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Using Importance-Performance Analysis to Identify Determinant Attributes of Entrepreneurial Orientation within the Italian University Departments

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1. Introduction

Over the years, a new role has been recognized to universities: they are nowadays considered key organizations not only for knowledge production, but also for knowledge dissemination and exploitation, becoming initiators of economic growth (Etzkowitz, 1983, 2004; Clark, 1998; Gibb, 2005). The “entrepreneurial university” (Etzkowitz, 1983) is characterized to be no more «an isolated island of knowledge» (Klofsten, Jones-Evans, 2000), but «an economic actor on its own right» (Etzkowitz, 2004) with a direct commitment to the economic and social progress.

The evolutionary process of the university towards the entrepreneurial model involves many changes, in terms of organization, culture and strategy. Literature has traditionally stressed the organizational perspective, highlighting the antecedents and the consequences of the evolution, beside the internal and external variables that can influence its outcomes. Some emphasis has been given also to the cultural perspective, considering the possible difficulties of universities in dialoguing with the business world and the implications for the effectiveness of technology transfer. To date, it seems that scholars aroused less interest in the strategic perspective, which is privileged in this paper by focusing on the universities’ strategic orientation.

The strategic orientation affects the strategic direction of an organization and defines its identity in terms of ideas, beliefs, attitudes, values, relationships with the external environment and objectives (Venkatraman, 1988). In the management and entrepreneurship literature it is widely diffused the use of the entrepreneurial orientation construct (Miller, 1983; Covin, Slevin, 1991; Lumpkin, Dess, 1996) to assess the strategic posture of an organization that acts entrepreneurially. It represents an operationalization of what Stevenson and Jarrillo (1990) termed as entrepreneurial management, since it is believed to be at the heart of entrepreneurial strategy making (Dess et al., 1997).

In the context of public universities, however, the use of the entrepreneurial orientation construct is not so widespread and still there is no precise definition of what it means. It is in fact clear that it is necessary to consider the peculiarities of universities and then adopt an operationalization of the construct different from that used for private and profit-oriented organizations. The main aim of this paper is precisely to try to identify the determinant attributes of the entrepreneurial orientation within the Italian universities. To this aim, we moved from a recent and innovative definition of the public universities’ entrepreneurial orientation, proposed by Todorovic, McNaughton and Guild (2011), and we carried out a survey based on a structured questionnaire sent to 251 department heads of Italian universities, with 103 useful responses. Then we adopted an importance-performance analysis (Martilla, James, 1977) to investigate the relationship between the proposed items and the perceived entrepreneurial orientation.

In the following sections a review of the literature on the entrepreneurial university model, the concept of entrepreneurial orientation and its application within the universities is presented. Thereafter our methodology and results are discussed. Finally, the implications and limitations of the study are illustrated.

2. Literature Review

The central constructs in this study are represented by the entrepreneurial university model and the entrepreneurial orientation. The theoretical background on these topics is therefore deeper discussed below.

2.1. The entrepreneurial university

Much has been written on the concept of entrepreneurial university, even if it is not possible to extract from this relevant body of literature a comprehensive model as to what exactly constitutes it. It has been argued that universities are entrepreneurial when «they are unafraid to maximise the potential for commercialisation of their ideas and create value in society and do not see this as a significant threat to academic values» (Clark, 2004). In this sense, by opening up and integrating activity-based relationships with the relevant stakeholders, in both a formal and informal way, they seek to become «‘stand-up’ universities» (Clark, 2004) and to take «a pro-active stance in putting knowledge to use» (Etzkowitz, 1983).

The interrelated factors leading to the intensification of university-industry collaboration have been clearly discussed. For instance, the growing scientific and technical content of all types of production and the need for universities of a more diversified funding base beside the governments’ policies aimed at raising the economic returns of public funded research have been identified as key issues originating the phenomenon (Geuna, 1998). On the other hand, literature describes the organizational innovations set up by universities to accomplish their third mission of economic development. It is manifest the heterogeneity from one case to another (Etzkowitz, 2004; Martinelli et al., 2008; Hussler et al., 2010). Based on the examples observed around the world, Etzkowitz (2004) describes the paths of the evolution towards the entrepreneurial university model, starting with the institution of an industrial liaison office, followed by the setting up of a technology transfer office, and, finally, the creation of an incubator. In line with the organizational renewal, many authors highlight the possible parallel evolution, over time, in the nature of relationships between university and industry, from single transactions to longer-term relationships (Bercovitz, Feldman, 2006). Such progression is however influenced by the larger framework in which the relationships take place: the external conditions (the characteristics of the local system of innovation) and the internal conditions (the university environment) both affect the efficiency and thus the evolution of knowledge transfer mechanisms (Etzkowitz, 1998; Powers, McDougall, 2005; Bercovitz, Feldman, 2006).

Manifest change in legal, economic and policy conditions can accelerate the translation of academic research into commercial products. A well-known example is the American Bayh-Dole Act of 1980 (Feldman et al., 2001; Powers, McDougall, 2005; Lerner, 2005; Bercovitz, Feldman, 2006). Similarly, the characteristics of the local firms, such as dimensions, organizational structure, R&D strategy and investments, play a relevant role in determining the relationship with the university as a strategic partner (Powers, McDougall, 2005; Cesaroni et al., 2005; Bercovitz, Feldman, 2006). In the same way, the public and private funding of R&D activities and the presence of formal and informal investors, may affect the entrepreneurial activity inside universities (McMillan et al., 1987; Roberts, Malone, 1996).

Not all research universities have been able to generate local economic effects (Feller, 1990). Factors affecting the university environment determine the rate and type of university knowledge production and influence the rate of technological change. In this regard, Gras et al. (2008) propose as determinants of technology transfer mechanisms five bundles of internal resources and capabilities: technology transfer policies and strategies; human capital; stock of technology; resources and capabilities of technology transfer offices; support measures.

A different perspective of analysis is that focusing on academic inventors, looking into their intentions (Prodan, Drnovsek, 2010), the propensity to engage in commercial activities (Hoye, Pries, 2009) or the difficulties to finance the start-up (Macho-Stadler et al., 2008; Gurdon, Samsom, 2010). Other scholars dwell on cultural differences between universities

and the business world, investigating the effects on technology transfer process (Samson, Gurdon, 1993; Liyanage, Mitchell, 1994; van Geenhuizen, Soetano, 2009).

Another peculiarity of the entrepreneurial university model is the creation and promotion of the entrepreneurial culture. In this sense, within the faculties there should be “entrepreneurial champions” (Clark, 1998), with the embedment of key aspects of entrepreneurship education right across the curricula and a determined pursuit of interdisciplinary research and development, proved by the offer of specialized programmes both at undergraduate and postgraduate level (Clark, 1998; Van Burg et al., 2008; Napolitano, Riviezzo, 2008; Riviezzo, Napolitano, 2010).

Finally, it must be noted that there is a part of the literature critiquing the inclusion of the third mission into the university (for example: Slaughter, Leslie, 1997; Hayes, Wynyard, 2002; Barnett, 2003; Bok, 2003). The oppositions to the “McUniversity” (Hayes, Wynyard, 2002) and the “academic capitalism” (Slaughter, Leslie, 1997) are based on the assumption that it conflicts with research mission for the researcher to be involved in translating the scientific results into business opportunities. But, as noted by Etkowitz (1998), it can be expected that this new function of economic and social development will be definitely integrated into the university, «with incubators adjoining classrooms and laboratory facilities».

2.2. The entrepreneurial orientation and its application within universities

The entrepreneurial orientation represents the operationalization of entrepreneurship in its essence. Miller (1983) firstly defined an entrepreneurial firm as the one «that engages in product-market innovation, undertakes somewhat risky ventures, and is first to come up with proactive innovations, beating competitors to the punch». Accordingly to this definition, many scholars (Covin, Slevin, 1991; Zahra et al., 2000; Daily et al., 2002; Wiklund, Shepherd, 2003) have adopted a multidimensional construct of entrepreneurial orientation consisting of three components: innovativeness, risk-taking and proactiveness. Lumpkin and Dess (1996) propose to integrate these three dimensions with two more: competitive aggressiveness and autonomy.

Innovativeness concerns not only the products or services and the markets, but it refers also to technology, administrative systems and strategies. Risk-taking is reflected in the willingness to allocate financial resources to projects with an uncertain outcome and it is inextricably linked to the ongoing pursuit of new opportunities. Proactiveness expresses the need to anticipate customer needs in order to achieve a competitive advantage over the competitors. Many authors (eg., Miller 1983, Covin, Slevin, 1986) propose a broader conceptualization of proactiveness, including in it a number of factors that lead to competitive aggressiveness. On the other hand, Lumpkin and Dess (1996) propose competitive aggressiveness as a separate and independent dimension to measure the propensity to deal with competitors in a direct and intense way, even by adopting non-conventional competitive tools. Autonomy, finally, is understood as the ability of an individual or of a group to act independently in order to realize an idea or a vision.

Alongside the more established models for interpreting entrepreneurial orientation, the literature offers several empirical evidence of its link to company performance (Zahra, Covin, 1995, Daily et al., 2002; Wiklund, Shepherd, 2003; Keh et al., 2007). In theory, the strategic aim of creating value and opportunity through the continuous pursuit of innovative activities suit well also to organizations that are not profit-oriented, such as public organizations. However, empirical evidence in this sector are still limited and the potential application of the construct in this context have been explored just to a certain extent (eg., Morris, Jones, 1999;

Caruana et al., 2002, O'Shea et al. 2005; Bhuian, Menguc and Bell, 2005; Morris et al., 2007). Furthermore, in the examples of application of the entrepreneurial orientation concept within no-profit organizations scholars rarely took into account the peculiarities of the reality under observation by proposing specific adjustments of the scale items used to measure the construct.

In the case of universities the differences with firms in terms of objectives, organization and systems of governance make it even more necessary a careful evaluation of the relevant dimensions by which it is possible to assess the entrepreneurial orientation. Moving from this point, a recent contribution by Todorovic, McNaughton and Guild (2011) developed an innovative scale, designed specifically to be applied to the context of public universities. The items included in the scale, that the authors labeled "Entre-U", are the result of in-depth interviews carried out with forty faculty members from four Canadian universities. Respondents were heads of departments and were asked to identify the most significant elements that in their perception were related to the entrepreneurial orientation of university departments. The number of items was then reduced by re-interviewing the same faculty members and asking them to indicate the items more or less significant and, in a second phase, through a focus group with other department heads. At the end of the process 23 items were developed, traced back to four dimensions: research mobilization; unconventionality; industry collaboration; university policies.

The first dimension relates to research undertaken in the department in terms of focus and orientation towards external stakeholders. The term used is aimed precisely to seize the capacity to «engage external stakeholders at all stages of research process, especially in making sure that research outcomes are communicated to multiple audiences in ways that are easily understood, so the results are more readily transferred and applied» (Todorovic, McNaughton, Guild, 2011). The second dimension refers to the department's ability to identify new opportunities outside the traditional academic environment, focusing on unconventional approaches in research funding, problem solving, relationships with external organizations and so on. The third dimension assesses the degree of cooperation with industry at individual and organizational levels. The fourth and last dimension refers to the perception that the department head has about the central university policies and the extent to which they hinder or facilitate the departments in their innovative and unconventional action.

Therefore, Todorovic, McNaughton, Guild (2011) provide a detailed definition of what it means to be "entrepreneurial" in the context of a university department and, through an exploratory survey among Canadian universities, they also assess the reliability of the scale in measuring the entrepreneurial performance of university departments. Since the background conditions play a relevant role in explaining the entrepreneurial posture of universities, as we noted above, we aim at investigating to what extent the proposed items of the Entre-U scale fit in measuring the entrepreneurial orientation of universities operating in a completely different context. In fact, unlike Canada, where universities have deep-rooted traditions of commercial exploitation of their research, in Italy only in recent years universities have been moving towards the valorisation of their scientific knowledge and the promotion of an entrepreneurial culture. From being quite varied and in some cases openly hostile, there is nowadays a greater acceptance of and a more positive attitude towards entrepreneurship across university departments, also as a consequence of recent changes in policy conditions (Cesaroni et al., 2005; Piccaluga, Balderi, 2006; Napolitano, Riviezzo, 2008; Riviezzo, Napolitano, 2010; NETVAL, 2011; Balderi, Daniele, Piccaluga, 2012). It seems therefore interesting to identify determinant attributes of entrepreneurial orientation within the Italian university departments.

3. Method

In order to achieve the objective of the research, we carried out a survey based on a structured questionnaire among department heads of Italian universities. Then, through an importance-performance analysis we investigated the relationship between the proposed items and the perceived entrepreneurial orientation. The fieldwork, the measures and the methodology are deeper discussed below.

3.1. Data collection and sample characteristics

We identified the target population of the survey through progressive steps. First, we used the annual report of the Italian “Network for the Valorisation of the University Research” (NETVAL, 2011) to select the universities with the best entrepreneurial performance, in terms of spin-offs and patents. Our idea was to target the universities most involved with the third mission and therefore presumably characterized by a stronger entrepreneurial orientation. Furthermore, we decided to focus on individual departments and not the entire university, in order to explain also the differences between departments within the same university and not only between different universities. Thus, we contacted the industrial liaison offices and/or the technology transfer offices of the selected universities to assist us in identifying the single departments most affected by commercial activities. Then, we proceeded to contact the department heads, first by telephone and then by e-mail. When we acquired a willingness to take part in the survey, we sent via e-mail the link to the online questionnaire. As an incentive to participate, we granted anonymity to respondents and the opportunity to have access to the final results of the survey. Of course, further contacts were necessary to solicit the responses and to validate some issues.

A total of 251 departments were contacted, in the period between January and June 2012. Among these, 238 are the department heads who gave us their willingness to receive the link to the questionnaire and 113 who returned the questionnaire – with a response rate of 47.47%. However, we excluded 10 responses due to incomplete or missing data. Therefore, the sample obtained is made up of 103 departments.

Approximately 31% of departments in our sample are from the disciplines of engineering, 16% are from chemistry and medicine, 10% are from physics and mathematics, 8% are from biology, 4% are from economics and 12% are from different disciplines (eg., agriculture, architecture, law etc.).

The majority of departments in the sample (53%) presents a number of faculty members falling in the 31-60 range, 20% in the 61-90 range, 16% in the 15-30 range, 10% in the 91-120 range and only 1% of the departments have more than 120 members.

Finally, a descriptive analysis based on the starting year reveals the presence of departments born in different historical periods – from 1969 to late 2011. The presence of departmental structures formed during the year preceding the survey was significant. It is a consequence of the re-organization of Italian universities resulting in the last university reform act, approved in 2010. This peculiarity affected the response rate we obtained, since many departments were still under re-organization at the time we contacted them.

3.2. Measures

We used a structured questionnaire to get information about: the different dimensions of the departments’ entrepreneurial orientation, which are the independent variables of our survey; the degree of entrepreneurial orientation perceived by department heads, which is the

dependent variable; and the characteristics of the departments, representing the control variables.

To measure the entrepreneurial orientation, we moved from the 23 items proposed by Todorovic, McNaughton and Guild (2011), translating them and making all the necessary adjustments to the local context. Respondents were asked to rate the extent to which the entrepreneurial orientation items described their department on a seven-point Likert scale. Furthermore, the department heads were asked to express on a seven-point Likert scale their agreement with the following statement: “Our department has a strong entrepreneurial orientation”. Finally, we considered some descriptive characteristics of the department as control variables: scientific area; dimension, measured as the total number of faculty members; experience, measured through the year of institution. Table 1 shows the items falling into each of the dimensions investigated.

Tab. 1 - The entrepreneurial orientation items (partially adapted from Todorovic, McNaughton and Guild, 2011)

Research Mobilization
RM1 - We encourage our graduate and PhD students to engage in research with significant implications for industry or society
RM2 - We encourage students to seek practical applications for their research
RM3 - Faculty members in our department emphasize applied research
RM4 - Compared to other similar departments in our region, our department has a reputation for its contribution to industry or society
RM5 - Many of our faculty members conduct research in partnership with non-academic professionals
RM6 - Our faculty members are expected to make substantial contributions to industry or society
Unconventionality
UN1 - Cooperation with organizations outside the university significantly improves our research activities
UN2 - Our faculty members often seek research opportunities outside the traditional university environment
UN3 - We seek significant funding from sources other than the Italian Minister of University and Research (MIUR)
UN4 - Compared to other similar departments in our region, our faculty members are known as very efficient and productive researchers
UN5 - We try to generate off-campus benefits from research projects
UN6 - Compared to other similar departments in this region, we are good at identifying new opportunities
UN7 - We support our faculty members collaborating with non-academic professionals
UN8 - When we come upon an unconventional new idea, we usually let someone else try it and see what happens (Reverse coded)
Industry Collaboration
IC1 - We encourage industry involvement in the research activities of our faculty members
IC2 - Our department is highly regarded by industry
IC3 - We are recognized by industry or society for our flexibility and innovativeness
IC4 - We believe that our department should build relationships with private or public sector organizations
IC5 - Our graduate students often secure high quality industry positions
University Policies
UP1 - We feel that university-wide policies at this university contribute substantially towards our department achieving its goals and objectives
UP2 - Our university policies are best described as developed bottom-up using feedback from all levels of the university
UP3 - Compared to most other universities, our university is very responsive to new ideas and innovative approaches
UP4 - Our department is given significant latitude when evaluating faculty members performance

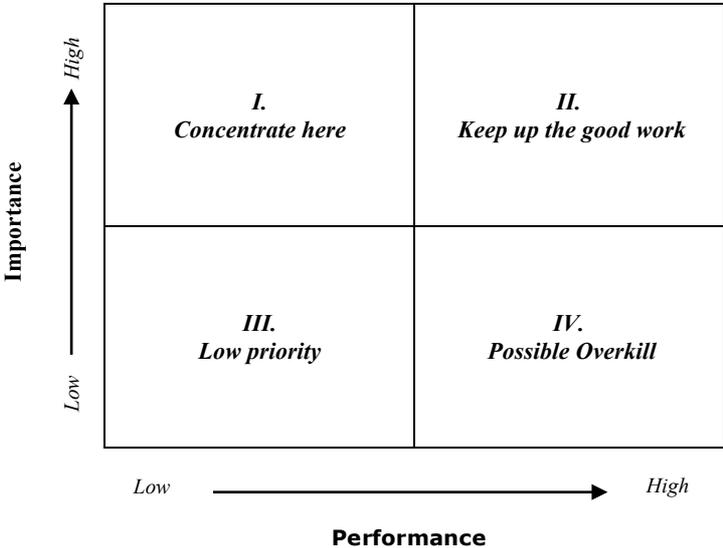
3.3. The IPA scheme

The IPA is a strategic planning tool well documented and widely diffused in the management literature (Ennew et. al, 1993; Slack, 1994; Matzler et al., 2003). Although the use of IPA lost favour in the last few years as consequence of the development of more complex quantitative methods (Duke, Mount, 1996), since this approach was proposed by

Martilla and James (1977), several studies have been published with empirical application in different contexts, such as transportation (Huang, Hsu, 1996), banks (Joseph et al., 2005), hospitality (Janes, Wisnom, 2003), tourism (Fuchs, Weiermair, 2003) and universities (Pike, 2004).

In its typical version, IPA involves assessing different aspects of an organization’s features in terms of perceptions of performance and of the importance of these performance. Usually such features are represented in a 2x2 grid, where each quadrant can be traced to specific guidance for management (Table 2): in particular, poor performance on extremely important dimensions indicate high priority in intervention for improvement (“Concentrate here” quadrant); excellent performance on highly important features represent opportunities for gaining or maintaining a competitive advantage (“Keep up the good work” quadrant); slightly important features that are excellent in performance imply that resources would be better employed elsewhere (“Possible Overkill” quadrant); finally, fair performance on slightly important features suggest that it may not be necessary to focus additional effort to these attributes (“Low priority” quadrant).

Tab. 2 – The IPA scheme (adapted from Martilla, James, 1977)



Although the application of IPA has always been considered very simple and intuitive, over the years several different approaches to inferring priorities and measuring importance have emerged in the literature (Bacon, 2003; Fuchs, Weiermair, 2003). First, as noted by Bacon (2003), in most published IPA studies importance is evaluated through the use of direct ratings (eg. 7-point scales anchored to “not at all important” and “extremely important”), while other studies estimate importance of different dimensions through indirect measures (such as standardised/unstandardised regression coefficients or correlation coefficients). In our research we decided to use indirect measures to infer importance scores, with an overall performance measure (the perceived entrepreneurial orientation) as the dependent variable and the performance scores of single items as the independent variables. Such approach is consistent with previous research (Lowenstain, 1995) and seems more suitable to reflect fully the importance of attributes that the department head would not admit to or is not aware of.

Second, positioning the vertical and horizontal axes on the grid is matter of judgment (Martilla, James, 1977, Bacon, 2003); specifically, in some applications the point where the quadrant lines cross is placed in the centre of the scale used (“scale-centred approach”), while in other studies the cross point is posited at the centre of data (“data-centred approach”) (Bacon, 2003). In our study the cross-point was set at the mean importance and mean

performance values. Such approach is consistent with suggestions provided by Martilla and James in their seminal work (1977), arguing that «the value of this approach is in identifying relative than absolute levels of importance and performance».

4. Analysis and results

As a preliminary analysis, we controlled for the validity and reliability of the scale items, by using the Cronbach's α coefficient. It describes the internal consistency of groupings of items, that increases as the value of the indicator is close to 1 ($0 < \alpha < 1$). Table 3 shows the optimal results we got for each of the dimensions of the scale and for the scale as a whole, and, in addition, the descriptive statistics.

Tab. 3 - Reliability and descriptive statistics of the scale items

Variables	Mean	Dev. Std.	Min	Max	α
Research Mobilization	5,129	1,068	2,000	7,000	0,863
Unconventionality	5,416	0,853	2,375	6,875	0,783
Industry Collaboration	5,117	1,090	2,200	6,800	0,864
University Policies	4,473	1,185	1,750	7,000	0,818
Entre-U (as a whole)	4,155	1,406	1,000	7,000	0,914

Table 4 shows the correlation coefficients, revealing that the four dimensions used to measure the entrepreneurial orientation of university departments are all positively and significantly correlated. In addition, research mobilization, unconventionality and industry collaboration are positively and significantly correlated with the perceived entrepreneurial orientation, while the dimension university policy is only partially correlated with the perceived entrepreneurial orientation ($p=0,011$).

Tab. 4 - Correlation matrix

Variables	1	2	3	4	5
1. Research Mobilization	1				
2. Unconventionality	0,743 ^(*)	1			
3. Industry Collaboration	0,662 ^(*)	0,656 ^(*)	1		
4. University Policies	0,209 ^(*)	0,308 ^(*)	0,324 ^(*)	1	
5. Perceived entrepreneurial orientation	0,490 ^(*)	0,374 ^(*)	0,555 ^(*)	0,225	1

^(*)Significant Correlation at 0,001 level

In order to develop the IPA scheme, descriptive statistics and correlation analysis were performed on single items included in the four dimensions. Descriptive results are reported in Table 5. Perceived performance of the single items were obtained through the average scores reported from department heads' evaluations, while correlation coefficients between the single items and the perceived entrepreneurial orientation were used as an implicit measure of the related importance.

Tab. 5 – Importance-Performance scores

Items	Mean	Dev. Std.	Pearson Corr.
RM1	5,02	1,482	,356 ^(*)
RM2	5,23	1,270	,353 ^(*)
RM3	5,18	1,258	,355 ^(*)
RM4	5,03	1,543	,359 ^(*)
RM5	5,44	1,362	,410 ^(*)
RM6	4,87	1,384	,439 ^(*)
UN1	4,95	1,498	,246 ^(*)
UN2	5,40	1,316	,427 ^(*)
UN3	5,80	1,478	,294 ^(*)
UN4	5,58	1,176	,105
UN5	5,55	1,073	,235 ^(*)
UN6	5,05	1,232	,296 ^(*)
UN7	5,60	1,278	,357 ^(*)
UN8	5,40	1,682	,006
IC1	5,09	1,380	,478 ^(*)
IC2	5,17	1,317	,584 ^(*)
IC3	4,75	1,289	,541 ^(*)
IC4	5,77	1,277	,146
IC5	4,81	1,495	,476 ^(*)
UP1	4,22	1,357	,084
UP2	4,34	1,418	,116
UP3	4,74	1,435	,113
UP4	4,59	1,665	,375 ^(*)

(*)Significant Correlation at 0,001 level

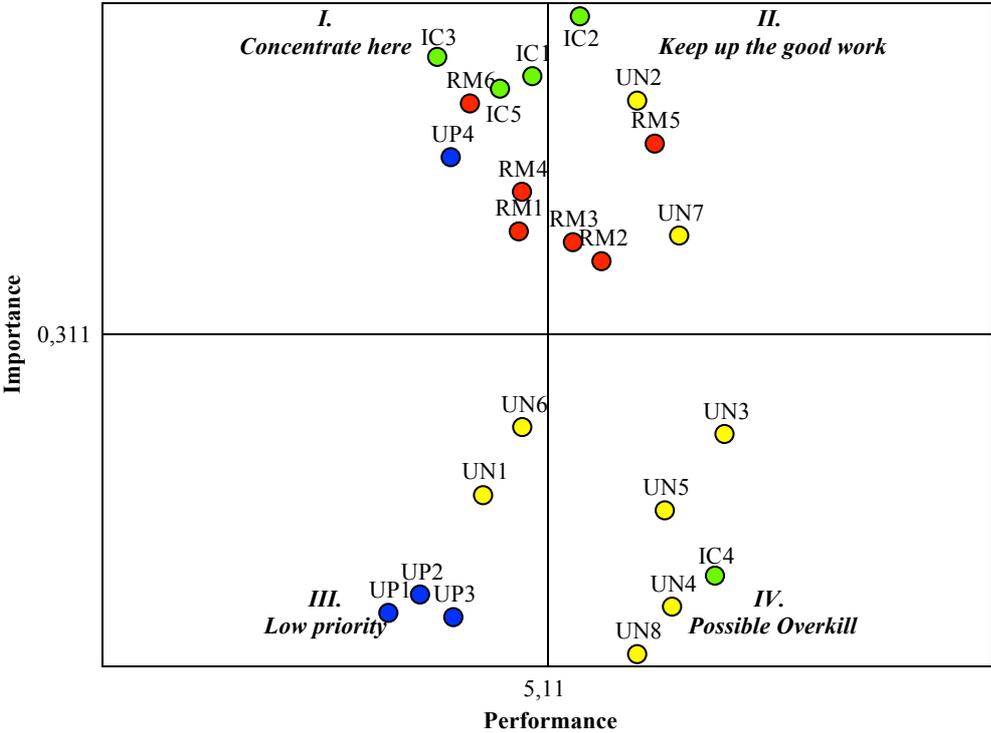
As the Table 5 shows, 6 items out of the 23 items included in the Entre-U scale are not significantly correlated with the perceived entrepreneurial orientation. By using the mean importance and mean performance values as the cross-points for positioning the vertical and horizontal axes, we obtained the grid shown in Table 6.

All the items that make up the two dimensions research mobilization and industry collaboration (with the only exception of the item “We believe that our department should build relationships with private or public sector organizations”) are considered extremely important to foster the entrepreneurial posture of university departments. However, the performance showed by Italian departments on these items differ. Concerning the capacity to “move” the research results towards external stakeholders, the interviewed professors evaluated very well the efforts of their departments for encouraging students to seek practical applications of their research, the emphasis posed by faculty members on applied research and their ability to conduct research in partnership with non-academic professionals. All these items fall into the “Keep up the good work” quadrant. On the opposite, the interviewed professors adversely evaluated the pressure on graduate and PhD students to engage in research with significant implications for industry or society, the departments’ reputation for their contribution to industry and the external stakeholders’ expectations towards faculty members to make substantial contributions to industry or society. All these items represent management priorities, falling into the “Concentrate here” quadrant. Concerning the capacity to cooperate with industry at individual and organizational level, the way in which firms regard the departments is considered a strenght, while the real involvement of industry in the research activities of faculty members, the departments’ flexibility and innovativeness and the capacity to ensure graduate students relevant industry positions are considered weaknesses on which action should be taken. Two additional strenghts that fall into the “Keep up the good work” quadrant relate to unconventionality. Specifically, the department heads positively evaluated faculty members efforts for seeking research opportunities outside the university environment and the support offered to faculty members collaborating with non-academic professionals. A further management priority that falls in the “Concentrate here” quadrant

concerns university policies, and is the autonomy given to departments in evaluating faculty members performance.

All the other items that make up the two dimensions unconventionality and university policies are considered less important to foster the entrepreneurial posture of university departments. Concerning the ability to focus on unconventional approaches, four items are evaluated as “Possible Overkill” and two as “Low Priority”. Based on the departments heads’ opinions, there is probably too much attention on the research of funding from new and different sources, on the off-campus benefits from research projects, on the researchers efficiency and productivity and on the departments’ proactiveness in adopting new ideas. Instead, the possibility of improving research activities through the cooperation with organizations outside the university and the departments’ ability in identifying new opportunities are considered low priorities. Concerning the impact of university policies, all the items fall in the “Low Priority” quadrant, with the only exception of the latitude given to departments in evaluating faculty members performance, as noted above. In particular, the contribution of university-wide policies to the achievement of departments’ objectives, the use of feedback from all levels of the organization in developing university policies and the university responsiveness to new ideas and innovative approaches are all considered slightly important features for the entrepreneurial orientation of the single departments, on which they also show very fair performance. The last item falling into the “Possible Overkill” quadrant relate to industry collaboration, and is the diffused opinion that departments should build relationships with private or public sector organizations.

Tab. 6 – The results of Importance-Performance Analysis



5. Discussion

Unlike other studies on entrepreneurial university, in this paper the attention was not focused on the allocation of internal resources and organizational innovations within universities or the characteristics of external environment influencing the results achieved in

terms of research exploitation. The attention was focused on university departments' strategic orientation, borrowing an approach typically used in studies on firms and aiming at investigating its determinant attributes. Such perspective seems to be particularly interesting though, at the time, most neglected in literature. In fact, the limited adoption of the entrepreneurial orientation construct within the universities has not yet clarified what it means to be "entrepreneurial" in this specific context.

We moved from the innovative definition of the public universities' entrepreneurial orientation proposed by Todorovic, McNaughton and Guild (2011), and we used the importance-performance analysis (Martilla, James, 1977) to investigate the relationship between the proposed items and the perceived entrepreneurial orientation of Italian university departments. The main reasoning behind our study is that the background conditions significantly affect the universities proclivity to behave more entrepreneurially (McMillan et al., 1987; Roberts, Malone, 1996; Etzkowitz, 1998, 2004; Feldman et al., 2001; Powers, McDougall, 2005; Lerner, 2005; Cesaroni et al., 2005; Bercovitz, Feldman, 2006; Riviezzo, Napolitano, 2010). Therefore, not all the variables identified in the exploratory study conducted in Canada, where universities have deep-rooted traditions of commercial exploitation of their research, necessarily result to be effective in a completely different context like Italy.

Our results, based on 103 surveyed departments, seem to show that not all the dimensions and the items considered to operationalize the entrepreneurial orientation affect in the same way the Italian university entrepreneurial posture, at least in the perceptions of the interviewed department heads. In particular, in order to foster the entrepreneurial orientation our results suggest the need to focus on research mobilization, engaging external stakeholders in research activities and effectively transferring and applying research results, and on collaboration with industry, focusing on operational flexibility and direct involvement of firms in the research activities of faculty members. On the other hand, the ability to promote unconventional approaches and the university policies are not perceived as determinant attributes of the departments' entrepreneurial posture.

These results are, in our opinion, a consequence of the developmental stage in which the universities involved in the survey are, compared to the "ideal" entrepreneurial university model. In the Italian public universities, as noted by Varaldo (2010), «the third mission [...] hard puts to making way and is penalized by ideological traditions and governance structures that sacrifice innovative and entrepreneurial spirit of more open and dynamic environments». The "second academic revolution" theorized by Etzkowitz (1998) is probably still in progress in Italy, where the debate on how the third mission can coexist with the two traditional missions of teaching and research is still ongoing. In this regard, the marginal role of the university policy is probably due to the fact that still there are few universities that have explicitly incorporated the third mission in their strategy. In the cases where universities reached significant entrepreneurial results, skills and activities to promote the exploitation of research are concentrated in specialized organizational units or at individual level, rather than spread all over the peripheral organization units (i.e. departments) (Cesaroni et al., 2005; Piccaluga, Balderi, 2006; Riviezzo, Napolitano, 2010; Balderi, Daniele, Piccaluga, 2012). As a consequence, our survey seems to show that in many peripheral units there is the perception that central policies do not facilitate the exploitation of research.

As we know from the literature, the transformation of the university towards the entrepreneurial model takes some time. Clark (1998) and Etzkowitz (2004) show that there are typically three different stages and phases to the development of the university as an entrepreneur. At the beginning of this organization learning process, the university takes a strategic view of the opportunities to get more involved with the environment and gains some ability in that direction. Then, it takes an active role in commercialising the intellectual

property arising from the research activity. In the later stage, it takes a proactive role in improving the effectiveness of its local system of innovation, often in collaboration with industry and government actors. It seems possible to sustain that only few Italian universities are already influencing the dynamics of local development and, in this sense, our results are the consequence of an evolutionary process still “in progress”.

In fact, as noted above, only recently the Italian university departments were asked to reflect on these issues, due primarily to the establishment of evaluation mechanisms that take into account not only the quality of teaching and research, but also the ability to exploit the scientific results. In this sense, it is possible that the scale items we adopted – developed and validated in a much more “mature” context like Canada – needed some more adjustments, because they aim at measuring activities that not always the department carry on or that are less likely to be considered as “entrepreneurial”.

6. Limitations and future research directions

This paper is not without limitations. First, the sample size obtained is not high in an absolute sense, but is in line with other studies on the topic and, relatively speaking, can be considered satisfactory – with a response rate of approximately 50%.

Another limitation is the type of statistical analysis we performed. Different approaches would probably give better results. In this direction we will move for future research developments. Furthermore, we examined the relationship between the proposed items and a subjective evaluation of departments’ entrepreneurial orientation, while we did not consider the relationship with any objective measure of entrepreneurial performance – like, for instance, the number of patents and spin-offs. This is a further point for future evolution of the present study.

Finally, in order to verify to what extent the environment can affect the results and the relationships between the variables investigated – as it would appear from the comparison between our results and those of the seminal study conducted in Canada – it would be particularly interesting to perform a comparative analysis among several countries. And this is another direction for future research developments.

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