Performance measurement in Academic Departments:

The Strategy Map Approach

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ABSTRACT

The purpose of the paper is the implementation of the strategic map model to an academic department. We use a qualitative methodology to identify dimensions of performance measurement suitable for application. After identifying the relations between the four perspectives and identifying the strategic maps, the case proposes a set of goals and measures which are suitable to satisfy the managerial needs a public service organization.

1. Introduction

Like many public service providers, in most European countries, universities strive to align measures of effectiveness with coherent measures of efficiency and with their mission (Cullen et al. 2003). In the case of universities, this is associated with a need to maintain excellence and face competition[1]. This requires the development of multidimensional performance measurement systems (PMS) able to fully capture the overall outcome of the various activities carried on within organisations (Kloot and Martin, 2000; Broadbent, 2007) and to provide decision makers with the completeness of information they need to manage processes which are — particularly in the public services context — clearly beyond the financial dimension (Ceynowa, 2000, Broad et al., 2007).

Many services use the balanced scorecard (BSC) (Kaplan and Norton, 1996), which is a performance measurement system thathas gained widespread recognition (Farneti, 2009). In its most recent versions, which extend the initial ideas, it introduces the Strategy Map (Kaplan and Norton, 2004; 2006), focusing on the strategy making process.

In order to illustrate the applicability of the Strategy Map (SM) approach, this paper illustrates its adoption in an academic department. Academic Departments (AD) are relevant examples for public services as they are characterised by multiple inputs and outputs: the process of converting such inputs is complex in nature and some outcomes are very difficult to measure.

This study aims at investigating the issue of strategy definition and performance measurement in academic departments, by investigating the definition and application of strategy map to an AD of an Italian university. Moreover, it focuses on the process through which the department has developed its strategy map and measurement indicators. Using a qualitative method, which allows a greater comprehension of the implementation process, the paper describes the different steps undertaken by the AD to design and articulate the four perspectives of the BSC and to identify the cause-and-effect chains that are related to the strategic objectives identified by the top management of the AD.

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[1] Universities, unlikely some other parts of the public services, do compete for students.

2. The Balanced Scorecard in the higher education sector

The BSC is a multidimensional performance measurement system (Kaplan and Norton, 1996) that adds strategic non-financial performance measures to traditional financial metrics to provide a more 'balanced' view of organizational performance. It considers four perspectives, for each of which the organisation should define objectives, measures, targets and initiatives:

- Financial perspective: the focus is on the achievement of financial results (both long and short term)

- Customer perspective: the focus is on the users of the product/services offered

- Internal processes perspective: it refers on the specific production processes and their efficiency

- Learning and growth perspective: it includes the management of the human, structural and relational capital of the organisation

Each perspective is linked to the strategic objectives of the organisation thus identifying the cause-and-effect relationships pursuing the organisation's mission.

Other studies present the application of the BSC to the higher education sector. Cullen et al. (2003) illustrated how the balanced scorecard and strategy map provided a University a tool to bring together different objectives in a single structured framework. Lawrence and Sharma (2002) focused on the financial dimension and on the internal process perspective assessed in terms of quality of research undertaken by the staff of universities. Kettunen (2005) noticed that, as is the case in the public sector, the customer perspective, instead of the financial one, should play the most prominent role. Papenhausen and Einstein (2006) emphasised that besides the "mechanics" implied by the BSC, support from senior administrators is critical to implementing a successful BSC, as it allows the creation of alignment and synergy across the college. Self (2003) described the process of implementation of the BSC at the University of Virginia Library and pointed out the extreme importance of coordinating the measures with the organisational values of the library.

These studies demonstrate the complexity around the application of the BSC model. We wish to add to the understanding we have of the use of BSC/SM in complex public service organisations in this study of its use in an Academic Department. It demonstrates the use at a micro-level where the complex and composite nature of the various interests affecting the activities carried out (Stewart and Carpenter-Hubin, 2000) make the use of the model particularly interesting, but easier to access and document. Thus, we provide an exploratory analysis based on the case of a department of the University of Padova. Table 1 provides a brief description both of the University of Padova and of the analysed department[2].

Insert table 1 about here

3. Research method

This case study is an "experimental" one (Yin, 1994; Ryan at al., 2002): given the need of the management of the AD to adopt a performance measurement system suitable to reach its mission and monitor the implemented strategic actions, the researchers proposed the adoption of the Strategy Map model, who seemed the most suitable to respond to the AD's managerial needs.

The role of the researchers was active because they were directly involved in the implementation phases, by supporting the top management of the AD during the definition of the hierarchy of the four perspectives of the BSC and the identification of indicators. On the other side, the authors did not actively participate in the process of identification of the mission and strategy of the department, rather being observers and facilitators of the process.

Data were first collected through secondary sources, using the web to obtain preliminary information on the department's profile and organizational structure. Then primary sources were used to get information about the department's mission, strategy, internal processes and procedures, and institutional activities. We conducted twelve in-depth semi-structured interviews[3] in the period May-October 2007: three with the chairman, four with the vice-chairman, and five with the chief financial

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[2] For reasons of confidentiality we do not provide the name of the department.
[3] More details of method can be obtained from the researchers.

officer - CFO. The researchers were able to assist to all the meetings held during the period in which the model was designed and implemented.

Data collected through the interviews were then analysed using the strategy map approach as a grid to identify a first representation of the key dimensions of strategy assessment as well as the underlying indicators. This representation was then discussed with the interviewees. Possible alternative configurations of the system of indicators included in the strategy map were also discussed, and possible inconsistencies clarified.

4. The Strategy Map applied to a department of the University of Padova

To apply the strategy map model to the AD, according to the approach defined by Kaplan and Norton (2004; 2006), the department has to elaborate and formalise its mission and strategy. The case study allows us to focus both on the process of strategy identification and on the analytical framework which collects goals and measures.

4.1 The process of implementation

The *starting point* is the analysis of the mission and strategic themes for the research activities of the AD. The strategic mission and objectives of the department had been carried on implicitly, with no explicit sharing within the organisation. The chairman and the vice-chairman, having consulted the members of the AD, held various meetings to formalise the strategy of the department, at which the authors participated as silent audience in order to follow the process of formalisation of the mission of the department. At the end of this step,the authors carried out one interview with the chairman and two with the vice-chairman. The outcome of this step was the formalisation of the mission of the AD: "*To promote scientific research and spread out knowledge and culture about the specific disciplines within the department*". The mission is pursuing a double aim: the growth of scientific research and the involvement of the community by diffusing the research outputs with a propagandistic approach in order to feed the culture and knowledge of the community.

The process of strategy formalisation leads to the *second step,* namely the definition of the hierarchy of the four perspectives of the BSC (strategy map). The department's stated mission and strategy make it clear that the fundamental purpose of the organisation is to promote research at a national and international level, as the main customers of the department are the scientific community, external third parties, the institutional financing bodies and PhD students. Therefore, the hierarchical structure of the model places the customer perspective at the highest level (as proposed by Kettunen, 2005).

In the *third step*, indicators are identified and selected for each of the four perspectives of the BSC, based on the above-mentioned hierarchy. To identify the indicators, interviews were carried out with the chairman and the Chief Financial Officer (CFO), and reference was made to the university and department statutes, rules and procedures.

The *last step* begins immediately after the definition of the strategy map and involves the validation of the strategy map. This step involved feedbacks from the various actors. In particular, the hypothesised cause-and-effect relationships were analysed and discussed with the chairman, vice-chairman and CFO of the department. This allowed to test each indicator in terms of relevance, completeness, reliability and interpretability. Eventually, the SM was approved and implemented by the AD.

4.2 The framework

In terms of Kaplan and Norton's (1996; 2001; 2004) BSC framework, the goals provide the starting point on which to build the strategy map: the mission is translated into goals, measures, targets and initiatives (Kaplan and Norton, 1996) to reflect the full picture.

The strategy map for the department is depicted by Figure 1. The special nature of the research activities, the characteristics of its customers and of the internal processes all have a significant influence on the structure of the BSC and the type of measurements that are needed to monitor the four performance dimensions.

Insert Figure 1 about here

Figure 1 provides a comprehensive description of the department's strategy, allowing the translation of the strategic themes into objectives and measures, tracing the chain of causes and effects that connects the desired outcomes with their drivers. Following the mission of the department, the BSC strategy map develops three strategic themes: 1. development of the international dimension of the department; 2. innovation in the research field; and 3. involvement with the community by offering high-quality research output. Although the department is an autonomous organizational unit of the University and thus can decide on its strategic priorities, all of the strategic themes are in line with the mission of the University of Padova, which aims at playing an important role in scholarly and scientific research at both a European and world level, by establishing closer and closer links of co-operation with all the major research universities.

In the adopted model, the learning and growth perspective is placed at the base of the strategic map. The internal process perspective allows identification of the critical internal processes by which the objectives established in the customer perspective can be achieved. Efficient processes enable funding and also allow for improvements in the effectiveness of research processes. The financial perspective serves as a base from which to achieve the objectives of the customer perspective and it includes both external funding and funding from the central government. The external funding is used to enhance commercial research activity, while the funding from the central government is mainly used to feed the objective of becoming a leader in the field of research. Moreover, figure 1 sets out all the indicators and cause-and-effect relationships among the different objectives, according to the BSC's four perspectives.

Customer perspective (see table 2)

The main objective (Objective 1) refers to the national and international scientific community. Such a category can be defined as a "meta-client." It represents both the benchmark in terms of emerging issues and fields of research, and the contextual environment in which the AD operates. Such an objective is measured by considering the reputation of the department in terms of seminars,

conferences, workshops and congresses organised within a year and number and quality of participants at these conferences. Moreover, the number and quality of publications by the academic staff is a measure of the reputation of the department.

The second objective (Objective 2) addresses a second type of customer, represented by central and local government institutions that provide grants to the AD. This goal is measured by the number of research projects financed by such institutions.

Objective 3 refers not only to third parties interested in commercial research[4] but also to the university or other departments that ask for consultancy. From interviews with the chairman of the department it has emerged that the purchaser does not always ask for high-quality research, being more interested in spendable and commercial research outputs. Such a situation is problematic as it conflicts with the mission of the department: if the consultancy activity brings financial resources to the department, it also undermines the promotion of scientific research. Nevertheless, it helps in pursuing the second part of the mission: disseminating knowledge and competencies on the specific disciplines of the department.

Other important customers to consider are the PhD students, to whom Objectives 4 and 5 are dedicated.

The customer perspective of the department does not strictly follow the classification proposed by Kaplan and Norton (2006). The only objective that can be easily referred to cost leadership is the research ordered by third parties, where the provision of consultancy is offered at low prices.

<center>Insert table 2 about here</center>

Financial perspective (see table 3)

The first objective of this perspective (Objective 6) is "to decrease costs related to commercial research activities". Such aim may have two possible effects: affect the satisfaction of third-party

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[4] By "commercial research," the department means all the research activity carried out to provide a specific output to a specific client. Institutional research is indeed research "for the sake of research" and is addressed to the first type of customer analysed above.

customers (lower price) and increase the surplus from more efficiency (more institutional research funding). This objective is therefore related to both objectives (1) and (3) of the customer perspective: the improved efficiency is beneficial both for third-party customer satisfaction and for the reputation of the department in terms of research results.

As described above, the financial strategy of the department is well balanced because it pursues a productivity-efficiency strategy (which gives results in the short term) and it addresses growing trends of cash inflow, which affect the long-term strategic results.

<div align="center">Insert table 3 about here</div>

Internal business perspective (see table 4)

The two main internal processes are the research process and the PhD program process. With regard to the research process, the main objective (Objective 10) is to "increase the quantity of the scientific productions" in terms of publications. By means of more intense scientific productivity, the department can positively affect its public image (refer to Objective 1 in the customer perspective) and fulfil its mission statement. The relationship between the two goals is particularly evident, also because they use the same measure.

As regards the PhD program process, the only objective identified (Objective 13) is that of "increasing the effectiveness of the teaching method". The measure is the percentage of teachers with an international curriculum. Such an indicator can be used to analyse the degree of internationalisation of the PhD teaching, directly linked to one strategic theme. Moreover, if the effectiveness of teaching methods increases, the department is also able to pursue Objective (4). Another possible use of such indicator is to managethe contacts with foreign schools and research institutions, thus relating to Objective (5).

Again, this perspective has not been constructed following the indications of Kaplan and Norton (2004). Within the research process, the commercial activity of the department could overlap with the

operating processes identified by Kaplan and Norton (2004) since it represents the process through which the department produces and delivers a product to the customer. As regards institutional research, it could be referred to as an innovation process (as it is carried on "for the sake of research" and not for profit).

Insert table 4 about here

Learning and growth perspective (see table 5)

The goals connected to the learning and growth perspective are the drivers for obtaining excellent results in the other BSC perspectives

With regard to human capital, four objectives are defined: satisfaction of academic and administrative staff (Objective 14), loyalty of administrative staff (Objective 15), productivity of academic staff (Objective 16), competencies of administrative staff (Objective 17)

As regards information capital the main objective (Objective 18) is that of "becoming a leader in technology support systems" in respect of both the research process and the ordinary administration process.

With reference to organisational capital, the four objectives are to communicate strategy to all human resources and set a culture of performance (Objective 19), develop leadership and a sense of responsibility (Objective 20), link salaries to performance and align personal objectives to those of the organisation (Objective 21), increase the quality of the organisational context by encouraging teamwork (Objective 22)

Insert table 5 about here

5. Discussion and conclusion

The paper contributes to the literature by investigating and applying the strategy map to an academic department. In the first part of the paper we discuss how the BSC is a potentially useful performance

model for academic departments. The case shows great emphasis on the mission and the cause-and-effect relationships between desired outcomes and drivers. This is a linkage that is relevant across the public services.

There are at least four main contributions. First, we contribute to the research by verifying whether the SM is an appropriate PMS for academic departments and therefore other complex situations. In fact the BSC includes objectives referring to the specific areas of the department's activity: quality of the research, reputation, relationships with local community, human capital. The adoption of the SM approach requires 1.) to visualise strategy, 2.) to identify the links between the mission, strategic objectives and adequate measures in order not only to monitor the performance but also to address the management and 3.) to strategically allocate the resources, both financial and not, to turn strategy into action. These needs are ones replicated across the public services.

Second, we also provide an insight of the process of implementation of the BSC. As Self (2003) illustrated, the process of implementation of the BSC requires various feedbacks to ensure that the indicators adopted are in line with the mission and strategy of the AD. It illustrates the importance of coordination between the different stakeholders involved in the enhancement of strategy, from academic and administrative staff, to different types of customers and the community in general. The case shows how the coordination problem is managed by the learning and growth perspective, and by linking the objectives of the customer perspective to the mission of the department

Third, there are some differences in the application of the SM compared to what has been studied by previous literature. The application in an AD requires an adaptation of the SM with respect to the satisfaction of customers' expectations. The analysis has shown an extension of the conceptual category of customer conventionally considered in the BSC. In our study, the customer perspective encompasses the wider network of stakeholders involved in the diffusion of knowledge and science, such as the scientific community, but also the public in general, financing bodies and PhD students, as well as including the traditional customer (i.e., external third parties for commercial research). Such adaptation confirms the important result of Ceynowa (2000). The BSC strategy map underlines the

importance of the customer perspective and the variety of stakeholders involved, and it is also able to monitor the financial dimension, in line with the general reduction of public funding. The financial perspective must adhere to the objectives linked to the financial autonomy and viability of the department, but also to the quality of the research. Moreover, the adoption of the BSC provides a focus on internal key processes, such as the research and PhD program processes, which are the main strategic drivers for improving the reputation of the department and the overall quality of its activities and outcomes.

Finally, this paper has also important managerial implications for both academic departments and other complex organisations. Theimplementation of the BSC represents an important moment of deliberation about the mission and objectives of the department and the identification of the strategic drivers. The process of implementation of the BSC strategy map led the department's community to share opinions, focus on the important topics, and set organizational priorities. The process of implementation has also educated both the academic and administrative staff as to the importance of performance management, measurement and evaluation although we cannot yet assert if the organization has fully developed a culture of performance management.

Thus the BSC/SM helps to monitor and to build department mission and goals and it is recommended for wider use.

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Table 1. The Italian University System, the University of Padova and the Department Gamma

Italian universities reform started in the 90's pursued a double aim: the increasing of financial and managerial autonomy and the improvement of efficiency and effectiveness of academic institutions. In the Italian institutional and university setting, department are those organisational units, which fulfil the research function. Their organisation reflects a division of the disciplinary fields, meaning that they group homogeneous fields of research in terms of methods and teaching, therefore the incumbent professors may be teaching in different schools and colleges.

The main operations carried out by ADs are research (basic and applied); but also teaching according to the demand expressed by the schools and in relation to the department's resources in terms of professors, structure and equipment; and national and international PhD programs. ADs have their own structures (library, labs, equipment and so on), are responsible for those structures and are given financial autonomy. ADs are made up of professors and researchers recruited by the schools and colleges.

The University of Padova is an old and well-ranking Italian university (founded in 1222). Research is carried on in 67 departments: they are organisational units promoting and coordinating research in the different fields. Each department is an autonomous unit in terms of financial, administrative, accounting and organisational resources.

The department of this case study was founded in 1984. Today the department employs 19 full professors, 15 associate professors, 11 assistant professors and 17 supporting administrators. The PhD program of the department hosts 22 students. The internal decision-making processes in the AD are lead by three main bodies: the chairman, the executive committee and the board of the department. The main function carried out by the governance model are the management of the research structures, of the annual plan for research and the relative funding requests, which must also be approved by the central administration, the management and organisation of the PhD programs and special education initiatives, the collaboration with the University schools and colleges in which the professors teach, the approval of the balance sheet and the coordination of the criteria for the use of resources.

Table 2. Overview of the customer perspective's goals and measurements

Customer Perspective			
Client		*Objective*	*Measurement*
Scientific community	1	Promote the reputation of the department as leader in research at a national and international level	Reputation index determined on the basis of n. of seminars, conferences, workshop and congresses organized by the department
			N. of international and national relevant speakers
			N. of publications
Third parties	2	Bring innovation in the research field, by committing research to less developed issues	N. of research projects funded and historical trend
	3	Offer research and consultancy projects that satisfy the needs of the customer	Client satisfaction surveys
PhD students	4	Offer high quality and international doctoral program	PhD students satisfaction surveys
	5	Offer to PhD students the possibility to study abroad with high-refereed academicians	Incidence of students spending a study period abroad

Table 3. Overview of the financial perspective's goals and measurements

Financial Perspective		
Type	*Objective*	*Measurement*
Efficiency	6 Decrease costs related to commercial research activities	% decrease in costs related to commercial research projects between years (considerating volume of activity)
Fund raising	7 Increase funding coming from central government	Growth rate of central government funding
	8 Increase funding coming from other public and private institutions	Growth rate of funding from other institution
Revenue from operations	9 Increase revenues coming from external deeds with third parties	Growth rate of revenues coming from external deeds

Table 4. Overview of the internal business perspective's goals and measurements

Internal business perspective		
Process	*Objective*	*Measurement*
Research process	10 Increase the quantity of the scientific productions	N. of publications
		N. of seminars, conferences, workshop and congresses organized by the department
	11 Increase the effectiveness of research	Growth rate in publications
	12 Guarantee adequate structures	Amount of funding per academicians
PhD program process	13 Increasing the effectiveness of the teaching method	% of professors having an international curriculum

Table 5. Overview of the learning and growth perspective's goals and measurements

Learning and growth perspective		
Type	*Objective*	*Measurement*
Human capital	14 Satisfaction of academic and administrative staff	Academicians satisfaction survey
		Wage rise due to commercial research activities
	15 Loyalty of administrative staff	Administrative staff satisfaction survey Incentives
	16 Productivity of academic staff	N. of research monographs published per professor
		N. of articles published in scientific international journals per professor
	17 Competencies of administrative staff	% of administrative personnel partecipanting to internal and external training courses
Information capital	18 Becoming leader in technology support system	Degree of satisfaction of administrative and academic staff with reference to technological resources
Organizational capital	19 Communicate strategy to all human resources and set a culture of performance	Survey on the level of interiorization of the dept mission, strategy and goals
	20 Develop leadership and sense of responsibility	Structure of responsibilities within the department
	21 Link salaries to performance and align personal objectives to those of the organization	Awards and promotions given on the basis of the personnel productivity and performance
	22 Increase the quality of the organizational context by encouraging team work	Personnel survey with regards to relationship with colleagues, team work effectiveness, etc,.

Figure 1. Department Gamma's Strategy Map

Mission
The mission of Department Gamma is *to promote scientific research* by enhancing the internationalization of its human resources. The mission also refers to the *dissemination of knowledge and culture about the specific disciplines within the department*.

Customer perspective

Research and consultancy projects (3)

Reputation as leader in research at a national and international level (1)

Institutional research committed to less developed

Internationalization of PhD students (5)

High quality and international doctoral program (4)

Financial perspective

Productivity strategy

Cash inflows growth strategy

Efficiency in commercial research (6)

Increase funding coming from central government

Increase funding from other institutions (8)

Increase revenues coming from commercial

Internal business process perspective

Research process

PhD program process

Quantity of scientific production (10)

Effectiveness of research (11)

Adequate structures (12)

Teaching method (13)

Learning and growth perspective

Human Capital Satisfaction (14)

Information capital Leadership in

Organisational capital Culture (19)