variation (customer) and training expenses (employees' skills). We have not established the statistical association between the

companies' profitability and their quality, productivity and innovation variables despite their importance for the BSC framework and reported core strategic advantages.

Future studies may extend the present one by testing the BSC links on richer collection of longitudinal data and large data samples. Sample studies have a big potential to indicate the presence of common patterns with respect to the BSC links for homogeneous groups of companies. They also can provide information about the timing and the mechanism of the association between indicators. Some advanced statistical methods can be employed such as path analysis and structural equation modelling in future research.

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Appendix 1 DESCRIPTIVE CHARACTERISTICS OF THE SAMPLE

Table 1A. Industry type and number of employees

Sector	Number of employees					Total
	0 -10	11 - 50	51 - 100	101 - 250	> 250	
1. Food products	1	5	4	0	0	10
2. Textile, leather and clothes	0	9	2	2	1	14
3. Paper, publishing and arts	0	4	3	3	1	11
4. Chemical industry	0	15	4	1	1	21
5. Rubber and plastic	0	14	3	1	2	20
6. Metallurgy and metallic products	1	12	13	4	0	30
7. Machinery and equipment	0	12	5	3	1	21
8. Electronic components and informatics	0	7	1	1	2	11
9. Transport materials	0	2	1	2	4	9
10. Others	0	4	2	1	0	7
Total	2	84	38	18	12	154

Table 2A Core strategic advantages of “gazelle” companies

Strategic advantage	Investment	Marketing	Interna- lization	Innovation	Quality & Productivity	Human Resources
Investment	*	7	11	10	37	4
Marketing	7	*	5	5	7	0
Internationalization	11	5	*	15	17	1
Innovation	10	5	15	*	16	3
Quality & Productivity	37	7	17	16	*	11
Human Resources	4	0	1	3	11	*
Total	69	24	49	49	88	19

Appendix 2 PERSPECTIVE VARIABLES

LEARNING AND GROWTH		
NAME(ABBREVIATION)	SOURCE AND YEAR	DESCRIPTION
University qualification(UQ)	Survey (1998)	% employees with university and post-university qualification
Training expenses (TE)	Survey (1998)	% total personnel cost
Employees productivity(Prod)	SABI (1998, 1999)	Operating revenue /Personnel cost
INTERNAL BUSINESS PROCESSES		
Quality	Availability of ISO 9000 certification or/and other types of quality certification (ISO)	Survey (1998) <u>Binary</u> : 1 – if company has the certificate or is in a process to obtain it, 0 - otherwise
	Employees in quality circles and improvement teams(PEQ)	Survey (1998) % of total number of employees participating in quality circles and improvement teams
Innovation	R&D employees(RDemp)	Survey (1998) % total number of employees working on R&D
	R&D expenditure(RDexp)	Survey (1998) R&D external and internal expenditure in percentage to sales
Customer	Change of product presentation (PrP)	Survey (1998) <u>Binary</u> : 1 – if company changed product presentation during last 2 years, 0 - otherwise
	Promotion expenditure(PE)	Survey (1998) Promotion expenditure in % to total sales
CUSTOMER PERSPECTIVE		
Returned Sales(RE)	Survey (1998)	Percentage of total sales returned
New Sales(NS)	Survey (1998)	Sales of new products(not older than 5 years) in % to total sales
Sales Variation (VS)	SABI(97-98, 98-99)	% change of sales of current year respect to the past
FINANCIAL PERSPECTIVE		
Return on Shareholder Funds (RSF)	SABI, 1997, 1998, 1999	(Profit/Loss before tax/Shareholders funds)*100%
Return on Total Assets (RTA)	SABI, 1997, 1998, 1999	(Profit/Loss before tax/Total assets)*100%
Profit Margin(PM)	SABI, 1997, 1998, 1999	(Profit/Loss before tax/Operational Revenue)*100%

Appendix 3 DESCRIPTIVE STATISTIC of the VARIABLES

Table 1 Continuous variables: the bottom BSC perspectives

	N	Minimum	Maximum	Mean	Std. Deviation
UQ	145	0	90	16,50	16,18
TE	144	0,00	10,00	1,91	2,33
Prod99	145	1,75	55,15	16,54	10,25
Prod98	145	1,98	62,15	17,83	11,65
R&Dexp	147	0,00	22,00	2,97	3,57
R&Demp	151	0,00	50,00	4,77	8,17
PEQ	152	0,00	100,00	23,17	30,16
PE	132	0,00	80,00	2,65	7,49
NS	133	0,00	100,00	34,85	29,22
RE	139	0,00	6,00	0,77	1,09
VS97-98	144	-50,38	100,32	16,27	17,46
VS98-99	142	-54,14	53,76	5,81	17,26

Table 2 Continuos variables – Financial Perspective

	N	Minimum	Maximum	Mean	Std. Deviation
RSF99	145	-28,26	112,34	28,35	19,49
RSF98	145	-1,42	75,56	34,75	16,46
RSF97	146	-41,1	111,3	35,75	20,19
RTA99	144	-4,46	41,31	11,08	8,35
RTA98	144	-,52	46,89	12,90	9,32
RTA97	145	-11,34	46,94	12,53	9,52
PM99	144	-3,64	50,42	7,80	7,25
PM98	144	-,19	45,24	8,12	6,96
PM97	145	-13,32	43,50	7,90	7,30

Table 3 – Binary variables

Variable	N of responses	Response frequencies	
		“0”	“1”
ISO	154	33	121
PrP	143	59	84

Appendix 4 BIVARIATE PEARSON' CORRELATIONS of the PERSPECTIVE VARIABLES (Specification year 1998 and 1999)

	UQ	TE	Prod98	RDexp	RDemp	PEQ	PE	NS	RE	VS9798	RSF98	RTA98	PM98
UQ	1												
TE	,407**	1											
Prod98	,050	,026	1										
RDexp	,279**	,157	-,095	1									
RDemp	,329**	,051	,050	,696**	1								
PEQ	-,009	,156	,090	,045	,087	1							
PE	,063	-,023	-,016	,152	,197	-,111	1						
NS	,084	-,017	,027	,270**	,258**	-,009	,186*	1					
RE	,032	,021	-,014	,036	,023	,075	-,006	,061	1				
VS9798	,032	,132	,112	,268**	,197*	,164	,083	,176	,113	1			
RSF98	-,081	-,065	,002	-,061	,000	,042	-,168	,071	,006	,257**	1		
RTA98	,075	,111	-,005	,013	,100	,013	-,152	,062	,069	,182*	,555**	1	
PM98	,123	,127	-,084	,036	,165	,064	-,143	,046	,036	,200*	,493**	,871**	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

	UQ	TE	Prod99	RDexp	RDemp	PEQ	PE	NS	RE	VS9899	RSF99	RTA99	PM99
Prod99	,056	-,009	1	-,084	,062	,058	-,013	,032	-,019	,254**	,074	,011	,014
VS9899	,030	-,025	,254**	,036	,006	-,074	,105	,123	-,202*	1	,333**	,196*	,119
RSF99	-,054	,173*	,074	-,119	-,179*	-,047	-,076	,002	-,072	,333**	1	,776**	,545**
RTA99	,086	,243**	,011	-,073	,010	-,029	-,049	,011	-,019	,196*	,776**	1	,845**
PM99	,125	,235**	,014	-,030	,145	-,027	-,033	,071	-,060	,119	,545**	,845**	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed)

Implementing the Balanced Scorecards in Two Spanish City Councils: an Institutional Perspective

Abstract: In the present study, we describe, compare and analyze the implementation of the Balanced Scorecard model in two Spanish city councils. Both organizations decided to use this model responding to the governmental requirements calling for the introduction of strategic planning and reporting. We build on two theoretical approaches of Institutional Theory, New Institutional Sociology (NIS) and Old Institutional Economics (OIE). We found, that one of the organizations followed tightly the BSC postulates through the design and implementation stages. However, the BSC here was used only symbolically, mainly as an image-making tool. The other organization implemented selectively some elements of the BSC and designed the program connected to the already existing organizational routines. Here, a process of formation of new accounting routines started to take place. The new technique is gradually gaining recognition of managers.

Keywords: Balanced Scorecard, Performance measurement, Local Government, Public Management, Institutional Theory

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Introduction

The public sector has been transforming recently in most of the developed countries. Responding to a concern about efficient utilization of public resources, this transformation is manifested in the decentralization of large public organizations, the introduction of contracting systems for employees and a greater stress on the efficiency and performance culture in public management. The academic literature refers to this transformation as New Public Management (Hood, 1991, 1995). One of the salient features of the latter process is the adoption by public organizations of private managerial techniques and styles.

The Balanced Scorecard (BSC) model, introduced by academics Kaplan and Norton in 1992 is one of such techniques, which gained popularity among non-profit organizations (Irwin 2002, Smith 2000, Lawrie and Gobbold, 2004). The authors themselves offered the BSC for application in the public sector (Kaplan, 2001). Nowadays it is actively promoted by consultancies and supported by a growing number of seminars and publications on the topic. According to some researchers, the BSC has become a sort of managerial fashion (Malmi 2001). Modell (2004) views BSC as an important part of a new organizational myth about a new strategic multidimensional approach to performance measurement, which competes, with the old myth based on the primacy of financial accounting and reporting.

Studies about the implementation of the BSC may shed light on a highly debatable issue in the NPM and namely, the nature and consequences of managerial accounting change in public organizations (Lapsley and Pallet, 2000, Lapsley and Wright, 2004). Ours will be a case study of BSC implementation in two city councils. Starting from the premise that managerial accounting techniques are socially constructed practices in organizations, we chose a sociological theoretical framework exposed in the next session.

1. Theoretical Framework

The analysis of the study builds on two streams of Institutional Theory, called the New Institutional Sociology (NIS) and the Old Institutional Economics (OIE). These theories are widely used by academics for interpreting the adoption of managerial accounting innovations. Both approaches emphasize the importance of the

institutions and institutional relations for organizational survival (Ahmed and Scapens, 2000).

The foundations of the NIS were laid by Meyer and Rowan (1977) and DiMaggio and Powel (1983). The central message of this theory is that organizations construct their images in accordance with the prevailing in society rules and expectations. Adherents of this approach argue that organizations often adopt and use new organizational models ceremonially. This is to say, not for the sake of greater efficiency but with the purpose of signaling the availability of practices making these organizations legitimate and good-looking in their environments. A "proper" image gives to organizations social recognition and privileged access to the resources. The latter is especially relevant for highly regulated societal sectors as, for instance, public sector. One of the important notions in NIS is the notion of *decoupling* (Meyer and Rowan, 1977, Meyer and Scott, 1992). *Decoupling* occurs when formal rules enter in conflict with the actual work practices in organizations. According to Meyer and Rowan (1977) decoupling may benefit the organizations. It allows account for practical considerations maintaining formally the legitimated structure. Orton and Weik (1990) refined the concept of decoupling²⁶. They argued that the notion of *loose coupling* might be more appropriate for most of the organizational settings.

Another important concept is the *isomorphism*, i.e. organizations facing similar institutional environment adopt similar formal structures. Di Maggio and Powell (1983) distinguish analytically three major types of *institutional isomorphism*, coercive, mimetic and normative. Coercive isomorphism results from the conformance with regulatory and political mandates, legislation and societal expectations. Mimetic isomorphism is driven by uncertainty, when organizational leaders tend to imitate practices of the most successful organizations in their institutional field. The diffusion of such practices may be supported by consultancies. Normative isomorphism results from professionalization. Similar educational background and training received by managers in the universities, business schools may lead to similarity in practices. Also, professional and trade associations may serve as the diffusers of the new ideas and centers of professional interaction.

The NIS is a predominantly macro theoretical approach. It is mostly concerned with the diffusion and spread of a particular organizational model within a given

²⁶ According to Orton and Weick (1990) "if there is distinctiveness without responsiveness, the system is decoupled. If there is both distinctiveness and responsiveness, the system is loosely coupled.

population. The orthodox NIS labels this spread as “contagion” and treats the engaged organizations as passive adopters of innovations. NIS is primarily concerned with explaining the uniformity and similarity of adopted organizational models in a particular institutional environment. As such, this approach is not especially suitable for describing the inter-organizational dynamics of change. For instance, it cannot explain why two organizations experiencing similar institutional pressures may handle them differently. Powel and Di Maggio (1991, p. 11, 27) acknowledge the macro-orientation of new institutionalism and call for the deepening of the institutional theory.

Oliver (1991) theorizes and describes a wide range of the strategic responses by organizations in response to institutional pressures going from resistance to conformity. Greenwood and Hinings (1996) propose to bring together old and institutional institutionalisms ideas for the explanation of radical change in organizations. The authors incorporate in their theoretical framework the micro-level variables such as interests, values, power dependencies and capacity for action. Furthermore, numerous case studies inspired by NIS attribute to the organizations role going beyond mere conformity (Basu et al., 1999, Covalevski and Dirsmith, 1988, Covalevski et al., 1993, Collier, 2001, Johnsen, 1999, Modell, 2001, 2003, Ritti and Silver, 1986).

Burns and Scapens (2000) developed an old institutional economics (OIE) theoretical framework applicable for intra-organizational studies of managerial accounting change. This approach is grounded on evolutionary economics. In particular, Burns and Scapens draw on the ideas by Hodgson (1993, 1998), Nelson and Winter (1982), Barley and Tolbert (1997). OIE is a process theory and is mainly concerned with the dynamics of organizational change. To explain change Burns and Scapens employ the concepts of *rules, routines and institutions*. “In the context of managerial accounting rules comprise the formal management accounting systems, as their set out in the procedure manuals; whereas routines are the accounting practices in use”(Burns and Scapens, 2000, p.7). Furthermore, routines are institutionalized if they “become the taken-for-granted ways of behaving” (p. 11). Thus, accounting change is viewed as a dynamic process of formation and institutionalization of new accounting principles and routines. According to evolutionary logic of OIE, organization is more likely to accept new rules, which are consistent with the existing routines, in

comparison to the conflicting ones. In other words, there is a certain path-dependency in the process of change (p.12).

The selection by organizations of new accounting models may be quite rational and intentional reflecting concerns about greater efficiency and cost control. But also this process may be influenced by the fashionable organizational trends and institutional requirements. Powerful organizational actors and groups have an active role in shaping the new institutional routines. This leaves more room for interpreting the interactions between organizational actors and the institutional environment (Scapens, 1994, 2000, Burns, 2000, Bogt and Helden, 2000, Busco et al., 2006, Siti-Nabiha and Scapens, 2005, Soin et al., 2002).

To summarize, according to NIS, public organizations would implement a new accounting model in order to comply with the requirements of central authorities and deliver the image of a modern and competitive organization to the influent stakeholders. A model would be used rather ceremonially than for the sake of operational efficiency. In this case we would observe loose coupling between the intended ways of running the organizational activities and the actual ones. OIE does not discard both, efficiency-seeking and legitimacy-seeking rationalities, behind the adoption of socially-valued managerial innovations. It suggests considerable path-dependency from the existing routines in the process of change. Being micro-perspective theory, it attributes active role to the powerful individuals and organizational groups in shaping of the new routines.

Although these two theoretical strands do not contradict each other in all the aspects but rather complement each other, they provide a base for an interesting theoretical debate. First, efficiency-seeking and legitimacy-seeking arguments are often recognized as competing in explaining the adoption of NPM initiatives (Lapsley and Pallet, 2000). Hypothetically, different rationalities behind the implementation of new managerial models, may lead to different organizational outcomes of such implementation. Second, in our opinion, active versus passive role that organizations may play in the adoption of managerial innovations also conditions managerial accounting change.

Our main purpose is to inform the theoretical discussion outlined above and complement academic literature on the spread of both NPM and BSC. In doing so, we will describe and compare the evidence on BSC implementation in two city councils in Spain. The paper proceeds as follows. In the first section we present the BSC and

overview several studies of the BSC. Next, we describe the research site and methodology. In section three, we expose the cases' evidence. Finally, we present the discussion of the findings and conclude.

2. The BSC concept in theory and applied

Since its launch in the early nineties the BSC concept has evolved. Early writings on the BSC describe it as a multidimensional model, designed for organizational performance evaluation and control (Kaplan and Norton, 1992). Later publications place the model in the center of strategy making and communication in the organizations (Kaplan and Norton, 1996, 2001).

When implementing BSC, an organization starts with the definition of its strategic vision and mission, analyzing its environment and potential. In the next step the strategy is described by means of a strategic map. This tool pictures strategic objectives critical to organizational success and the relationships among them. Importantly, the strategic objectives are not chosen and presented separately but linked by means of cause-and-effect chains. So the strategy is translated into a set of cause-and-effect relationships about how it can be achieved.

The strategic objectives are classified typically into four major perspectives, named from the bottom to the top as Learning and Growth, Internal Business Processes, Customers and Financial. This design ensures the interests of major stakeholders, employees, clients and shareholders. When perspectives are used in the BSC of public organizations the order of the Customers and the Financial perspectives is reversed. Customers' or Citizens' perspective is placed on top, with the wellbeing of citizens being in the top of the pyramid of organizational priorities. This perspectives' order means that by innovating and educating their personnel, public organizations adapt their processes and spend efficiently public resources in a way that keeps their clients (citizens) satisfied.

In the next stage, one has to choose the indicators for measuring the achievement of strategic objectives. Target values are assigned to the indicators and the achievement is measured by comparing their targeted and actual values. Sometimes there is not a single indicator, but a strategic plan, associated with a strategic objective. The task then becomes to control the degree of accomplishment of such a plan. When sufficient amount of the BSC data is accumulated, organizations may initiate learning

procedures, checking for statistical association of the hypothesized causal relationships.

The design and implementation of BSC is done in a top-down fashion. Typically top managers of an organization define macro-determinants of the strategy and middle managers are involved in the definition of the strategic objectives and indicators. The BSC content, objectives and mechanism should be communicated and explained to managers and employees. At advanced stages of BSC usage, the managerial compensation is related to the achievement of targets. This way the attention of managers is directed toward the critical issues of the organization's strategy and the model becomes a motivational tool. It is also recommended to use the BSC information for supporting the budgeting process.

In sum, BSC is mainly used in organizations for strategic alignment and communication, evaluation and control of performance. It also can provide a basis for organizational learning, design of managerial incentives and budgeting process. Technically speaking, BSC represents a multidimensional model, containing a set of strategic objectives which are measured by quantifiable indicators. The objectives are linked into the causal chains telling the story of how the strategic vision can be achieved and ensuring a holistic and dynamic representation.

The principles described refer to the theoretical concept of the BSC. Real-life applications often deviate considerably from the normative BSC. Studies of BSC applications by private companies by Malmi (2001) and Speckbacher et al. (2003) revealed that most of the BSC applications appeared to be incomplete versions of the model. For instance, in most of the applications the idea of cause-and-effect chains was omitted. Griffith (2003) studied the use of the BSC by one governmental department and two grown entities in New Zealand. In all three organizations he discovered highly customized versions of the BSC model.

Few studies described the BSC implementation from the organizational perspective. Malina and Selto (2001) describe in their case study the experience of a large manufacturing enterprise in using a model similar to the BSC for the evaluation of the performance of its distributors and the communication of the corporate strategy. The authors conclude that model is an effective strategic and performance measurement tool, able to transform organizational routines despite some tension it triggered between top and middle managers.

Similarly, Kasurinen (2002) studied the BSC adoption in the large manufacturing company from the efficiency point of view. The author compares the normative implementation and implications of the model with the ones observed in practice. He complements the model of managerial accounting change, stressing the role of numerous internal organizational factors, such as culture and leadership.

We have not found studies studying the BSC adoption from the institutional perspective. Taking NIS and OIE theories as a theoretical base, our objective is to investigate the different motivations, scenarios and consequences behind the adoption of the model by city councils. We will illustrate, suggesting empirical support for both theoretical approaches, how differently two similar organizations coming from the same institutional environment face new societal demands.

3. Research questions, Site and Methodology

We structure the evidence of our study around two major questions: how the BSC is implemented (1): and what are the outcomes of the implementation for the studied organizations (2). The first research question includes a number of subquestions, addressing main points of the BSC approach, such as the definition of the strategy, the content of the model, data collection and learning, cause-and-effect relationships, ties with incentives and the budgeting process.

We employ the case study methodology (Yin, 1994). Our case study falls into the categories of descriptive and explanatory case studies (Ryan et al., 2002) since our objective is twofold, describe the experience of the city councils with the BSC and interpret this experience in the light of institutional theory.

Two cases of city councils are studied. The access to these organizations was gained through personal contacts. The researcher visited the organizations in the period from July 2004 to February 2005. Notably, these are organizations coming from the same organizational field and possessing similar organizational characteristics.

Both organizations initiated new managerial programs in 2000 upon a new governmental directive (guidelines), which called for the introduction of innovative techniques in the public sector. According to this directive all municipalities which counted with more than 50 000 citizens were obliged to supplement traditional financial reports with the reports about the annual plans set and the results achieved. In both organizations, the idea of implementing the BSC was brought about by the

senior managers of the city councils who have had previous experience with this technique.

The first city council launched several initiatives of new public management, such as the ABC, the Visa purchase procurement, and a system for processing citizens' complains and suggestions. With the assistance of a consulting company it developed its BSC initiative as a pilot study in the Area of Economy and Treasure. It was planned to extend the initiative later to all other departments. This organization was the first city council in Spain to introduce the BSC model. In order to facilitate further reading and understanding of the evidence exposed in this paper this organization hereafter will be referred to as Organization A. Organization A started its project in 2001 , and the project is currently paused for reasons to be explained.

Table 1

Organization A	
<u>Interviews</u>	<u>Documents</u>
<p>Recorded -Head of the Area of Economy and Treasury (leader of the BSC project) -Senior Auditor (director of the BSC team)</p> <p>Notes -Head of purchasing department (potential BSC user) -Head of tax department (potential BSC user)</p> <p>Informal(3) -Senior cost accountant (responsible for the analysis of the BSC data)</p>	<ul style="list-style-type: none"> ▪ Presentations form the BSC practitioner conferences ▪ The strategic map ▪ Glossary of the strategic objectives and indicators ▪ Web site documents
Organization B	
<u>Interviews</u>	<u>Documents</u>
<p>Recorded -Head of local police(BSC user)</p> <p>Notes -Head of Quality processes (leader of the BSC project) -Senior economist(member of BSC team)</p> <p>Informal (2) -Head of Quality Processes (leader of the BSC project)</p>	<ul style="list-style-type: none"> ▪ Presentations from the BSC practitioner conferences ▪ The annual work program of the city council ▪ Web site documents

The second city council also engaged in several projects of new public management starting in 1990s. This organization started a new program of strategic management and reporting in 2001. All the departments were involved. The BSC initiative was embedded in this global program. Currently, the city council developed a procedure to monitor the performance of its departments and is considering the design of its global BSC model. Hereafter this organization will be referred to as Organization B.

The data used in this study are collected from interviews, informal talks with the managers of the city councils and internal documents provided by the organizations. The interviews lasted for about one hour. In both city councils, in the degree as it was possible, they covered three groups of persons, the leaders of the BSC projects, the members of the BSC teams and the BSC users. Only some of the interviews were recorded with the consent of the interviewed persons. Furthermore, some clarifying information was facilitated via mail and during telephone conversations. Table 1 lists the interviews, conducted by the researcher and the documents analyzed.

Table 2. Interview protocol

<u>Question</u>	<u>Issues to analyze</u>
1. What does the BSC mean in your department and how do you work with the BSC?	Understanding of the BSC concept
2. How was the BSC constructed?	Implementation of the BSC: technical and organizational perspectives
3. How were the strategic priorities defined?	
4. How were the indicators (using existing, designing new ones)?	
5. Are you satisfied with the indicators used?	The use of the BSC: technical and organizational perspectives
6. How is the BSC information processed and analyzed?	
7. Is there something you would like to change in the BSC?	The impact of the BSC on organizational life
8. How do other employees of the department participate in the BSC project?	
9. How did your work change with the introduction of the BSC?	

The interviews were conducted in a semi-structured fashion. The researcher introduced first herself and explained briefly the objective of the study. The interviewed person was then asked about his/her job position in the organization and educational background. The interviews were conducted along the following questions (see Table 2 for the list of questions and issues the author planned to address with these questions). The next session reports our findings.

4. The BSC Implementation

Two organizations adopted remarkably different approaches in developing their scorecard initiatives. In order to design its model the BSC team of organization A studied the cases of BSC implementation of the city councils at Charlotte(USA-North Carolina), Calgary(Canada), London and Wakefield (Great Britain). The way the organization A sets up its model can be defined as “prescribed” since the architecture of the model resembled closely the BSC methodology.

Organization B designed and implemented its scorecard program in a “customized” way as only some elements of the BSC philosophy were employed in the design of its program. According to the manager of organization B the idea was to develop a program, which would respond optimally to the necessities of the politicians and the city council managers. In fact, Organization B came close to the well-known management by objectives approach²⁷ (Drucker, 1976).

4.1 Definition of the strategic mission, vision and objectives

Both organizations implemented their scorecards programs in the top-down fashion. In particular, the macro definition of strategy was done by the politicians and the top managers of the city councils. The task of translating the strategy into the operational terms was done by the teams formed by the heads of the departments and the departmental units.

Organization A

The strategic mission and vision of Organization A were defined by the top managers of the Area of Economy and Treasury in collaboration with a politician who represented the governing party at the time (See Appendix 1). Furthermore, a

²⁷ It is the process of agreeing upon strategic objectives within an organization so that managers and employees understand what they are. The achievement of the objectives is further monitored with performance indicators.

technical team was formed including the heads of five departmental units and led by the senior auditor. The technical team elaborated the set of strategic objectives and issues to be included into the strategic map (see Figure 1A of the Appendix). Four major strategic topics were chosen to describe the vision (1) enhancement of the organizational image (2) promotion of economic activities (3) efficient resource management (4) sustainable growth. Strategic plans and actions were defined in order to fulfill strategic objectives.

Organization B

The strategy formulation process in Organization B was based on the strategic principles chosen by the government of the city for the period of 2004-2007 and defined as citizens' participation, sustainability, social cohesion, and economic and social progress. Every year politicians and managers of the city council elaborate the Annual Work Program formulating the annual strategic objectives and the actions necessary to make them work (see Appendix 2 for clarification of the process of strategy formulation). The Annual Work Program of 2004 included 120 strategic objectives and 479 strategic actions assigned to the different organizational units of the city council. This document also included the detailed budget for the forthcoming year. The source of financing for some of the strategic actions and plans was specified. Apart from the strategic objectives set out in the Annual Work Program managers of the basic operative units defined the objectives which were specific to their units' activities. In such a way the program of performance measurement is aimed not only to attenuate the corporate strategy but also the specific tasks of the operative units. The units' heads along with the heads of the departments and politicians participated in the process of translating strategic objectives into actions and select indicators in order to monitor the achievement of the objectives.

4.2. BSC content

Organization A

The BSC team built its model around four perspectives which are typical for the BSC applications in public organizations, labeled from the bottom to the top as "Learning and Growth", "Internal Processes", "Financial Health" and "Clients" (See Figure 1). Such sequencing of the perspectives means that by improving employees' skills and enhancing their motivation it is hoped to achieve improvements in the processes such

as budgeting, cash planning, and clients' attendance. This in turn would permit to maximize the financial and non-financial revenues and minimize debt. The latter would lead to the achievement of the top strategic objectives, such as the enhancement of organizational image, optimal resources allocation, sustainable growth, and promotion of economic activities.

In the next stage the BSC team selected the indicators for each of the strategic objectives, specifying the source and the frequency of their collection and also the targeted values (See Table 1A). The process resulted in the selection of 48 indicators, the number going far beyond the recommended 18-20 by Kaplan and Norton. According to the managers, the idea, underpinning the usage of a big battery of indicators, was to work first with the extensive version of the model and later, after the data analysis, narrow it down.

The heads of the departmental units proposed most of the indicators. According to the interviewed managers of organization A, the definition of the BSC indicators did not constitute a big problem. Around 50% of the indicators already existed in some form, although, their construction often required the retrieval of information from different databases and additional computation. The rest, however, was new and their construction required creation of new databases. In some cases strategic plans were assigned to strategic objectives. Then, the degree of plan accomplishment served as a measurement instrument for the respective strategic objective.

Organization B

Here the BSC team decided not to employ the four-perspective design for the departmental metrics but select the indicators specifically for each of the strategic action and objective. For instance, response time by police officers to a traffic accident was chosen as one of the indicators for the strategic objective of increasing the safety of the public roads. The heads of the departments and basic operation units (BOU) had autonomy in proposing the strategic actions and plans corresponding to the strategic objectives they would be responsible for. They chose the indicators in collaboration with the politicians and some of them received help from the managers of the BSC team as well. Most of the indicators used are related to the temporal and budgetary marks of the realization of strategic actions (see Table 2A) and therefore perform as controlling indicators. Few indicators measure the outcomes of strategic activities. Most of the indicators were new for the organization.

At the global organizational level the managers of the BSC team started to develop a performance measurement model including four perspectives, called respectively “Professionalism” , “Decentralization and Transversality of the Processes”, “Outcome Orientation”, and “Quality and Impact”. The meaning of these perspectives encompasses the BSC sequential logic: better quality of human resources leads to better services they provide, better organizational outcomes and higher satisfaction manifested by the citizens. The construction of a global performance measurement model is one of the strategic objectives of Organization B.

4.3 Data Collection and Analysis

Organization A

Organization A decided to create a job position for a person who would collect, transform and analyze the BSC data. This position was granted to the senior manager of costing and managerial control unit. The manager (further referred to the BSC technician), had to establish contacts with the departmental units and ask for the necessary information. In case the information was received, the technician performed the necessary calculations and introduced the data in the BSC software, obtained from a consulting company. Data analysis consisted in comparing the actual values of the indicators with the targeted ones. The software produced an output of this analysis visualizing the results in the range of “very good” in blue or “very bad” in red.

The collection and processing of the information turned out to be one of the major obstacles of BSC implementation in Organization A. According to the technician, it was impossible to get all the necessary data from the departmental units. The delays in data supply were explained as due to the shortage of time and resources for the extra task and also technical problems with local databases. As a result, only around 30% of the planned amount of indicators was collected during 2002 and 2003. The output of the analysis for the years 2002 and 2003 was published in the web-site of the city council.

Organization B

The process of data collection and analysis is organized as follows in Organization B. First, the data is collected at the departmental level. The heads of departments in collaboration with the heads of BOU have freedom in setting-up the necessary procedures and measurement formats. For instance, some of them have chosen to

revise the information monthly, created necessary databases and appointed employees to perform the technical tasks required for the construction of metrics.

Next, information about the accomplishment of the strategic objectives is supplied to the managers of the scorecard team. They analyze the data and produce an aggregate report, which includes the strategic actions and objectives listed in the Annual Work Program and the state of their accomplishment. Managers use traffic lights, with green being “in time, very good”, and red signaling delay. The accomplishment of strategic objectives is discussed in the General managerial meeting with the politicians each quarter. Here the possible delays are analyzed and if needed the targets of the problematic and unfeasible objectives are modified.

Managers use Excel spreadsheets to process the data. The aggregate reports are posted in the city council intranet. According to the managers, no additional recourses were invested in building their performance measurement model. However, some of the interviewed pointed out to the problem of “information breakage”. The heterogeneity of the departmental information systems represents an important obstacle in the construction of a global database. There are significant costs associated with the processing of information which are expected to grow in the future.

The progress in the implementation of the scorecard metrics is not uniform across all services. The most advanced departments started to review their metrics. For instance, in the department of Public Roads managers started to analyze historical values of some key indicators with the objective to predict its future trend. At the same time, they expressed concern about the rapidly amounting data, and the desire to make an inventory for deciding which indicators are especially useful and informative.

4.4 Cause-and-effect relationships

Being central to the BSC design, the idea of cause-and-effect chains receives only limited attention in the model application of Organization A and it is deliberately omitted by Organization B. One of the managers interviewed in organization B expressed his conceptual position about the feasibility of finding valid and stable causal relationships in the context of public sector:

I am not convinced that relationship of the type “employee training will lead to greater efficiency” holds true. For me it is too general and not

necessarily true. But I know that greater quantity of registered cars does imply greater revenues²⁸ (Head of Quality Processes)

The BSC team of the organization A built its strategic map with relationships between the strategic objectives. Managers here are well aware of the importance of connectivity and dependence between the elements of the map. However, during further usage of the model no attempts were undertaken to exploit the collected indicators and analyze the association between them. This is partly because only around 30 % of all the indicators were collected, but mainly due to the lack of organizational knowledge and resources to undertake such analysis.

This is the most difficult part of the BSC. There is no internal culture. Consultants were ignorant as well... In the public sector there are a lot of indicators related to each other. Sometimes the nature of their relationship is not one of dependence but of interdependence. (Head of the Area of Economy and Treasury)

The members of the BSC team in organization B considered the assumption causality to be very “tough” for organizational understanding and costly and time-consuming in terms of implementation. The major argument pushed forward by managers was that working on the cause-and-effect part of their performance measurement model was not of primary interest for the organization at the moment.

We still did not make a step toward the famous BSC in a sense that we did not establish yet correlations between causes and effects. In my opinion the organization is not sufficiently mature to do that. If the organization is not sufficiently mature, if only one part of the organization has internalized the importance of doing the scorecards...if the global scorecard is not integrated with the local ones...given all this, there is a long way toward the construction of a sophisticated BSC. For me it is very important that the organization internalizes the concept and believes in it and that the organization itself demands a more sophisticated system. (Head of Public Roads)

The findings of the present study contribute to the ongoing academic discussion about causal performance measurement models (Norreklit, 2000, 2003; Otley, 1999). Using an experimental methodology, Webb (2004) investigates the importance of causal structure in the strategic performance measurement models. He demonstrates that well-articulated causal links make salient for organizational actors the mechanism of achievement of the objectives stated in the model. Better understanding of the goals

²⁸ Car owners pay a fee when they register their cars.

lead to greater commitment by managers to achieve them. Thus, hypothetically, causal models have an advantage compared to the ordinary scorecards.

Most of the real-life models, however, are causally weak. Luft (2004) in his discussion of Webb's article defines several types of such "weaknesses". These are the high cost of the analysis, uncertainty of the processes of value generation, and conflicting views on "true" cause-and-effect relationships managers may have.

The first two arguments seem to be especially relevant for the studied cases. In both organizations the interviewed have emphasized the difficulties of "digesting" the concept of causality. Partly this occurs because of the challenges to trace the value-creation activities in a public organization in comparison to the private one. And most importantly, the causal representation of the information is not demanded by the organizational members themselves. This adds an additional cost to the construction of a causal model.

4.5 Ties with incentive mechanism and budgeting

None of the organizations used BSC measures to compensate employees upon the achievement of the planned outcomes. According to the head of the Area of the Economy and Treasury of Organization A this would violate the legislation in force. Some of the services heads in Organization B, however, commented that there were incentives in terms of public acknowledgment of employee merits in the intranet or during regular meetings.

The relation of the BSC with the budgeting process in Organization A is indirect since one of the strategic objectives of its map is formulated as "Improve the Budgeting Process". However, the BSC measures did not serve for the allocation of money to the strategic plans. Organization B in its Annual Work Program specified the budget of each strategic initiative in a case it would be decided to allocate money for its accomplishment and so that spending be monitored. So, the scorecard design of Organization B assured the relationship between its strategic management and budgeting process.

5. The outcomes of the BSC implementation for the city councils

Organization A

The enthusiasm that top managers had with regard to the BSC initially, declined drastically upon stumbling over what managers define as the “technical difficulties”. Lack of human resources and time, problems with collection and processing of the information, need for stronger motivation and political support were listed by them. The project was stopped in 2004 and surprisingly, no meeting was organized to analyze the available BSC information for years 2002 and 2003, and no attempts were made to rescue the project. The opinions given by the managers of the BSC teams, personally involved in the project, are emotionally loaded:

We have designed a good vehicle but did not know how to drive it. And it is not because we are not capable to do this but because we needed more time and gasoline: we needed more of the human resources, to solve technical problems, to connect our databases.
(Senior auditor)

We elaborated a very good model which could be very useful for management. We invested a lot of energy into this but failed to implement it in practice.
(Senior auditor)

The BSC was an important step toward the creation of a new culture of performance measurement. But the idea was not understood by the organization. (Head of the Area of Economy and Treasury)

Feedback given by some heads of departments confirms that the BSC project currently does not have any impact on their job duties:

I understand what the BSC is about. It is to have a global idea about our progress. It is a very good idea but we need to solve many problems first.

The most important issues for me are: how much taxes am I collecting, and whether I am following the budget. I can obtain these data from my application²⁹. What I need is not reflected in the BSC. (Head of tax department)

I don't see the BSC initiative negatively but it is has to be further developed. (Head of purchasing department)

²⁹ Refers to the special software for processing information available at the tax department.

Managers, however, were proud that their city council was the first in Spain to implement the BSC model. The information collected for years 2002 - 2003 together with the explicative notes is posted on the city council web-page accessible for the public. According to the top managers, they consider to use the experience for implementing a new performance measurement program, which will cover all the departments of the city council.

Organization B

In Organization B the implementation of the scorecards in the departments has started to change gradually organizational life. The managers of the BSC team unanimously treat their performance measurement initiative as a tool for the creation of a new management culture of performance measurement.

Human factor matters a lot. In the beginning the scorecard was perceived by many as a repressive tool, only as a control tool. But attitudes change little by little. (Head of Quality Processes)

It is useful and starts to become popular in organization. Many heads of departments went further and started to utilize their metrics in the discussion of the budget allocation...Which is great, the scorecard is becoming a legitimate tool for negotiations (Head of Public Roads).

Nevertheless, the managers of the BSC team in organization B recognize that the progress is rather slow and not uniform across the departments and depends a lot on the predisposition of the heads of departments toward this new way of performance measurement. In addition to the resistance, the problems of processing the data and conciliation of local and global metrics of data were mentioned as obstacles to change. The analysis of the internal documents showed that in 2004 Organization B achieved 86% and 87% of targeted strategic objectives and actions respectively. The latter represent 6% improvement over the similar statistics of the year 2003. The unachieved strategic objectives and actions, those which are in “red” or “yellow” are analyzed.

6. Discussion of findings and conclusions

The main purpose of this study was to analyze the experience and the results obtained by two Spanish city councils in the implementation of their scorecards programs. We

did so in the light of NIS and OIE theories. Having analyzed how and why the city councils adopted their balanced scorecards we see two different scenarios.

Importantly, both city councils started to implement new performance measurement programs with an intention (at least, formally so) to change their old ways of performance measurement and reporting and comply with the new institutional requirements. Following Mizruchi and Fein (1999), we admit that empirically it is quite difficult to draw the distinction between three mechanisms of isomorphism postulated in NIS. The primary impulse to change was given by law (coercive isomorphism). The idea to format new programs in the BSC style can be attributed to both mimetic and normative isomorphism. Organization A designed an exemplary BSC, building on the BSC templates of reputable cities councils (mimetic isomorphism). Initiators of the new programs in both city councils base on the experience, obtained in the other organizations and professional seminars (normative isomorphism). As the result, two organizations initiate the construction of new organizational rationality about multidimensional strategic performance measurement. The scenarios of this change, however, turned out to be different in the two organizations. And, therefore, the meaning of loose coupling would be quiet different in the studied setting.

Organization A implemented the balanced scorecard in a ceremonial-like fashion. For this organization, the BSC is a symbolic managerial tool, signaling that the organization is modern and open to innovation. Notably, one of strategic objectives placed in the strategic map was formulated as “the enhancement of corporate image”. The analysis of information in the BSC was published on the web. However, no meetings followed to analyze this information and use it in managerial decisions. The BSC is well understood by only the few top managers who initiated the innovation. It is a matter of pride for the organization, as it was the first city council to implement the BSC. However, middle managers supported the model only formally. Although they understood the virtues of it they preferred to keep familiar work routines and practices. This passive resistance of managers, which did not see the relationship between the BSC and their job responsibilities, together with a number of technical problems, led Organization A eventually to decouple its operational activities from BSC.

On the other hand, Organization B implements its program in instrumental-like fashion. In contrast to Organization A, salient here are the arguments of efficiency

and applicability of the new model to the internal decision making. The BSC is used as a name for an effort to develop a useful hybrid approach, which followed the orthodox BSC only loosely. Organization B is shown to search for comprehensible formats in the design of its model, omitting deliberately the four standard perspectives at the departmental level and postulated in BSC cause-and-effect relationships. In other words, Organization B loosely couples with the idea of advanced multidimensional strategic performance measurement. Nevertheless, its technical and operational activities are coupled tighter with the formal institutional requirements. In the end, it does measure and reports its strategic performance.

The scorecard of Organization B became aligned with the Annual Work Program, a major mandatory document of a city council which has legitimacy among politicians and citizens. Apart from sketching the strategy this document allocates the budget for the city council activities. Part of the performance measurement program of Organization B represents quantification and tighter control upon listed in the Annual Work Program objectives and activities. Our analysis suggests that this link between organizational routines that are already familiar (annual plan and budget allocation) and a novel rules (introduction of quantifiable indicators and reporting) ensured greater commitment of the heads of the departments and the necessary political support. Therefore, our findings provide an empirical support to Burns and Scapens (2000) proposition about path-dependency in the process of change. Organization B is a good example as we have been able to document that existing routines did influence the selection and implementation of new ones. Implicit here is the OIE evolutionary view of step-by-step assimilation of new routines and practices by the managers.

In contrast, Organization A constructed its BSC upon a complex strategic map with the numerous cause-and-effect relationships among the strategic objectives. It seems that this document could not assure smooth transition from familiar routines to the novel ones and merely played a symbolical role. According to the OIE theoretical framework, Organization A abandoned its project in the phase of translation of the new rules to the new routines. Organization B managed to translate new rules into the new routines of measuring and reporting. However, the degree of institutionalization of those routines is not high and heterogeneous across the departments.

OIE also emphasizes the active role organizational actors and groups may have in shaping of new rules and routines. Our findings reveal certain inter-departmental

differences in the adoption of the BSC in Organization B. Notably, the managers of the BSC teams started to build a network of “accountable-for-innovation” middle-managers and employees. The adoption of a new reality of performance measurement by managers and employees implied a long and tedious process with individual predisposition toward innovation differing across organizational actors (here heads of departments and subunits). As a consequence, the implementation of the model was not uniform across departments and subunits. Managers comment that having leaders and outsiders is natural.

Therefore, it can be argued, that an important insight into the dynamics of change can be gained by looking at the relationships between the managers involved in the project and the manifest sources and forms of resistance. It is beyond the scope of the present study to conduct such analysis. Several studies, grounded on the theories of power and social identity, have started this line of research (Collier, 2002, Bourguignon Annick at al., 2005)

Synthesizing the evidence from our cases, we conclude, that responding to the same institutional stimuli, organizations may employ diverse tactics constructing their formal structures. New rules designed in the connection with the existing organizational routines are shown to have bigger chances to be accepted in organization. Contributing to the NPM management discussion, we conclude that both, efficiency and legitimacy seeking reasons, are present in the adoption of strategic performance measurement models by the public organizations. While the primary impulse for changes was given in both city councils by the desire to comply with new governmental requirements, in one of the city councils strategic alignment started to take place and some managers began to use performance indicators in their day-to-day activities. As studies of this kind accumulate, we will be able to explain which organizational features may explain the prevalence of a certain perspective. Alternatively, as in our present observation, we may see the two perspectives represented for many types of organizations as complement characterizations of changes in managerial accounting.

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Appendix 1 BSC set-up in Organization A (Source: Organization A internal documents)

Organization A defined its mission as:

“To elaborate and control the budget, to define the policies of employment, economic promotion, taxation and purchases ensuring efficiency, justice and service quality via efficient management of the resources contributed by citizens”

The strategic vision is formulated as following:

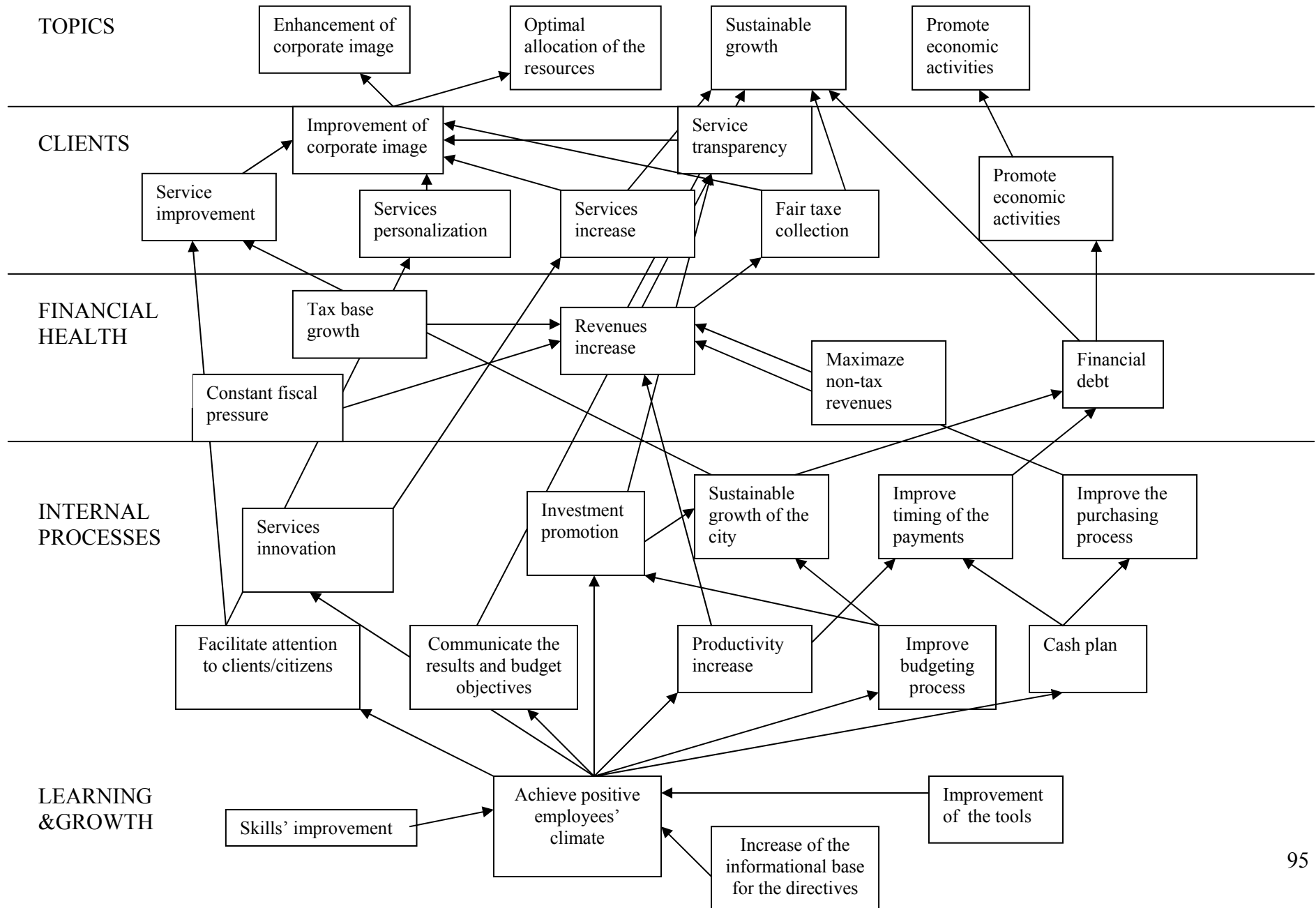
“To be a leading, innovative city council offering high quality service for our citizens”

Table 1A Example of the BSC indicators, targeted values and strategic plans used in the Organization A

Perspectives/Strategic Objectives	Indicators	Source	Frequency	Targets	Strategic plan
Clients/Citizens					
Improvement of the corporate image(perceived quality)					
<i>Providing more and better services, personalizing and making transparent relations with citizens, to form better image of the department, perceived by the citizens.</i>	Number of citizens' complaints received by phone -010	General Services - 010	monthly	3% of the total city council complaints	
	Number of complaints in the department/number of the city inhabitants	General Services - 010	quarterly	maintain constant	
Service improvement (technical quality)					
<i>To increase the quality of the service, improving internal processes and implementing better practices, in order to meet clients' expectations.</i>	Average period of time occurring between the date of reclamation entrance and its resolution	Tax department- Database of the receipts	monthly	5% decrease	
	Average period of time which passes when the resources are pending	Tax department- Database of the receipts	monthly	5% decrease	
	Period of time of the refund of the mistaken receipts	Tax department- Database of the receipts	monthly	5% decrease	

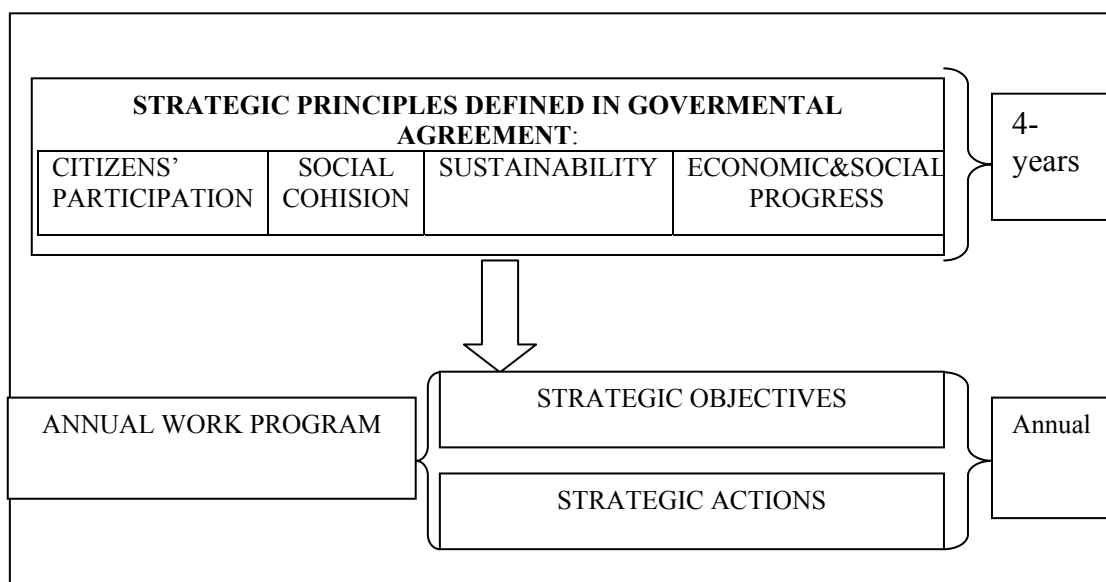
Financial Health					
Growth of the taxes' base					
<i>To increase tax revenues, encouraging formation of new enterprises, retention of the existing and developing residential and commercial systems.</i>	Amount of the fiscal regularization	Tax department-Database of the inspections	quarterly	3% of annual growth	
	Number of new buildings registered	Tax department-Property register	quarterly	3% of annual growth	
	Total of new buildings' registration	Tax department-Database of the receipts	annually		
	Number of new enterprises registered	Tax department-Database of the receipts	quarterly	3% of annual growth	
	Total of new enterprises' registration	Tax department-Database of the receipts	quarterly	3% of annual growth	
Internal Processes					
Improvement of budgeting process					
<i>To improve the administrative procedure of the invoices' confirmation. To target a confirmation period of 30 days.</i>	% of the invoices confirmed within 30 days	Accounting database	monthly	to exceed 50% of confirmation within 30 days	Monthly revision of the invoice confirmation
	% of the total of the invoices confirmed within 30 days	Accounting database	monthly		
Learning and Growth					
To achieve positive employees' climate					
<i>To strengthen the employees' work spirit, having them more motivated, and productive.</i>	Number of accepted employees' suggestions/Total of suggestions	Direction/Book of the suggestions	quarterly	to exceed 50%	Communication plan
	Index of absenteeism	Human Resources	monthly	inferior to the city council average	
	Accomplishment of the BSC objectives	Direction of the Economic and Treasure Department	monthly	to exceed 60%	

Figure 1A STRATEGIC MAP



Appendix 2 Strategy Formulation in Organization B (Source: Organization B internal documents)

Fig 2. Strategy Formulation Process in the Organization B



Source: proper elaboration based on the internal documents

Table 2 Example of Strategy Formulation in the Organization B (Excerpt from the Annual Work Program)

Objective 1.2 Citizens' participation		
1.2.1 To promote the definition of the model of the participative budget in order to apply it in the year 2005		
Actions	Responsible	Budgeting
1.2.1.1 To define the plan for the model of the participative budget	Economic Department	Own resources
1.2.1.2 To begin the constitution of the participative mechanisms for implementing the plan	Participation	Own resources
...		
1.2.6 To create the City Advisory Board, a global participative organism, for discussing city policies and strategies		
1.2.6.1 To design the objectives of the City Advisory Board	Economic and Institutional Relationships	Own resources
1.2.6.2 To form the City Advisory Board	Economic and Institutional Relationships	Own resources