

## Title

### Becoming entrepreneurial university: Fact or Fiction?

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#### Abstract

In the context of the Entrepreneurial Universities and university third mission we want to examine to what extent university business support activities are becoming part of the day by day of the university as part of their current financial sources or is just a fashionable activity and the university will finally react against them due to cultural, managerial and organisational manners anchored in different principles to those required to turn a university into an entrepreneurial organisation. We analyse the case of the IDEAS Programme at the Polytechnic University of Valencia as a paradigmatic case in Spain and conclude that the process is imposing changes in several university structures that so far have been welcomed and are transforming the institution into a systemic organisation, linking the different activities related to business support at the university. The key result is represented by an increasing evolution in the number of university spin-off and business created with three key periods of time reflecting strategy changes.

#### Keywords

Entrepreneurial university, university third mission, business development support, organisational change.

## Introduction

The concept of “university” is rapidly changing. As described by Wissema (2009), university first were a teaching institution, later in the 19<sup>th</sup> century it became involved in research. In many cases its role is no longer restricted to teaching and research (Etzkowitz 1998) and nowadays a university has a “third task” – known under different names as: knowledge transfer, entrepreneurship, regional development. Universities become important institutional actors within national and/or regional innovation systems. Rather than “ivory towers”, many governments seek to use universities as instruments for knowledge-base economic development and change (Mowery and Sampat 2005). On the other hand the slower growth in public funding devoted to Higher Educational Institutions (HEIs) has pushed several university presidents to become more aggressive and “entrepreneurial” in seeking new sources of funding. This has forced these institutions to explore new ways of university-industry linkages as a means to expanding research support and make profit and commercialize its knowledge creating activity (Rasmussen et al. 2006). One of these new society-oriented activities is the encouragement of entrepreneurship and the support of business development (e.g. Clark 1998; 2004). This means that the university has to face new roles and to deal with new stakeholders that so far have not been part of its agenda.

We argue that the actual development of business activities at universities in the form of spin-off and technology-based firms support will impose drastic changes in many fundamental university structures if they want to successfully contribute to this activity. On the one hand this is due to the somehow abrupt incorporation process of those activities to their day by day and on the other, to the novelty that these activities bring about for the university personnel in many aspects: to deal with new stakeholders, to incorporate business concepts and manners, which are not part of their culture, etc. This situation resembles to a great extent to Alice after falling into the hole and finding herself facing a new and to some extent absurd land.

In this paper we show how the concept of the entrepreneurial university is affecting different areas and activities in a Spanish university in order to readapt them to those new challenges in the form of businesses as a new source for financing for teaching staff. We want to find out to what extent these new activities are being adapted into the “University Third Mission” scheme and are accepted among the university community

as their new arena. After all, universities will have to realise whether they succeeded in this new challenge or it has been just a bad dream as Alice's when she discovered Wonderland.

The structure of the paper is as follows: first we go deeply into the theoretical foundations of the incorporation of entrepreneurial activities at universities and how some conceptual models support this process. Then we show how this process is affecting a Spanish case: the Polytechnic University of Valencia as the Spanish pioneer in supporting business development for more than fifteen years now. The aim is to analyse to what extent strategic changes at both the service and the university itself have contributed to consolidate the business creation support and a new financing source for the institution. Finally we draw some conclusions.

## **Some theoretical propositions**

### **Why universities might get involved in business support activities**

The nature of the university's contribution to society has long been the subject of debate and is again receiving much attention from researchers and policy makers. The notion of the 'entrepreneurial university' (first mooted by Davies, 1987) has become a powerful way of characterizing the modern university and its contribution – in clear contrast to the traditional conception of the university and its social role. In relation to the new role assigned to universities, there is a common and widely-held belief that the higher the amount of spin-off companies a university is able to create, the 'more entrepreneurial' it will be considered.

Clark (2004), however, pertinently notes that 'entrepreneurialism in universities should not be seen as synonymous with commercialization'.

The study of the world's most successful entrepreneurial universities has resulted in a considerable body of literature (Rothaermel et al. 2007) on their characteristics and on the process by which they have transformed themselves. Examples of studies addressing such issues include those by O'Shea et al (2007), Clark (1998, 2004) and Etzkowitz (1983, 2004). According to these authors, the entrepreneurial university can be understood as a flexible organization which interacts with its social and economic environment, adapting itself to change and seeking out additional sources of funds for research, teaching, technology transfer, commercialization, etc. Clark (1998) states that

entrepreneurial universities have in common a strengthened steering core, an expanded developmental periphery, a stimulated academic heartland, a diversified funding base and an integrated entrepreneurial culture, but does not analyse the interdependency between these five characteristics.

The entrepreneurial university, as defined above, must undertake and manage a wide range of activities relating to its three basic roles, as elucidated in the literature on higher education's third mission (Molas-Gallart et al, 2002): teaching, research and socio-economic development ('outreach'). These activities, and their management, must be carried out in an entrepreneurial manner: in practice, this demands the involvement of a wide variety of stakeholders. In this context, one of the most significant stakeholders in the new university's third mission is the science park (McAdam et al. 2006). In our conceptualization of the entrepreneurial university, science parks are closely linked to the university's 'extended developmental periphery', and from now on we therefore use the term 'entrepreneurial university' to include both the university and the science park.

On the other hand university teaching staff is also part of this picture. For a long time teaching staff has been confined to teaching and research activities as their "raison d'être" and just devoted time to entrepreneurial activities without any special university frame. In fact we can observe three main university functions (Laredo, 2007) to be fulfilled instead of university missions and how teaching staff organise around those three functions according to some extent to their personal interests but also to university's policy interests. In this respect it is crucial to investigate to what extent personal decision of teaching staff influence and are influenced by university policy priorities to know whether they will become part of the so-called University Third Mission. In addition, we also need to include in our analysis the role played by university students and graduates: they are traditionally considered as passive elements of the university realm. However, entrepreneurial activities can also be seen as the natural consequence of university functions affecting the students. Here again we need to analyse whether this possibility is incorporated into the student's portfolio and whether they are aware of such possibility.

Therefore we are facing a picture where universities' need for additional funding is involving them into entrepreneurial activities as part of the Third Mission, besides the implication of both teaching staff and university students into those activities.

## An empirical approach

### Is the University ready to deal with this challenge?

So far we have introduced the reader to the entrepreneurial university context and the reasons why universities are getting involved in entrepreneurial activities supporting both teaching staff and (graduate) students in the business creation process. Universities tackle this challenge in several ways and apply different models. There is a large amount of recent literature dealing with this issue from different perspectives. We want to distinguish two relevant streams of literature for the case we analyse: the first one dealing with university spin-off and Technology-based firms creation process and the second one dealing with the implications and models for university involvement in entrepreneurial activities. Within the first one we want to highlight the relevance of the “entrepreneurial university” concept as defined by Etzkowitz (1998) or Goddard (1998) in relation to the “University Third Mission (or Stream)” idea as introduced into the “Russell Report” (Molas-Gallart et al, 2002). In the end these are the two sides of the same coin: as far as universities are experiencing the need to search for additional funding sources, and also are considered active agents of an innovation system (whether national, regional, local, sectoral, etc.), then it makes sense to think about the possibilities of the university to contribute to the social development in additional forms to those of training people (as the first traditional university mission) and producing new knowledge (as the second one). Hence, business creation appears as a good option (as part of the third one) to increase university funds sources and opens up the possibility of transforming this institution into the so-called entrepreneurial university. In this respect it is worth to comment on the ambiguity of this concept, since its definition rejects the idea of entrepreneurial university as synonym of a commercial one but the final result of supporting university spin-off creation is the commercialisation of a certain product with new knowledge embedded in it. The debate here is the amount of university share in the business not whether the university is interested in having a business share or not, otherwise there is no case for additional funding search. Whether commercial or not, the “entrepreneurial university” stream of literature has mainly focused on the comparison of university behaviour toward business creation support. In this respect Clark (1998, 2004) makes an extraordinary contribution and shows how five European universities respond differently to change. He identifies five core elements to

induce such change: *'a strengthened steering core, an enhanced development periphery, a discretionary funding base, a stimulated academic heartland and entrepreneurial belief'* (Clark, 1998). Departing from this idea of what universities do to become entrepreneurial, other authors have explored their entrepreneurial role analysing why universities do what they do (Gunasekara, 2006). In this respect, the main reason again links to the innovation system approach making the distinction between generative and developmental roles performed by universities within an innovation system context. These two university categories will emerge depending on how they carry out their activities and contribute to the territory development with respect to four innovation system key elements, namely territory agglomeration or clustering of industry, human capital formation, associative governance and territory cultural norms. The underlying thesis that connects this theoretical approach to Clark's stands as follows: the more developmental role played by a university the closer to an entrepreneurial university it will be. The theoretical relevance of these two approaches for our specific case rests on the connection between entrepreneurial university and third mission concepts on the one hand and innovation system on the other. As far as the innovation system approach rests on the existence of several interrelated agents to produce innovations in the territory, we can envisage a cultural and organisational change of universities to adapt themselves to the challenges posed by the entrepreneur realm if they are appointed to make a significant contribution in this respect.

The theoretical relevance here raised also helps us to link it to the second stream of literature, dealing with implications and models for university involvement in entrepreneurial activities. This second stream has devoted special attention to the challenges posed by university third mission activities and models dealing with the necessary organisational, cultural and managerial changes. In this respect we can find several concepts such as the entrepreneurial culture (Gibb, 1999) as the "set of values, beliefs and attitudes commonly shared in a society that underpin the notion of an entrepreneurial 'way of life' as being desirable and in turn support the pursuit of 'effective' entrepreneurial behaviour by individuals or groups". If we translate this notion to the university arena, we can easily envisage the need for a cultural change among university staff (both teaching and administrative staff) but also among the students and graduates in order to actually behave in an entrepreneurial fashion. This idea also gives room to a second and related one: the need for a behavioural change. In this respect Castro et al. (2001) define the 'dynamisation' process within the university

context as those behavioural, managerial and organisational changes that both teaching and administrative staff have to experience in order to make a proactive contribution to university third mission activities. In the end these two linked ideas are used to determine to what extent a university is ready to face the challenges posed by the entrepreneurial world since this is a territory that traditionally has been far away from the university culture and manners. Related to these two ideas we can finally find some literature dealing with models that set those necessary changes within the university in order to cope with the entrepreneurial challenge. Business development support process at universities is considered when it is related to spin-off companies in which universities have intellectual property rights or shares on the spin-off (Cuyvers and Zimmermann, 2002). Additionally, the building process of university entrepreneurial culture is mainly referred as to as entrepreneurial awareness activities, but those not involve other stakeholders or activities. An alternative model that ant to take into account is Nikos' *Entrepreneurship in Network* model (Nikos, 2004) which considers the development of its activities in the entrepreneurship domain in four main activities: research, teaching business development support and training and consultancy. We consider that this model offers a broad view since it takes into account additional activities to that of spin-off creation and also several stakeholders and networks for their development. This idea also links to the innovation system approach, closing the theoretical loop. Rasmussen and Borch (2006) offer a different approach through the development of dynamic capabilities within the university: new paths; the past, present and future balance; the reconfiguration and integration of resources and the creation of new knowledge resources. Once again attention is places on the creation of research-based spin-off ventures, but these authors consider that stakeholders from within and outside universities are involved in the spin-off creation process and have partly conflicting objectives. Finally we pose the attention on the university business support process. In this respect we usually find different university units in charge of somehow overlapping services and opposing interests often exhibited by the personnel involved. The right balanced management of this common picture is difficult to imagine. According to Kirwan et al. (1996) the entrepreneurial process takes place in social systems, where four mechanisms are embedded (Groen, 2005) and are related to specific capital needs. This capital is defined as *strategic capital, economic capital, cultural capital and social network capital*. According to Arroyo-Vázquez and van der Sijde (2008) and Arroyo-Vázquez et al. (2010), entrepreneurs needs can be grouped into

these four categories adding and additional one: hosting and facilities since they consider that incubation and other facilities are crucial for the business creation process to be successful. The thesis underlying to this model is that the higher the involvement of the university community (mainly supporting services and teaching staff), the larger the amount of business needs will be satisfied through those five capitals and the easier the development of businesses in the early years.

Summarising the theoretical framework, we want to distinguish two streams of literature dealing with university business creation support. The link between them allows us to anticipate a radical cultural, managerial and social change of universities if they want to succeed in the business realm.

## **The case of the Polytechnic University of Valencia**

We want to analyse to what extent the university involvement in business creation support is becoming a usual activity among those included into the university third mission through the study of a Spanish case that is considered as pioneer among Spanish universities. The Polytechnic University of Valencia (UPV) was created in 1968 but it is not until 1989 when all third mission activities are actually regulated under a common framework for the whole university. Then we have to wait until 1992 when the unit in charge of university business support is initially created to provide support to university students, graduates and teaching staff to build up businesses from their own ideas. From this point the so-called IDEAS Programme, takes the lead in Spain with respect to university business support.

With respect to university spin-off creation within the Spanish context we need to point out how this possibility has been boosted thanks to legal changes (specifically the reform of the University law -España, 2007). The changes posed with this law enabled the possibility of technology-based business creation from research results removing therefore several existing restrictions for teaching personnel. In addition, this law implicitly imposes strategic and managerial changes for those universities willing to participate in university technology-based spin-offs. As an additional condition, the university will have to own a business share and develop its own legal framework for university spin-off creation according to the new law. The UPV so far has elaborated its own legal framework and will have a business share of each firms created from the

university research. Besides this framework ensured the participation of different university agents and services. This in the end has meant deep strategic, managerial and social changes within this university somehow trying to reflect the model depicted in Arroyo-Vázquez and van der Sijde (2008) and Arroyo-Vázquez et al. (2010).

The evolution in the business support process at this university can be understood under the paradigm of the university third mission willing to become an *entrepreneurial university*, but it also makes sense to consider Laredo's three university functions (2007) articulating differently the three missions. In this respect the UPV can be characterised by a specific mix of mass tertiary education, professional specialised higher education and research and academic training. This evolving mix also fits into the evolution experienced in the activities carried out by the IDEAS Programme from 1997 to 2008. During the initial five years (1992-1996) this unit was partly operative but it is not until 1997 when the activities are compiled and there exist records with information purposes. We can see in the Table 1 the evolution in the different activities according to four categories, namely *entrepreneurs and businesses' support, diffusion and communication activities, training activities and projects and other collaborations*.

Table 1: Evolution of IDEAS Programme Activities

		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	
Entrepreneurs and Business Support	Test of entrepreneurship behaviour													
	Business Plan document and revision													
	Business Plan Software													
	Personalised follow up													
	Accounting and fiscal consultancy													
	Data base and resource search													
	Support and Advice to awards													
	innova Virtual Incubator													
	Virtual Shops and e-commerce consultancy													
	Business development support													
	Information and support for subsidies													
	Market, prospective and new opportunities studies													
	Spin-off legislation													
	Business networking and financial support													
	IDEAS firms awards													
Communication and Difussion activities	Faculty Conferences													
	Entrepreneurship Awareness Conferences													
	Merchandising and marketing													
	Stand in Foroempleo Fair													
	Conference organisation													
	TV Show													
	Information Stands in Faculties													
	Awareness Workshops													
	Difussion Workshops													
	Teaching staff awareness programme													
"Entrepreneur Day" Fair														
Training Activities	Entrepreneurship behaviour training													
	Business Plan training													
	Collaboration in official teaching activities													
	"Training entrepreneurs" Courses													
	New Business opportunity training													
	SMEs management Course													
On-line Training														
Projects and Other Collaborations	Collaboration with other institutions													
	National and/or regional projects													
	EU Projects													
	Books and other publicatinos													
	Specific training in entrepreneurship for other institutions													
	collaboration in others Entrepreneurship Awards and Events													

We want to highlight the fact that IDEAS Programme's core activities are related to the first category. The other three categories are envisaged as support or strengthening of the first one. The order of these four categories within the table reflects their importance within IDEAS Programme. As for the first one (the central one), we can divide the time frame in three periods of time: 1997-2000; 2001-2004 and 2005-2008. Each period of time respond to a different amount of activities carried out within this category. The relevant fact is the increasing number of these activities from one period of time to the next. In addition, these three periods of time also coincide with strategic changes within IDEAS Programme accompanied with changes in the direction of the service in 2001 and 2005 respectively.

On the other hand the increasing number of activities within this first category also responds to an ongoing strategy adoption addressed to increase and improve the services offered to entrepreneurs and businesses as well as to incorporate new personnel with new competencies.

With respect to the second category we can make a different division in the time frame: 1997-2001; 2002-2005 and 2006-2008. These three periods of time are also the result of the strategic and IDEAS Programme's direction changes with one year of difference with respect to the central activity. This is due to a lower strategic importance of these activities with respect to the first category. In addition, the process of design, planning and fulfilment of diffusion and communication activities need a larger of time. Besides, it is worth to mention that the increasing amount of these activities also responds to an adaptation process to entrepreneurs' needs and characteristics and the use of new communication resources and university mass media.

As for training activities (third category) we can distinguish the following three key periods of time: 1997-1999; 2000-2002 and 2003-2008. During the first period of time, training activities had a sporadic character with no long run strategy. During the second period of time the "Training entrepreneurs" course was designed as a medium-long run strategy for entrepreneurs training process. However it was not completely developed during that period of time. During the last period of time this course was complemented with additional courses and on-line training and participation in official teaching activities. However it is worth to mention that during the third period of time of types of courses included in training activities has suffered modifications just to reflect entrepreneurs and business men needs and demands.

The fourth category was planned as a financial source for the IDEAS Programme and knowledge transfer mechanism more than an activity addressed to entrepreneurs. According to Table 1 we can consider two main periods of time for this category: 1997-2002 and 2003-2008. During the first one, these activities are mainly sporadic actions that do not respond to any planning and specific objective. From 2003 on, these activities will constitute the core of a financial strategy and external collaboration process. This change in the strategy will reflect in an increase in IDEAS Programme income budget coming from these types of activities. This also reflects what Clark (1998) points out as the part of the critical path to be covered to become an “entrepreneur university”. Finally and summarising the evolution shown by the sets of activities carried out by the IDEAS Programme we can argue that the portrayed process also reflects what we have anticipated in the previous chapter.

Figure 1: Evolution in the IDEAS Programme Incomes Distribution

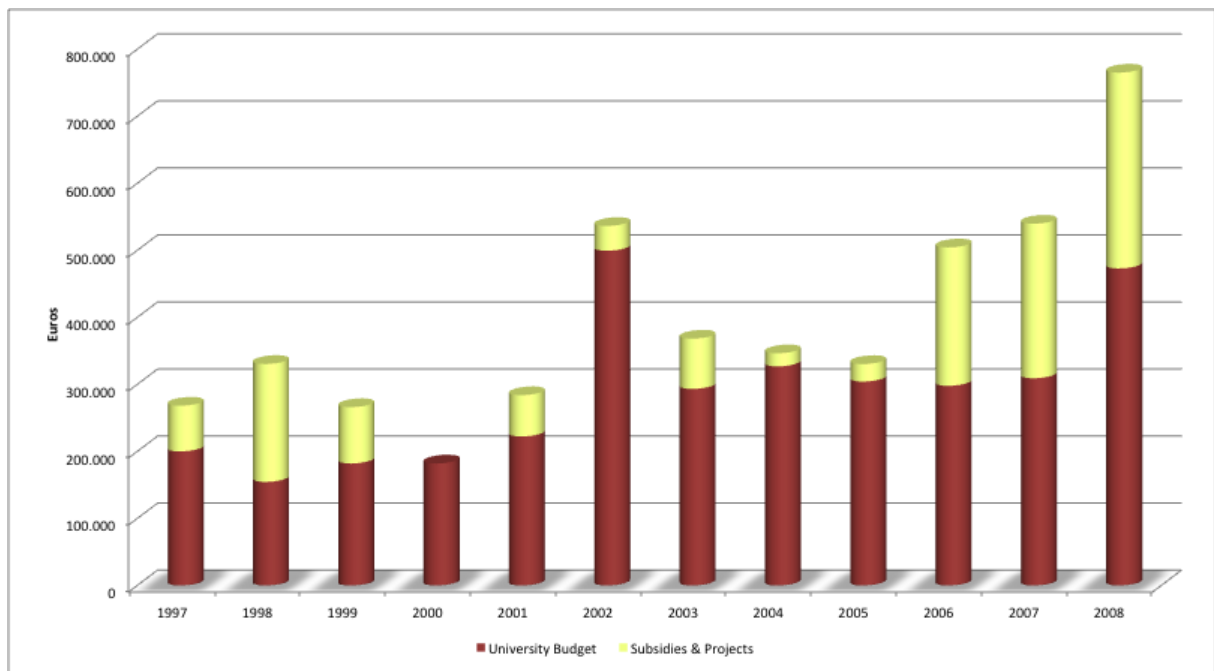


Figure 1 also reflects the three period of time that we mentioned for the central category of activities and the underlying the strategic and direction changes in the IDEAS Programme. Between 1997 and 2001 the income budget is rather low in comparison to the other two periods of time, but still there is a certain amount due to subsidies and participation in projects. After 2001, we observe an increase in the income budget coming from the UPV. This also coincides with the first change in the IDEAS

Programme direction and the strong commitment in support of entrepreneurship activities at the university. However, between 2002-2005, the income budget share of projects participation decreases in comparison to the university share. From 2006 on, again we observe the influence of the strategic change in the incomes distribution. The new change in IDEAS Programme direction boosts the income share from subsidies and projects with a constant increase during this period of time.

Figure 2: Evolution in the Expenditure in Entrepreneurs & Business support versus Number of Created Business

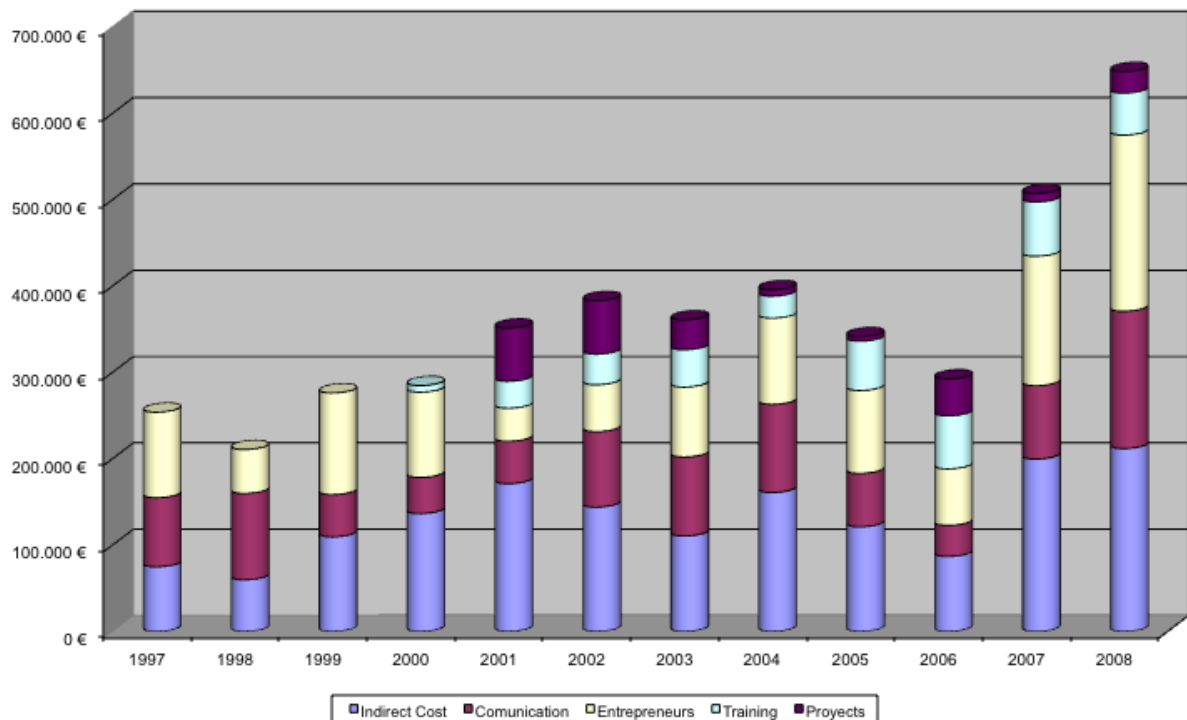


Figure 2 clearly shows the portrayed differences among the three periods of time matching with the direction changes. Between 1997 and 2000, the expenditures are erratic reflecting the lack of a clear strategy while the number of business firms created is constant showing a smooth decrease. From 2001 to 2005, these two data series grow in parallel: the strategic change in the IDEAS Programme also supported by the UPV begins to offer positive results in terms of number of business firms created. This strategy is also accompanied by an increase in the number of activities carried out at IDEAS Programme and the respective expenditure. During the last period of time (from 2005 on) we observe an increase in the number of entrepreneurs' support activities but the number of business firms created decreases. The strategic changes in this last period of time involve, on the one hand an increase in human resources devoted to the new

activities (Table 1), emphasizing those addressed to specific advice for technology-based spin-offs creation and their legal framework development. On the other, the selection process of business ideas supported from the IDEAS Programme becomes more discriminant focusing the efforts in technology-based business ideas, what in the end affects the number of businesses supported. We also have to add to this picture the economic crisis beginning in 2007 with an evident decrease in the number of entrepreneurs willing to launch new businesses. This fact also influenced in the decrease in the number of business firms created. Besides the IDEAS Programme efforts in terms of an increase in the entrepreneurs' support expenditure share and this new strategy supporting technology-based and high value added businesses, the number of firms created experienced a smooth decrease. In addition, during the last two years of this period, the IDEAS Awards are launched with the financial support of a bank, which also has a strong repercussion on the income budget.

Figure 3: Evolution in the Expenditure in Communication & Diffusion Activities versus Number of Business Created



When we analyse the data of Figure 3 we must note that the expenditure in this sort of activities will affect in the next period of time to that committed. This way we can link the abrupt decrease in the expenditure during 1999 and 2006 with the respective decrease in the number of business firms created in 2000 and 2007-2008. Coming back

to the analysis based on strategy changes, between 1997 and 2000 we observe that increases in entrepreneurs' support activities expenditure match with decreases in communication and diffusion activities expenditure. During the second period of time (2001-2005) we observe a parallel evolution in the expenditure in this type of activities and the number of firms created. However we need to highlight that the increase in the number of firms created in 2001 with a parallel decrease in both entrepreneurs' support and communication activities. The increase in the business firms created in 2001 was not accompanied with the appropriate strategy and advice and therefore the quality of these firms is rather lower. We can confirm this extent with the high percentage of the firms created in this year that disappear as it is shown in Table 2.

During the last period of time (2006-2008) we observe how the strategy and direction changes turns into a constant expenditure increase but the number of firms created smoothly decreases. To some extent this is the result of a higher communication expenditure financed from outside the UPV as well as the development of new activities within this category trying to mitigate the crisis effects, but also is the consequence of focusing advice efforts in technology-based firms with the participation of teaching staff with a much lower impact in the number of firms created.

Table 2: Evolution in the number of IDEAS Businesses and the survival percentage

Created Businesses	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Created Businesses	15	18	17	12	27	31	37	48	45	50	49	45
Technology Based Businesses	1	2	3	0	0	2	1	3	4	5	7	6
Business alive at 31/12/2008	7	13	16	11	14	21	31	43	42	46	48	45
% of Business Survival	47%	72%	94%	92%	52%	68%	84%	90%	93%	92%	98%	100%

## Remarks and conclusions

The idea of transforming the University from a training and research institution into an organisation where those activities are used as bricks to build businesses is now well incorporated into both the political speech and the university budget as a new financial source. This fact has forced developed countries' universities some transformations in terms of university internal organisation, systemic work, cultural changes at both university staff level (administrative and teaching) as well as student and graduate levels. This is a slow process in which the involvement of personnel is a key point if we want to succeed. The IDEAS Programme case reflects that those transformations were

initiated when third mission activities became a centralised task at the university. The ongoing effort in “dynamising” university personnel was the starting point to force the required cultural change of teaching staff minds with respect to business creation. On the other hand, the huge effort made during many years at the students and graduates level has seeded a new germ opening up the idea of self-employment as a valid and alternative option for them using the university as a diving board for their business ideas. On the other, this slow and evolving process has meant the definition of different strategies for different periods of time, using different and increasing number of activities directly and indirectly supporting entrepreneurs (graduates, students or teaching staff). The growing economic effort in terms of expenditure talks about the university involvement with these activities but also the growing income budget reflects that need for new financial sources as part of the university involvement in third mission activities. The results in terms of businesses created looks promising. However, we have to note that the economic crisis has also meant a slowing down in the number of business and university spin-off created which is the reflection of the whole economy. Hence business support from the university as a third mission activity does not escape to the economic and business principles and rules and need to actually adapt to them if those businesses want to succeed in the market as the final judge, our particular “Queen of Hearts”. Therefore we can conclude that the seed is growing but this is a reversible process that might react if the support that has received during the analysed period of time is replaced due to other urgent decisions resulting in the atomisation of the university business support unit.

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