Undergraduate Perceptions of the Need for an Agricultural Entrepreneurship Curriculum

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Abstract

A review of business programs having entrepreneurial studies found that institutions of higher education could play a limited, yet important, role in developing student entrepreneurship spirit. We surveyed University of Missouri College of Agriculture, Food and Natural Resources undergraduates to ascertain their interest and level of knowledge about entrepreneurship. Student survey respondents indicated a strong interest in entrepreneurship, a lack of business knowledge in key areas, a desire for out-of-the-classroom training, and a mixed desire to return to a rural setting.

Introduction

We define an agri-entrepreneur as one who organizes, manages and assumes the risks of an agribusiness or agri-enterprise. According to a 2000 Kauffman Foundation report on global entrepreneurship, 9.8% of the U.S. adult population is attempting to start a new business at any one time (Kauffman Center for Entrepreneurial Leadership, 2000). An assessment of entrepreneurial activities indicates 80% of business start-ups fail (Kauffman Center for Entrepreneurial Leadership, 2000). However, research analyzing higher education entrepreneurship curricula indicates that graduates of these programs are more likely to start new businesses and be self-employed. They tend to have higher annual incomes, greater levels of assets and greater job satisfaction (Charney and Libecap, 2003).

Charney and Libecap (2003) found over 1,500 colleges and universities offered some form of entrepreneurship training in 2000 compared to 400 in 1995; today nearly 50 schools offer an entrepreneurship degree (Solomon et al. 2002). However, these programs are primarily concentrated in traditional business programs that do not focus on the unique challenges of the agri-food sector and the rural economy. An unanswered question is whether this lack of agri-entrepreneurship curricula is a supply-side or a demand-side phenomenon.

The agricultural industry and the rural community is undergoing significant changes as agri-food system consolidation occurs, and rural communities search for their niche. Much of the economic activity in rural communities has been historically based on agriculture. As rural communities undergo economic, sociological, and geo-political changes, and the agricultural industry becomes more technologically and business-focused, agri-entrepreneurship may play a key role in reshaping and revitalizing rural America. Entrepreneurship has been cited as a critical component for economic development in rural communities (Sexton and Kasarda, 1992). Macke and Kayne (2001) believe rural-based entrepreneurs face challenges beyond those of traditional entrepreneurs. These challenges include an older, poorer, conservative population; greater distance from substantial markets; depopulation; increased subsidies to maintain resources; and less dynamic economies. Yet, Smilor (1997) stated, "It does confer identity, a sense of belonging, a measure of security" (p. 11) in referring to not only entrepreneurs, but also the impact they can have on community.

Adequately preparing students for entrepreneurial careers in this environment may require changes in curricula. Can agricultural colleges implement an agri-entrepreneurship curriculum to improve the success rate of new agricultural business start-ups? Before colleges begin investing in new curriculum development, it is important to determine the level and nature of student interest in this type of curriculum. We present the results of a survey, focused on entrepreneurship, administered to undergraduate students in the College of Agriculture, Food, and Natural Resources (CAFNR) at the University of Missouri-Columbia. We found student interest in owning their own businesses to not be significantly different among students with farming, rural, or urban backgrounds, nor across academic disciplines. The primary factor in predicting an entrepreneurial interest is personal knowledge of an entrepreneur. We also found students, even seniors, feel ill-prepared for starting their own business and believe hands-on learning opportunities, whether on the job or through internships, would increase their preparedness. Finally, we find specific areas of study and related opportunities that students identify as shortcomings in their entrepreneurial knowledge base.

Literature Review

In a Winter 2001 assessment of the state of entrepreneurship training in higher education, the

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Kauffman Center for Entrepreneurship Leadership (hereafter, the Kauffman Report) reports on the innovative programs in the areas of student learning, faculty development, administrative support and entrepreneurial involvement. For student learning, it points to experiential learning, such as internships and business plan competitions, as the element that differentiates entrepreneurial programs. Developing student leadership through entrepreneurial clubs and/or associations is also shown to have tremendous impact on clustering entrepreneurs. Prior to the slowdown in the economy, many schools provided assistance for students launching start-up businesses.

The Kauffman Report (2000) finds faculty members are rapidly developing entrepreneurship skill sets, as reflected in the increase in schools offering some sort of entrepreneurship courses. The research infrastructure has also improved with the creation of entrepreneurial associations and journals to fill the void of outlets for entrepreneurship research. Faculty have also helped establish entrepreneurship learning centers, staffed by both entrepreneurs and faculty. These centers use more guest speakers and focus more on business plans and facility development to provide improved entrepreneurship learning. The one shortcoming in faculty involvement is professional development experiences.

Kourilskly (1995) argues institutions of higher education need to help change students' mentality from "take-a-job" to "make-a-job" for entrepreneurship curricula to thrive instead of introducing courses and involving entrepreneurs in the classroom. Kourilskly (1995) points to three stages in the development of an entrepreneur: 1) the identification or recognition of opportunities; 2) commitment of resources in the presence of risk; and 3) creation of operating an organization. She claims higher education curriculum only plays a limited role in putting second- and third-stage concepts into place, but can play a critical role in opportunity recognition and exploration.

Developing opportunity recognition and exploration requires an environment that encourages students to become imaginative, independent thinkers and to develop skills in assessing a concept's need within the marketplace. Kourilskly (1995) refers to the overall components of the first-stage as the "Initiator" stage. Thus, a successful entrepreneurship curriculum would have the tools in place to students to better understand how to maneuver through the business start-up process as well as focusing on allowing students to be free thinking, analytical and risk taking.

The Kauffman Report (2000) argues entrepreneurship training needs to extend beyond business schools. Several collaborative programs, particularly between business schools and colleges of engineering or physical sciences are highlighted. Macke and Kayne (2001) contended entrepreneurial training is particularly needed for rural economic development where rural entrepreneurship carries challenges distinct from traditional entrepreneurial settings. Given the traditionally agricultural orientation of rural economies, these observations suggest a need for advanced training in agri-entrepreneurship.

Agribusiness programs are better suited than traditional ones to provide this type of agri-entrepreneurial curriculum. Agribusiness curriculum combines business school entrepreneurship curricula with an understanding of the production and institutional features peculiar to agriculture. For instance, the biological production process introduces to the management process risk and uncertainty sources that are not well understood or addressed in most business programs. Second, agricultural enterprises have access to a myriad of special grants, cost-share, loan guarantees, low interest loans and technical assistance available through the United States Department of Agriculture and state departments of agriculture. However, political and regulatory issues are necessary and important to agribusiness performance. Thus, agribusiness programs that apply conventional business tools to this unique business setting would be appropriate forums for agriculturally focused entrepreneurial training.

Methods

To ascertain student interest in agri-entrepreneurship, we conducted a survey of undergraduate students in the CAFNR at the University of Missouri. We designed the survey to elicit responses on students' interest in agri-entrepreneurship, understanding of business-related concepts and demographic information. For the subjects surveyed, we defined entrepreneurship as one who organizes, manages and assumes the risks of a business or enterprise. We specifically stated that production agriculture does not qualify as an entrepreneurial business. We tested the survey on a small number of students prior to its implementation.

Demographic questions were asked to determine students' age, year in school, gender, major, background [farm, rural (non-farm), suburban, urban], family involvement in entrepreneurship and knowledge of friends or friends of family involved in entrepreneurship. Students were also asked if they had considered owning their own business.

The majority of the survey dealt with students' perceived knowledge of entrepreneurship topics. Students were asked to respond to the statement "I have a good understanding of …" for each of the following topics: business plans, market analysis, marketing, grant opportunities, legal issues, access to capital, information resource providers and access to entrepreneurial clubs. Responses were scored on a five-point Likert scale, where 1 = "Strongly

Disagree," 2 = "Somewhat Disagree," 3 = "Indifferent," 4 = "Somewhat Agree" and 5= "Strongly Agree."

CAFNR students were contacted by e-mail at the end of November 2002 and asked to take part in a web-based survey that would be used in the assessment and potential development of agri-entrepreneurial curriculum. Students responded by completing a web-based survey form, and no follow-up e-mail was sent to avoid overwhelming students with additional e-mail. Of slightly over 2,000 CAFNR undergraduate students, 172 responded to the survey. While this response rate is low, we cautiously recognize the response rate itself may be an indicator of the overall interest in such a program. That is, entrepreneurs make up a small percentage of the population, so less than seven percent of the CAFNR student population expressing an interest in entrepreneurship indicates strong demand for an entrepreneurship curriculum. Students not interested in entrepreneurship were unlikely to respond to the survey.

Table 1 presents respondent demographic summary statistics. Compared to the CAFNR undergraduate population, a higher proportion of survey respondents tended to be male, a higher percentage of respondents tended to have a farm background and a higher percentage of respondents tended to be pursuing a degree in agricultural economics or agribusiness.

Results and Discussion

A series of four questions was asked of students related to their interest in entrepreneurship, previous knowledge of entrepreneurship, interest in curriculum development, and the geographical setting for applying their entrepreneurship interest (Table 1). Over 95% of respondents indicated that they have considered wanting to own their own business. Applying this percentage to the sample relative to total undergraduate enrollment in the College we find that nearly 7.5% of CAFNR undergraduates have considered owning their own business. This proportion of students is larger than some degree programs in the College, which alone suggests demand. Not surprisingly, a majority of respondents (85%) indicated knowing someone who owns their own business. Eighty-percent of respondents indicated interest in taking a course in entrepreneurship. The difference in respondents indicating "yes" between wanting to own your own business and wishing to take a course in entrepreneurship may be due to students not believing coursework will enhance the ability to become an entrepreneur. Interestingly, only slightly over one-half of respondents indicated they would like to own their own business in a rural setting. This result is important, as it indicates only about one-half of those we train will return to a

Table 1. Summary statistics of agricultural entrepreneurship survey respondents.

	All	Freshman	Sophomore	Junior	Senior
Number of respondents[z]	172	41	45	33	34
Demographics					
Female (% of respondents)	39	34	40	32	50
Background (% of respondents)					
Farm	56.86	43.90	62.22	57.58	64.71
Rural, non-farm	24.18	24.39	28.89	24.24	17.65
Suburb	14.38	21.95	6.67	12.12	17.65
Urban	4.58	9.76	2.22	6.06	0.00
Undergraduate major (% of total)					
Agricultural economics or agribusiness	24.84	14.63	15.56	30.30	44.12
Plant Sciences	4.58	2.44	6.67	9.09	0.00
Animal Sciences	20.92	19.51	26.67	15.15	20.59
Ag Education	13.73	9.76	20.00	18.18	5.88
Other	35.95	53.66	31.11	27.27	29.41
Entrepreneurship (% of respondents)					
Have you ever considered wanting to own your own business	96.51	95.0	100	93.9	97.1
Know of someone who owns their own business	85.47	80.0	88.9	75.8	88.2
Are you interested in a course in entrepreneurship	77.91	70.0	75.6	78.8	91.2
Where would you want to own your own business (% reporting rural)	55.81	55.0	60.0	51.5	55.9

[z]Nineteen respondents did not respond to the question of class in college

rural setting. Thus, the focus on rural economic development through agri-entrepreneurship may not be consistent with student desires.

In an attempt to assess whether we could predict student interest in wanting to be an entrepreneur, we found the only significant variable to be the variable that captured respondent knowledge of other entrepreneurs. This result was as expected, and we believe this result points toward partnering aspiring student entrepreneurs with existing entrepreneurs. Other variables included in the model were background (rural, urban, suburban), age, degree and gender. We do not report these results here because of the lack of overall explanatory power of the model. Results are available from the authors upon request.

Questions posed of subjects and mean responses from respondents are reported in Table 2 and Table 3 respectively. Responses, by class in school, are reported as mean responses ranking the question in one of five categories from "1 = Strongly Disagree" to "3 = Indifferent" to "5 = Strongly Agree."

A majority of respondents indicated feeling comfortable with their understanding of business plans and feasibility studies (Questions 1 and 2). This result differed little across class. This does not suggest students know how to write a business plan or conduct a feasibility study. However, knowing the basic concepts of business plans and feasibility studies is important, because these tools form a strategic planning foundation.

Students generally feel uncomfortable with legal issues linked with building a business (Question 3). This result is not surprising because of the need to understand organizational structure issues, articles of incorporation, tax issues and business law. These topics are typically not covered in a traditional college of agriculture curriculum. One curriculum area to be developed, or direct students toward, is the understanding of legal issues related to business development.

Most respondents indicate a good understanding of marketing products (Question 4). This is somewhat surprising, as most respondents indicated a farm background where commodity agricultural marketing dominates. It is common for agricultural producers to misperceive the ease of product marketing after being involved in commodity marketing. Students from a farm background could share this misunderstanding. Although the CAFNR Department of Agricultural Economics offers a products marketing course, not all CAFNR students take it, and exposing students to hands-on learning is difficult. Schroeder (1996), in reporting on a commodity futures trading course, argues experiential learning in agricultural economics coursework is superior to traditional classroom-based instruction. Possibly more experiential learning needs to occur for students interested in agri-entrepreneurship to fully recognize the complicated process of product marketing.

Because of the increased usage of the Internet for transacting business, students were asked to rank their understanding of e-commerce. Student respondents are generally uncomfortable with e-commerce (Question 5). E-commerce has undergone considerable change over the past few years following the dot-com collapse, which has probably confused students about the benefits and use of e-commerce. Educating students on the usefulness and limitations of the Internet as a business support tool may have merit.

Establishing costs and pricing products are integrally linked. In order to properly price a product or concept, one must first know the costs of production. Thus, students were asked to rank their understanding of pricing strategies and of determining the cost of production (Questions 6 and 7). In general, the responses were bi-modal with juniors and seniors indicating somewhat more comfort with pricing

Table 2. Questions posed to the CAFNR undergraduate students

1. I have a good understanding of business plans?
2. I have a good understanding of feasibility studies?
3. I have a good understanding of legal issues related to business?
4. I have a good understanding of marketing products?
5. I have a good understanding of e-commerce?
6. I have a good understanding of pricing strategies?
7. I have a good understanding of establishing cost of production?
8. I have a good understanding of state and federal government programs that regulate and assist businesses?
9. I am comfortable setting up my own business now?
10. I will be comfortable setting up my business in 5 years?
11. I will be comfortable setting up my business in 10 years?
12. I would be interested in an internship opportunity with an entrepreneur?

Table 3. Mean responses, separated by class, of student knowledge of entrepreneurship related topics.[Y]

	Freshman		Sophomore		Junior		Senior		Overall	
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
Question 1	40	2.98	45	3.27	32	3.38	34	3.38	171	3.23
Question 2	39	2.38	45	2.49	32	2.72	34	2.94	170	2.68
Question 3	39	2.56	44	2.61	32	2.75	34	2.79	169	2.66
Question 4	40	2.90	45	3.29	32	3.63	34	3.50	170	3.31
Question 5	40	2.25	45	2.49	32	2.44	34	2.68	171	2.48
Question 6	40	2.88	44	2.86	32	3.28	34	3.21	169	3.04
Question 7	39	2.95	45	3.07	32	3.00	34	3.59	170	3.15
Question 8	39	2.38	45	2.29	32	2.22	34	2.44	170	2.29
Question 9	40	1.80	45	1.89	32	2.09	34	2.15	171	1.97
Question 10	39	2.79	45	3.24	32	3.25	34	3.12	169	3.14
Question 11	39	3.67	44	3.93	32	3.72	34	3.91	168	3.84
Question 12	40	3.78	45	3.78	31	3.77	34	4.09	168	3.84

[Y] Responses were scored on a five-point Likert scale, where 1= "Strongly Disagree" to 5 = "Strongly Agree."

strategies. Again, one concern is that students apply commodity marketing concepts marketing deals with market timing to product marketing. Mark-up pricing, cost plus pricing and premium pricing are product-related marketing strategies. These strategies are much different than commodity marketing decisions such as whether to store, at what time to sell, and how much to sell. An additional course or part of a course, on product pricing, assessing cost of production and inventory management may prove helpful.

Question 8 addresses students' understanding of state and federal government programs that regulate and assist in business. A majority of students feel they have a poor understanding of government programs. This result is as expected. Many state and federal agencies, along with foundations, offer technical support, cost-share and grant funding. Aspiring entrepreneurs could benefit from learning about government and foundation sponsored programs.

In general, survey respondents indicate they do not currently feel comfortable setting up their own business (Question 9). However, most respondents indicated they will feel more comfortable setting up a business five or ten years down the road (Questions 10 and 11). This finding is consistent with Reynolds, et al. (2002), who found persons between ages 25 and 44 are more likely to be entrepreneurs. Our findings suggest persons realize this a priori. These findings also imply students see value in supplementing their college training with experiential training (i.e., on-the-job) before pursuing their entrepreneurial dreams.

This is consistent with students' responses about the need for entrepreneurship-focused internship opportunities (Question 12). Students clearly indicate they would welcome the opportunity to pursue internship opportunities related to agri-entrepreneurship. Thus, creating connections between students and entrepreneurs to promote entrepreneurial aspirations could be valuable. One relatively simple means of developing this curriculum dimension is to build on relationships with alumni entrepreneurs.

Curriculum Implications

Since World War II, students have perceived large corporations as the primary source of employment opportunities (Kirchhoff, 1994), but now, students are expressing an interest in entrepreneurship, as evidenced by the recent growth in entrepreneurship curricula. In Fall 2000, a study by the Kauffman Foundation found survey respondents slightly disagree with the statement "colleges and universities have enough courses and programs on entrepreneurship," scoring -0.30 on a scale of - 2 equals strongly disagree, 0 equals neutral, +2 equals strongly agree. However, little is known of the demand drivers for higher education level entrepreneurship curricula and, in particular, agri-entrepreneurship. Using college level survey data from the undergraduate students in the CAFNR at the University of Missouri, we analyzed curriculum demand and interest in agri-entrepreneurship.

We find students' perception of curriculum needs focuses on legal issues, e-commerce and the implications and availability of government business programs. Some curriculum needs go beyond the scope of current educational offerings, while other needs indicate multi-divisional coursework. Also, opportunities to begin entrepreneurship clubs exist. In these clubs, potential entrepreneurs could interact about ideas, risk perceptions and learning opportunities.

A sub-group of faculty in the Department of Agricultural Economics is in the initial stages of implementing lessons learned from this study. Two members are now part of a campus entrepreneurship education initiative. An "Introduction to Entrepreneurship" course is in the development stages. Students would have to apply to take the course, and the course would be limited to a cohort of twelve students. The course structure would have seminar focus with emphasis on inviting agri-entrepreneurs to the classroom to interact with students. Topics included in the curriculum would focus on topics not currently available to persons interested in entrepreneurship, and a 'risk taking' atmosphere will be promoted through encouraging creativity. The students would follow-up this course with a week long, hands-on, intensive job shadowing experience during the period between fall and winter semesters. Because the choice of becoming an entrepreneur is as much a lifestyle choice as financial choice, we believe outside funding will be needed to implement a robust summer internship program, i.e., compensate the agri-entrepreneur for allowing the student to intern. Yet, we believe this will provide great opportunities for the student and agri-entrepreneur.

Despite the seemingly clear opinions expressed in our results, we recognize they must be interpreted cautiously. This is a case study based on the background and resources of one institution, and should not be generalized across agricultural colleges. The study is further limited by the low survey response rate (7.5%) and the high percentage of survey respondents who indicated an interest in owning one's own business. Both suggest a likely bias in the sample. However, that bias is instructive, and the perceived strengths and weaknesses of students' entrepreneurial training are likely most clearly pronounced.

Final Note

At the time of publication and after the final peer review of this manuscript the first student cohort of an introduction to agri-entrepreneurship course began the winter 2005 semester. The cohort is comprised of sixteen selected students, four female

student and eight male students from various degree programs. There are four focuses of this team taught course encompassing business and social entrepreneurship. First, students are introduced to entrepreneurship and the challenges and opportunities of becoming an entrepreneur. Second, each student is administered a personality profile to enable the student to assess oneself relative to successful entrepreneurs, i.e., does the student have the characteristics of successful entrepreneurs. Third, the core of the course is a three day retreat held at the Kauffman Center for Entrepreneurship in Kansas City, MO during spring break. At the retreat faculty facilitate discussion, from questions developed by students, between students and entrepreneurs. Last, faculty will work with students to develop a program of study directed at improving their strengths and building on their weaknesses. In visiting with students in the cohort we found that the survey used to assess whether, and how, an agri-entrepreneurship curriculum should be developed acted as a strong recruitment tool for the course by stimulating students to consider the path of making a job as opposed to the path of taking a job.

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