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PERFORMANCE EVALUATION IN RESEARCH
DEPARTMENTS: FROM THE BALANCED
SCORECARD TO THE STRATEGY MAP

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Performance evaluation in research departments: from the Balanced Scorecard to the Strategy Map

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ABSTRACT

Notwithstanding a growing interest towards performance management systems for universities, little is known on their application to academic departments. Being an institution dedicated to research, a department presents specific characteristics: creativity, professional autonomy, low degree of repetitiveness, uncertainty on results, unclear relation between input and output. Such peculiarities make the evaluation and measurement of its performance particularly difficult. The purpose of the paper is the exploration and development of a performance evaluation approach which is suitable for the particular features of an academic department.

As this paper is explorative in nature, we use a qualitative methodology, to identify dimensions of performance evaluation suitable for application to an academic department. Data are collected for the case study of a department of the University of Padua, Italy.

After identifying the relations between the four perspective of the balanced scorecard and identifying the strategic maps, the case study proposes a set of goals and measures which are suitable to satisfy the managerial needs of the analyzed department.

The paper contributes to the performance evaluation literature in three main ways. It extends the concept of customer by considering a wider systems of stakeholders; it emphasize the strategic role of the financial dimension as a driver for achieving the mission and it highlights the need to coordinate the different stakeholders involved in the enhancement of strategy, from academic and administrative staff, to different types of customers and the community in general.

Introduction

Universities are facing great demand to be accountable to their stakeholders. As various authors have observed, the peculiar role of educational institutes requires them to define a strategic plan supported by mechanisms for monitoring, controlling and adjusting it (Al-Turki, Duffuaa, 2003; Papenhausen, Einstein, 2006). The increasing demand for quality, efficiency and effectiveness, the scarcity of financial resources and the consequent need to arrange adequate controls and accountability mechanisms (Epstein, Birchard, 1999; Epstein, Manzoni, 2006) have suggested and imposed to universities the adoption of management systems oriented to the measurement of the performance of the different actors, the introduction of total quality management and of evolved reporting instruments such as the balanced scorecard (BSC).

As Papenhausend and Einstein (2006) highlight, the BSC is flexible enough for all types of organizations including universities. Furthermore, Al-Turki and Duffuaa (2003), specifically referring to academic departments, state that "performance measures must be based on a set of objectives that are linked to the mission of the department and its vision for the future" (p.330).

The need for applying a performance measurement (PM) system to universities is also pointed out by Cheng, Yang and Shiau (2006) who focus on the strategic allocation of resources in the process of turning strategy into action. As to this regard, O'Neil et al. (1999) had already claimed that if a university is able to align measures of effectiveness with coherent measures of its core processes and with its mission, then it will be able to maintain excellence in turbulent changes of the environment. They also state the importance of developing and committing to credible mission-driven measures of performance.

The BSC can be conceived as a management system aimed at focusing strategy in a way that can lead to breakthrough competitive performance. In other words, performance measurement goes beyond its traditional monitoring role to assume a more proactive role in the management of an organization. Such management focus is well developed through the concept of Strategy Map (SM) which according to Kaplan and Norton (2001) "enables an organization to describe and illustrate, in a clear and general language, its objectives, initiatives and targets, the measures used to assess its performance and the linkages that are the foundation of strategic directions" (p.170).

The role of the SM is to translate the items of the BSC into a cause and effect chain (Cullen et al. 2003) so that the objective results are connected with their drivers and the organization can pursue its strategic vision. Kaplan and Norton (2001; 2004) themselves state that the general architecture of the BSC can be modified in order to best fit the nature of the organization, especially if it operates in the public or not-for-profit sector.

Although literature has focused on the application of control and evaluation systems with reference to public universities, such issues has not been sistematicalwly studied with respect to research departments and their peculiar nature. Such literature gap is double-fold: on one side, there are no studies which aim at identifying the proper performance evaluation model to be applied to departments; on the other side, there are no applications of any model to a real case.

This papers seeks to fill this gap with an exploratory analysis based on a case study of a Department of the University of Padua (for privacy reason we do not provide the name of the Department). Table 1 provides a brief description of the University of Padua and of the Department. The case study is then put in the context of the existing literature on strategy definition and measurement and accounting, ending with the drafting of a strategic map and measurement indicators.

The paper is structured as follows: the next section is dedicated to the description of the peculiar characteristics of a research departments and it aims at identifying the priorities in terms of performance measurement. Section 3 is dedicated to the review of literature, while section 4 describes the research method. The paper ends with the case study, a discussion of the results and their contribution to management theory and practice.

Insert table 1 about here

1. Academic departments and performance measurement

Academic departments are a peculiar unit of university, which promotes research and feeds development of society.

In the Italian institutional and university setting, departments are those organizational units which fulfil the research function. Their articulation reflects a division of the disciplinary scientific fields, meaning they group up homogeneous fields of research in terms of methods and teaching, therefore the afferent professors may be teaching in different schools and colleges. The main operations carried out by departments are:

1. research (basic and applied), carried on both individually and collectively
2. education service provision, according to the demand expressed by the local community and in relation to the department resources in terms of professors, structure and instruments
3. commercial service provision, according to the demand expressed by third parties which require the particular skills and competences of the members of the department

4. national and international PhD programs.

Three are the organs with decision power: the chairman, the executive committee (giunta) and the board of the department (consiglio di dipartimento). Their functions are to:

- manage the research structures
- approve the annual plan of researches and the relative funding requests, which anywaws have to be approved by the central administration
- manage and organize the PhD programs, special education initiatives and collaborate with schools and colleges
- approve the balance sheet and coordinate the criteria for the use of resources.

Departments can be conceived as operating units of the university, as they have their own structures (library, labs, machineries and so on), they are responsible for those structures and they have their own administrative staff, given their financial autonomy.

The markets in which departments provide service are of two kinds: internal - when referring to the scientific community, external – when third parties (firms, public administration, European Community) ask for consultancy on specific research projects.

Research activity is organized as an adhocracy (Mintzberg, McHugh, 1985), as this type of structure is able to manage the various dynamics and pressures coming from the environment. Interactions, behaviours and activities are mainly informal and the coordination is realized through the creation of multi-functional groups. Collaboration along the horizontal dimension is fundamental as the introduction of specialists increases the effectiveness. The main characteristics of such organizational structures are: high horizontal specialization, low vertical specialization, low degree of formalization, decentred decision making, great flexibility and reaction ability (Al-Turki, Duffuaa, 2003).

Researchers and professors, who are the principal actors in the adhocracy, do operate using their own professional knowledge in an innovative and creative way. The coordination mechanism used is the reciprocal adaptation which is the only mechanism that ensures freedom, flexibility, interaction and smoothness that the research activity needs.

From what discussed above, it is clear that the organizational structure of universities has a high level of differentiation and, given the great decision autonomy, it presents serious coordination and guidance problems (Al-Turki, Duffuaa, 2003). Because of the collective nature of the decision making process and the great decentralization of structures, the guiding principles in the choices of the university bodies cannot refer to specific and unique interests but must give equilibrate answers within various and changing requests.

The missing unitary management objectives, the multiple - sometimes opposing - aims and the impossibility of setting a hierarchy of actions based on one valuation criteria increase the level of negotiation pressure on the predisposition and definition of objectives. This induces great lacks in the formulation of the strategic plan. This is why universities need urgently to implement management and control systems aimed at institutionalizing the process of definition of short and long term objectives, and that may represent a valid support tool in the decision making regarding the allocation and use of resources and the monitoring of the performance (Arcari, 2003).

As stated by Phillipmore (1989), Johnes and Taylor (1990) the elements to be considered when measuring the performance of a department are:

- outcomes of the process of researching, in terms of publications
- impact of such outcomes, in terms of citation
- quality, in terms of funding received, awards and reputation
- usefulness, in terms of deals with third parties.

It is widely known (Johnes, Taylor, 1990; Ramsden, 1991; Cave et al, 1997; Cugini, Pilonato, 2006) that there are many different factors that affect the correctness, credibility and transparency of the performance indicators. An example regards the measure of the outcomes of research, i.e. publications. It is important indeed to define what publications to consider, the weight of each of them, the quality and so on.

As stated by Al-Turki and Duffuaa (2003), departments can be thought of as units with multiple inputs and outputs. The process of converting such inputs is complex in nature and the outcomes may be very hard to measure. The authors suggest certain characteristics a performance measurement system for academic departments should have. First of all, it should clearly be aimed at achieving the goals, stimulating internal quality improvement and benchmarking with leading departments. In particular the PM system should (p.332):

- be relevant (include data that are essential to understanding the accomplishments of goals)
- be interpretable (communicate in an understandable, concise and comprehensive way)
- be timely (availability to users before the report loses its value in making decisions)
- be reliable (consistency of the report from period to period)
- be valid (the measure must well proxy the intended quality indicator).

Stewart and Carpenter-Hubin (2000) suggest that academic departments must fully understand the macro-level goals "so that objectives and measures for their individual units are linked to those of the entire institution. Administrators must link unit goals to macro goals in all scorecard areas, develop strategies to achieve those goals and allocate resources to those strategies" (p.40).

Research departments need to be managed, controlled and evaluated according to their main strategic objective, that is the creation of knowledge. Indeed, they have to refer to multi-dimensional strategic managerial systems which consider the different aspects of their processes and support the corporate governance mechanisms (Epstein, Manzoni, 2006). Being an institution dedicated to research, a department presents specific characteristics: creativity, professional autonomy, low degree of repetitiveness, uncertainty on results, unclear relation between input and output. Such peculiarities make the evaluation and measurement of its performance particularly difficult.

Due to the particular characteristic of academic departments and our research goals, we have decided to adopt the Balanced Scorecard model as performance measurement system. As we will see from the literature review, the Balanced Scorecard (Kaplan, Norton, 1992) has gained widespread recognition partly because of the dissemination skills of its authors but partly undoubtedly because of its versatility. This model can be applied with different levels of complexity and can be used either simply to provide a balanced view of the organization's performance or (as the authors propose) as a strategic management system. Little integration and adaptation is required for its implementation as the link with the organizational structure are weak.

The purpose of the BSC model is to translate strategy into goals and performance measurements from four different perspectives: the financial, the customer, the internal processes and the innovation and learning (Kaplan, Norton, 1992, 1996). The use of this model allowed us to explain the relationships existing between the objectives (and therefore, the measurements also) related to the four perspectives.

In the next section, it follows a brief reviews of the main studies regarding the application of the BSC to university institutions and units.

2. BSC applied in university institutions

O'Neil et al (1999) explore the application of the BSC to the University of Southern California, in particular to the Rossier School of Education. The model was designed to satisfy the information needs of the central administration:

> Financial perspective" was replaced with "academic management perspective," and instead of asking "How do we look to shareholders?" we asked, "How do we look to our university leadership?". For the original "customer perspective" we substituted "stakeholder perspective" and identified students and employers as our most significant stakeholders. We kept the original names of the two remaining

perspectives. In addition to these changes, we renamed the "balanced scorecard" the

"academic scorecard" (p.36).

When coming to the choice of the objectives, the authors stressed the idea that the indicators of performance had to be "ordinary rather than exceptional" as to reflect the routine of the academic management in terms of data availability. Especially in high-decentralized organizations, such as universities, the authors also pointed out the need to monitor the quality of the academic units, whether it is increasing or declining according to the same standard that allows for comparability.

Insert table 2 about here

The BSC has been applied also to academic libraries. Such units are indeed a staff elements of university's organization: they can be considered providers of cost-efficient and up-to-date information to meet demands of professors and researchers in their achievement of quality teaching and researching. The control of this service provision can be effectively supported by the BSC especially if priorities among the dimensions of the BSC are set functionally to the pursuit of the mission of the organization. In particular, Ceynowa (2000) explains how the financial perspective, which leads in the BSC when applied to the private sector, must be considered as instrumental to the perspective of stakeholders (i.e. users of the library). Moreover, the development of the BSC requires clear definition and formulations of strategic objectives, "a task that university facilities are generally still somewhat unaccustomed. The BSC can thus make an essential contribution to strategy-based academic controlling" (p. 164).

Self (2003) describes the process of implementation of the BSC at the University of Virginia Library and points out the extreme importance of coordinating the measures with the organizational values of the library. In order to implement the BSC, the administration nominated four task forces, one for each perspective and a coordinating group with the aim of overseeing the process. The task forces first reviewed the mission of the library, stated the priorities and set the strategic objectives for each perspective. Then, they implemented 4 up to 6 indicators for each perspective by analyzing the options for data gathering and specifying a target for each indicator. The coordinating group had the role of reviewing the proposed model, suggest recommendations, organize procedures for data gathering and assign responsibilities among the organization.

Lawrence and Sharma (2002) study the implementation of the BSC at the DXL University in Fiji: " *The financial dimension of the BSC at the DXL University encapsulates indicators such as cash flow, liquidity ratio, debtors age, collection efficiency, profitability measured in terms of return on assets, return on equity, and so on. The strategic requirement of DXL University through its financial perspective of BSC is to operate as a successful and efficient business*" (pp. 671-672). The customer perspective refers to measures as "*student complains*", "*employer complains*" and

"*students rating of teachers*" (p. 673). On the internal process perspective, Lawrence and Sharma state that: "*can be assessed in terms of quality of services... Research undertaken by the staff of universities, measured in terms of their numerical contribution to international conferences and refereed journals, contributes to the internal business perspective of the university. Increasingly, universities adopt as a measure of research success the amount of external funds attracted by their researchers. More and more, research has to have a commercial value*" "*The DXL University emphasizes research and the clocking of publications in proliferating journals*" (p. 671).. And more "*The innovation and learning perspective saw the DXL University identifying shortcomings of their staff through their performance appraisal programme, and running short-term training courses to remedy this shortcomings*". "*The university also sends its staff abroad for doctoral studies, conferences and on sabbatical leave. This enables the staff to develop better research practices, thus boosting the university's research profile*" (p.672). Table 2 shows the connection between strategy and BSC at the DXL University.

Insert table 3 about here

Kettunen (2005) focuses on the Turku Polytechnic (Finland) case study. He notices that with regards to public sector the customer perspective, instead of the financial one, should play the most prominent role. Using the strategy map approach, the author describes the causal chains between the objectives. The customer perspective has two objectives, the "regional development" and the "customer satisfaction". Both can be achieved through innovation, support and learning processes described in the internal perspective. The financial perspective refers to "external funding" and "funding from central government", whereas external funding is mainly used to invest in innovation processes, while funding from central government is employed to feed the learning processes. The internal process perspective contains a description of sequential processes, comprehensive of innovation processes, support processes and learning processes, which constitute the causal chain of value creation. The last perspective, i.e. learning and growth, refers to three objectives: the capability for R&D, environmental scanning and customer knowledge, quality and assessment of capabilities and in-house training. These three objectives are indeed drivers to pursue the objectives of the internal process perspective.

Insert table 4 about here

Another case of application of the BSC to a university is the one studied by Papenhausen and Einstein (2006). First of all, the two authors try to understand clearly what is the mission of the college and starting from that they draw the strategy map of the university unit. They then develop the BSC, highlighting objectives and indicators for each perspective. Here we present some of the goals identified by Papenhausen and Einstein (2006):

Financial perspective	*Building endowment/fund raising/annual giving*
	To be financially sound
	Increase grants
Stakeholder perspective	*Attract high-quality students*
	Student satisfaction
	Quality research contribution
Internal process perspective	*Teaching excellence*
	Curriculum excellence and innovation
	Quality faculty
Learning and growth perspective	*Adequate physical facilities*
	Teaching/learning innovations
	Faculty development

In the case analyzed by Chen, Yang and Shiau (2006) the BSC is applied to a private university. They state "*the present study believes that mission and vision should be on the top of the BSC in this case study, followed by the financial perspective, then the customer perspective, the internal process perspective, and, finally, the learning and growth perspective*" (p.195). Differently from what sustained by Kettunen (2005), Ceynowa (1999) and theorized by Kaplan and Norton (2001), the customer perspective is not, in this case, the most important. Chen, Yang and Shiau (2006) justify such peculiarity by stating the emergency of surviving a financial crisis and referring to the fact that "*the four major perspectives of the BSC can be adjusted according to the individual needs of the organisation*" (p.194).

As we have seen from the literature review, the application of BSC has been widely studied with reference to public universities, but no attention has been given to its implementation to research departments.

By overcoming a purely hierarchical structure in defining the objectives, BSC focuses on the importance of identifying cause-effect relationships between the measures. The relationships of cause and effect have recently been proposed by Kaplan and Norton (2004, 2006) through a BSC Strategy Map, which gives an explicit description of the hypotheses behind strategy. Each BSC measurement is a link in a causal chain connecting outcomes with the guiding drivers (Kaplan, Norton, 2001).

In the next sessions, the research method and the case study are presented.

3. Research Method

The case study research technique (Yin, 1994) makes data collection onerous but has important interpretative advantages – its foundations on the depth of analysis and inductive logic permit a more reliable interpretation of the data (Bourgeois and Eisenhardt, 1988).

Data were first collected through secondary sources, using the web to obtain preliminary information on the Department's profile and institutional and organisational structure. Then primary sources were used to get information about the Department's mission, strategy, internal processes and procedures and institutional activities. We conducted 12 in-depth interviews, 3 of which addressed the Chairman, 4 the Vice-Chairman and 5 the Administrative Secretary. These interviews were semi-structured, based round standard questions then extended in relation to the type of interviewee. They were conducted by members of the research team with an average length of about 90 minutes. They were recorded and transcribed in full on the same day that they were conducted.

Data collected through the interviews were then analyzed by the research team members, 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. Such representation was then submitted to the interviewees, engaging them in active dialogues as recommended by the grounded theory approach (Glaser and Strauss, 1967), to emphasize areas of overlap as well as gaps according to each respondent, discussing possible alternative configurations of the system of indicators included in the strategy map, and clarifying possible inconsistencies.

The outcome of this analysis is represented in Figure 1, and discussed in the following section.

Insert Figure 1 about here

4. The BSC applied to a Department of the University of Padua

To apply the model of the Balanced Scorecard according to the approach of the strategic map to the Department, as defined by Kaplan and Norton (2004; 2006), the Department mission and strategy were necessary.

The *starting point* was the analysis of the mission and strategic themes of the Department, which clearly defined strategic directions to develop the research activities of the Department. In order to do so, an interview was held with the Chairman and two with the Vice-Chairman, in order to redefine the Department strategic mission, themes and objectives.

The strategy formulation allowed to carry out the *second step,* namely to define the hierarchy of the four prospects of the Balanced Scorecard.

One peculiarity of the application of the BSC results in the fact, being the Department a public organization, the hierarchical structure of the model placed the customer perspective at the highest level. The Department's stated mission and strategy make it clear that the fundamental purpose of the organization 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.

In the Strategy Map model reported in Figure 1, the financial perspective serves as a base to achieve the objectives of the customer perspective. The financial perspective includes both external funding and funding from central government. The external funding is used to enhance the 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. Nevertheless, efficient processes enable funding and allows for improvements also in the effectiveness of the research processes.

The internal process perspective allows to identify the critical internal processes to achieve the objectives established in the customer perspectives .

The learning and growth prospects are placed at the base of the Strategic Map.

In the *third step*, indicators were identified and selected, monitoring each 4 perspectives of the balanced scored, based on the above mentioned hierarchy.

To identify the indicators, interviews were carried with the Chairman and Administrative Secretary, and reference was made to the University and Department statutes and rules and procedures.

The *last step* began immediately after the definition of the Strategy Map and involved the validation of the strategic map. In particular, the indicators identified and the hypothesised cause-effect relationships were analyzed and discussed with the Chairman, Vice-Chairman and Administrative Secretary of the Department.

This allowed each indicator to be tested from the following points of view:

- relevance: included data are essential to understanding the accomplishments of goals within each BSC perspective
- completeness: each perspective monitors the whole phenomena of interest
- reliability: consistency and validity of the indicators versus the content of the strategy expressed by the department
- interpretability: each indicators is quantifiable and it is communicated in an understandable, timing, concise and comprehensive way.

In terms of Kaplan and Norton (1996; 2001; 2004) balance scorecard framework, the goals provide the starting point on which to build the strategy map. To reflect the full pictures, the mission must

be translated into goals, measures, targets and initiatives (Kaplan, Norton, 1996) to provide a useful mechanism for performance measurement.

The strategy map for the department, the special nature of the research activities carried out, 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. Figure 1 shows the strategic map and provides a logical and comprehensive way to describe the department and its strategy, as it allows to translate strategic themes into objectives and measures, drawing the cause-and-effect chain that connects the desired outcomes from the strategy with the drivers that will lead to these strategic results. Moreover, it sets out all the indicators listed further below, according to the four perspectives.

5.1 Customer perspective

The main objective is "to promote the reputation of the department as leader in research at a national and international level" (1) and it is referred to national and international scientific community. Such 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 department operates. Such objective is measured considering the reputation of the department in terms of seminars, conferences, workshops, congresses organized within a year. Such reputation is also measured by the number and quality of participants to these conferences. Moreover, the number and quality of publications of the academic staff is considered a good measure of the reputation of the department.

The second objective is to "bring innovation in the research field, by committing research to less developed issues" (2). Such aim is pursued with reference to a third type of customer, which is represented by central and local government institutions granting the research activity of the department. Such goal is measured by the number of research projects financed by such institutions. Another objective is "to offer research and consultancy projects that satisfy the needs of the customer" (3), with reference to both third parties interested in commercial research but also the university or other departments who ask for consultancy. With the term commercial research, the department refers to all the research activity that is carried out on order to provide a specific output

to a specific client[1]. Such objective is measured through customer satisfaction – in terms of quality, timing, pricing and post-sale support – and degree of customer loyalty (number of "habitual" clients that keeps buying services from the department). From interviews with the Chairman of the department it has come out that the purchaser is not always asking for high-quality research, being more interested in spendable services. It is worth to point out that such situation is problematic as it is conflicting with the mission of the department. On one side, such consultancy activity is important as it brings financial resources to the department. On the other, it undermines the pursuing of the mission (promote scientific research). This is mitigated by the fact that such consultancy activity helps in following the second part of the mission, which is to spread out knowledge and competencies on the specific disciplines afferent to the department.

In order to increase the internationalization dimension of the department, another important customer to be considered is represented by PhD students. The objectives relating to this type of customers4 are double-fold. On one side, the department aims at "offering high quality and international doctoral program" (4). On the other, its goal is "to offer to PhD students the possibility to study abroad with high-refereed academicians" (5).

The customer perspective of the Department does not follow strictly the classification proposed by Kaplan and Norton (2006). Indeed, trying to overlap the above described objectives to one of the four strategy identified by the authors (cost or product leadership, system lock-in and complete solutions for clients) seems to be somewhat forced. The only objective that can be easily referred to the cost leadership strategy is the one that regards research activities ordered by third parties, whereas the provision of consultancy is offered at a low price that guarantees the covering of expenses (including the additional 10% required by the university administration for every research activity commissioned by third parties).

Insert table 5 about here

5.2 Financial perspective

The first objective is "to decrease costs related to commercial research activities" (6). Such decrease indeed can have two possible effects. On one side, it could affect the satisfaction of third parties customers as they would benefit of a better price. On the other, the department could employ such increased efficiency either to compensate the administrative personnel involved in the consultancy activity or assign the surplus to institutional research funding. Such objective is therefore related both to objectives (1) and (3) of the customer perspective. The surplus obtained by improved

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[1] Institutional research is indeed research "for the sake of research" and is addressed to the first type of customers analyzed above.

efficiency is indeed beneficial both the third parties customer satisfaction and for the reputation of the department in terms of research activities carried on and results obtained in terms of publications.

Another financial objective is "to increase funding coming from central government" (7). The funding coming from the Ministry of University and Research are given on the basis of the quality of the research project presented for grants. Therefore presenting high quality projects will increase the probability for the department to have more financial resources and therefore pursuing the strategy of become leader in its research field. Another similar objective is declined with reference to other sources of funding, such as local government, public research institutions and so on (7). Such sources of financing are indeed a driver to increase the research projects undertaken by the academic staff of the department and therefore will have a direct impact on the reputation of the department.

Another important financial objective is "to increase revenues coming from external deeds with third parties" (9). Such increased profits could be employed to carry on institutional research activity and therefore increase the leading position of the department.

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 is addressed toward a growing trends of cash inflows which affect the long term strategic results.

Insert table 6 about here

5.3 Internal business perspective

The two main internal processes are the research process and the PhD program process.

With regards to the research process, the main objective is to "increase the quantity of the scientific productions" (10) in terms of publications. By means of a more intense scientific productivity, the department can positively affect its public image as leader in the research field (refer to objective 1 in customer perspective) and therefore to reach the statement claimed in the mission. The relationship between the two goals is particularly evident. The performance measurement for such objective are indeed the same at those employed to measure objective (1).

The other main objective with reference to the research process is to "increase the effectiveness of research" (11). Such goal is measured on the number of publications of the department throughout a year taking particular attention to those appearing in international journals, which strongly contribute to the image of the department.

The third objectives of the research process is that of "guaranteeing adequate structures" (12). Such goal is measured by the cash in-low of each academician. The higher is such indicator, the greater the funding available to carry out the research projects.

As regards the PhD program process, the only identified objective is that of "increasing the effectiveness of the teaching method" (13). The measure is the percentage of teachers with an international curriculum. Such indicator can be employed in two different ways. It can be used to analyze the degree of internationalization of the PhD didactics, which is directly linked to the mission and the strategic theme of strategy map. Moreover, if the effectiveness of the teaching method increases, the department is also able to pursue objective (4). Another possible use of such indicator is to understand how many of the academic staff have contacts with foreign schools and research institutions, representing therefore a good driver to reach objective (5).

Again, this perspective has not beenconstructed following the indications of Kaplan and Norton (2005). The motivation for not adopting their guidelines can be found in the particular nature of the internal processes of a research department. Indeed, some specification have to be made. Within the research process, the commercial activity of the department could be overlapped 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 customer. As regards the 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 7 about here

5.4 Learning and growth perspective

The goals connected to the learning and growth perspective are made up of the drivers to obtain excellent results in the other BSC perspectives. The customer perspective, the financial and that concerning internal processes highlights where the company must excel but they require structural support in terms of human, structural and relational capital. Investment in staff skills and the capacities of IT and organisational systems represent the premise for organisational learning.

With regards to human capital, there are four objectives:

- Satisfaction of academic and administrative staff (14)
- Loyalty of administrative staff (15)
- Productivity of academic staff (16)
- Competencies of administrative staff (17)

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

With reference to organizational capital, the four objectives are:

- communicate strategy to all human resources and set a culture of performance (19)
- develop leadership and sense of responsibility (20)
- link salaries to performance and align personal objectives to those of the organization (21)
- increase the quality of the organizational context by encouraging team work (22)

Insert table 8 about here

5. Conclusion and discussion

In this paper we argue that in an environment that requires increasing accountability from academic institutions, the BSC Strategy Map approach offers a valuable tool for implementing a strategic performance management system.

The implementation of the BSC is an iterative process that enables continuous improvement and enhancement. By concentrating on the mission, academic departments can define their strategic objectives and, by using the Strategy Map, they are able pay more attention to costs and benefits in implementing performance management.

The characteristics of the BSC Strategy Map approach are here adapted to an academic institution. By emphasizing integrative analysis and trade-offs, the BSC helps academic administrators in focusing on internal processes to improve institutional effectiveness and, at the same time, show accountability to the external public (Epstein, Wisner, 2001).

This case study has introduced the balanced scorecard method with a particular emphasis on mission and cause-and-effect relationship between desired outcome and drivers. The adopted approach considers as the prior perspective the customer perspective, followed by financial perspective, the internal process perspective and the learning and growth perspective. For each perspective there have been identified specific performance indicators in order to measure the whole system.

The major aspects of this case study can be summarized as follows:

- it represents a relevant moment of reflection about the mission and objectives of the Department and the identification of the strategic drivers

- it underlines the importance and the multi-stakeholders nature of customer perspective of public institutions
- great attention is given to the financial dimension, in line with the increasing financial autonomy and viability required to university institutions, but also in terms of strategic driver to implement improvements in the quality of the research activity
- it focuses on key internal processes such as the research and PhD program processes which are the main strategic drivers to improve the reputation of the Department and the overall quality of its activities and outcomes.

The case study also provides some evidence for improving the understanding of implementation of performance measurement systems such as the BSC to an academic department. So far as the literature on BSC is concerned (Kaplan, Norton, 1996) there are at least three main contributions.

First, the application to an academic department requires an adaptation of the BSC with respect to satisfaction of customers' expectations. The analysis has shown an extension of the conceptual category of customer conventionally considered in the Balanced Scorecard effectiveness assessment. Indeed in the case study, the customer perspective, besides comprehending traditional customer (i.e. external third parties for commercial research) encompasses the wider stakeholders system involved in the diffusion of knowledge and science, such as the scientific community, but also the public in general, the financing entities and the PhD students. Such adaptation represents an important innovation as against the more traditional applications of the Balanced Scorecard.

Moreover, the use of the Balanced Scorecard has highlighted how the financial perspective is considered relevant even in a public institution. This appears to be an important step as the financial dimension permits to trigger a virtuous chain reaction, in the sense that research processes can be implemented effectively with availability of financial resources. When research processes improve, the outputs will contribute to the reputation of the department, therefore enhancing the ability of the department to get to more funding. The financial dimension therefore is a strategic driver for the achievement of the mission and goals, especially after the Italian university reform, which has increased the level of financial autonomy of these institutions.

The third aspect worth to mention is related to the 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. Such aspect is partly managed through the learning and growth perspective, in part by linking the objectives of the customer dimensions to the mission of the department.

The effects from the introduction of a strategic management process structured on stakeholders, are of great significance. Through the Strategy Map approach described above to research problems, it is possible to create a climate of trust, pulling together towards shared goals.

Improved outcomes lead to more positive expectations both for the present and the future, facilitating the research process required to sustain the reputation of a department and guaranteeing access to the financial resources needed to carry out various and innovative research projects.

6. Limitations and future research

There are at least three limitations to be considered in examining the contribution of this study.

First, the analysis lacks in terms of generalizability of results because it is based on a case study research design. Still, this research method has significant advantages in developing reliable models. While this study has the merit of presenting novel evidence on the implementation of the BSC to academic departments, further research might valuably builds on these findings to develop quantitative analyses allowing to understand how performance measurement models vary according to department's key characteristics.

Second, the analysis is focused on the identification of key dimensions of performance evaluation. Although this is a first necessary step, other studies might want to implement the model, measuring the level compliance with the identified strategy, and identifying determinants of variance between ex-ante strategy goals and ex-post performances.

Third, the analysis assumes a supply-based process of strategy assessment, while it leaves unexplored the customer-based view. Indeed, we interviewed "managers" of the Department but we did not address the perspective of the final customer which purchases and uses the research product. Hence, we cannot ensure that strategy dimensions which might be relevant are included in the model. Further research might want to address this issue, developing frameworks which extend the strategy assessment process to the customer component of the stakeholder system.

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Table 1. The University of Padua and the Department

The University of Padua is an old and well-ranking Italian university was founded in 1222 in a period when a number of professors and students had left the University of Bologna. Padua University was not founded as the result of a charter granted by pope of emperor, but as a "response to the specific social and cultural conditions that created a need for it"; and its motto of *Universa Universis Patavina Libertas* was well-deserved not only under the original Commune of the thirteenth century but also during the fourteenth-century rule of the Carraresi and throughout the period of Venetian rule of the city (from the 15th to the 18th century).

During more than 780 years, the University has attracted students from all over the world and encouraged its own professors to go abroad to gain experience in the teaching methods used in other countries. Recently, the University has had to reorganize its degree courses in order to meet the requirements set out by the new University reform and the thirteen Schools at the University have reformulated their teaching strategies according to the requirements set out in the new reform, offering over 100 three-year degree courses (bachelor), over 80 higher degree courses and many specialization degree courses, as well as many Master's Degree courses. More than 11,000 students enrolled in 2005-06 and the University today has more than 66,000 students.

Research is carried on in sixty-seven departments afferent to all the macro-areas: scientific, technical, bio-medical, humanistic, law and social sciences. According to the statute of the University, departments are those organizational units of the University which promote and coordinate research in the different fields. Each department is an autonomous unit in terms of financial, administrative, accounting and organizational resources. The governance of departments is run by three bodies: the Department Board ("Consiglio di Dipartimento"), the Executive Committee ("Giunta") and the Chairman. The Board has the responsibility of planning and controlling the Department's activities and it is composed by all the afferent full, associate and assistant professors, by the Administrative Secretary (in charge of the administrative process), by representatives of the administrative staff and of PhD students. The Executive Committee has the role of assisting the Chairman in the management of the Department. It is composed by the Chairman, the Administrative Secretary, by at least two professors and two assistant professors and by a representative of the administrative staff.

The Department of this case study was founded in 1984, recently compared to the date of foundation of the University, but right after the institutional reform of 1980. Its real origins are indeed older as there was an older institute, the so called "Gabinetto" which operated since the 19th century. 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 mission of the department is "*to promote scientific research and spread out knowledge and culture about the specific disciplines afferent to the department*"

The department declines the mission into the following objectives which provide further details for evaluation. As regards the first part aimed at promoting scientific research, the main parameter to monitor is internalization, in terms of papers, conferences and contacts of the department. The promotion of research therefore regards the provision of an international context for the academic staff so that it is motivated to publish in international journals. For the Department, the objective internationalization is absolutely prior. Besides motivating the academic staff to publish on prestigious international journals, the mission is pursued also by inviting foreign professors to hold seminars and lessons to the department faculty and PhD students. As to the doctoral program, internationalization regards both the teaching staff and the research carried on by the students who are requested to spend a period of study in a foreign university. Therefore the promotion of scientific research is carried by raising the international profile of the department via research publications, foreign academic staff, international conferences and seminars and PhD students

As regards the second part of the mission – i.e. the diffusion of knowledge about the specific disciplines – the department organizes not only scientific conferences and seminars but also meetings that are propagandistic in nature, as they are addressed to a wide audience with few competencies on the specific disciplines.

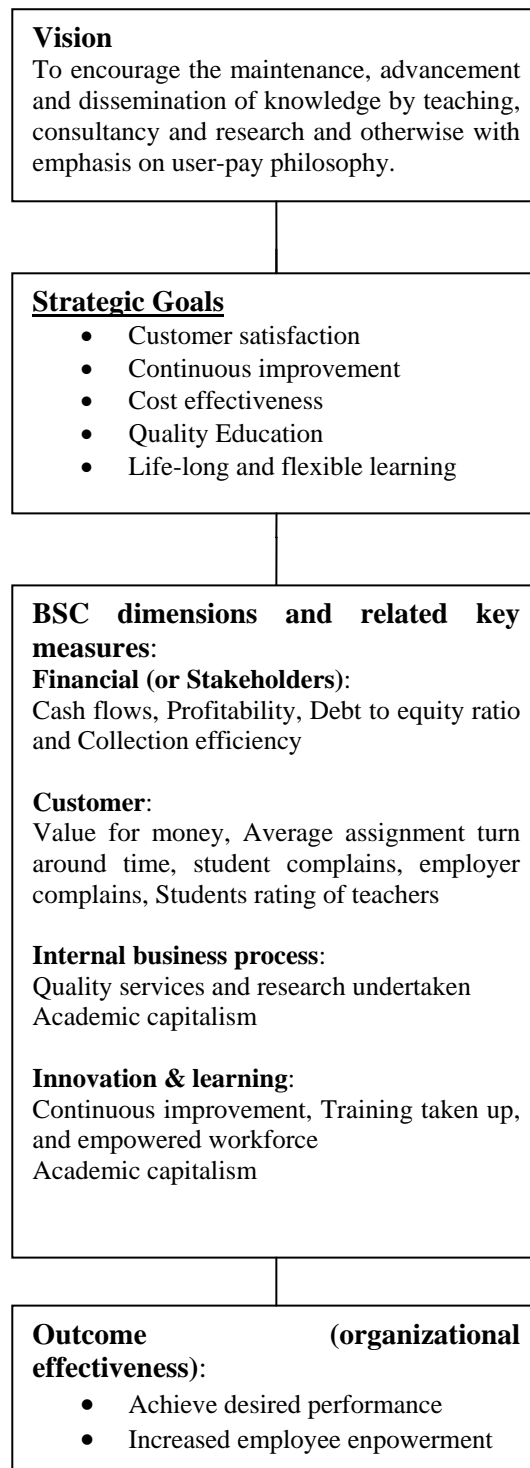Based on this mission, the BSC strategy map develops three strategic themes:
1. Development of the international dimension of the department
2. Innovation in the research field
3. Involving with the community by offering high quality research output

Table 2. *Academic Scorecard* at *Rossier School of Education* of *University of Southern California*

Goals	Measures
Academic Management Perspective	
Improve budget performance	Net surplus of income: endowments; recovery of indirect costs
Improve school operations	Productivity, information technology and systems
Improve management/leadership	University goals are facilitated, asset utilization
Stakeholder Perspective	
Quality academic programs	Ranking in *U.S. News & World Report*: teaching effectiveness
Student centeredness	Quality of student services/advising
Quality of faculty	Publications, research funding
Value for money	Retention, reduced time to degree, return on student investment
Alumni/employer satisfaction	To be developed
Internal Business Perspective	
Improve faculty productivity	Faculty Productivity Report, teaching effectiveness
Improve staff productivity	To be developed
Improve recruitment/advisement	To be developed
Maintain responsibility to community	To be developed
Innovation and Learning Perspective	
Improve quality of degree programs	Academic Program Review, accreditation peer review, financial assistance to students
Increase student learning	Learning outcome measures, graduate school/job placement success
Improve quality of students	SAT/GRE scores, student composition
Attract/keep talented faculty/staff	Salaries, faculty/staff satisfaction
Increase educational innovation	Increase educational technology usage, teaching innovation, new degrees, interdisciplinary collaboration
Faculty staff development	To be developed

Source: adapted from O'Neil *et al.* [1999, p. 35].

Table 3. Strategy and BSC *DXL University.*

Vision
To encourage the maintenance, advancement and dissemination of knowledge by teaching, consultancy and research and otherwise with emphasis on user-pay philosophy.

Strategic Goals
- Customer satisfaction
- Continuous improvement
- Cost effectiveness
- Quality Education
- Life-long and flexible learning

BSC dimensions and related key measures:
Financial (or Stakeholders):
Cash flows, Profitability, Debt to equity ratio and Collection efficiency

Customer:
Value for money, Average assignment turn around time, student complains, employer complains, Students rating of teachers

Internal business process:
Quality services and research undertaken
Academic capitalism

Innovation & learning:
Continuous improvement, Training taken up, and empowered workforce
Academic capitalism

Outcome (organizational effectiveness):
- Achieve desired performance
- Increased employee enpowerment

Source: adapted from Lawrence e Sharma [2002, p. 673].

Table 4 *Balanced Scorecard* at the "*continuing education centre*" of Turku Polytechnic

Perspectives and objectives	Measures
Customer	
Student satisfaction	Satisfaction of students on a scale 1-5, where 5 is highest
Employer satisfaction	Satisfaction of employers on a scale 1-5, where 5 is highest
Financial	
External funding	External funding
Internal processes	
Volume of R&D	Number of R&D projects
Publications	Number of publications in own series
	Number of published articles
Volume of continuing education	Number of days provided in continuing education
	Number of partecipants in continuing education
Learning and growth	
Number of employees with postgraduate degrees	Number of licentiates
	Number of doctorates
Number of employees in long-term education	Number of postgraduate students

Source: adapted by Kettunen [2005, p. 215].

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

Customer Perspective		
Client	*Objective*	*Measurement*
Scientifi 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
	2 bring innovation in the research field, by committing research to less developed issues	N. of research projects funded and historical trend
Third parties	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 6. 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 7. 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 8. 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
			Administrative staff satisfaction survey
	15	loyalty of administrative staff	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