

THE "ENTREPRENEURIAL UNIVERSITY": A PRELIMINARY ANALYSIS OF THE MAIN MANAGERIAL AND ORGANISATIONAL FEATURES TOWARDS THE DESIGN OF PLANNING & CONTROL SYSTEMS IN EUROPEAN ACADEMIC INSTITUTIONS

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Abstract

In the last decade, European academic institutions have been affected by significant reforms aimed to improve their own performance levels. The reason for these reforms has been inspired by various factors, such as budgetary restrictions imposed by National Governments and the "marketisation" of the Higher Education sector. This has led European universities to increase their autonomy and accountability to successfully perform and compete in a worldwide competitive system. Both autonomy and accountability have involved a greater emphasis on performance management and Planning & Control (P&C) systems.

In the light of the new institutional and competitive context, the aim of this paper is to provide a preliminary analysis of the main features of European universities according to a management-based perspective. Subsequently, a definition of "academic performance" is suggested in order to design a P&C system, which may fit academic 'business' features in terms of both competitiveness and quality of Higher Education services.

Keywords: University management; 'Entrepreneurial University' features; Academic performance management-based perspective; Planning & Control systems.

1. INTRODUCTION

Over the last ten years, European National Governments have undergone a series of reforms – in terms of both rules and organisation design – which have deeply changed the way of running public universities.

The underlying causes are essentially due to two macro phenomena which have strongly highlighted the unsustainability of outdated systems:

- the economic crisis that National Governments have faced for some time;
- the competitiveness – at both national and international level – of the Higher Education sector, which overall found universities management tools inadequate to support decision-makers.

As for the first item, the economic crunch has raised National Governments' awareness of the quality of financial transfers to the various sectors working to the advantage of the community (e.g. education, transports, public health, infrastructures, etc.); with reference to that, given the increasing tightening of public funds, Governments have considered opportune to allocate funds according to the results and meritocracy of those institutions operating in the same sector and depending on the attention paid to end users' needs. This mechanism has thus triggered some important factors of competitiveness among universities at national level such as: expenditures rationalisation and quality of products/services supplied to the advantage of stakeholders.

As for the second item – and as a consequence of the need for a cut in the Higher Education sector budget – the doubtful competitiveness of most universities has clearly come out (Shattock, 1999), namely in the wake of other Countries' best practices (e.g. USA).

Such phenomenon tackles the possibility of an international prestige heralding new investments and sources of finance for research and educational activities: in other words, the substantial investment of public resources has not resulted in an equivalent quality of research and didactics (Boyce, 2002).

Furthermore, the competitiveness of the academic system reflects the competitiveness of the overall "Country" system, since – as Czarniawska & Genell (2002) maintain – it is exactly thanks to the interaction among research, university and vocational training that one may refine the tools allowing different production systems to keep pace with their rival economies: innovation, technology and competence are unanimously considered the only true driving forces in order to face global challenge on the long term, namely for those developed economies where competition is not based on the cost of inputs or on economies of scale.

Therefore, the great and innovative change in the European academic system is leading university management bodies to dispute their current and obsolete managing systems in order to ensure successful survival throughout time.

This stems from the need – underlying this paper objectives – to start up a reflection on universities managing systems under an innovative and, at the same time, sustainable perspective.

Given the above reasons, the study of universities success factors, the analysis of criticalities to the academic value creation, the tension towards stakeholders' satisfaction, strategic management, performance assessment and the analysis of the causes of achieved performance level, constitute the main topics of a larger stream of research that appears necessary to develop in order to contribute to the current debate.

To that end, this paper constitutes an introduction illustrating European universities key features and considering universities as "enterprises"; particularly, the first part of the research is oriented to pinpoint universities' production processes, governance and organisational structure; whereas, the second provides a definition of "academic performance" which represents the cornerstone to design universities Planning & Control systems.

2. A MANAGEMENT-BASED PERSPECTIVE OF ACADEMIC INSTITUTIONS

The distinction between public and private sector, the lack of 'dialogue' between business management and law disciplines, and the various shapes of social organisations, have always made it hard to understand that even public institutions may be addressed as "enterprises" (Neumann & Guthrie, 2002).

From the very first definition of an "enterprise" – i.e. an institute aiming at the fulfilment of human needs and tending to last – it is actually possible to detect that also public institutions, although non-profit making, may be regarded as "enterprises" (Parker & Jary, 1995). On this concern, operating in a context of "limited economic resource" represents the distinguishing feature which is common to all kinds of enterprises.

For universities as well, it is necessary to adapt a context of "limited (economic) resource" to the attainment of universities own mission (Chapman, 1997; Parker, 2002); this causes a strong commitment to meet the increasing needs in terms of both performance quality improvement and the adoption of typical enterprises management mechanisms (Bleiklie, 2001).

The phenomenon of the so called "State-owned companies privatisation" dates back to the middle of the '80s when the reform movement, New Public Management, was set up (Hood, 1991; Osborne & Gaebler, 1992). Such movement promotes and aims at turning the old, bureaucratic, centralised and inefficient administrations into dynamic and decentralised organisations seeking efficiency and citizens' satisfaction.

As a result, many European universities have started to rethink their forms of organisation, governance and management, often moving from traditional models of participative management towards more corporate models of management.

The New Public Management – opposed to Weber's bureaucracy and to the Progressive Public Administration model (Karl, 1963) – tends to introduce private sector management mechanisms and philosophies into Public Administrations, and to focus on results and objectives rather than on observance of procedures.

The implementation of these new management ideas has put the focus on making the academic sector more competitive and responsive to citizens' needs by offering 'value for money, choice flexibility, and transparency' (OECD, 1993).

As far as the subject of universities marketisation is concerned, the metaphor of the “Ivory Tower” by Powell & Owen-Smith (1998) is by now famous; according to such metaphor, as universities are gradually identified with commercial richness, they also lose their uniqueness in the society. They are any longer seen as the ivory towers of intellectual activities and truth thoughts, but rather as enterprises run by arrogant people aiming at capturing as more money and influence as possible.

Although several academic institutions claim that they have already implemented suitable P&C systems and, therefore, that they are now more accountable to their stakeholders, it is still not clear what the real effect of these new managerial arrangements on the governance structures of these institutions has been, particularly due to a lack of in-depth analysis aimed to highlight specific characteristics of universities according to a performance management perspective.

As far as P&C systems are concerned, obstacles to their spread are due not just to technical, organisational and political problems, but above all to the difficulties in adapting them to universities peculiarities.

Actually, within the universities, the creation of social and competitive value is, on the one hand, equivalent to meeting stakeholders' needs for training and knowledge enhancement; stakeholders are also directly or indirectly involved and interested in the growth of the economic value of universities, since they are deemed as investments useful for the community.

On the other hand, “knowledge” creation, development and transfer in favour of the community dictates universities high professional competence in order to tackle the growing competition of the Higher Education sector.

3. THE MANAGEMENT PROCESS CYCLE OF THE “ENTREPRENEURIAL UNIVERSITY”

As Clark (1998) asserts, there is a widespread awareness that universities must become more customer-oriented, more competitive and making its leaders more accountable. To achieve such goals, performance indicators – as part of a larger P&C system – are tools used by academic decision-makers to exercise a management control, based on economic, efficient, and effective criterion.

This means that performance measurement systems are crucial for academic outcomes improvement. What cannot be measured cannot be controlled, and what cannot be controlled cannot be managed. This may happen whether strategies and evaluation mechanisms, such as the adoption of proper performance indicators, are not implemented (Cave et al., 1997).

Nevertheless, indicators have to fit university management peculiarities in order to effectively and timely provide significant information on performance trends to decision-makers.

The peculiarities of the "Entrepreneurial University" refer to the management areas and their underlying processes.

As one may easily figure out, management macro areas of universities basic mission are:

- (1) education;
- (2) scientific research;
- (3) empirical and applied research;
- (4) supporting activities;
- (5) administrative back-office.

All the other functions and activities carried out are propaedeutic and/or support the above-stated macro areas (e.g., career guidance for students and job placement).

In the specific instance, education includes all the activities aiming at knowledge transfer and development of professional competences.

Research relates to the evolution of the various branches of knowledge; namely, it is conducted in the departments according to a logic of homogeneous clusters of disciplines. With reference to the tangibility of research outcomes, it seems worth to distinguish between scientific and applied research: the first one envisages to formulate theories, sciences and doctrines, whereas the second one aims at the practical application of such theories and its outcomes are more tangible (e.g., the working out of new drugs or of design patents).

Supporting activities include a range of additional and auxiliary services to didactics and research functions (e.g., technical support).

Finally, administrative back-office is encompassed by education, research and supporting activities and it is fundamental for the coordination of the whole academic activities and functions, especially in terms of available resources allocation.

The following figure summarises management macro areas of universities basic mission.

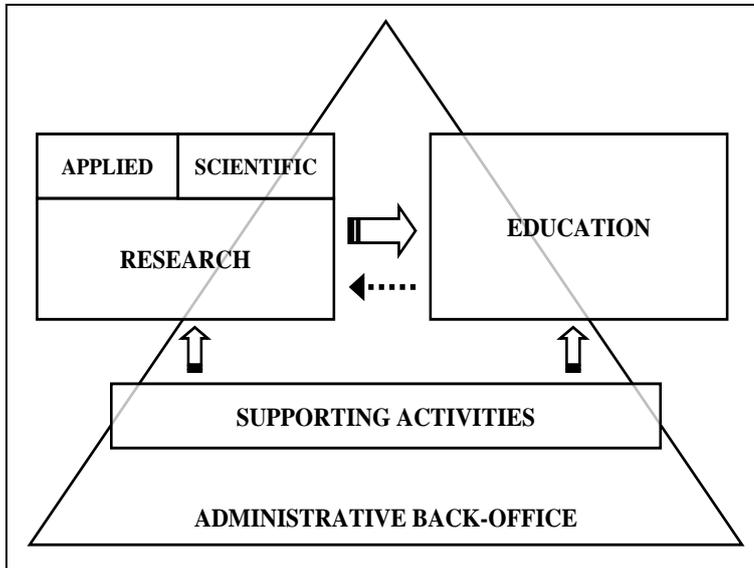


FIGURE 1 – UNIVERSITY MANAGEMENT MACRO AREAS

The whole management areas share a common management process cycle characterising European universities. Figure 2 shows such cycle, which is composed by the following phases:

- Funding: it deals with the university property, the debts it can contract with third parties in order to obtain the necessary resources to its funding, the transfers received by other public bodies (typically the Ministry of Education), the disinvestments of its assets, the contributions by some enterprises and other bodies able to finance specific research activities (e.g., the European Union).
- Investment: the accumulated resources are then used, that is to say invested, to buy inputs and strategic resources necessary for the attainment of the university goals. As regards this, besides traditional assets and manpower, the development of the intellectual capital, i.e. the enhancement of knowledge, competence and capabilities of all those involved in research and didactics, gets extremely interesting.
- Realisation: after resources are transformed into value to the advantage of end users, investment is followed by realisation, corresponding to money return of the investments made for the accomplishment of the supplied services. Universities direct realisations refer to tuition

fees paid out by the students enrolled in the different courses (e.g., bachelor degree, master degree, PhD), to the assignment of applied research results (e.g., patents and intellectual works) and to other incomes coming from other services (e.g., student's residences rental, visiting researchers housing rental, conferences entrance fees, revenues due to courses for executives). Indirect realisations purely concern the taxes paid by the community to the State in order to benefit from public utilities, including education.

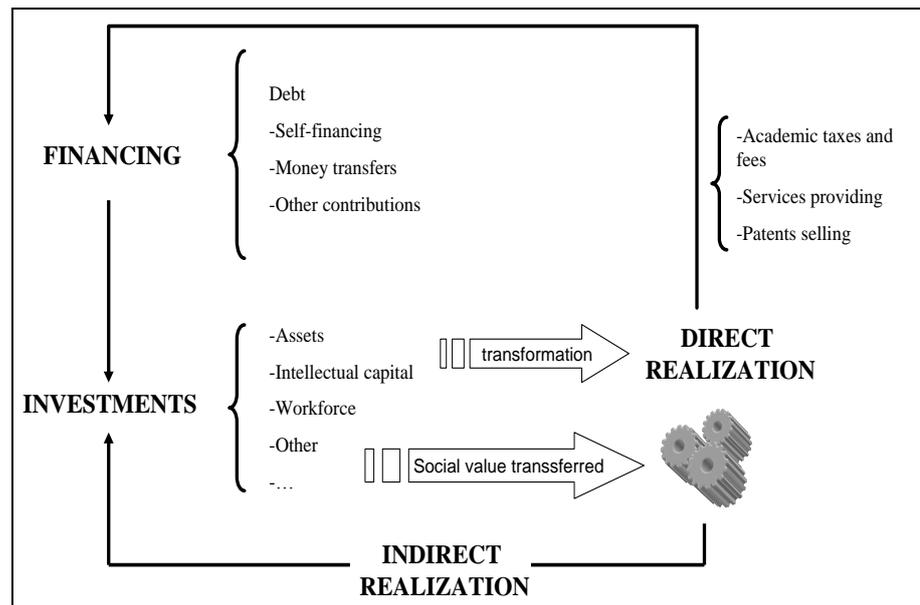


FIGURE 2 – MANAGEMENT PROCESS CYCLE OF THE "ENTREPRENEURIAL UNIVERSITY"

Anyhow, as maintained by Flamholtz (1996), the way to reach a sustainable development throughout time is to supply all those public utilities providing a suitable value to the community's needs and able to contribute to increase richness which is overall generated, rather than richness which is consumed in each economic regional system.

4. THE ACADEMIC STAKEHOLDER SYSTEM

A peculiarity of the "entrepreneurial university" consists in its relation with the outer world. Services supplied by universities address an authorising environment, that is a hemisphere made up of social groups, encompassing enterprise market too.

Such an environment does not just practically represent the community of the region where the university is placed, but the broader community which may benefit from its products regardless its geographical positions, and which is supposed to foster cultural and scientific promotion (Dill & Teixeira, 2000).

Moreover, academic stakeholders should not be considered as mere passive users and beneficiaries of educational services, but rather as those who provide resources and delegate education management to the public sector.

In terms of competitiveness, understanding stakeholders' requirements contributes to strengthen the university competitive performance, and, as a result, its economic and social outcomes.

In the specific occurrence, the social groups who enjoy the use of academic activities are: learners as direct beneficiaries of educational services; the national and international scientific community interested in the evolution of the various branches of "knowledge"; the national and local economic system, formed by enterprises, banks, public institutions, local authorities, which are all interested in human capital growth and in the scientific and applied research outcomes; the State, as the main financing body of the Higher Education sector.

Furthermore, from an internal point of view, stakeholders can be recognised in the following categories of key players: academics (e.g. full-, associate-, assistant-professors, researchers, lecturers, PhDs) and non-academic staff (e.g. civil servants performing in administrative back-office and technical staff).

5. MAIN FEATURES OF ACADEMIC GOVERNANCE

A governance structure may be defined as a set of rules concerning authority and power related to the performance of a university's activities directed towards a set of common goals (De Boer, 2002), i.e. it reveals the way by which an organisation frames and combines responsibility and authority.

In European academic institutions, the governance system is somewhat complex because of the uniqueness of their organisation: several categories of key players actually coexist within universities, whose hierarchical order is rather difficult to understand if compared to other public or private organisations (Kennedy, 2003). Furthermore, several organisational units – often located in different geographical areas – have to interact in order to provide administrative products to end users (e.g., bachelor certificates elaboration at least involves the interaction between faculties and secretary offices).

On this concern, dialectic between "centre" and "periphery" stands for one of the most significant criticalities in running universities, especially as far as the assignation of financial and human resources is concerned. At today, the design of performance measurement systems is essentially oriented to capture those results coming from 'front-office' units, leaving out the contributions that 'back-office' units

bring to the overall performance of universities. In other words, universities emphasise the identification, analysis and working procedures, to improve their performance.

Actually, organisational units (e.g. faculties, departments, administrative offices, secretary) and their respective executive staff appears as worlds apart from other managers, both regards the management as well as their duties. As a result of this fragmentation, each manager is only concerned with its organisational unit, steering away from the goals of the institution as a whole (Dearlove, 1998).

Therefore, such logic implies a partial view of the relevant system and, hence, tackles strategic and organisational learning of decision-makers (Kloot, 1997).

Consequently, it appears necessary to support academic decision-makers by suggesting appropriate P&C systems, in order to better understand criticalities, organisational dynamics and, above all, value drivers which may be influenced to lead universities towards their goals achievement. Namely, universities performance dynamics understanding facilitates an efficient distribution and coordination of strategic resources between 'back-office' and 'front-office' units, and enables universities to effectively and efficiently reach their pre-set goals.

Figure 3 displays the European universities organisational structure and outlines its governance (Mintzberg, 1979).

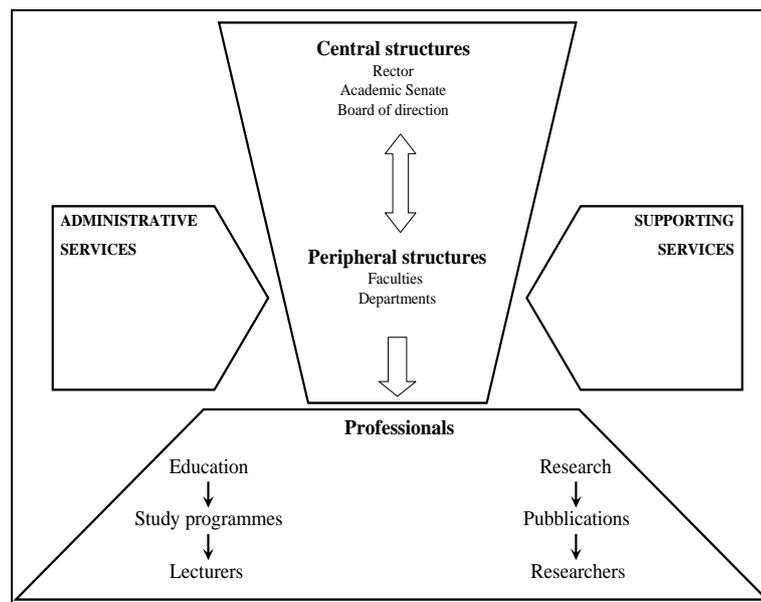


FIGURE 3 – UNIVERSITY ORGANISATIONAL STRUCTURE

6. THE RELATION BETWEEN STRATEGIC AND OPERATING MANAGEMENT IN ACADEMIC INSTITUTIONS

To start with, "knowledge" enhancement and transfer should be put in a specific framework inside a broader social system development process, where university intertwines its activities with other institutions' activities.

In order to meet education and knowledge enhancement needs through economical, social and competitive public services, university management decisions have to be taken by two main management levels: the strategic level, which aims at long term planning, and the operating level, which aims at turning strategic planning into decisions and consequent actions for current management.

As regards this, one of the most significant criticalities for strategy-making in public organisations is the weak relationship with other institutions. In fact, as Reponen (1999) maintains, universities are loosely coupled organisations within the external social context, where other public and private institutions interact.

In order to meet education and knowledge enhancement needs, it actually seems necessary that the university interact with other institutions – generally autonomous and playing different roles – to reach a shared, strategic and inter-organisational framework within the social system. Such framework has to be based on common learning and strategic dialogue, in order to understand and overcome the complexities of the social and competitive system.

Figure 4 sums up the two levels of university strategic setting: firstly, the "in-depth" identity, that is the hidden and invisible part of the organisation strategic scheme that underlies the concrete decisions made explicit in the visible strategic profile, is defined at a political level. Such identity corresponds to the "reason of being" of the organisation and it thus identifies its mission. In other words, it represents the underlying strategic trend made up of guidelines, values, beliefs and basic attitudes, which becomes rooted in key players' behaviour (Goold & Quinn, 1990).

Secondly, the academic visible strategic profile – stemming from the underlying strategic trend – represents the executive formula outlined by the organisation management. It includes the totality of directives and orientations addressing the university key players and aiming at attaining prearranged goals. To a great extent, its validity is more limited, from a time point of view, than the underlying strategic trend validity, and it changes depending on the assessment of the organisation strategic performance throughout time.

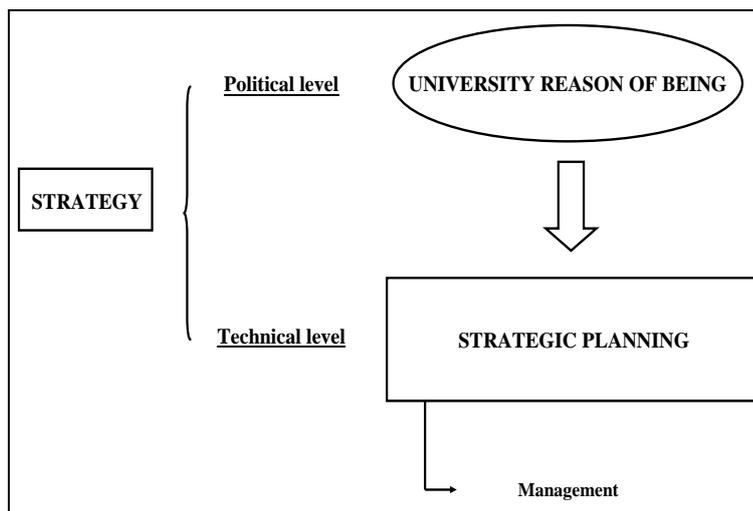


FIGURE 4 – THE LEVELS FOR STRATEGY SETTLEMENT IN UNIVERSITIES

The organisational strategy aims at spotting and understanding the social and competitive system uncertainties and complexities, as well as at reaching, according to the observed phenomena, university adjustment through some advisable decisions which should influence the causes underlying such phenomena. As asserted by Bianchi (2004), the capability to understand, to control the complexity of the relevant system and to envisage its possible evolutions, in terms of organisation decisions and future external events, accounts for a decisive key in learning and strategic running.

In particular, strategic decisions concern the detection of:

- basic goals and end-results to attain, which stand for the foundations of the university management;
- objectives, which are closely connected to basic goals and end-aims;
- strategic resources, which have to be allocated among organisational units according to both objectives-oriented coordination and rationalisation.

Namely, the above items refer to the management body competence of:

- (1) combining political decisions with management choices, and
- (2) constantly organising and coordinating available resources in the light of goals attainment.

7. THE "PERFORMANCE" CONCEPT IN THE "ENTREPRENEURIAL UNIVERSITY"

The "performance" concept relates to the results that an organisation reaches throughout time, depending on the products/services it offers in order to meet its customers' needs. In business

management literature, such concept is used to describe what an organisation has achieved – in terms of outcomes – according to a list of goals, which have been pre-set by decision-makers in order to meet collective needs (Miller, 2007).

Nevertheless, under an excessively limited conception, performance was mostly meant as the organisation economic and financial result (profit or loss). This was to a great extent due to the difficulty in detecting and quantifying the organisation outcomes in terms of efficacy, efficiency and impact on the outside world. Therefore, it appears necessary to broaden one's horizons of the performance concept, especially while analysing universities which are non profit-making, and to consider a multidimensional perspective, including economic-financial aspects, quantitative and qualitative assessments, and summing up, as far as possible, the effects of generated value.

Particularly, the multidimensional perspective of performance has to be referred to both space (central vs peripheral organisational units) and time (short, medium and long term).

Moreover, the multidimensionality of performance concept has to draw inspiration from accountability, which determines the necessity to be accountable for the correct use of public resources, for goals attainment and consistency with the administrative mission, towards the community. Accountability has then the double meaning of: "taking up of responsibilities" and "information transparency" about public institutions performance towards the community and the different moving forces taking part in the system. As for "entrepreneurial universities", performance has to be considered as the contribution originating from a heterogeneous plurality of organisational and managing activities, often distant in space and time one from each other, but consistent with the academic system overall objectives, aiming at social, economic and competitive value and meeting education and knowledge enhancement needs (Cosenz, 2011).

Academic performance does not only mean what was produced, but also how it was produced. Just like this, it is possible to understand the causal drivers of the achieved results and to lead the university towards pre-set goals, by paying attention on production process efficacy and efficiency too.

Academic performance has to be conceived by three main functions: didactics, research and administration; each of them actually implies the attainment of different expected results:

- education concerns vocational training and thus, its performance parameters include training quality, teaching effectiveness and social impact;

- research aims at "knowledge" development into its different branches. In this case, performance has to be assessed in terms of research quality, innovation (with its double meaning of originality and validity of scientific-applicative outcomes), effectiveness of the relation between employed resources and obtained results, and productivity;
- administration focuses on efficient running of "academic" resources (including the financial ones) and supports the first two management areas, particularly by paying attention on cost efficiency.

According to university interlocutors, it appears necessary to distinguish between competitive (i.e. market) and social (i.e. community) performance.

The first one considers university as an 'entrepreneurial system' performing within a competitive context and, therefore, it compares results among different universities in order to let Higher Education sector endure in the market and increase the resources – both financial and not financial – which are achievable by improving performance itself.

On the other hand, social performance corresponds to the benefit that a university is able to offer to its social groups, namely welfare, progress and development of the entire social system.

Often, by looking at universities goals, competitive performance coincides with social performance and, therefore, the above distinction seems rather blurred.

8. STRATEGIC PLANNING & CONTROL SYSTEMS APPLIED TO UNIVERSITIES

Academic performance represents a key concept to design a suitable P&C system.

In particular, planning activity consists in both settling goals and making decisions to reach those goals in a given period of time. That is to say, planning assesses the goals to achieve and suggests the consequent actions to take depending on the mission of the organisation.

Particularly, planning is intended as predetermination, as ex ante assessment of university objectives. This does not mean that planning should be a prediction of future events, but rather a "perspective" on the estimated performance according to the available strategic resources, means and the strategies put forward.

Consequently, academic decision-makers have to deal with the settlement of medium and long term goals and, thus, have to define short term objectives according to the latter ones in a "flexible" way, i.e.

being aware that they may change throughout management according to feedbacks from control processes (Otley, 1999).

Planning follows a circular procedure including objectives settlement and resources management, and is not only outlined at a general level, but also at each management area and organisational unit contribution level.

On this regard, objectives have to be (Poister, 2003):

- (1) clearly set;
- (2) shared;
- (3) measurable;
- (4) consistent with other horizontal or vertical organisational units objectives;
- (5) achievable;
- (6) referred to a given period of time;
- (7) easily influenced by decision-makers.

Understanding the university system and its interactions with the outer world is a fundamental condition to plan objectives and choices to reach pre-set goals.

Strategic planning is based on decisions rationality: a decision is rational whether it is consistent with its objectives, possibilities, existing bonds and available means.

Goals attainment is verified by some proper performance indicators, which are divided into: economic-financial and not financial indicators (concerning volume, efficiency, impact and productivity). As a result, outcomes may be measured both in terms of quantity (cost, time, volume) and of quality (human resources explanation, users' satisfaction, university image) (Shattock, 2003).

Logically, each indicator is coupled with an objective, according to which decision-makers have to outline its actions, after taking into account the available resources and means (Ammons, 2001).

As asserted by Pearce & Robinson (2007), it is essential to manage how to understand, a priori, what the relations existing between <<actions>> and <<outcomes>> are, or in other words, to arrange a <<model>> of management functioning.

In spite of this, models at issue are often prepared according to a standardised logic based on formal tools that do not provide a suitable support to decision making processes. In fact, by observing at some university management experiences, such models have provoked an excessive bureaucratisation of management, and, at the same time, the possibility of influencing outcomes through formal documents turned out to be deceiving; the formal documents analysis should have hopefully assert the adjustment of "objectives↔resources↔activities↔outcomes", the coordination among different management areas, the external phenomena effects and the outcomes controllability.

In order to effectively support decision-makers, planning models within universities should be based on a systematic strategic learning, characterised by (Bianchi, 2004):

- a selective, rather than overall and analytic, approach to universities system, considering variables multiplicity and their causal relations;
- planning interpretation as a system of decisional logics, rather than a list of activities and tasks to carry out;
- involvement of the whole university system (e.g., faculties, departments, administrative units, organisational units);
- focus on the social role university has to play in the future, according to its mission and basic strategic orientation.

As previously asserted, planning is inseparably linked to management control.

Management control accounts for the coordination among the activities carried out within the university and its connection with the outer world (Anthony & Govindarajan, 2007). It was set up to play the role of organisation guide in order to:

- (1) support learning and decisions,
- (2) empower internal stakeholders,
- (3) influence their attitudes,
- (4) motivate and assess them on all levels of university hierarchy.

Prevailing literature defines management control as a management guide aiming at reaching entrepreneurial university goals in the most efficient and effective way, and at the same time ensuring a sustainable use of resources and a quali-quantitative compliance of the performance with the objectives set in the short, medium and long term.

The fundamental precondition for control enforcement is the detection of standard operational conditions, that is to say the spotting of the relation between the expected needs and consumptions in each management area, according to the various resources (input), which will produce certain results (output) throughout time.

Figure 5 displays the relation between planning and management control.

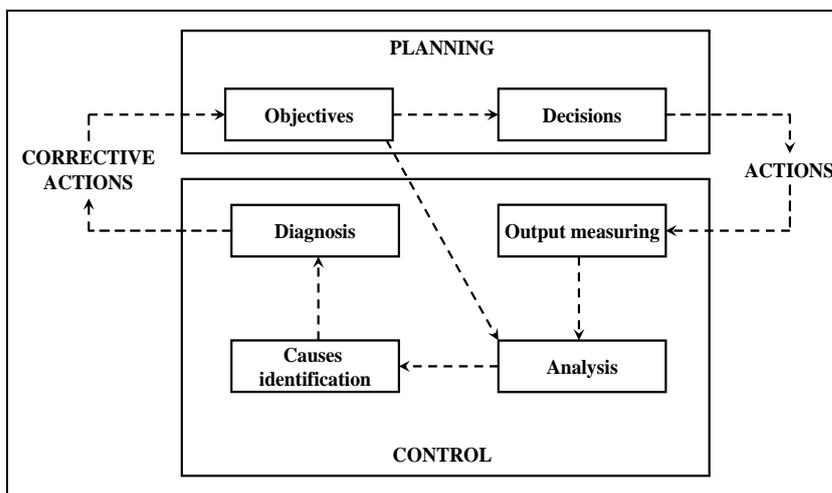


FIGURE 5 – THE CIRCULAR PROCESS BETWEEN P&C ACTIVITIES

In particular, control activity have not to be sporadically done or limited to decision-makers' assessment after the financial statement has been yearly drawn up (the so-called feedback mechanism); rather, it should be systematically worked out throughout management, in order to allow decision-makers to change, whether necessary, the planning contents and to undertake corrective and timely actions, with a view to attain the entrepreneurial university set goals (the so-called feedforward mechanism).

Management control is, thus, substantial for the “analysis” and “diagnosis” of the university production cycle. Therefore, the P&C system, which has so far been outlined, strongly focuses to “entrepreneurial university” performance.

9. CLOSING REMARKS

Remarks made in this paper allowed to underline European university essential features according to a management-based perspective. Specifically, university conditions of lasting continuity and functionality were assessed as well as the factors determining their strategy, concerning both political and managerial levels. With reference to that, management, assessment and organisation main features were analysed.

The remarkable change that is taking place is entailing a great evolution of the traditional organisational, managerial, conceptual and cultural patterns, both at European and extra-European levels. Nevertheless, under present conditions, the necessity to work out and suggest management mechanisms suitable to improve universities performance, is really widespread; this is not just meant to obtain public funds, but most of all, to orient productive activities towards competitiveness and social value effective creation. In other words, the need to adopt innovative approaches in university management is increasingly evident, in order to fill in the gap of knowledge requirements. The case in point is actually fairly complex and specific, and thus it requires coordination and appropriate operational mechanisms. These mechanisms refer to the strategic P&C systems which have been handled in the last section of the paper. As a result, findings have highlighted a preliminary analysis of the characteristics which have to be taken into account by decision-makers in developing P&C systems to be implemented in European universities.

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