

# **Activity-Based Costing and Management in Budgetary Devolution and University Reforms**

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## **Abstract**

As in a number of other countries, Italy has undertaken a fundamental process of reform of its higher education system. These reforms introduced increased autonomy for universities locally, but this is offset by the need to control costs and manage public spending efficiently. Central support services are a significant part of total university budget and both academic managers and the government seek new instruments to account for these costs. This paper focuses on this issue, presenting the results of the application of a specific accounting method – activity based management (ABM) – to central support services in fourteen Italian universities. The participative approach adopted allowed a tailoring of ABM, developing a hierarchical scheme divided in two levels which provides cost information for different purposes and users. The framework was applied successfully in all the universities involved, providing more meaningful and detailed numbers compared to traditional cost accounting methods.

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## Introduction

The overall expansion in public expenditure experienced in the 1970s and 1980s led many governments in western countries to rethink their administrative machinery. Reforms have affected nearly all public organisations promoting instruments to displace the old-style governance in favour of a New Public Management (Hood, 1991; 1995). Decentralisation is a key element of these reforms which allows the delegation of decision making in an attempt to improve efficiency and effectiveness of service delivery. The devolution of budgeting responsibilities became an important mechanism for enacting this decentralisation, which has, however, posed the issue of controllability for central government and local managers. In this context of substantial change, management accounting systems (MAS) have been claimed as a possible answer, recognising the potential benefits of assisting managers to make decisions and budgets and to measure performances.

The step from the *desire to adopt* to the *actual adoption* of MAS has never been easy and many public managers have complained about the inadequacy of traditional systems which seemed to be inappropriate to their organisations. This discussion benefited from the wider debate on the *relevance* of traditional MAS in the private sector, and in particular in service organisations, where the incidence of non-volume-related overhead has become predominant (Kaplan, 1983; Johnson and Kaplan, 1987; Bhimani and Brimson, 1989; Antos, 1992). Activity-based cost management (ABCM) has been a solution to this change of proportion in costs, first for private organisations and then for the public sector, in which, however, the adoption has not been straightforward and is still in its experimentation phase. Despite the significant attention devoted to ABCM by governments, and the problematic setting, empirical studies in this field are lower than in the private sector. This paper focuses on this issue by presenting the development and application of activity-based management (ABM) to service activities in fourteen Italian universities.

The field chosen for this research was particularly interesting for investigating ABM as an instrument for managers and government to control and budget overhead costs. Over the last decade the Italian government has assigned an increasing autonomy to universities and the devolution of budgetary responsibilities is one of its main dimensions. A particular concern has been raised on the controllability of

overhead service costs. While there are many research contributions and discussions on the efficiency and effectiveness of the “products” of university, teaching, research and technology transfers (Farnham, 1999), the attention devoted to support activities is lower. However, their importance is highly significant either as a line of expenditure or for their possible contribution to enhancing the performance of academic services. The study reported in this paper used an action research approach to develop ABM and add to the debate on the control of overhead service costs in the public sector. Specifically it aims to (1) present the model defined, with particular attention to the process of adaptation and (2) discuss the results of its application in the 14 universities.

The article is divided into four sections: a discussion of the specific context of Italian universities; the research approach adopted for the study; a description of the theoretical framework; and the discussion of the results with conclusions.

## **The Context: Budgetary Devolution**

The reform of the public sector has been pursued by governments of western countries since the early 1980s, undertaking actions at different levels, and universities are a component part of this process. British government has been following this path, from the outset recommending the development of new management tools (see for example the Hanham report, 1988). More recent studies show that interest in universities is not restricted to the pace-setters, such as UK, but has become a priority in the agenda of a number of governments (Pechar and Pellert, 1998; Christiaens and De Wielemaker, 2003; Modell, 2003; Pettersen, 2004; Venieris and Cohen, 2004).

The process of reform of the Italian university system started in the mid-nineties, with the introduction of a new financing system, which represented a real break with the past. In particular a law of 1993 (n. 537/93) defined new principles for determining resources flowing from central government, which contributed to budgetary devolution. Previously the Italian system was characterised by the centralised authority of the Ministry of Universities determining the overall resources and the budget for each university, and further, within each budget, the

allocation to specific subject areas (e.g. social science, medicine) and the lines of expenditure (teaching and non-teaching staff, research financing). Nearly half of the overall budget was previously assigned directly to faculties and expense centres, without flowing through the university central management.

The 1993 reform mentioned above introduced three main changes: (1) the definition of a single line budget of financial resources, including all the specific items previously assigned to expense centres; (2) the introduction of “re-balancing” mechanisms, assigning an increasing part of resources on the basis of standard cost per student; (3) the introduction of incentive mechanisms, based on the achievement of government defined results.

The devolution of financial responsibilities raised growing worries over the controllability of resources from central government and university managers. The growing awareness of the need for control was the main pressure for further reform in 1996. With the 1996 law (n.662/96) central government introduced an evaluation system from universities; locally universities have to define an internal committee which determines the fairness of resources management, research productivity and teaching results; centrally the government created a national committee for evaluating the university system which assesses the results of academic institutions and controls their development plans.

The introduction of these evaluation mechanisms gave prominence to the problem of controllability but it was not an answer for managers in informing their decision making and formulating their plan. The two committees have actually focused attention on teaching/research activities and products, almost neglecting service activities and their overhead costs, which are highly significant. Despite the increasing desire to explore this area and develop a management accounting system (MAS), universities are inhibited from undertaking the exercise by two main problems: managers’ limited knowledge of MAS and the perceived inadequacy of traditional models.

## Research Approach

The lack of available models for evaluating support activities in universities prompted the use of an action research approach. Since its origins, action research has gained growing recognition for its contribution to the understanding of practices and its provision of theoretical insights. However there is not a widely accepted definition (Altrichter et al., 2002). The central issue of this approach is the interplay between science and practice, influencing simultaneously the theoretical conceptualisation and the practical rules of the phenomena studied (Argyris et al., 1985). The two central contributors to action research, Argyris and Kemmis, see in it the connection between the critical thinking of researchers and the emancipation to change processes (Argyris et al., 1985; Kemmis, 1985). Further, action research entails the participatory involvement of actors within the organisation studied, in all of the research phases, building an exchange of information and knowledge and, in the process, enhancing participants' competencies.

The approach was divided into three phases: the *design*, the *implementation* and the *revision*. The research was carried out over a 13-month period from September 2001 to October 2002. The project, financed by the *Italian National Committee for Evaluating University Systems*, involved the Committee itself, three researchers and at least two participants within each of the universities involved: a person responsible for data collection (manager or officer) and a supervisor (top manager).

The sample was selected from Italian universities and it was differentiated on the basis of the following criteria: geographic position, size, and faculties. However the selection favoured institutions which showed interest both in the experiment and in sharing information with other organisations. Table 1 shows the organisations selected and their major attributes; pseudonyms were given for reasons of confidentiality.

**Table 2**  
**Participants' Involvement in the Research Phases**

	<b>Committee</b>	<b>Researchers</b>	<b>Supervisors</b>	<b>Data collector</b>
<b>Design</b>				
a. Objectives definition	yes	yes		
b. Sample selection	yes	yes		
c. Definition of comparison modes	yes	yes		
<b>Implementation</b>				
d. Model definition	yes	yes	yes	yes
e. Data collection		yes		yes
<b>Review</b>				
f. Revision of model and data	yes	yes	yes	yes

The preliminary design of the model, based on a literature review and interviews with university managers and members of the academic board in three universities, defined the objectives of the study, the universities involved and the modes for benchmarking. The interaction with the national committee was essential for focusing attention on critical issues and selecting an appropriate set of universities for the research.

The implementation and the review were carried out as a participative study with universities, where a supervisor and a data collector were identified. The research team used different ways of interaction: formal communications, informal e-mails and plenary meetings.

All the meetings were structured in two ways: first a research team presentation was made (objectives, model, results, revisions) and then there was a guided discussion. The debate was fundamental to both

researchers, in enhancing the quality of each phase of the project, and participants, who took the opportunity to gain a better understanding of, and ideas for improving, their organisations.

## **The Theoretical Framework**

The development of management accounting systems (MAS) for service activities in universities drew attention to the issue of overhead allocation. During the 1980s overhead costs were recognised as the focus of the decreasing significance of traditional MAS; the advancement of technology and the global competition changed cost structures where overhead had become a significant proportion of total cost, characterised by increased diversity and complexity (Kaplan, 1983; Johnson and Kaplan, 1987; Bhimani and Brimson, 1989). The use of traditional systems based on volume-related measures for accounting for this overhead (including the cost of functions such as marketing, selling, distribution and general administration) provided cost information which was inaccurate and sometimes misleading (Mitchell, 1994). This shortcoming of traditional MAS increased the need for new and more accurate tools like activity-based costing and management.

Activity-based cost management (ABCM) traces costs first to activities rather than to products, providing a more consistent picture of overhead consumption. Furthermore, the use of a driver for each activity helps management to make decisions, to measure and finally to improve existing services (Antos, 1992; Cooper et al., 1992). Despite its large number of proponents, the debate on ABCM benefits continues: after many applications, supporters have recognised possible failures and some major problems related to organisational issues (Shields and McEwan, 1996) and technical difficulties. Roberts and Silvester (1996), Shields (1995) and Anderson et al. (2002) identified, in particular, some problems in designing the system; these issues are the number of activities to be included in the framework; an overly complex system design; difficulties over reciprocal cost allocation; the quality of implementation training and the adequacy of resources; and compatibility with existing systems. More recently Jones and Dugdale (2002) strengthen the debate, affirming that ABC and ABM are surrounded by ambiguity, and it is difficult to identify a unique activity-based costing or management system.

Specific applications which reflect the standard design and implementation path have been undertaken in public sector institutions. However government guidelines (CIPFA, 1999) and researchers (Brown et al., 1999; Arnaboldi and Lapsley, 2004) suggest that particular attention should be paid to some distinctive features. These elements refer first of all to behavioural issues including the commitment of managers and the involvement of operational staff. In this respect, training proved to be another critical element that can facilitate or hinder the development of an activity based system. Another important element is the choice of the site, which influences not only the initial success, but also the possible rolling out of these systems. Finally, these contributions stress the need to address the technical element, such as the interaction with existing information systems and the selection of software and modelling tools. Having these issues embodied in the political environment of public organisations means that ABC and ABM models, which originated in the private sector, cannot be transferred easily to public sector settings.

Looking specifically at universities, despite the interest of governments in overhead costs, the number of contributions and empirical applications in this field is limited. Mitchell (1996) and Pendlebury and Algaber (1997) reported on the practices of British universities, revealing a small proportion of institutions accounting central support activities with ABC. Other studies focused mainly on teaching and research or ABC applications to specific areas support activities – mainly Libraries (see for example Lamborn and Smith, 2001).

Drawing on these contributions this study adopted an ABM approach in the development of a specific tool for academic support services. The choice of ABM – and thereby not to apply cost driver rates to products – was related to the specific setting of the experiment. There are difficulties in identifying homogeneous groups of products/services and the basis of different rates may raise the issue of “equity” in public sector actions.

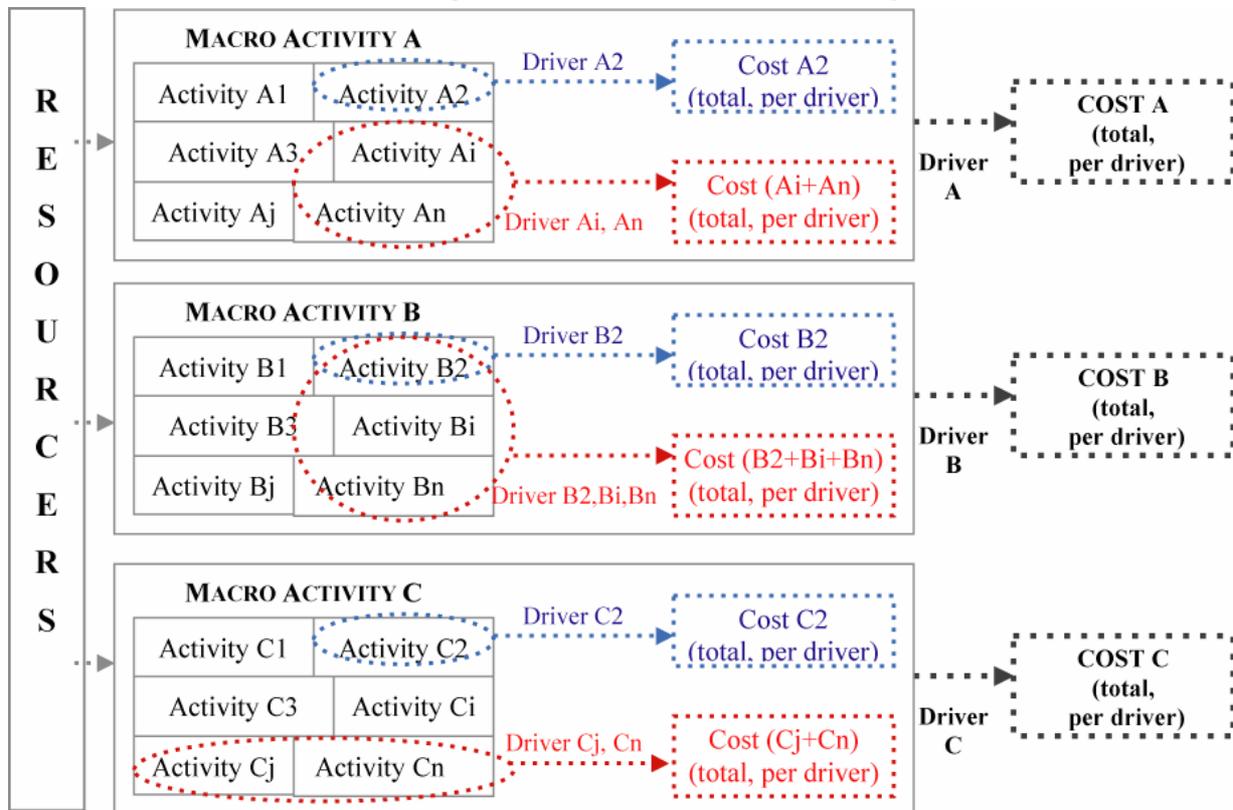
## **Research Model**

Support activities in universities cover a wide range of services in which a large number of non-teaching staff were involved. On average in our

sample, the proportion between teaching and non-teaching staff employees is 45.3% to 54.7%, which evidences the significance of accounting for this area. The extent and variety of the services carried out and the need to trace costs for different purposes led to the development of a general model, based on three levels of activities (macro-activity, activity and micro-activity) and two levels of drivers, adopting an hierarchical structure.

The model (Figure 1) first traces costs to the *macro-activities* which may be services or processes within university support activities; a *general driver* is assigned to each macro-activity. The second level is defined by the *activities* into which the macro-activities may be divided; a *driver* per each activity is assigned. A further level of cost analysis was added, grouping together related activities; this focuses attention on sub-processes within an area (e.g. activity for teaching staff within Personnel Management macro-activity). Finally there is a last level, *micro-activity*, which defines the operations accounted in the *activity*; costs are not traced to this level (not shown in the model) but it is important for data comparison on, for example, overtime with other organisations. This initial framework was suggested from both prior research and the preliminary phases of the empirical study. In particular there are two issues which led to the hierarchical structure: first the variety of information requested by users within the university, hence their different needs; second the difficulties in moving from an overall picture of the organisation (sensing areas of real need) to a further understanding of detailed cost data (activity unit costs) and vice versa.

**Figure 1**  
**The Activity Based Framework Adopted**



For example a university may include two macro-activities in the model: *Personnel Management* (A) and *Procurement* (B). First resources are traced to them identifying the macro-activities' costs, then a general driver is assigned to both (e.g. *n. employees* for Personnel Management and *total expenses* for Procurement); the collection of drivers would give the first level of unit cost, the cost for each employee and the cost per expense (cost A and B in figure 1). The second level in the model instead would define the cost of the activities included in the two processes; *personnel* may be divided for example in three activities: payroll management (activity A1), training (Activity A2); enrolment competition (Activity A3). Finally identifying a driver for each activity (e.g. *n. payments* for payroll management; *n. training modules* for training; *n. competition* for enrolment competition) it is then possible to calculate the activities cost per driver (e.g. cost of training divided by the *n.* of modules).

The general model was used as the theoretical basis for defining the MAS for universities administrative activities; following the hierarchy the first step was the choice of the *macro-activities*. This decision was made

during a plenary meeting with all the 14 universities and focused the study on three major areas: *Accounting Services, Personnel Management, Students' Support Service*. These areas were seen as a priority by the institutions involved and by the national committee, on the grounds that they employ a high percentage of administrative staff in total and further, that these macro-activities are rapidly expanding, incorporating new tasks and services every year.

Another important decision was the identification of *cost pools* (*Resources* in Figure 1) that will be distributed on the activities; these cost pools may include all the lines of the general ledger or focusing on some sub-sets (e.g. personnel, information systems). The selection of the expense items in the system and their aggregation in cost pools was made on the basis of three criteria: (1) cost percentage of the total, (2) level of control over these costs for the administration staff, (3) cost of measurement.

In the initial proposal to the participants, the research group selected four major items which contribute more than 80% to the total costs: personnel, training, space, and consultants. However, during a plenary meeting, many universities suggested additional expense items which are strictly related to personnel (computer, printers, telephone) and the cost of utilities (electricity, gas, water, waste cleaning, security). Finally one administrative director (University D) suggested adding the cost of hardware and software applications specifically developed for the support services studied.

The brainstorming session was crucial and some controversial issues emerged. In particular most of the participants were reluctant to include information system (IS) costs for several reasons. A first problem is that not all the universities could easily calculate the depreciation of IS investment as they directly charge the whole amount of the investments to revenue every year; second, often applications – but in particular the hardware components (e.g. server) – are shared by many services within the institution and apportioning the cost to the activity studied could be difficult; finally some managers reported that their universities could provide the value of investments for the previous year only, as they do not have an archive of IS costs but just a general (and wider) item reported in the balance sheet. These problems suggested the exclusion of IS costs from the cost pools, to guarantee the reliability of the data and the comparability of institutions. All the other costs

proposed were added creating three cost pools: (1) personnel costs and consultants; (2) telephone, pc, printer and training and (3) utilities.

With the cost pools defined, the subsequent step was the identification of the resource drivers, that is the basis for apportioning the three cost pools to the activities. The first was apportioned to the activities on the basis of the time percentage dedicated to the macro-activities and the activities; the second cost pool was ascertained in two steps, first assigning to each person their charges for telephone, pc, printer and training, and then using staff time percentages to trace these costs to activities; a similar calculation was introduced for the utility pool (the third one) calculating first a cost per square metre and then assigning these costs to each person.

So far the design of the accounting system implied the same decisions for all the macro-activities. The following steps were also carried out with a specific focus on each area: the identification of activities and their drivers and the definition of a general driver for the macro-activity. An initial investigation of each macro-activity in two universities allowed the research team to draft a list of activities and drivers, which was then submitted to all participants. After some revisions and e-mail follow up, the final decision was made during a plenary meeting, with a total agreement on activities and drivers. The choice to provide an initial list of activities was suggested by previous research on the implementation of activity based management/costing in public sector (Arnaboldi and Lapsley, 2003); the lack of experience and the background of internal personnel often misdirect staff effort, who tend to overly focus on detail, identifying too many activities for an accounting system. However their involvement in the preliminary definition of the list and in the revision was fundamental and led to a straightforward approval.

The following tables report the activities and drivers for the three areas studied.

**Table 5**  
**Student Support Services – Activities and Drivers**

Student Support Service		
	<i>Activity</i>	<i>Driver</i>
1	Tutoring	N. student
2	Registration 1st year	N. 1st year students
3	Registration	N. students
4	Self-certification	N. self-certifications
5	Students cards management	N. students
6	Students programme management	N. students
7	Graduation management	N. graduated
8	State exam management	N. registered
9	Career management	N. students
10	Certification	N. certifications
11	Mobility management	N. mobility files
12	PhD management	N. PhD students
13	Post-graduate school	N. post-graduate students
14	Convention management	N. conventions
15	Student Grant management	N. grants

The tables show that the model implemented provides cost information which is significantly different from a traditional system. Traditionally the costs available within universities are obtained by dividing the resources consumed in each organisational unit (OU) by a unique measure. This method has two important problems that can compromise the significance of the cost. The first issue is that there is only partial overlapping between support services and the organisational structure; often these processes are spread across different OUs and their overall analysis is not possible with traditional costing methods: for example the management of non-teaching staff recruitment and the planning of their careers can be performed by two different organisational units, but they both contribute to *Personnel Management*. A second problem relates to

the diverse activities carried out within each area: table 5 shows clearly this situation for *Accounting Services* where there are five activities that have five different drivers. The model proposed aims to overcome these problems by creating virtual macro-activities, obtained by the sum of clearly, and previously, identified activities; these virtual areas cross the boundaries of the organisational units and cover the sub-processes which contribute to each supporting service (here student support, managing personnel and accounting).

Once we identified the “boundaries” of the macro-activity, the last step in completing the model was the definition of a general driver for each of them. The decision for *Students Support Service* and *Personnel management* was easy, while the definition of a global measure for accounting was more controversial. Many participants observed that the characteristics of the sub-activities vary as well as the typology of work involved in their management, and the definition of a unique driver seemed ambiguous, as the following comment shows:

We have thought seriously about a possible driver, but we cannot figure out a unique measure for dividing the total cost of accounting management that can give us a useful measure. The set of activities includes standard repetitive operations, such as the management of students taxes, but also tasks, such as the preparation of financial statements, which are performed once a year (*The Director of Accounting Service of University F*).

At the end of the session an agreement was achieved to use the following drivers: *n. students* for the *Students Support Service*; *n. personnel* for *Personnel Management* and *total Revenues + total Expenses* for the *Accounting Service*.

At first glance the choice of a unique driver could suggest a reversion to a traditional approach; however there are two elements which explain the difference. First the cost per general driver is only the initial level in the hierarchical model, which is targeted to provide a general picture of the areas and “strong” signals to top level administrators; second, as discussed previously, the cost ratios here include (as a numerator) all the activities costs related to a specific support service, crossing organisational units. These data are usually not available with traditional methods shaped around the organisational structure.

## Research Results

The system presented in the previous section was implemented in the 14 universities over a six-month period (from February 2002 to July 2002). In this part of the paper we discuss the two major results of this application: the operational issues; the costs and their significance to the participants.

The first problem encountered in the implementation was the collection of personnel costs; many universities had to search for these data in different databases and put the information together manually. The inadequacy of information systems is certainly not a new problem and not specifically related to public sector organisations: there are a number of contributions to the literature showing both public and private organisations which faced these issues (see for example Antos, 1992; Mitchell, 1994; Shields and McEwan, 1996). The problem was overcome here with the support of the research team; however it should be taken into account carefully for any adoption of the system on a routine basis.

The most critical step in the implementation was the identification of the working time percentages, which form the main driver for dividing personnel-related costs over activities. Participants used two different approaches. First some universities adopted a centralised method where the project data collector interviewed only the line managers involved, determining the percentages without the involvement of employees. Other universities followed a second approach: the project data collector contacted the individual employees involved in the macro-activities, who were then asked to fill out a sheet dividing their time on the activities. The effort in collecting data is similar and the coordination action significant in both cases. Regarding the reliability of information both methods have some problems. The definition of time percentage by line managers could affect the precision of data due to a limited knowledge of staff activities; the direct involvement of operational staff could affect data as they may define percentages for influencing the final result, as the following comment shows:

At the beginning we decided that, for gaining more precise information, the best way was to ask people to fill out these forms; however when we analysed the data we realised that some of them misunderstood the goal of this data collection; for example they increased percentages for tasks they believed to be more

important. The most significant case was a person who filled out the form reaching a total of 200% observing that his commitment to the organisation goes far beyond the normal effort (*Data collector at University E*).

At the final stage of the research project, participants agreed that the “central” approach is better and possible mistakes in the collection process have a marginal impact on costs.

A final operational problem was faced in evaluating drivers. The identified drivers may be divided into two categories: (1) measures provided yearly to the Ministry of Universities; (2) measures which universities are not obliged to provide externally. The quantification of the first set of measures was straightforward and the presence of consolidated rules favoured homogeneity in data collection, while the collection of the second category was more critical. During the model definition the research group, together with participants, identified specific definitions for each indicator to guarantee data comparability; however the first comparison of results showed some inconsistencies in two drivers: fiscal operations (*accounting services*) and staff leaving files (*personnel management*). The plenary meeting was fundamental to understanding the reasons for these differences; in the first case (*fiscal operation*) some universities explained that they accounted for the number of official fiscal payments which can be an aggregation of many fiscal basic operations. The differences in the second driver (*staff leaving files*) were explained by the exclusion or inclusion of the files analysed for people who have not left the organisation in the period considered; all the universities agreed that the best driver was the total number of files managed. In both cases the data were checked and revised, for all the 14 universities involved, setting out which kind of operations and files the institutions had to use. This revision enabled a homogeneous and reliable comparison of the costs for both levels: macro-activity (table 7) and activities (table 8, 9 and 10).

The organisations involved were particularly satisfied at the benchmarking results, which were considered useful on many levels. The approach adopted allowed universities to identify the whole cost of the processes analysed (accounting, personnel management, student support services), crossing the internal boundaries of the organisation and providing a complete picture of costs incurred. The administrative director of university L was particularly enthusiastic about this new opportunity as in the past they attempted to calculate the cost of the whole *Personnel Management* process without any success; he explained that the costs incurred in their “Personnel Management Office” do not include all the set of activities considered here (e.g. recruitment management is not included), which however are the real reflection of how much it costs to manage and support a staff member in a university.

For University L the overall cost accounted with the activity approach resulted in its being considerably higher compared to their traditional measures; these “new numbers” supported the perception that the administrative director was quite costly in personnel management: ABM costs gave him a new instrument for defining and negotiating line manager objectives for improving services.

The calculation of costs based on a homogeneous set of activities leads to the second benefit reported by all the participants: the possibility to benchmark reliably with other universities. Previously, some institutions attempted to compare their costs externally but they encountered several problems with their different internal organisational structure and the different costs included in their accounting systems. The interest of Italian academic managers for external comparisons is related to the recent reforms of higher education system, which has increased their autonomy, but also their responsibilities and the pressure for rationalising the use of public resources; they are aware that support services are an important line in their budgets and the relative positioning against other Italian universities is considered crucial to compete efficiently.

Looking specifically at the three areas analysed, the results for *Accounting Services*, considering the macro-activity level (table 7), were in accordance with managers expectations, while the comparison at the activity level revealed some critical situations in the management of specific processes. In particular the administrative directors of

universities M and F were surprised by the costs of fiscal operation management (table 8) which had never been considered significant; the costs were then discussed in both universities with line managers reporting the same problem: the replication of some micro-activities performed within different organisational units. Also the administrative director of University I was surprised by the results of specific activity costs; though they have the minimum general cost, in accounting for the cost of fiscal operations they are quite high. On the contrary, his director of the accounting office was not surprised by the result, confirming some problems in managing this activity, but the traditional method of cost allocation had hidden this inefficiency by spreading the costs over the whole activity.

*Personnel Management* costs surprised nearly all the participants, by highlighting an average cost of 512 euros per person, which was higher than their expectations. Some managers tried to explain these results by looking at the “history” of this area in Italian universities, where there has been too high a division of tasks, proliferating the number of people enrolled, increasing bureaucracy and reducing general efficiency. The detailed picture given by the activities costs per driver (table 9) were useful in identifying specific problems for each university. Finally it is interesting to highlight that university I, which has the lowest general cost (275.45 €/person), was contacted by many organisations involved in the project to understand its practices which are a result of a recent reorganisation in this area. The following comment by the *Personnel Management* director shows the type of question usually addressed:

After the presentation of the project results we received many of phone calls from other universities which were interested in understanding how we arrived at these results. Some questions were of general interest, asking indications for starting a process of reengineering as we did two years ago. But some questions were very specific, for example they wanted to know how we can have such a low cost for *Teaching Staff Management* or *Non-Teaching Staff Competition Management*. (Director of *Personnel Management* at University I).

The reactions to the cost of *student support services* were different among diverse groups of managers: where the organisational structure nearly matches the set of activities considered, the level of costs were in accordance with expectations; on the other hand costs were usually

higher. In this area, however, managers were particularly interested in the second hierarchical level, trying to find a possible way of improving their efficiency. The clearest example is given by university B which considered its cost for *self certification* and *certification* too high compared to the results achieved by universities I and E. On the basis of these targets and the indications given by university I, the administrative director of B authorised a project for reengineering and standardising these processes.

Finally it is important to highlight that the results were not used only as an “ad hoc” basis for defining the activities and processes: some universities (i.e. G and M) used the project result as targets for line managers within the yearly budgeting process.

## Conclusions

The specific focus of this study is the adoption of management accounting systems (MAS) for central academic support services, which have been recognised as highly significant lines of expenditure. The issue of overhead allocation refers to the early 1980s debate on the shortcomings of traditional MAS and to the appearance of activity-based cost-management systems. However the application of these systems for support activities in universities is still marginal and exercises mainly address specific areas of academic services (Mitchell, 1996; Pendlebury and Algaber, 1997; Lamborn and Smith, 2001). The lack of available systems informed the objectives of this study, which developed and tested an activity-based system in 14 Italian universities. The major findings of this article cover two dimensions: the model definition and its applications.

This model proposed enriches the experiences reported in the literature in three ways. First, the ABM has a formal and defined hierarchical structure, which proved particularly useful for providing cost information to different actors within these organisations; top managers and academic boards want limited quantifications but strong signals which analyse the services budgeted (macro-activity level), while line managers need more detailed information on the processes managed (activity level). Second, the use of the *activities* and *macro-activities* overcame a common problem of traditional accounting systems, that is,

their main focus on organisational unit performances. The model developed here crosses the boundaries of divisions, providing a complete picture of the support services carried out and tracing them to an appropriate driver. Third, the second level of the model (the *activity*) provides detailed information on the diverse activities performed within an area (e.g. accounting services). Participants' reactions, after the presentation of results, confirmed the three benefits set out above, further validating the accounting model developed.

From the operational perspective the application in the 14 universities proved to be feasible though not straightforward. As reported by previous studies some problems were encountered in the collection of costs and drivers, which were related to both technical and behavioural issues. The main technical problem was the dispersion of the data required in several databases, which are often managed and accessible to a few key actors within the organisation. The time needed for contacting these people and inserting the data manually was too long for some universities, which questioned the possibility of carrying out the exercise on a routine basis. The main behavioural issues emerged during the documentation of the time dedicated by operational staff to each activity. People tended to see the exercise as a personal evaluation more than an activity costing exercise, trying to adjust percentages to emphasise their contribution. However the presence of a central coordinator in each university and the involvement of line managers recognised these situations, supporting the reliability of the data. A final problem was related to the drivers, in particular, to the collection of some non "conventional" measures. The drivers defined in the model include traditional indicators (e.g. students, expenses, incomes), which are already available as they are provided yearly to the Ministry of Universities, but it included some "new" measures which were collected specifically for the ABM application (e.g. in *Personnel management* the number of trading modules and the number of authorisations). During the data collection, universities interpreted the definitions provided by the research team for two drivers (fiscal operations, staff leaving indemnity files) differently and provided numbers which were not comparable initially. The errors were evident in the comparisons of results and during the plenary meetings the differences were clarified, the instructions revised thereby eliminating ambiguities and then the data was re-collected and verified.

The application and the presentation of results also gave the opportunity to observe the reactions of participants to their costs. Top managers were generally impressed by the information collected though some differences exist among different groups of universities. Looking at the first level of costs (macro-activity) the results were in accordance with some managers' expectations; for others, they were generally higher. This divergence is justified by the different design of the applied accounting model from the traditional accounting systems: the first is focused on activities while the traditional method is usually based on organisational units. The partial overlapping between organisation units and macro-activities gives significant differences in the costs for some universities. On average, the most surprising area was *Personnel Management*, where the cost per person was expected to be lower. The activities costs at the second level were considered a surprising result by all the participants, as they provided an in-depth analysis of the diverse activities performed and the possibility of comparing them against other universities. This reaction stresses the benefit of the model proposed compared to more traditional methods where a unique volume measure is considered. The general cost per driver was here seen as a general, quick indicator for top managers' scorecards, but the full understanding of the cost structure and the centre of the analysis formed the second level. This last opportunity, benchmarking, was another important benefit highlighted by these managers. The reliable and homogeneous comparison with other universities defined reference costs which have been used either for revising processes or as targets in the control and budgeting processes.

## Limitations and Future Developments

The results of this study however point to the need for further investigations; in particular three areas need to be explored. The first element is related to the activity-based model design; it proved to be suitable for academic institutions and effective in providing reliable costs, but its implementation required the manual inserting of information on costs, percentage time and drivers. Its use on a routine basis needs to be carefully considered, analysing the revisions required in the information systems and the integration of ABM within the overall control system. The second issue is related to the differentiated situation portrayed by costs; the macro-activities and activities costs provided a

guideline for highlighting “good practice” and the participants’ comments and plenary discussions gave indications for improving services. However, only an in-depth investigation of these cases would provide the necessary detail for key actors to improve their performance.

A final development is related to a possible misleading use of the hierarchical model; the first level of analysis (general cost per driver), as evidenced in the study, is only a preliminary steps towards fully understanding cost behaviour; however the model could induce managers to be biased by these results into assuming ‘volume-centric’ approach. This opens the possibility to experiment with the model, limiting its application only at the second level, and also to explore new models for measuring the macro-activities results as a whole.

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