

Fostering Student Entrepreneurship and University Spinoff Companies

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*“Entrepreneurs do more than anybody thinks possible”
with less than anybody thinks possible, regardless of the
field in which they work.*

John Doerr

Funder of Netscape, Google, and Amazon

A student spinoff company strives to transform knowledge acquired by students into an income-generating business. This article outlines how a university can increase the number of spinoff companies created by its student entrepreneurs.

Student spinoff companies are of interest to all forward-thinking universities, particularly those that support research and teaching programs in the field of entrepreneurship. The spinoff companies provide tangible evidence that students acquire viable entrepreneurial skills while studying at the university. In addition, student spinoff companies contribute to regional economic development, commercialize knowledge that otherwise would go undeveloped, help universities attain and expand their core missions, and increase the return on the investments in university R&D.

University policies developed specifically for student spinoff companies significantly affect the growth potential of such ventures. This article provides a model and a set of principles that universities can use to support and increase the number of student entrepreneurs at their institutions. The model and principles are grounded in research findings and practical experience. In addition, the article suggests that universities adopt a results-based management approach to plan and deploy initiatives to support student entrepreneurs. The approach is widely used by government agencies interested in increasing the outcomes from their investments.

Introduction

Today's academic institutions are adding economic development to their more traditional mandates of teaching and research (Hoskisson et al., 2011: <http://tinyurl.com/3tkdepv>; Rothaermel, et al., 2007: <http://tinyurl.com/4xaacr8>). Accordingly, the need to foster student entrepreneurship has become increasingly important for senior university administrators worldwide.

There is a risk however, that policies fostering entrepreneurship at a university may miss out on key scholarly insights and concrete practical experience. The literature on student entrepreneurship has grown in varied directions, making it difficult for universities to

formulate effective policies. Lessons learned from practical experiences with student entrepreneurs are not widely available. The research findings and intuitive understanding around student entrepreneurs can be difficult to understand for senior university administrators interested in adopting effective university-wide policy principles promoting student entrepreneurship for commercial and social enterprises.

This article focuses on those students who establish new companies to commercialize opportunities using knowledge they acquired through their studies at university. This article is not concerned about university students working in projects commissioned by large companies, nor is it about students who commercialize

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knowledge by means other than launching new companies (e.g., licensing technology to an established firm), who commercialize opportunities with knowledge acquired from non-university sources, or who are participants in business plan or idea competitions.

Student spinoff companies can be founded by students attending programs in any faculty at a university. These companies operate independently from the university; they have their own legal, technical, and commercial structures.

A student spinoff company transforms knowledge that students acquire at a university into revenues from: i) new products, services, technology, tools, and solutions; ii) new quality of goods; iii) new methods of production; iv) opening new markets; v) securing new sources of supply of raw materials; and vi) new organizational forms.

This article proceeds as follows. First, the importance of student spinoff companies is examined. Second, the distinct and salient aspects of student entrepreneurs are identified. Third, a model to increase the level of student entrepreneurship at a university is introduced. Fourth, a set of principles anchored around the model are identified. Fifth, a recommendation is provided to encourage senior university administrators to use a results-based management approach to manage their initiatives to increase the level of student entrepreneurship. Conclusions then follow.

Why Are Student Spinoff Companies Important?

Student spinoff companies are important for at least five reasons:

1. Student spinoff companies offer concrete proof that the university from which they emanate is relevant, up-to-date, and competitive. These proof points attract talented students, faculty, partners, and donors; generate private and public sector investment; and strengthen links to important regional and international networks.
2. They contribute to the economic development of the region where the university is located. They generate jobs (including jobs for students and knowledge-intensive jobs), diversify the local economy, satisfy customer needs, and attract talent and investment.

3. They commercialize knowledge that may otherwise go undeveloped within the university. Transforming “in house” knowledge into sellable goods is expensive and uncertain. Most universities do not have the skills, will-power, discipline, financial resources, space, and networks required to transform university knowledge into a wide range of commercial goods. In many cases, student spinoff companies are required to transform university knowledge into market offers, attract capital, and validate customer value.

4. They help universities accomplish their core missions of research, teaching, and community development. Student spinoffs provide faculty with knowledge that is useful for educating students, and they increase awareness of the practical value of undertaking university research.

5. They increase the return on government investment in university R&D. Policy makers and taxpayers are increasingly concerned about the low returns from government investment in university R&D. Michelacci (2003; <http://tinyurl.com/68pvg3e>) has shown that, when the stock of knowledge is high and the amount of entrepreneurial skill is low, an increase in R&D reduces economic growth. When entrepreneurial skills at the university are low, returns on large R&D investments are also low. In addition to being knowledge-transfer mechanisms, student spinoff companies increase the level of entrepreneurial activity at a university, which then increases the university’s return on its R&D.

What Are the Distinct and Salient Aspects of Student Entrepreneurs?

Student entrepreneurs use university knowledge to recognize opportunities and develop, launch, and operate new companies to exploit them. This definition is consistent with the definitions of entrepreneurship contributed by Shane (2003; <http://tinyurl.com/6yy3yqy>) and Hoskisson, Covin, Volberda, and Johnson (2011; <http://tinyurl.com/3tkdepv>).

There are at least five distinct and salient aspects to student entrepreneurs:

1. They use their university education to develop the three core capabilities that underlie venture creation. According to Rasmussen and colleagues (2011; <http://tinyurl.com/6xdn4cd>), these three core capabilities

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ies are: opportunity refinement, resource acquisition, and venture championing.

2. They rely on the university's reputation and networks to reach the credibility thresholds of their ventures. Rasmussen and colleagues (2011) define the credibility threshold of a venture as the establishment of an entrepreneurial team and acquisition of resources required by the venture.

3. They learn to be more self-reliant than peers carrying out venture initiatives in large corporations. Unlike corporate venturing, student entrepreneurs learn that they cannot count on the university to provide them with the resources they require to develop their ventures. As a result, they tend to think of resources as tools that provide them with requisite services rather than feeling the need to own those resources. Student entrepreneurs focus on the applications, not the attributes of the resources.

4. The quality of their educational experience is very much influenced by the quality of their entrepreneurial experience while studying at the university. Student entrepreneurs expect more than lectures on entrepreneurship; they expect to interact with faculty who can help them attain their entrepreneurial-related goals.

5. They use the university to develop weak, strong, and bridging network ties. Weak ties provide them with new knowledge and information. Strong ties provide resources, legitimacy, and sensitive information exchange. Bridging ties provide market and customer information as well as capability to expand current capabilities (Hoskisson et al., 2011; <http://tinyurl.com/3tkdepv>).

Factors that Affect the Number of Student Spinoff Companies

Various entrepreneurship theories exist. In this section, we build on the knowledge-based theory of entrepreneurship (Acs et al., 2005; <http://tinyurl.com/3q46kzq>; Acs et al., 2009; <http://tinyurl.com/3dlctbe>) and the subjectivist theory of entrepreneurship (Mahoney and Michael, 2005; <http://tinyurl.com/42p9fhv>) to develop a model for the purpose of organizing policy principles to foster the creation of student spinoff companies. Six constructs were identified as determining the number of student entrepreneurs in a university at a given time (dependent variable), as shown in Figure 1 and described below:

A and B: Students use university-based knowledge to develop opportunities within the university. The



Figure 1. Factors that affect the level of student entrepreneurship at a university

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amount of knowledge available to students is expressed as the product of two factors: the total stock of knowledge available at the university and the portion of knowledge that the university allows students to commercialize. If university policy assigns all rights over the university's stock of knowledge to students, then the number of student entrepreneurs launching companies is likely to increase.

C: When comparing the projected profits from entrepreneurship to the expected wages from employment inside or outside the university, the greater the disparity between profits over wages, the higher the level of students launching startups.

D: Students need to develop three core entrepreneurship capabilities: identify and refine an opportunity, acquire resources, and champion a venture. The stronger are the entrepreneurship capabilities of university students, the greater is the number of students launching startups.

E and F: The literature has identified barriers to entrepreneurship (Shane, 2003; <http://tinyurl.com/6yy3yqy>), which can be organized into two categories: university barriers and regional barriers. University barriers to entrepreneurship include lack of social acceptance of student entrepreneurs, tensions between academic and commercial outputs, lack of people with business experience and commercial skills, and inefficient technology transfer offices. Regional barriers to entrepreneurship include regulatory, legal, administrative, employment, financial, and partnership burdens. For example, in some regions, student entrepreneurs need one day to register a company; in other regions, they need 20 weeks. Some regions require skill qualification or the elaboration of a business plan certified by a business expert attesting to the company's viability. In some regions, students lack access to bank and trade credit.

Figure 1 illustrates that the number of student entrepreneurs at a university is positively affected by: i) the stock of knowledge at the university; ii) the fraction of stock of knowledge that students can commercialize, iii) the expected excess of profits from entrepreneurship minus wages from employment, and iv) the students' entrepreneurial capabilities. It also illustrates that the higher the university and regional barriers to entrepreneurship, the lower the number of student entrepreneurs.

Principles to Increase the Number of Student Spinoff Companies

Table 1 provides principles that can be used to develop university policies for increasing the number of spinoff companies created by university students. These principles are organized around the six factors illustrated in Figure 1.

The principles provided in this section link the descriptive nature of scientific research with the action-oriented nature of policy-making practices, as advocated by proponents of the science-based approach (Romme and Endenburg, 2006; <http://tinyurl.com/6aowwcz>). These principles use practical experience gained helping graduate students at Carleton University launch their businesses to expand on the principles reported by van Burg, Romme, Gilsing and Reymen (2008; <http://tinyurl.com/3v3787c>) and Gilsing, van Burg and Romme (2010; <http://tinyurl.com/3w7s4q3>).

A Results-Based Management Approach to Creating Student Spinoff Companies

Senior university administrators can use a results-based management approach to increase the level of student entrepreneurs. The results-based management approach looks beyond investment in activities and outputs, focusing on specific results of investments (Canadian International Development Agency, 2008; <http://tinyurl.com/3jy985q>). With this type of approach, the use of three tools to manage initiatives in fostering the creation of students' spinoff companies may prove quite helpful. These tools include: i) a logic model; ii) a performance measurement framework; and iii) an investment risk management template. Examples of the three tools used by the Canadian International Development Agency can be accessed here: <http://tinyurl.com/3lnnde6>

The logic model illustrates the logical relationships between inputs, activities, outputs, immediate outcomes, intermediate outcomes, and final outcome of a university initiative to increase its number of student entrepreneurs. The inputs, activities, and outputs address the "how" of the initiative, whereas the immediate, intermediate, and final outcomes provide the actual "changes" that take place as a result of investing in the initiative.

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Table 1. Principles to foster student entrepreneurship at a university

Focus	Principles
A. Increase stock of knowledge	<ul style="list-style-type: none"> • Attract and retain productive faculty researchers with business experience who can increase the stock of knowledge that can be commercialized. • Provide mentors to students to help define and strengthen opportunities. • Distinguish between knowledge that reinforces existing practices versus knowledge that destroys them.
B. Increase portion of knowledge students can exploit	<ul style="list-style-type: none"> • Enable students to commercialize a large portion of the stock of university knowledge. • Separate spinoff process from research and teaching.
C. Increase projected excess of profits from entrepreneurship over wages	<ul style="list-style-type: none"> • Provide students with entrepreneurship assistantships using the same support level used to provide teaching and research assistantships. • Fund student entrepreneurs to pay other students to work on their ventures. • Fund students with viable opportunities. • Differentiate product development versus opportunity development. • Screen opportunities and provide students with constructive feedback on how to advance their opportunities. • Insist on market orientation for opportunities. • Provide access to potential customers, partners, and investors. • Provide tools to define and strengthen opportunities. • Help obtain external resources. • Do not take equity or keep intellectual property.
D. Increase individual capabilities	<ul style="list-style-type: none"> • Provide experiential training and mentors to develop capability to identify and refine opportunities, acquire resources, and champion ventures. • Link students to serial entrepreneurs.
E. Decrease institutional barriers	<ul style="list-style-type: none"> • Create university-wide awareness of benefits of student entrepreneurship to the region, university, and faculty. • Create exemplars that motivate entrepreneurial behaviour and celebrate successes. • Provide space for students to collaborate. • Set clear and supportive spinoff process tailored to opportunity type. • Stimulate creation and development of compelling opportunities. • Define nature and duration of spinoff company ties to university. • Greater focus on results of investments than on tracking investments in activities. • Eliminate inequalities based on gender, age, race, health, and religion.
F. Decrease regional barriers	<ul style="list-style-type: none"> • Encourage faculty to contribute to regional economic development organizations. • Involve students in economic development organizations, clusters, capital suppliers, incubators, service providers, etc. • Provide access to conferences where technology and market trends are discussed with potential customers.

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A university can use the performance measurement framework to prepare and implement a plan that systematically collects relevant data over the lifetime of the student spinoff creation initiative and to demonstrate progress made in achieving expected results.

The investment risk register outlines the operational, financial, developmental, and reputational risks of a university initiative to increase numbers of student entrepreneurs and defines the corresponding risk response strategies.

Conclusions

Today's universities are adding economic development to their teaching and research mandates. Fostering student entrepreneurship for commercial and social purposes therefore has become increasingly important for senior university administrators worldwide.

We all face the challenge to do right for our student entrepreneurs and institutionalize the pertinent processes and values required to support the creation of their companies.

About the Author

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