A Case of Entrepreneurial Class Projects

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Abstract

Entrepreneurial class projects are long-term projects trapped in short-term classes. In information systems programs, they are found in classes such as introduction to information systems, project management, systems analysis and design, web development, or major-specific capstone classes. Despite the valuable work and effort invested in these projects, there is little evidence of the continuation of these projects after classes ended. This study addresses this issue by finding quantitative evidence of the continuation or not of class entrepreneurial projects and by exploring potential factors affecting such continuation. The study uses the case of an entrepreneurial class project that has been completed within many different sections of an information systems class in a big public university in the United States.

Keywords (Required)

Entrepreneurial, entrepreneurship, class, project, continuation, tech, startup, information, system, skill, resource, resourcefulness, support, investment, capital, potential, confidence, product, prototype, app, experience, ownership, university, graduation, capstone, self-employment, willingness, pursue, status, exploratory, factor, case.

Introduction

Entrepreneurial class projects are long-term projects trapped in short-term classes. They are designed to apply the theory learned in class and very often to foster group collaboration. They are usually completed along a whole semester or an important part of it within classes such as introduction to information systems, project management, systems analysis and design, web development, or major-specific capstone classes. Often times, the final deliverable of these projects includes a model or prototype for a new product, service or business.

After all the valuable work and effort invested in these projects, and despite the interesting potential of some of these innovative ideas, this research has found little evidence of the continuation of these kinds of projects after classes ended. This is counterintuitive considering that one popular goal among business schools is to foster entrepreneurship. Still, right at the moment when the product demands a business to support its commercialization, the class ends and the enterprise never starts.

This study addresses this issue by finding quantitative evidence of the continuation or not of class entrepreneurial projects and by exploring potential factors affecting such continuation. The study uses the case of an entrepreneurial class project that has been completed within many different sections of an information systems class in a big public university in the United States. This class project has been run in a standardized manner over several years.

Justification

Like no other program, information systems programs are at the intersection of business and technology playing a unique role in fostering entrepreneurship in business schools. They provide students with the tools needed not only for the generation of business ideas but also for their materialization. IT related businesses are today easier to create and implement due to the prevalence of knowledge over capital. An app hosted in the cloud and using web services to satisfy its operational and marketing needs can become

a successful business in months. If it doesn't, the entrepreneur stops paying hosting, services, and outsourced labor. For information systems students, a big part of the labor is their own.

With this unquestionable advantage and with so many different class projects inherently created to become businesses, how is it possible that information systems programs are not structured to leverage these entrepreneurial projects? Isn't this the best way they can positively impact the socioeconomic development of their communities? The information systems students in business programs, are equipped with the marketing, managerial, financial, and technological skills needed to create, develop and launch tech-related enterprises that can provide employment for themselves and others in their communities.

These students face few choices after graduation: unemployment, subordinate employment, and self-employment. Students pursuing their own startup projects would be less constrained by the labor market fluctuations. If the core of their business depends on their knowledge, they are also more independent from capital, other workers, and external stakeholders' pressures. In moments when mismatches between academic knowledge and required labor market skills are under scrutiny, academic leaders must support the development of entrepreneurial projects in their programs to prove the relevance of college education.

Case

This study addresses the case of an entrepreneurial class project in the information systems department of a big public university in the United States. The same class project has been completed by more than 2,000 students in the span of 5 years. The project requires students to come up with an idea for a new tech startup. Feasibilities, marketing strategy, functionalities and the general structure of the business are created throughout the class. Testimony from several instructors of the class acknowledge the creativity, uniqueness, and potential of many of these ideas. These conditions present a unique opportunity to assess the two questions of this study: to what extent these potential businesses continued being pursued after class? and what factors affect this continuation?

Methodology

The purpose of the study is inductive in nature. Qualitative and quantitative measures are considered for the assessment. Former students and professors of the introduction to information systems course where the tech startup projects are run were contacted to collect the required information. Professors' feedback was important to shape the questions asked to students. Structured surveys were used to collect students' views regarding the experience with their projects and the status of those projects. A list of the potential a priori factors and corresponding questions follows:

Status of the project:
Options:

1. No progress since the class ended
2. The project is in standby but there are plans to continue with it later
3. The project is still being pursued but the startup is not operational
4. The startup is currently operational
5. The startup was operational for a while but eventually closed
6. The startup was operational and sold to a third party

The potential factors use Likert-type scales from Strongly disagree to Strongly agree as possible answers to the following questions:

Potential: I think our Startup idea had the potential to become a successful business.
Resources awareness: I am aware of the resources available for entrepreneurs at [University].
Technical skills: We, as a team, have the appropriate technical skills to continue with the project.
Working atmosphere: The working atmosphere in the team was pleasant.
Business skills: We, as a team, trust our business skills to continue with the project.
Entrepreneurial spirit: Team members have a strong entrepreneurial spirit.
Time A: Team members have enough time to keep working on the project.
Resourcefulness: We, as a team, are confident in our abilities to get the resources needed for the project.
Institutional support: [University] and [School] will support the continuation of our project.

Product knowledge: We, as a team, have good knowledge of the product/service and market of the Tech Startup.
Ownership: Ownership of the business idea was clear for all members of the team.
Class experience: The class experience with the project was very positive.
Instructor support: We received appropriate feedback and support from the class instructor.
Confidence: We, as a team, are confident in our ability to succeed.
Time B: Time availability is the main limitation to continue with the project (Testing question in negative form).
External support: We, as a team, know that we can get external support for entrepreneurs.

The collection of information took place between January and February of 2019. Professors in the department of information systems with whom students who completed the project were taking classes were requested to ask those students for their participation. It was up to those instructors to offer incentives for students' participation. Almost none of them offered it. 68 acceptable responses were collected. Those who failed to appropriately respond the attention checking questions were discarded. A pilot study of 12 students was run to verify the quality of the responses and the fit of the survey instrument.

In the proposed model in Figure 1, all relationships are thought to have a positive effect from predictor to outcome. In short, almost all factors are thought to affect how students view the potential of their idea and the likelihood of their success pursuing it. The only exception to this is the unlikelihood that the class experience and the working atmosphere within their teams will affect the potential of the idea. It is, though, likely that once confidence is built, the idea will look more feasible which is what can ultimately motivate the team to continue with the project. On the contrary, lack of clarity about the ownership of the idea can discourage members to pursue it.

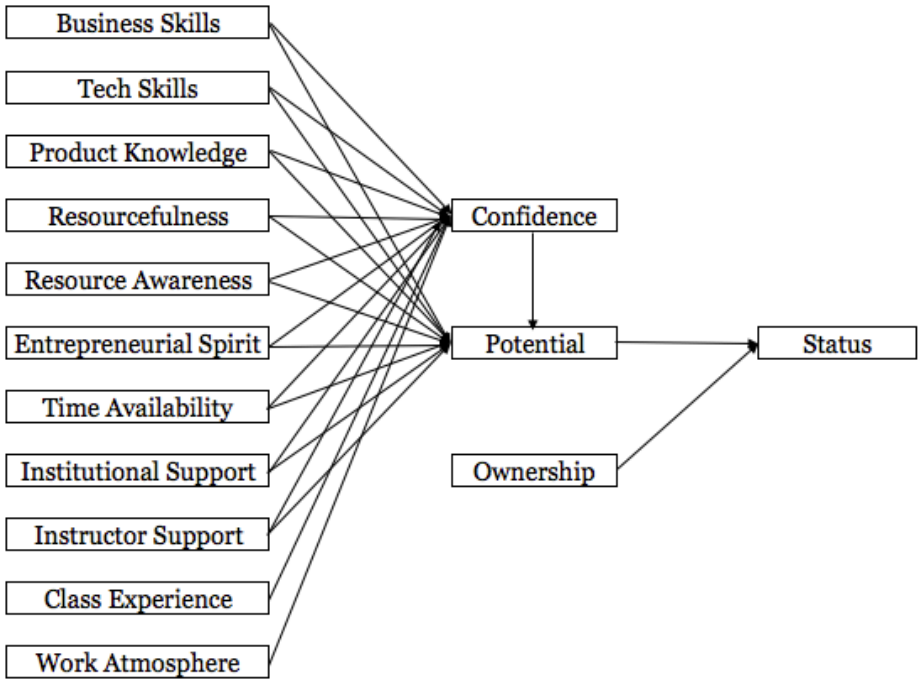

Figure 1. Conceptual Model - Projects Continuity

Results

The first important finding of this study is the confirmation that hardly any project continued after the class ended. Only one project is being pursued and another is planned to be pursued. All others were abandoned. Although, this satisfies the first purpose of the study with overwhelming evidence for the lack of continuation of the entrepreneurial projects, it also makes impractical statistical analysis of the impact of confidence and potential on status because there is practically no variation in status.

A simple regression of Potential on Confidence shows significant at $p < .0005$. However, the study's own model acknowledges that other variables can have different effects on this relationship. A regression using all other variables leaves only Resource Awareness at a significant level of 0.054, making all other variables, including confidence, not significant when controlled by all other variables. The adjusted R square of this model is 0.347. The sample size might not provide the power needed for this or other analysis, and given that yet other relationships are possible, the study does not conclude on the effects but will rather move on to an assessment of the qualitative answers in a further stage of this study, not included here. This qualitative assessment will include follow up interviews with respondents who agreed on providing more in-depth views of their answers, 58.8% of respondents.

According to the proposed model, Confidence should be directly affected by independent factors. A model including those factors shows that Tech Skills, Business Skill, and Time Availability are significant at 0.001, 0.003, and 0.014 levels. No other variable has a significant effect. The adjusted R square for this model is 0.742. This is an interesting finding because it coincides with students' testimonies collected through the survey. This qualitative analysis will be part of the follow up study, not completed yet.

These analyses are eminently exploratory. Therefore, the final qualitative assessment of the data consists of an exploratory factor analysis (EFA) that can provide better insights on the latent factors involved in the model proposed. The EFA was performed using Maximum likelihood and an orthogonal Varimax rotation. All variables were included. A look at the correlations and anti-image matrices for these variables shows that most correlations are above 0.3 and few partial correlations are below 0.7. According to Hair et al. (2010), this demonstrates the factorability of the data. Moreover, The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO MSA), an indicator of the proportion of correlations over the sum of correlations and partial correlations, confirms that the 0.808, in our case, is meritorious (Kaiser 1974).

The EFA converged after only seven rotations and found that five factors explain 63.55% of the variance of our model. It provided some support for some of the proposed relationships. As previously found, Tech and Business Skills seem to be related to Confidence. Their loadings are high in the same factor in the EFA. It also makes sense, in the context of these projects, that Institutional Support and Resource Awareness load in the same factor. The same is true for Class Experience and Work Atmosphere. The variables in each factor are shown in bolded fonts and under the same shaded stripes of the table below.

	Factor				
	1	**2**	**3**	**4**	**5**
Tech Skills	**0.85**	0.015	0.246	0.142	-0.052
Confidence	**0.764**	0.189	0.255	0.188	0.399
Business skills	**0.641**	0.192	0.111	0.406	0.258
Resourcefulness	**0.614**	0.429	-0.037	0.188	0.176
Institutional support	0.107	**0.976**	0.156	-0.101	-0.037
Product knowledge	0.403	**0.425**	0.279	0.159	0.261
Resource Awareness	0.108	**0.42**	-0.259	0.077	0.136
Potential	0.351	0.175	**0.569**	0.215	0.161
Ownership	0.486	0.21	**0.514**	0.003	0.31
Instructor support	0.113	-0.114	**0.505**	0.249	0.02
Class experience	0.051	-0.028	0.527	**0.764**	0.104
Work atmosphere	0.345	0.048	0.105	**0.676**	0.064
Entrepreneurial spirit	0.075	0.074	0.05	0.081	**0.759**
Time A	0.452	0.05	0.136	0.05	**0.523**

Extraction Method: Maximum Likelihood.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 7 iterations.

Table 1. Rotated Factor Matrix

Discussion

The purpose of the study is inductive in nature and limited to the observations within the case. Although not conclusive, these results are encouraging for a context-specific model built from practical experience and not from previous tested models.

This study has found that entrepreneurial projects are, indeed, abandoned after classes ended. It also shows evidence that technical and business skills, as well as time availability, attributes on which academic programs have a direct influence, can strengthen students' confidence in pursuing entrepreneurial projects. Other relationships can be better established after more in-depth interviews with students. However, those interviews will be more productive after understanding the potential closeness among some of the studied factors.

Giving the lack of variability of the status variable, it is also clear now that an evaluation of willingness can help assess the desire of students to continue their projects even though nothing has in fact been done to move them further. In addition, the fact that they might have never even considered continuing with their projects, tells us that something as simple as not proposing that possibility in class was enough for their intentions to keep working on their projects to disappear.

A second stage of this study will help refining the conceptual model and developing appropriate items to assess these factors. Ultimately, the purpose is to develop appropriate instruments to assess the likelihood that promising class entrepreneurial projects are pursued after class completion. These results will inform the information systems department, the school, and the university about the best actions to take in order to harness the potential of these projects.

Conclusion

Unfortunately, the tech startup projects finish with the end of the classes. Despite the potential of some of these ideas to become real businesses and the important progress achieved in class, there is no evidence that students pursue further development of their projects. Given the current objectives of academic programs in business schools and information systems departments, and the increasing availability of resources for student entrepreneurs, it is obvious that institutions need to understand the mechanisms through which the potential of the tech startup projects can be maximized. Although this case is particular to an institution, the final goal is to provide all business schools offering information technology programs with awareness of the tools and resources needed for the creation of businesses, as a natural outcome of their programs and a compelling evidence of their success.

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