# Management accounting and governance implications: The case of the University of Bologna

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**Abstract**

University mission is a complex topic. Mission fulfilment requires the ability to manage different objectives simultaneously. An adequate performance management system can be crucial to support this process. The recent accounting reform of the Italian public universities offers the opportunity to implement such a performance management system. The introduction of the accrual accounting approach for financial reporting – and budgeting – does, in fact, require the collection of a greater amount of data and, notably, a richer amount of information on costs. The collected data and information can then be effectively used to promote accountability and to support decision-making processes from the governance to the operational level.
In this context, the question arises: What are the drivers and the barriers that can facilitate the introduction of an effective performance management system in public universities?
In order to answer this question, the authors conducted a study on the case of the University of Bologna, at its first implementation of a management accounting system (called COAN project). The aim of the COAN project is to contribute to the understanding of the organizational and procedural conditions that may affect the introduction of accounting innovation in the context of public universities.

**Keywords:** Accounting innovation, Organizational driver, Organizational barrier, Management accounting system, Performance management, Public university.

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## 1. Introduction

Changes and innovations in public sector accounting regimes are topics widely explored (Parker and Guthrie, 1990; Perrin, 1998; Chan, 2003; Anessi Pessina and Steccolini, 2007). Often born from the impulse of reforms inspired by the logic of New Public Management, accounting innovations in the public sector aim to introduce principles of management responsibility and continuous improvement. More specifically, with the aim to make individual administrations responsible and accountable for the use of public resources, regime changes play a fundamental role in the process of performance control and communication improvement (Hood, 1995).

Although the topic of accounting innovation in public sector has been extensively covered by several scholars over the years, the number of contributions focusing on accounting innovation in public universities is still limited (i.e. Gray and Haslam, 1990; Christiaens and De Wielemaker, 2003; Agasisti and Catalano, 2013; Agasisti et al., 2008; Agasisti et al., 2015; Upping and Oliver, 2012).

In this vein, the recent Reform introduced in Italian universities offers an interesting opportunity for further study. Following law 240/2010, Italian public universities have been called to adopt a new statute that responds to the need for greater "simplification, effectiveness, transparency of administrative activity and accessibility to the information". This law led to a reorganization of the organizational model, which now focuses on the department. At the same time, Italian Public universities are called to reach a threefold mission (education, research, and third missions) through a model organized into departments and academic bodies in charge of the overall definition of strategies. The university's organizational units include departments that are mainly research-oriented; other areas are teaching-oriented with a greater ability to attract students, and some others are more suited to pursuing third mission activities with patent production, professional training, spin-offs, and implementation. From the accounting point of view, these different orientations translate into different revenue and cost generation models. Some departments, such as those in the technological and economic area, are more exposed to establishing commercial relationships with companies and other actors. Other departments (i.e. those in the chemical, agricultural, and medical-veterinary fields) are more oriented towards acquiring their own income through participation in national and international grants. Finally, other departments are characterized by a greater orientation towards teaching and the contribution of generating university revenues, especially through student fees.



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In this context, an appropriate management control system can provide a significant support the fulfilment of the University strategic aims within each department. In loosely coupled systems (Weick, 1972), managerial accounting takes on a key role in trying to align the university's strategies with departmental strategies. University governance needs to understand how each department can contribute to university strategies, requiring managerial tools that guide budgeting, staff recruitment, building development, and in general incentive policies.

The recent reform of Italian public universities affected significantly the accounting systems of these institutions (D'Alessio, 2012; Mussari and Sostero, 2014; Paolini et al., 2014; Mussari et al., 2015; Gigli et al., 2017; Tieghi et al., 2018; Caldarelli et al., 2020; Paletta, 2004), offering several opportunities to improve their process of strategy implementation. The introduction of the accrual accounting approach for universities' financial reporting and budgeting, in fact, has required the collection of a greater amount of data and, in particular, a richer amount of financial and management information that can be effectively used to support decision-making processes and accountability at different levels (Sargiacomo et al., 2002; Cantele et al., 2011; Ricci et al., 2013; Salvatore et al., 2017; Allini et al., 2017; Allini et al., 2019; Francesconi et al., 2020).

A wide strand of research has touched upon performance measurement systems in universities highlighting their possible restrictions and shortenings (Dobija et al., 2019; Guthrie and Newmann, 2007; Kallio et al., 2017; ter Bogt and Scapens, 2012; Vakkuri and Meklin, 2003). In fact, the implementation of accounting innovations generates the need to train staff and management to operate using the new approach, increasing the need to improve accounting expertise and support (Pendlebury and Karbhari, 1998). With reference to the internal resources needed to support an effective transition, the lack of adequate resources for training, the lack of both staff and appropriate software to implement accrual accounting or to use the information provided in a timely and useful way, and the insufficient professional accounting support are examples of obstacles in public accounting system modernization (Cohen et al., 2007).

This paper aims to contribute to the understanding of the organizational and procedural conditions that may affect the introduction of management accounting and performance measurement in the context of public universities. More specifically, through the assessment of the case study of a major Italian public university engaged in the implementation of a diffused management accounting system, we have explored the issues emerging from the performance measurement of academic units (Aversano et al., 2017; Paolini



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et al., 2017) with multiple objectives and potential trade-offs, as well as the implications for the governance of universities whose bodies have to keep together a weakly coupled system.

In particular we aim to answer the following research question: which are the organizational conditions that can affect an effective implementation of a performance management system in the context of complex organizations such as universities?

After presenting the theoretical framework in which the phases of the accounting innovation process are described, we present the case of Bologna University that is engaged in a project for the first implementation of a pervasive management accounting system under the Italian acronymous of COAN.

## 2. Theoretical framework

Several obstacles and drivers may affect the effective introduction of accounting innovation in public sector (Christensen, 2002). Responding to external stimuli, in fact, the organizations react to the promoters of change so as to address the expectations of the information's users. In this process, some barriers may increase the time or cost needed to implement accounting innovation (Christensen, 2002; Luder, 1992).

More specifically, the institutional and the organizational context can affect this process (Cohen et al., 2007) through *confuser* factors that create uncertainty about the project's future, *frustrator* factors that suppress the innovation or transition, and *delayer* factors that slow down the process (Kasurinen, 2002). While the assessment of the institutional context conducted by neo-institutional theorists can be useful in order to describe the first source of barriers (Weaver et al., 1999; Mayer and Rowan, 1977; Oliver, 1991), the resource-based view approach (Barney, 1991; Grant, 1991) can be useful in order to identify the organizational barriers. The implementation of accounting innovation, in fact, has not only to be considered as a technical shift. It is also as a process of reorganization that requires specific organizational resources, as well as dynamic capabilities in order to implement the transition effectively (Ridder et al., 2005).

To analyze the implementation process of management accounting at Bologna University, we have referred to the literature on accounting innovation implementations that combine both the neo-institutional perspective and the resource-based view approach. In particular, we propose to assess the phases of the implementation of a new accounting system (Gigli et al., 2018b): (1)



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framework definition; (2) data gathering; (3) information production; and (4) use of information.

## 2.1.Framework definition

The process of the introduction of an accounting innovation starts with the definition of the overall framework, that, in the case of public organizations, can be strongly influenced by relevant level of government. With reference to the context of this study, the apex of the university defines the new accounting procedures to be adopted by each organizational unit (departments). According to previous research, the organizational units are more likely to acknowledge the new system when its objectives are clearly conceptualized, especially since the new standards must be integrated into existing information systems. The effective and transparent communication by university's central bodies concerning their aims and desired outcomes also facilitates this process.

In the framework definition phase, the effective implementation of the accounting innovation can be hampered by several barriers. According to neo-institutional scholars, for instance, the lack of fit between management accounting system's content and the organization's operations increases the risk of organizational decoupling (Meyer and Rowan, 1977; Brignall and Modell, 2000). This occurrence is particularly significant in the case of accounting regime transitions, for example, those of Italian Universities in which staff with a limited previous experience in the field of cost management risks to not understand its potential, only seeing its limitations. This issue concerns both the merely technical dimension of the gap and the cultural distance. In particular, the organizational units may resort to identity resistance when the imposed pressure is inconsistent with their organizational identity (Modell, 2004; Lukka, 2007; Rautiainen, 2010; Fox-Wolfgramm et al., 1998). In the field of accounting innovation in public sector, this issue is significant and can be observed in the cases of acritical transposition of accounting tools, developed in the business world (Christiaens, 1999; Guthrie, 1998). In addition, conflicting norms and cultural models can occur between institutional frameworks, and within them, generating potential difficulties. More specifically, when the aims of the new system are not clear, their scope is wide, and pressures to adaptation are ambiguous, organizations may interpret them in a way that enables them to maintain the *status quo* (Edelman, 1992). Conversely, transparent and effective communication



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about the overall aims and their desired outcomes facilitates this process (Miller et al., 2013).

## 2.2. Data gathering

Once the framework is designed, the second step consists of the production of a flow of data that is needed to implement the management accounting system. This phase is likely to bear a high financial burden, as it requires substantial investments to update the information systems so that the data may be produced and transformed into the valuable information. The organizational aptitude for transformation is particularly important; limited internal capacity for change (Rasche et al., 2013), in contrast, can hamper the assimilation of the innovations. Several barriers can occur when information about effectiveness and productivity is difficult to observe and to measure (Rowan and Miskel, 1999; Meyer and Rowan, 1977; DiMaggio and Powell, 1983;). In the higher education context, in which is often submitted to multiple pressures and characterized by possible conflicting objectives. In these contexts, organizational shortcomings cannot be resolved merely by training administrative staff for the new system. They require the redefinition of the underlying bureaucratic logic. Another set of potential barriers is related to the perception that the adoption of the innovation is expensive and time-consuming. Research on the introduction of ethical codes in developing countries, for instance, shows an increase in expenses which make the adaptation process unsustainable, thereby triggering decoupling behaviors (Pongpirul et al., 2006). Under this perspective, the lack of capabilities, knowledge and skills of the administrative staff is a critical cause of barrier difficult to overcome in the short term (Luder, 1992). In addition, the lack of resources for training, software unable to elaborate information in a timely and useful way, and the insufficient professional support are examples of obstacles for the modernization of the accounting system (Cohen et al., 2007).

## 2.3. Information production

The phase of information production involves the transformation of data from the accounting system into information. This phase may be affected by low participation in the process, by a tendency to adhere merely to formal requirements, and by limited understanding and acceptance of the fundamentals of the new system. The introduction of management accounting requires



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a cultural change within units. People have to understand how the additional information produced can actually be used. In particular, employees need to be trained with relevant new accounting skills (Guthrie, 1998, Hepworth, 2003) so as to avoid the risks of a critical transposition of accounting tools developed in the context of for-profit business (Christiaens, 1999; Guthrie, 1998).

This training process should be aimed to avoid difficulties related to the identification of assets, the calculation of depreciation, the treatment of balance sheet provisions, and capital asset valuation (Christiaens, 2001; Hepworth, 2003; Perrin, 1998). In this vein, the production of information should not only be considered as a technical shift, but rather as a process of reorganization requiring specific resources, as well as dynamic capabilities (Ridder et al., 2005). Especially, the application of accounting innovation depends on strategic orientations and requires the involvement of the managers, as well as the staff's capability to develop new structural routines in managing transitions (Ridder et al., 2006). From this perspective, the lack of capabilities, knowledge, and skills of the administrative staff is one of the most significant barriers to its effective transition, which cannot be avoided in the short term (Lüder, 1992).

### 2.4. Information Use

The availability of information does not always imply that it will be used to support decision-making. The final phase of the use of information involves the effective use of the new accounting information. In fact, a management accounting system is effective when it is able to support the fulfillment of organizational objectives (Fottler, 2006; Naranjo-Gil, 2009; Helm et al., 2007) by orienting employees toward the implementation of the organizational strategy (Kaplan and Norton, 2004) and aligning human resources and individual performance aims to the institutional aims (Fottler, 2006; Helm et al., 2007). In this vein, once the new data is shared and accepted as reliable, it can become a vehicle for behavioral change. The introduction of management accounting should produce an overall improvement of the decision-making process, as the previous approach proved insufficient to guarantee appropriate control of the performance of public organizations (Ball and Brown, 1968; Dechow, 1994). However, this cannot be taken for granted. In other words, information has to be useful to support the decision-making process. Usability refers to the attitude of the performance indicators



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dashboards to produce clear, comparable, and significant information. Performance measures are usable when they are meaningful and easy to interpret (Kosel et al., 2007), not as complex as the practices they represent (De Bont and Grit, 2012), and are supported by descriptive information (Smith, 2005). In addition, such as in the previous phase, the lack of accounting and performance measurement knowledge and skills among academics and universities' administrative staff may not negatively affect only data gathering and information production but also the use of information. Some authors have highlighted how the use of performance measurement systems can be more interactive (and, consequently, less diagnostic) when the staff is adequately trained (Naranjo-Gil, 2009).

## 3. Empirical Setting and method

According to national Law no. 240/2010, Italian public universities are required to substitute cash accounting with accrual accounting and introduce management accounting. The reform implies the maintenance of the previous structure with ex-ante authorizations and constraints, to be combined with the new accounting system. Further regulations were introduced so as to complete the initial framework. The Legislative Decree no. 18/2012 – that has been implemented through s subsequent Inter-Ministerial Decree – introduced the mandatory drafting of the annual budget with authorization purposes, entailing a budget of profit and loss, as well as an investment budget. One of the implications of the introduction of accrual accounting is the sudden availability of a larger amount of cost information that can be particularly useful in implementing a performance measurement and management accounting system.

To implement the cost accounting system, in response to Legislative Degree 2012/01/27 n. 18, the first release of the overall model was defined in 2017. In this vein, the COAN (Contabilità Analitica) project at Bologna University aimed to move from an analysis by expense centers – typical of the cash accounting system – to an analysis by cost centers. In the information production process, the cost centers, therefore, become the first element of differentiation and the breaking point, compared to the previous system. The project was strongly supported by the current governance, in particular by the current Rector. At the same time, the administrative heads of ARAG (Area Finanaza e Partecipate) were mainly involved with the departments' administrative heads.



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In this context, to fulfill the research aims, we have used a single case study approach, combining interviews, direct observation, and action research. The research is based on the analysis of a case study. This qualitative approach was considered suitable because it does not aim to establish cause-effect relations among variables but determines the basic characteristics of particular modes of organization and actions (Yin, 2013). Although the results are not statistically relevant, they offer a multidimensional perspective that allows us to enrich the theory. Information was gathered using a combination of different sources and approaches. A documentary content analysis was conducted on reports produced during the COAN project. These unpublished documents also included internal protocols and procedures. Semi-structured interviews were conducted by two researchers with key individuals involved in the planning and implementation of the COAN project. Interviews typically lasted 2-3 hours and were transcribed verbatim.

Data were gathered longitudinally from September 2017 to April 2020, throughout the experimental period of the COAN project.

On a monthly basis, two researchers, met the several members of the administrative staff involved in the project so as to gain information on the barriers and drivers emerging during the development of the management accounting system. A researcher participated to the periodical meetings with the department directors to gain information concerning the process of discussion and negotiation of both the framework and the objectives. When possible, interviews have been recorded.

The researchers coded data separately based on categories that reflect the building blocks and the phases of accounting

## 4. Findings

Findings are organized according to the accounting innovation process described in the theoretical framework.

### 4.1. Framework definition

The introduction of performance measurement and management accounting systems in Italian public universities is based on a regulatory framework that has changed and is still evolving. The main regulatory provisions (Law 43/2005 on planning and evaluation of universities; Law 240/2010 on the



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organization of universities, academic staff and recruitment, quality and efficiency in universities, Legislative Decree 18/2012, ANVUR Resolution 103/2012 with the guideline for performance management in public universities) have requested, in particular, the introduction of a three-year financial plan to guarantee the sustainability of all university activities. In particular, to ensure the transparency and homogeneity of accounting systems and procedures, universities are obliged to adopt an accrual and cost accounting system to draw up a financial report (Bilancio Unico d'Ateneo) composed of a final balance for the fiscal year and a forecast document for the following three years.

The existence of this regulatory framework has facilitated the introduction of a performance management process summarized into a strategic dashboard of key performance indicators. The process started with drafting the strategic plan – in this case, three years – in which the strategic objectives, operational objectives, and related indicators are defined. Regarding the Bologna University case, in the 2019-2021 strategic plan, these objectives are highlighted, and for each of them, one or more indicators and the respective targets are reported. The strategies and actions they must carry out to achieve the goal are also described, together with the person formally responsible for its fulfillment.

For example, the strategic objective "Improvement of the quality of scientific research" is associated with the operational objective of "Qualifying, enhancing, and internationalizing Phd programs", which envisages the following indicators: (i) the percentage of doctoral students with an access qualification obtained from other Italian or foreign universities, (ii) the number of students enrolled in the first year of the doctoral cycle and (iii) the number of outgoing doctoral students. The person in charge of this strategic objective is the Vice-Rector for Research.

Performance measurement is carried out by the 32 individual departments, in which the Vice-Rector for Research agrees on the targets to be achieved with each Department Director based on the individual organizational unit's specific characteristics. The choice of measuring the objectives, whether strategic or operational, through indicators is one of the moments of change that makes the content of the document more transparent and readable and facilitates communication.

The performance management system summarized in the strategic dashboard has been progressively enriched by the information coming from the cost accounting information, and this process – which began in 2016 – is still ongoing.



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The implementation of cost accounting in Italian public universities has also become mandatory by law. However, each institution is in charge of its implementation, and no specific configuration is specified in the regulation. In the case of Bologna University, the top management chose to pervasively exploit this system's information so as to aggregate data with different configurations. This would be useful to support a multiplicity of choices at different levels.

The introduction of information from the cost accounting system to the strategic dashboard of each department is the result of a consultation among Vice-Rectors, the Chief executive officer, and the Department Directors or the heads of the general services (i.e. Real estate, University libraries). In particular, the debate concerns the definition of the cost indicators to be included in the strategic dashboard and the measurement methods to be adopted in the cost accounting system. The definition of the cost objectives to be included in the strategic dashboard and the indicators' definition is a complex process in which the indicators originally present in the strategic dashboard are settled, while the cost accounting system's complete setting process is still evolving. Especially from the point of view of IT equipment and supporting evaluation methods, choices have been made that have already led to some measurements, but the process certainly cannot be defined as completed. As explained by the Manager of the financial area:

"*At the moment we have implemented a cost accounting system, based on full cost. We have chosen a cost configuration, we have identified cost centers, and we are sharing the decision concerning the calculation methods*".

Up to day, a full-cost configuration has been chosen. The preliminary, intermediate, and final cost centers have been identified; the parameters for allocating indirect costs have been identified, and constant dialogue is now open with the departments to share the calculation methods.

### 4.2. Data gathering

The data gathering process turned out to be quite simple regarding the identification of the most appropriate indicators. In the university under examination, and, more generally, in Italian public universities, there was already a good deal of experience and familiarity in the construction of indicators; the way universities obtain resources from the central government



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(FFO) is based on indicators themselves. In contrast, the entire cost accounting system's implementation is more complex, both in technical and organizational terms. The first step in obtaining cost information is the creation of the link with the financial accounting system. The contextual transition to accrual accounting made the availability of this information possible. At the University of Bologna, from a technical point of view, a great deal of support is provided by UGOV software, which integrates financial accounting and cost accounting. As pointed out by the administrative staff involved in the process, the link between cost accounting and financial accounting required a large initial investment in mapping the system, but then UGOV adequately supported the production of the information. The introduction of innovation in the accounting system – both in the transition from financial to accrual accounting, and for the new inclusion of cost accounting – has involved an important investment in training activities for the staff called to produce the accounting data.

In this vein: "*We spent a lot of time, and a lot of energy in the transaction period. We have done a training course, and now all the employees involved in the project have adequate skills. The most time consuming and work intensive process was UGOV cost accounting configuration*" (Manager of the Financial Area).

At this stage, these investments have been useful in producing the first important results. The cost accounting outputs that the University of Bologna is able to produce have a degree of analytically and significance that makes dialogue with the various interlocutors possible.

The University of Bologna has adequately absorbed the change, especially in cultural, political, and governance terms. There has been a significant investment – an important push by the current Rector to make this change possible. Cultural barriers and bureaucratic barriers have been largely overcome by the political will to create a favorable context for change.

### 4.3. Information production

The production of information was immediately one of the most debated issues within the COAN project. In the design of both performance measurement and a management accounting system, the most critical part is related to identifying costs, the definition of the full cost, and the selection of allocation mechanisms. In the case of Bologna University, choices have been made starting from the current organizational structure; consequently, the



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overall system is department centered. As the Manager of the financial area explains:

"*We chose to structure the measurement process following, actual, organizational structure. The departments, nowadays, are the most significant organizational unit, and so we have structured our full cost process by focusing on department*".

The 32 departments, in fact, are the organizational units within the triple public universities' objectives – teaching, research, and the third mission are pursued. However, the consumption of resources within the university is not achieved solely within the departments: an important part of the costs – i.e., personnel expenses and library services – refers to other areas and is, consequently, originally measured within the related organizational units. The personnel area has the highest costs. In order to implement the cost accounting system, the first release of the overall model was defined in 2017. In this vein, the COAN project aimed to move from an analysis by expense centers – typical of the cash accounting system – to an analysis by cost centers. In the information production process, the cost centers, therefore, become the first element of differentiation and the breaking point, compared to the previous system. In this context, the final cost centers have been structured as financial responsibility centers in order to understand their absorption of resources. The following step was identifying the factors determining the absorption of individual costs, the related drivers, and, finally, the allocation of overheads. Subsequently, an attempt was made to analyze the contribution of the various structures to the formation of university income, thus highlighting the contribution margin at the university structures' level with respect to the results achieved. In a sequential logic: (i) the original structures have been identified, those in the head of which the original data is found, and those destined to support costs in an accrual logic. For example, the Human Resource Unit is the one in which personnel costs are measured; therefore, this remains the value used to develop the subsequent allocation and turnover processes. (ii) Subsequently, the techniques of identification and allocation of overheads were chosen, (iii) then the measuring of the full cost for the final centers. Within the final centers, the great interest is concentrated in the departments.

This process has been implemented by involving the administrative staff, the people in charge of the transversal services, and the directors of each department.

The cost center technique for the management and appraisal of full costs has, in general – and even more so within this type of institution – some



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limitations. In fact, in the public sector, the risks of the acritical transposition of accounting tools, developed in the business world, can compromise the quality of the produced information (Christiaens, 1999; Guthrie, 1998). Among these risks is the impossibility to identify appropriate criteria for cost allocation; this is the case of several indirect costs.

Now the limits inherent in full cost has been exceeded by an accurate mapping of the process. An accurate identification and description of the indirect cost allocation processes. This represents an important first step for a cost accounting system in a complex organization like Bologna University.

### 4.4.Information Use

The use of the information available in the case of the University of Bologna has basically developed along two lines: at the level of the single department and the central level.

Concerning the first guideline, today, we can only develop reflections on the system of indicators in first version of the strategic dashboard. These have become, in particular, the driving force through which the subsequent phases of the process are developed; these indicators have already been the subject of debate between the central bodies of the university and the representatives of the transversal services area or departments' directors. On the other hand, as regards the cost accounting system, the experimentation process has not yet reached the stage in which cost and revenue data can be used to measure, for example, deviations from what was planned; at the same time, this information cannot be used to build the budget for the period.

Regarding the second guideline, however, the use of information at the level of central bodies is already widely structured. Starting with the indicators defined within the strategic board, they are subject to hearings with the directors of all 32 departments. This moment of confrontation serves at the same time to measure the achievement of objectives and establish the necessary dialogue for the definition of subsequent objectives. Thus, it has become an important moment of discussion and negotiation. The availability of KPIs – used to make decisions converge; for public organizations –, is certainly an important point of rupture and growth towards an increase in the degree of managerialism of the individual structures. The same goes for the methods used to allocate the overhead on the final cost centers.

The COAN project has currently identified the departments as final cost centers and is able to identify the full cost for each of them. In the transition from spending centers to cost centers, the attribution of direct personnel costs



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is probably the most innovative aspect of the new system. Previously not attributed to individual organizational units, personnel costs of academics and departmental administrative staff are now back-charged to individual departments.

The administrative managers and the pro-rector delegated to the budget have opened a table with each department director to share the processes of allocating the overheads. None of them were sensitive to these valuations but immediately sensed that each different value could have important strategic implications. In this vein, for example, the departments most suited to teaching contested the choice of allocating personnel costs on the basis of the number of students; in the same way, the departments most dedicated to research contested the cost allocation process based on plant and equipment costs.

"*How do the university is going to allocate indirect personal costs? According to the number of students, or to the number of people in the department*? (Director of the department of Engineering).

"*We have a lot of professors who teach in courses provided in departments others than ours. The allocations of personal cost have to take into account this issue*". (Director of the department of Mathematics)

## 5. Discussion

Public universities are called to face a threefold mission with an organizational structure composed of very differentiated organizational units, and the definition of an effective performance management system can play an important role in addressing this challenge. Performance measurement aims to capture the value produced by the organizations, directing the behaviors toward the organizational goals. In universities, the concept of value has to be assessed from the threefold perspective of the quality of research, quality of teaching, and ability to impact the wider environment, still maintaining a focus on efficiency in service provision and public expenses containment. The performance measurement topic can be approached by identifying the elements that constitute the overall architecture of the performance management system: the objective of performance measurement, the structure of the KPIs, and a system of incentives at different levels. Different configurations of these elements of the performance management system architecture can



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produce valid support for policymakers, for the top management of each university, and for the individual department. However, the effectiveness of strategic dashboards, performance measurement systems, and managerial accounting information does not depend exclusively on the system architecture itself, but it is also affected by other organizational contingencies such as the organizational culture and leadership, the quality of the information provided, the availability of financial resources and human resource skills, as well as how accounting innovations are truly implemented.

In the case of Bologna University, a previous experience in the use of the key performance indicators according to the strategic dashboard, as well as the recent introduction of the new accounting systems seem to favorite the effective implementation of the COAN project. This innovation is not perceived as a pure external pressure, rather it is an element perceived as coherent to the organizational identity (Modell, 2004; Lukka, 2007; Rautiainen, 2010; Fox-Wolfgramm et al., 1998)

More specifically, the results of the analysis of COAN project at Bologna University highpoint how shared objectives, joined standard definition, an in-depth mapping of process, and a constant dialogue on activities and results are fundamental for the introduction of a management accounting system within a complex context (Christiaens, 1999; Guthrie, 1998; Luder, 1992; Cohen et al., 2007; Gigli et al., 2018a). With reference to the case of the Italian University Reform, the introduction of accrual accounting to substitute the cash approach has been the first step, now the challenge is seizing the opportunity of greater availability of information to define tools able to support the governance and management of the institutions.

In the shift from cash to accrual accounting system in public sector, in the phase of framework definition a careful attention to objectives clarification to the administrative staff, and appropriate accounting standards (Christiaens, 1999; Guthrie, 1998). In contrast when the focus is on the introduction of management accounting and performance measurement system, objectives sharing among the organizational units, and the involvement of such units in the definition of the standards are important. With reference to the phases of data gathering and information production, instead, the presence of appropriate technical skills and appropriate software and IT support (Luder, 1992; Cohen et al., 2007) become a precondition for a fundamental ex-ante process of in-depth mapping of procedures and processes, facilitating the production of correct, timely and significant cost information. Finally, with reference to the use of information, a constant interorganizational dialogue on the initiatives implemented in order to reach the strategic objectives both at departmental and central level is fundamental.



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As for the actors, while the shift from a cash to accrual system required a strong involvement of the university administrative central office and administrative staff (Pendlebury and Karbhari, 1998; Luder, 1992; Gigli et al., 2018a), the introduction of a management accounting systems involve multiple actors: governance bodies, departments' directors, managers of transversal organizational units, and administrative staff. In this vein, the attention shifts from the phases of data gathering and information production, to those of shared framework definition, and results discussion in using the information.

## 6. Conclusion

This paper aims to contribute to the understanding of the organizational conditions that can affect an effective implementation of a performance management system in the context of complex organizations such as universities.

The theory of organization and managerial research has traditionally described universities as highly decentralized organizations in which the power of individual and academic communities prevents the central determination of a unitary command and control approach. Concepts such as "loosely coupled," "organizational anarchy," and "ambiguity" have connoted the organizational model of universities, weakened the meaning of conventional managerial control methodologies, and made the effect on the behavior of managerial tools such as strategic plans, budget for responsibility centers, management accounting and performance measurement systems unpredictable.

The changes that have affected university systems in the last twenty years have led to a rethinking of management control tools to ensure greater unity in strategic action, addressing common goals, and promoting greater awareness of institutional belonging. In particular, the funding systems of universities, increasingly linked to academic performance (number of active students, quality of teaching, scientific productivity, quality of recruitment policies, etc.), have led to the need to question how departments contribute to the generation of income and operating costs, determining the economic equilibrium of the university.

The experience of a large university like the University of Bologna, with more than 86,000 students enrolled in 221 study programs, 2,800 professors and researchers working at 5 campuses and in 32 departments, demonstrates the importance of introducing managerial control systems as an organizational mechanism to try to hold together a system that tends to hypertrophy. Management control systems give unitary and supportive direction to the



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university as a whole while trying to respect the departments' academic specificities in contributing to the pursuit of the institutional missions. Accounting for economic responsibility centers represents a powerful information base for understanding how administrative structures, campuses, departments, and other organizational units (interdepartmental centers, libraries, museums, etc.) absorb the university's resources and contribute to determining its costs, income, and performance. In a context that requires greater strategic management skills, management accounting helps create a less self-referential organizational culture, generating conditions of greater rationality in decision-making processes. The University of Bologna's case shows that all this is not a simple consequence of the introduction of new performance measurement systems but is the result of an intentional design that integrates new accounting systems into new governance mechanisms. In particular, the introduction of departmental hearings, during which the board of directors annually audits each department on performance, academic strategies, and resource planning, represents the institutional context for giving meaning to performance measurement systems.

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