STUDENTS' PERCEPTION OF BUSINESS IDEA GENERATION: A CASE OF ENTREPRENEURIAL HACKATHON

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Abstract

Business idea generation is a challenging process that involves creativity and innovation and constant interaction among the participants. This study deals with business idea generation, where international students from a Finnish higher educational institution created novel ideas in a diverse learning environment. We present a case of an entrepreneurial hackathon, where the students participated in the process of business idea generation and created numerous innovative, novel and sustainable business ideas. The ideas were presented to an audience and the judges evaluated the pitches. This study focuses on students' perception of the entrepreneurial skills and traits as well as the business idea generation. First, students' individual perception of the entrepreneurial skills and traits is ascertained. Further, students' evaluation of their own and peers' ideas is compared with that of hackathon judges. This study follows a quantitative research methodology. For the purpose of data collection, two surveys were developed. Empirical data was collected at the beginning of the hackathon as well as during the final presentation session, at the end of the event. Our analysis shows that students' active participation in the hackathon enhanced their understanding of the business idea generation. The results indicate that the students' entrepreneurial thinking was enriched by providing a creative learning environment such as an entrepreneurial hackathon. This study contributes in providing insights into the practice of hackathon as an effective method for entrepreneurial education.

Keywords: Hackathon, entrepreneurial skills, innovation, business idea generation, higher education.

1 INTRODUCTION

Entrepreneurship has emerged as a boundless force that shapes the changes that take place in the economic environment [1]. It is an engine of economic progress, job creation and social adjustment [2]. Establishment of new businesses is seen as a crucial factor in achieving economic goals at the firm, the regional, and the national level [3]. In the pursuit of moving towards an entrepreneurial society, it is important to develop entrepreneurship capital, which reflects different legal, institutional and social factors, and involves social acceptance of entrepreneurial behavior [4]. With the emergence of entrepreneurship, the field of entrepreneurship education continues to progress as well. Research has shown that the higher education institutions (HEIs) play an important role in increasing the entrepreneurial competencies of university graduates [3]. Educational systems play a major role in developing and propagating entrepreneurial initiatives among university graduates [5]. The growth in the entrepreneurship curricula has been remarkable and HEIs that offer entrepreneurship courses have grown from a handful in the 1970s to over 1,600 in 2005 [6]. Many studies have confirmed that university graduates have a great potential to pursue entrepreneurship although there may be a lack of motivation to start new ventures [5].

As Gurol and Atsan [2] state, the successful entrepreneur has a set of personal skills and traits that need to be developed in students if their entrepreneurial capabilities are to be enhanced in order to meet the challenges of the entrepreneurial climate of the twenty-first century. Universities play a huge role in inculcating entrepreneurial skills and traits in students, which are essential to pursue entrepreneurial activities. Many previous studies have suggested certain entrepreneurial skills and traits as indispensable requirements for starting entrepreneurship. An entrepreneur requires a broad array of entrepreneurial skills. Smith et al. [7] investigated seventeen entrepreneurial skills that were originally developed by Lichtenstein and Lyons in 1996. Their research shows that nine out of those seventeen skills are the most useful. These skills are operational skills, managerial skills, marketing/sales skills, financial skills, creativity, skills to obtain supplies/raw material, accountability, business planning and environmental scanning. According to Bejinaru [8], the entrepreneurial skills that are anticipated to define the entrepreneurial behavior by 2030 are complex-problem solving, critical thinking, originality thinking, active learning, and judgement and decision-making. Skills like business planning, idea creation, negotiation skills and interpersonal skills are the focus of many entrepreneurship study programs [9]. Chang and Rieple [10] suggest that the development of entrepreneurial skills can be enhanced by providing a learning environment, where the students have an opportunity to interact with the business people while collaborating on real projects.

Baum and Locke [11] posit that the entrepreneurial traits like passion, tenacity and new resource skill and situationally specific motivation like communicated vision, self-efficacy, and goals impact venture growth. A study suggests that entrepreneurial traits are interrelated and the best-developed traits include competing against self-imposed standards, self-confidence and dealing with failure [12]. Liang and Dunn [13] studied the relationship between entrepreneurial traits and entrepreneurial learning. They studied the measure of realism and optimism in entrepreneurs and found out that they are more realistic than optimistic. Numerous studies show that traits like risk-taking propensity, innovativeness, tolerance for ambiguity and desire for security foster entrepreneurship. However, other scholars believe that contextual factors like education and structural support factors also have an impact on entrepreneurial intention [14]

In addition to entrepreneurial skills and traits, there is also a need to study more profoundly students' perceptions of business idea generation and ingredients of a sustainable business idea. According to Hougaard [15], successful business ideas are not so much about talent as about a systematic approach. Developing a robust business idea requires a wide range of competencies that are only rarely present in one single individual. He considers analysis, creativity and communication to be the basic competencies of an entrepreneur who develops sustainable business ideas. Identifying business ideas with real commercial potential is a daunting task. However, three tools that can assist in investing wisely are utility, price and business model [16].

The role of HEIs in providing creative learning environments that support students' entrepreneurial capabilities also needs to be investigated. Previous studies have confirmed that HEIs have a positive role in developing entrepreneurial competencies and exploring the factors influencing entrepreneurial behavior of students [17], [18]. Numerous HEIs offer various programmes devoted to entrepreneurship with the hope to produce future entrepreneurs and increase entrepreneurial activity in the society. In

order to convince the students to take up entrepreneurial careers and enhance their entrepreneurial skills, HEIs need to be more innovative while offering entrepreneurial education to the students.

Nowadays, there is a new trend among European HEIs to use varied learning methods for developing entrepreneurial competencies among students. One such method of teaching action-oriented entrepreneurship is an entrepreneurial hackathon. Hackathon, which was earlier defined as a social coding event, is not any longer limited to software projects and it can be any event of any duration where people come together to solve problems [19]. Such a method of entrepreneurship education focuses less on the traditional classroom setting and more on action-oriented learning. Research validates that the HEIs should provide support and issue guidance to the teachers on the flexible use of physical environments, which encourages students' creativity [20]. HEIs need to provide students an environment that sparks creativity. A regular classroom setting is not always very inspiring to encourage entrepreneurial thinking and spark innovation.

Based on the above theoretical standpoints, explaining entrepreneurial skills, traits and business ideas, it is our contention that there is a clear need to understand students' perceptions of business idea generation and study the role of varied learning methodologies, such as, an entrepreneurial hackathon in this context for fostering entrepreneurial competencies among students. This paper investigates students' perception of business idea generation during an entrepreneurial hackathon. Entrepreneurial skills and traits of students are evaluated using a survey before the hackathon starts. During the hackathon, they are introduced to different business tools and are constantly trained by a team of coaches. The students participated in the process of business idea generation and created numerous innovative, novel and sustainable business ideas. At the end of the hackathon, the business ideas were presented to an audience. The students and the judges evaluated the pitches of twenty teams based on predefined criteria. The differences between judges' and students' evaluation of business ideas are then compared using a specialized software package SPSS.

The remaining sections of the study will first discuss the description of the hackathon event and the collection of the empirical data in the methodology sub-section, followed by the empirical results and conclusion.

2 METHODOLOGY

This study deals with the students' perception of the entrepreneurial skills and traits as well as the business idea generation during an innovation hackathon. There were 81 international students, who participated in the entrepreneurial hackathon. The sample population for this study is a group of 72 male and female students, out of which sixty nine belonged to the undergraduate degree programs and only three were master's level students. The inter-disciplinary distribution of the sample group based on major field of study is business (36), information technology (27), hospitality and wellness (10) and others (1). There were eight coaches, who were responsible for conducting pre-designed sessions and activities during the event. Besides, team-based coaching and guidance were also offered to each team. The main role of the coaches was to support student learning during the event.

2.1 Entrepreneurial Hackathon

According to Lara & Lockwood [21], common characteristics of a hackathon include *'(i) participants are organized into small groups that work intensely (sometimes around the clock), (ii) a short time frame in which the project is taken from concept to prototype, and (iii) a centralized location where teams meet and work'* at the same time. The entrepreneurial hackathon in question is a working example of these characteristics. First, the students were divided into small teams of 3-5 students. These teams participated in the supervised activities with coaches and worked on their own free time on developing their business ideas throughout the event. Secondly, the hackathon was organized for two days, within which, each team generated a novel business idea and presented the same at the end of the event to the audience including a jury of judges. This process encapsulated the initial brainstorming about the business idea, use of different tools to fine-tune the elements and several pitching rounds. Lastly, the hackathon was organized as a 22-hour cruise in the Baltic Sea, which offered a creative learning space for the students. The hackathon provided an opportunity for the participants to work and meet with other teams throughout the entire event.

The entrepreneurial hackathon was arranged for two days in October 2019. The whole event was structured in a manner that students get sufficient time to team up with the like-minded students, who could work in teams to generate their business idea. Interdisciplinary teams were coached throughout the hackathon. The activities were scheduled to have a logical flow of the entrepreneurial process towards a viable business idea formation. The focus of the activities was to introduce business management tools that the teams could use in order to generate innovative and novel business ideas and to rehearse idea presentation to peer student audience. The coaches explained the tools and their potential use in the idea generation. Students were encouraged to engage in collaborative work and peer discussions to gain clarity of the ideas and to retain motivation.

2.2 Quantitative study

This study follows a quantitative research methodology, where the empirical data was collected through questionnaires. For the purpose of data collection, two survey questionnaires were developed, keeping in view the aim of the study. Participants were informed that their participation in the survey was voluntarily and the collected data will be managed confidentially and used only for educational research purposes. All students participated in the said surveys.

At the outset of the event, participants were asked to provide participant-specific anonymous demographic data as well as to answer quantitative questions related to the entrepreneurial skills and traits. In the same questionnaire, the students were asked about their perception of a good business idea. The second phase of empirical data collection was at the closing session of the hackathon, where students presented their finalized business ideas to the peer audience and to four hackathon judges. In the second questionnaire, students were asked about the novelty of the business idea, the quality of idea pitch and the overall presentation.

The collected empirical data was carefully reviewed by authors individually. First, each questionnaire form was given a specific identity code for internal referencing purpose. After a consensus among the authors, 9 incomplete forms were excluded and 72 forms were selected to proceed to next phase of data entry and further analysis. The data was carefully entered by the authors into IBM SPSS statistical tool. In line with the aim of the study and based on the initial structure of the questionnaire, the variables were given the values while entering the data, so that the analysis could be carried out for research inquiry using the same statistical tool. The authors carefully discussed each variable in the data. They collectively carried out the data analysis, engaged in progressive peer-to-peer discussion about the possible significant figures and reached a consensus about how each could be represented as the key findings of the study to achieve the aim of this study.

3 RESULTS

Anchoring our study to the theoretical base presented in the above sub-section, we have divided the collection and analysis of the empirical data into two parts. Both parts are developed in line with the aim of the study. The first part (survey questionnaire 1) deals with the entrepreneurial skills and traits. While the second part (survey questionnaire 2) deals with the business idea generation. In the following sub-sections, both parts are analyzed using the empirical data collected during the hackathon.

In order to analyze the individual entrepreneurial skills and traits, the participants were classified into three distinct groups. The first group consists of the students with neither prior entrepreneurial education nor entrepreneurial experience. The second group consists of students having entrepreneurial education but no entrepreneurial experience. The third group consists of students with prior entrepreneurial education as well as entrepreneurial experience. All three groups assessed the importance of entrepreneurial skills and traits at an individual level with the scale of 1 – 3 (1 = least important and 3 = most important). The collected data was entered into the SPSS package. Table 1 illustrates the SPSS output with mean values and non-parametric test about the selected skills and traits as perceived by the participating students.

Table 1. The mean values of students' assessment of the importance of entrepreneurial skills and traits

Individual entrepreneurial skills and traits	**Group 1:** No entrepreneurial education or experience		**Group 2:** Entrepreneurial education but no experience		**Group 3:** Entrepreneurial education and experience	
	Mean	Median	Mean	Median	Mean	Median
Leadership	1.50	1.50	1.70	2.00	2.17	2.00
Business Planning	1.00	1.00	1.80	2.00	2.20	2.00
Negotiation	2.00	2.00	2.08	2.00	2.14	2.00
Problem solving	2.33	2.00	2.11	2.00	2.33	3.00
Presentation/marketing	1.00	1.00	2.23	2.00	2.70	3.00
Time management	3.00	3.00	2.26	2.00	1.88	1.50
Idea generation	2.50	2.50	2.24	2.00	2.36	2.00

The seven variables pertaining to the individual entrepreneurial skills and traits are presented in the above table in the order of the value of the mean. All variables were evaluated by each group. The values in the table show that each group has a different perception of the entrepreneurial skills and traits based on their current state of entrepreneurial education and experience. The differences in students' assessment could be highlighted for example "business planning" received minimum value by group 1 compared to a higher value by group 3. Similarly, "time management" received the highest value by group 1 against a lower value by group 3. On the contrary, "problem solving" skills received equal values from groups 1 and 3. Similarly, "idea generation" and "negotiation" skills received approximately similar values from all three groups. The "presentation and marketing" skills are not considered important by group 1, whereas both other groups consider it important. Finally, groups 1 and 2 have almost equal importance of "leadership" as compared to group 3, which considers it more important. However, the Kruskal-Wallis test was conducted and statistically significant difference was found in only one variable, "presentation/marketing" (H=11.490 p=0.003).

The results of the first part of our analysis show that "idea generation" is the most important skill (highest mean value = 2.29) as compared to "leadership" (lowest mean value = 1.80) as perceived by the participating students from all three groups.

"Fig. 1" depicts the graphical representation of the means of the selected individual entrepreneurial skills and traits as perceived by the three groups of participating students.

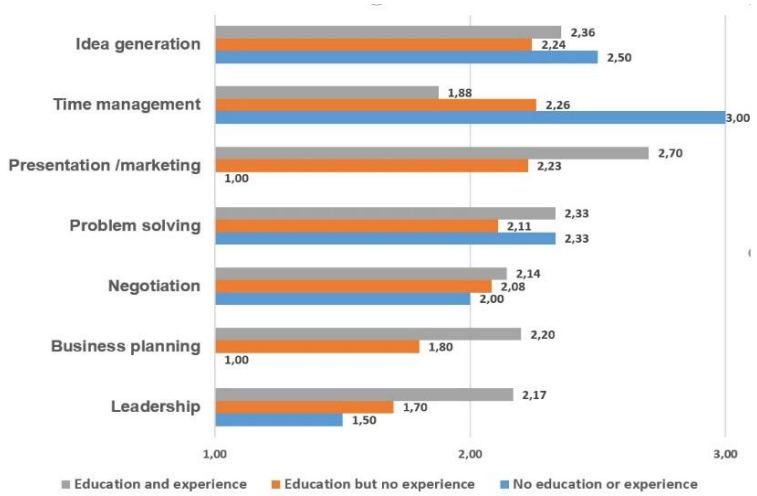

Figure 1. Graphical representation of the mean by three groups of students

For the second part of the analysis, we have applied non-parametric Mann-Whitney U–test to compare differences between judges' and students' evaluation of the business ideas. This test was used due to the smaller number of judges. There were twenty teams (and business ideas), which were assessed by 4 judges and 62 students. Both judges and students had to evaluate students' business ideas from all twenty teams based on four different criteria, which were: 1) innovativeness of business idea 2) clarity of revenue stream 3) dream team (effectiveness of the team) and 4) overall presentation and pitch. The assessment was done on the scale of 1 – 5 (1 = minimum and 5 = maximum).

Out of the 80 assessed items, there were statistically significant differences in only two items that can be seen in Table 2. The Mann-Whitney test indicated that in Team 1, students' evaluation of the criterion, "dream team" was significantly greater (Mdn=3, M=3.27) than the judges' evaluation (Mdn=2, M= 1.67), U=13.00, p=0.007. Similarly, in Team 14, students' evaluation of the criterion, "innovativeness" was greater (Mdn=3, M=2.94) than the judges' evaluation (Mdn=2, M=2), U = 42.00, p = 0.024.

Table 2. Mann-Whitney U–test

	Student		Judge		Mann-Whitney U	
	Mean	Median	Mean	Median	U	p
Dream team Team (T1)	3.27	3.00	1.67	2.00	13.00	0.007
Innovativeness Team (T14)	2.94	3.00	2.00	2.00	42.00	0.024

Overall, there were no statistically significant differences in 78 out of 80 items. The results indicated that in most cases judges' and students' evaluations of the business ideas were at par. An example is presented in 'Fig. 2' that shows the assessment of "clarity of revenue stream" by students and judges for all the twenty teams. The results revealed that in most cases evaluations by judges and students are quite similar, which indicates that students were able to assess the criteria accurately.

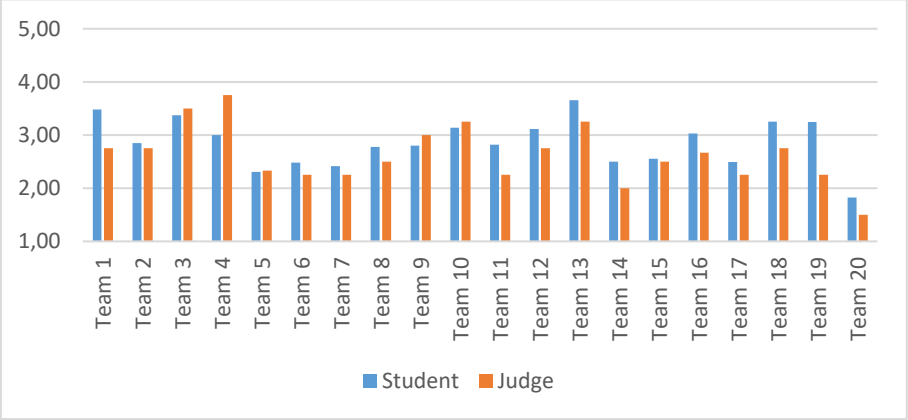

Figure 2. Assessment of variable, "Revenue Stream" by students and judges.

4 CONCLUSION

This study presents a case of an entrepreneurial hackathon, where international students from a Finnish HEI participated in the process of business idea generation and created numerous innovative, novel and sustainable business ideas. This study focuses on students' perception of the entrepreneurial skills and traits as well as the business idea generation. Keeping in view the aim of the study, data was gathered using two survey questionnaires during the hackathon. This study follows a quantitative research methodology and the data analysis was carried out using the IBM SPSS package.

The findings of the first survey questionnaire imply that students with entrepreneurial education and experience see marketing and presentation as the most important trait, whereas the students with no entrepreneurial experience view time management as the most important trait for entrepreneurs. The results reveal that all groups viewed the idea generation aspect as a very important skill and leadership on average the least important trait for entrepreneurs.

On the other hand, the findings of the second survey questionnaire show that there were statistically significant differences in only 2 out of 80 assessed items. In Team 1, students' evaluation of the criterion, "dream team" was significantly greater than the judges' evaluation. Similarly, in Team 14, students' evaluation of the criterion, "innovativeness" was greater than the judges' evaluation. In other 78 items, there were no significant differences between the judges and the students. The results showed that in most cases judges' and students' evaluations of the business ideas were at par.

Our analysis shows that students' active participation in the hackathon enhanced their understanding of the business idea generation. The results indicate that the students' entrepreneurial thinking was enriched by providing creative learning environment such as an entrepreneurial hackathon. This study contributes in providing insights into the practice of hackathon as an effective method for entrepreneurial education.

Since the number of students in the hackathon was limited, care should be taken in generalizing the findings of this study. Innovation hackathon seems to be an effective method of entrepreneurial education, a similar study could be conducted using a larger student sample.

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