

Solutions for Building Entrepreneurial University

Assoc. Prof. Dr. Le Nguyen Doan Khoi

Department of Scientific Research Affairs, Can Tho University, Vietnam

Abstract: - This paper presented the solutions for building entrepreneurial university in the globalization phase. In addition, it analysed the mechanisms of university to technology transfer: conferences and scientific publications, training of skilled labour force, and commercialization of knowledge entrepreneurial climate. It added a new facet towards other climate like innovation climate, justice climate or service climate. Given the proven linkages between concepts and positive outcomes like performance or satisfaction, the concept of entrepreneurial university contributes to entrepreneurship research.

Keywords: entrepreneurial university, technology business incubator, technology transfer

I. INTRODUCTION

In the recent years, universities have developed technology business incubators and formal programs for technology transfer. Entrepreneurial Universities apply three main mechanisms to transfer technology: conferences and scientific publications, training of skilled labour force, and commercialization of knowledge. Moreover, the commercialization of university activities has become a key component in government agendas.

Entrepreneurial university – in terms of companies, created specifically to exploit technological knowledge originated within universities. It is one way to facilitate this transfer and to establish new enterprises with innovative knowledge and technologies as their strategic resource and competitive advantage. Furthermore, spin-offs are probably the most visible form of commercialization of university research.

Hence, in the short run, we question if the status of affiliation with university institutions is perceived as a credible quality signal by investors. In the long run, we compare the performance of university-based and independent firms and investigate the determinants of the differences between the two categories. This is particularly interesting in light of the risk-relevance given by potential investor in university-based firms to the business development skills of management.

II. LITERATURE REVIEW

2.1 Entrepreneurial University

The growing importance of an entrepreneurial culture to the universities has seen a great many new studies appear in the literature that focus on the following aspects: the role of legislation and the national system in stimulating academic enterprise (Shane, 2004), factors in the university environment facilitating the creation of business activities (O' Shea et al., 2005), the institutional conditions under which spin-offs are incubated (Lockett et al., 2005), the characteristics of individual academics who become entrepreneurs (Landry et

al., 2006), the benefits firms derive from affiliation with a university institution (Mian, 1996), and the value creation capacity of university commercial initiatives (Lambert, 2003).

Referring to entrepreneurial universities, it could be understood as a source why university members act entrepreneurial and is manifested in the observable artefacts, values, and basic assumptions held by the universities' members. This pattern of basic assumptions results in observable behaviour of the employees and visible artefacts, which could be perceived by the organizational members and therefore constitutes the entrepreneurial university.

2.2 University-based enterprises

Enterprises that compete in high-technology industries face major challenges in achieving competitive advantage and profitability (Oliver and Liebeskind, 1998). In science-based industries, success requires a firm to develop and accumulate diverse technological capabilities. However, enterprises suffer serious problems accessing the resources needed to build these competencies. The development of links with universities could represent a solution to accessing the resources needed to ensure value creation (Geisler et al., 1990).

The benefits enterprises gain from collaboration with a university are well documented in the literature. Access to sources of knowledge and innovation, and to physical resources such as university laboratories and libraries, are some of the most important value-adding components that a university can offer a firm (Quintas et al., 1992). The window on emerging technologies provided by the affiliation to universities can improve the flexibility a firm has in conducting R&D activities (MacLachlan, 1995) and at the same time reduce the costs of developing technological capabilities (George et al., 2002). The affiliation with a university can also foster collaboration with public research institutes (Oliver and Liebeskind, 1998) and information sharing, especially where knowledge is more likely to be tacit (Cohen and Levinthal, 1990). Moreover, links with universities can enhance the confidence of other stakeholders in a company (Mian, 1997), such as Venture Capitalists (VCs) and business angels. This can facilitate the raising of funds needed to finance the innovative activity and make the use of this capital more effective. Access to finance is indeed a key determinant of the growth and value generation associated with new technology based firms (Wright et al., 2006).

Referring to entrepreneurial university it is important to mention that in most cases entrepreneurship is not seen as a main goal of universities. Their traditional goals could be

summarized as facilitating research and disseminating knowledge across academic and student communities (*O'Shea et al., 2005*). During the last decades, fostering the technology transfer process was attributed to them as a third mission in order to overcome limitations of economic development (*Niosi, 2006; Degroof/Roberts, 2004*). Hence, an ideal type of a new university was developed – the entrepreneurial university. But until now, this third mission of universities is not clearly implemented everywhere (*Etzkowitz/Klofsten, 2005*). Therefore, it could be argued that the clear perception of entrepreneurship as a university's goal and as a part of its mission is a key-factor for perceiving a university as entrepreneurial and for fostering its entrepreneurial climate (*Palacio Aguirre et al., 2006; Etzkowitz/Klofsten, 2005; Friedman/Silberman, 2003; Jacob et al., 2003; Laukkanen, 2003*).

Furthermore, entrepreneurial qualification offers symbolize the institutionalization of entrepreneurial activities. Such an institutionalization might have a positive impact on entrepreneurial university (*Burg van et al., 2008; Palacio Aguirre et al., 2006; Etzkowitz/Klofsten, 2005; Moray/Clarysse, 2005; Laukkanen, 2003*).

In summary, we assume that the following factors might influence either directly or indirectly a entrepreneurial university: the perception of entrepreneurship as a university's goal (goal), the perception of successful role-models (role models), the perception of entrepreneurial qualification offers, the perceived exposure to academic entrepreneurship (exposure), the perception of infrastructure and the perception of social support.

III. RESEARCH RESULTS

The data for this study was collected through a survey at Global Entrepreneurship Research Association (GERA) in measuring Global Entrepreneurship Monitor (GEM). We rely on one of the more notable entrepreneurial settings: an IPO is one of the more critical junctures in the development of a firm. The decision to take the firm public presents many opportunities for the continued growth and prosperity of the firm.

The characteristics of university-based enterprises are studied from four perspectives: efficiency and profitability, innovative activity, ownership structure, and corporate governance. The return-on-assets ratio, defined as sales minus operating cost over total assets, measures the operating efficiency of the firm in its use of resources, while return-on-equity, defined as net profit over equity, expresses the profitability for the shareholders. We find that university-based firms show a lower level of operating efficiency and shareholders profitability at the IPO (Panel A, Table 1). On the other hand, university-based firms show greater innovative activity (Panel B). Indeed, on average, university-based firms own a larger number of patents (35 compared to 9 for the independent firms) and have a level of R&D investments twice that of the control sample (median value of R&D investment scaled by

sales is 20% for university-based versus 10% for independent firms)

Table 1 - University-based enterprises compared to independent firms

	University-based enterprises	Independent enterprises
Panel A: Characteristics and Operating performance		
Firm size (mean) ^a (market cap, € mln)	26.5	27.3
Firm age (mean) ^a (years)	7.7	8.4
Efficiency in the use of assets (median) ^b (%)	7.87***	14.15
Shareholders Profitability (median) ^b (%)	7.23***	15.14
Panel B: Innovative level		
Patents (mean) ^a (number)	34.51***	9.33
R&D Expenses / Sales (median) ^b (%)	19.86***	10.00
Panel C: Ownership structure		
Divestment at the IPO (mean) ^a (%)	19.34**	24.96
Fresh Capital Inflow at the IPO (mean) ^a (%)	25.37***	21.79
Pre-IPO stakes owned by substantial shareholders (mean) ^a (%)	68.88***	77.47
Pre-IPO stakes owned by TMT members (mean) ^a (%)	33.83**	42.31
Pre-IPO stakes owned by the CEO (mean) ^a (%)	22.25***	34.07
Panel D: Corporate governance		
Age of the CEO (mean) ^a (years)	46.55	45.08
Service as CEO (mean) ^a (years)	6.38	7.09
CEO = main shareholder (mean) ^c (% of the sample)	42.3*	54.37
CEO = founder (mean) ^c (% of the sample)	58.01	64.44
CEO external links (mean) ^a (number)	1.74**	1.38
Presence of Venture Capital (mean) ^c (% of the sample)	71.33*	79.72

^a *t*-Test of equal means; ^b Mann-Whitney Test of equal medians; ^c Test of equal proportions;

*** 1% significance level;

** 5% significance level;

* 10% significance level;

IV. IMPLICATIONS

This research studies the firms with university collaboration that have gained access to the public equity markets in recent years. The main contribution is to investigate the previously unaddressed issue of the valuation of university-based enterprises. To this extent, we accept a market-based perspective by selecting a survey at Global Entrepreneurship Research Association (GERA) in measuring Global Entrepreneurship Monitor (GEM).

Our results provide a wide range of practical implications. First, new possibilities arise for universities to improve the

entrepreneurial university in a strategic manner. Second, the mentioned students ask for measures and tools specifically designed for academic entrepreneurship. Furthermore, general exposure and educational offers play a crucial role for improving entrepreneurial climate and goal perception. Thus, we suggest that more effective interventions be created, targeting more than one of these factors.

We argue that more attention should be devoted to the development of the business acumen and abilities of university-based enterprises, as skill in these areas is essential for long-term success

V. CONCLUSION

In conclusion, the introduction of the entrepreneurial university construct pressuring academics to transfer their research into the marketplace is not enough for the solution necessarily requires a new sensitivity to the commercial realm that enables to identify the fields of research and the single projects viable of market exploitation. On basis of these premises, university-based firms need to assess the marketability of their business idea and the management skills of their top members. Following this, it should consider whether or not the team members can and want to develop these management abilities, so they need to decide whether to remain pure academics or to invest their time and effort in developing managerial skills, probably through specific training. Remembering that on a personal level prestigious research achievements do not necessarily fit with an inclination to doing business, it is concluded that university-based firms face a make-or-buy decision on management skills.

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