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Research Article

The Business Model Approach in Entrepreneurship Education: Impact on Undergraduates' Enterprise Potential

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Abstract

Parallel to the consolidation of Business Model approach in different fields of Management, a delay is detected in its application to entrepreneurship education. These applications should conceivably be paralleled by a gradual adaptation of the methodological approaches, with educational establishments incorporating the business model focus and foundations and evaluating the results of its use. The current work aims to constitute an advance in this direction. The paper reports on the results—in terms of the improvement in enterprise potential—of an experiment testing two different pedagogical methodologies in entrepreneurship education on two groups of students studying for degrees in Building Engineering at a Spanish university: a classic methodology based on the development of a business plan, and a new one based on the business model. The results show that students assigned to the methodology based on the business model had a significantly higher level of enterprise potential

Keywords: *entrepreneurship education, pedagogical methodology, business model, business plan, enterprise potential.*

1. Introduction

If the entrepreneur is made, not born (Gartner, 1988), entrepreneurship can be understood as a process of learning, and a theory of entrepreneurship requires a theory of learning (Minniti & Bygrave, 2001). Therefore it would be possible to develop the attitudes more linked to entrepreneurship through education (Kleiman, 2008; Jones & Iredale, 2006). In this context, a considerable debate exists about the most appropriate pedagogical models for teaching entrepreneurship (Higgins et al, 2013; Neck & Greene, 2011; Honig, 2004; Dale, 2001), and according to Kuratko (2005) the question is not whether entrepreneurship can be taught, but what should be taught and how it should be taught (Honig, 2004; Fiet, 2000).

In this context, business plan writing is the most widely used pedagogical approach in what Neck and Greene (2011) call the *process world* in teaching entrepreneurship, in which entrepreneurship is presented and taught in a linear fashion (Higgins et al, 2013) that involves identifying an opportunity, developing the concept, understanding resource requirements, acquiring resources, implementation, and exit. According to Dale (2011), the worship of the rational business plan in curricula is one of the "elephants in the room" that needs to be tackled if entrepreneurship education is to evolve to a stage in which it is better adapted to the modern business world.

In a process that started in the mid-1990s, a new approach for analyzing entrepreneurial activity has evolved: the business model. This new focus could replace the old way of doing things and become the standard for the next generation of entrepreneurs (Magretta, 2002). According to Zott and Amit's (2008; 3) definition, "the business model is a structural template of how a focal firm transacts with customers, partners, and vendors; that is, how it chooses to connect with factor and product markets".

Compared to the traditional approach of the business plan, the business model method involves carrying out immediate tests and trials in the market and adjusting the value proposition according to the feedback from the market. This new approach can be said to be rooted in the entrepreneurial bricolage approach (Baker & Nelson, 2005), to the extent that it tries to tackle challenging environments by creating a context that enables behaviors and capacities such as creativity, improvisation, and various social and network skills. Likewise, the business model method can also be understood from the so-called "effectuation process" in venture creation, characterized by flexibility and experimentation (Sarasvathy, 2001, 2008; Chandler et al., 2011). In contrast, the more classical business plan approach, understood as a rational process that tries to predict the future results of a venture creation by gathering and processing information at the present moment in time, could be said to be rooted in the so-called causation process, which consists of taking a set of means as given and focusing on selecting between possible effects that can be created with that set of means (Sarasvathy, 2001). While the business plan is seen as a definitive set of facts and as the culmination of everything that the entrepreneur knows and believes, the business model is designed to be adapted to real life in an iterative process.

The present work makes two main pedagogical contributions. The first is its operationalization of an emerging paradigm in entrepreneurship education—the Business Model—differentiating this approach from a more classical paradigm, the business plan. The second contribution is its comparison of both approaches in terms of their impacts on the students' enterprise potential, measuring the effect of participating in an entrepreneurship education program on young undergraduates' enterprise potential, comparing the use of two alternative methodologies: the business model approach and a more classic approach based on the development of a business plan.

2. Enterprise Potential

As a necessary corollary to the growing maturity of entrepreneurship education (Katz, 2008), authors have tried to determine its impact on students' enterprise potential. It is possible to recognize two main approaches in this respect, both starting from the conviction that personality traits are static, and theories based solely on traits underestimate the influence of specific situational factors on actions (Ajzen & Fishbein, 1977). One group of studies tries to measure the effect of entrepreneurship education on students' future intention to start a business. These studies consider entrepreneurial intentions, but also desirability and feasibility of starting a business and the student's degree of contact with entrepreneurial experiences in their environment (Hattab, 2014; Chimucheka, 2014; Souitaris et al., 2007; Peterman & Kennedy, 2003). A second group of studies takes a different approach and tries to measure the impact of the actions in entrepreneurship education on several attitudes associated with entrepreneurs trying to determine the extent to which these attitudes change as a result of the educational experience (Athayde, 2009).

2.1 Entrepreneurial intentions

Krueger and Brazeal (1994) distinguish between the latent entrepreneurial "potential" of individuals from their "intention" to become entrepreneurial, which is a reaction to a displacement event (something that occurs to cause a change in behavior). According to Shapero (1975) and Shapero and Sokol (1982), a person's intent to start a business is influenced by perceived desirability, perceived feasibility, and propensity to act. These three variables are presented as direct antecedents to entrepreneurial intentions. Shapero (1975) suggests that a person's attitude toward entrepreneurship could be indirectly influenced by his or her prior exposure to entrepreneurship through previous work experience and the existence of role models.

Krueger (1993) tests this model, incorporating breadth and positiveness of prior experience to capture prior exposure to entrepreneurship. Likewise, Peterman and Kennedy (2003) and Hattab (2014) measure the changes in desirability and feasibility of starting a business in a way that is appropriate for young people still at school, who are unlikely to have immediate "intentions" to become entrepreneurs. Using a pre-test and post-test control group design, Peterman and Kennedy (2003) find that the entrepreneurial experience at school has a positive impact on pupils, who record significant improvements in their perceived desirability and feasibility of starting a business after taking part. On the contrary, Hattab (2014) did not find relation with perceived feasibility or self-efficacy.

2.2 Attitudes toward enterprise

In turn, Athayde (2009) finds that definitions of the successful entrepreneur often center on a collection of behaviors underpinned by certain skills and attributes. She designs a latent enterprise potential construct with five dimensions that are consistently associated with theories of entrepreneurship and that have been measured in empirical studies to assess entrepreneurship. After the reliability testing process, Athayde (2009) develops a refined measure of Attitudes Toward Enterprise for Young People (ATE Test), which consists of five factors:

a) Creativity. A key factor for promoting innovation and central to the concept of entrepreneurship, especially relevant in entrepreneurship education (Timmons & Spinelli, 2004) and particularly in the current competitive context (World Economic Forum, 2009)
b) Leadership. A key factor in starting a new business (Vecchio, 2003), comprises a large number of attitudes that are critical to the success of the venture (Timmons & Spinelli, 2004)
c) Achievement motivation. A large number of studies point to this attitude as being strongly linked to entrepreneurs (Caird, 1991; Durand & Shea, 1974; Morris & Fargher, 1974; Robinson et al., 1991)
d) Personal control. Understood as "the extent to which a person believes they have control over their life" (Athayde, 2009, p. 485), is a central dimension in theories of entrepreneurship (Robinson et al., 1991)
e) Intuition. It has been less commonly associated with entrepreneurship than the other factors and can be associated with the ability to cope with uncertainty and unstable circumstances, which are often characteristic of enterprise creation (Athayde, 2009).

3. Empirical Analysis

3.1 Research questions

From the above discussion it is reasonable to think that an entrepreneurship education program based on the business model methodology could be more effective than one based on the business plan methodology in terms of encouraging creativity, innovation and the ability to "think out of the box" to solve problems (Leschke, 2013; World Economic Forum, 2009), expanding the range of activities and potential solutions pursued by nascent entrepreneurs (Honig, 2004), and promoting the search for and detection of opportunities (George & Bock, 2011). It could also provide a closer fit to the conditions of the new competitive environment (Leschke, 2013; Perkman & Spicer, 2010; Magretta, 2002), which call for "bricolage capabilities": creativity and combinatorial skills, tolerance for ambiguity and messiness and setbacks, and the ability to improvise and take advantage of emerging resources and opportunities (Baker & Nelson, 2005). Likewise, the business model methodology is expected to provide a better fit with the "principles that form the core of a rudimentary theory of effectuation" (Sarasvathy 2001: p. 252): focusing on short-term experiments, focusing on projects where the loss in a worst-case scenario is affordable, emphasizing pre-commitments and strategic alliances to control an unpredictable future, and exploiting environmental contingencies by remaining flexible.

In this respect, Krueger and Brazeal (1994) distinguish between entrepreneurial "potential" and the "intention" to become entrepreneurial. Starting from that point, Peterman and Kennedy (2003) use Shapero's (1984) displacement model and find that perceived desirability and perceived feasibility are positively affected by participation in an entrepreneurship education program. Souitaris et al. (2007) come to the same conclusion, adding that the inspirational part of these programs is particularly effective at impacting attitudes and intention and increases the chances that students will actually attempt an entrepreneurial career at some point in their lives.

Thus the first hypotheses of this work are as follows:

Hypothesis 1: *Students who have completed an entrepreneurship education program based on the Business Model methodology will have a higher level in their intention to start a business than students who have completed a program based on the Business Plan methodology*.

Hypothesis 2: *Students who have completed an entrepreneurship education program based on the Business Model methodology will have a higher level in their desirability of starting a business than students who have completed a program based on the Business Plan methodology*.

Hypothesis 3: *Students who have completed an entrepreneurship education program based on the Business Model methodology will have a higher level in their feasibility of starting a business than students who have completed a program based on the Business Plan methodology*.

On the other hand, Athayde (2009) starts from a number of definitions of the successful entrepreneur (Gibb, 1987, 1993, 2000, 2002) to define the ATE (Attitudes Toward Enterprise for Young People) scale, which comprises five

dimensions: achievement, personal control, creativity, leadership, and intuition. She finds that participants in an entrepreneurship education program score higher than nonparticipants in the ATE test. Conceivably then:

Hypothesis 4: *Students who have completed an entrepreneurship education program based on the Business Model methodology will have a higher level in entrepreneurial attitudes (Leadership, Creativity, Achievement, Personal Control and Intuition) than students who have completed a program based on the Business Plan methodology.*

3.2 Method

To test the hypotheses in this work, the authors carried out a study to determine the impact of two different entrepreneurship education methodologies on students' enterprise potential.

The research involved two groups of undergraduates studying for the degree in Building Engineering at the University of La Laguna (Spain). The two different methodologies were: first, a classic methodology based on the development of a business plan; and second, one based on the development of a business model. For the first group, a business planning process was designed, starting from the evaluation of entrepreneurial opportunities, feasibility analyses, market evaluation, and financial forecasting, all of which make up the cornerstone of most entrepreneurship curricula today (Neck and Greene, 2011). For the other group, the business model methodology was based on Osterwalder, Pigneur and Tucci's (2005) approach, and applied through Osterwalder and Pigneur's (2010) manual, in which the business model consists of nine building blocks: value proposition, target customer, distribution channel, relationship, value configuration, core competency, partner network, cost structure, and revenue model.

The students were studying the obligatory course "Business Administration" in the first year of their 4-year degrees. This course is introductory and its aim is to familiarize students with the world of the business and the main principles. Despite these mainly theoretical objectives in the Academic Guide for the course, an overall objective to "improve the innovation, entrepreneurship and creative skills" is included.

The course contents were identical for both groups, the only difference being in the methodology underlying the practical work. One group used the business model methodology to develop their proposed business, the other, the business plan methodology. The two groups of students did not have, a priori, any objective differences, since the students were allocated to one or other methodology at the beginning of the course at random. Consequently, the students did not differ in their prior knowledge, learning abilities and attitudes toward entrepreneurship. They were enrolled in the first academic year at university, and had studied the same academic program and had sat the same exams in secondary school.

Two instructors were responsible for teaching both groups, dividing the teaching between them depending on their area of specialization but both taking an equal part with both groups. This was to ensure that the personal character of the teacher did not influence the study.Moreover, training tools and schedules were similar for both groups.

All the above guaranteed that the differences in enterprise potential at the end of the course between both groups were the result of the different methodologies used: business model or business plan.

3.3 Data

The authors used a web-based, self-administered, Spanish-language questionnaire to collect the data, which the respondent had to complete personally. The questionnaire was put on the teaching platform being used for the course, and the students were sent requests to participate including a link to the questionnaire and instructions for participating.

The data were collected after the students had completed the course, but before they were informed of their results, in May 2011. The authors built a database on the same server that hosted the questionnaire in order to receive and store the responses online. They received a total of 112 responses from the students, of which 41 had followed the business model methodology and 71 the business plan methodology.

3.4 Measurement scales

To obtain the data needed to test the proposed hypotheses, the authors used a structured questionnaire based on contributions and scales from the literature reviewed. As discussed above, to measure enterprise potential the authors used two types of scale: one to measure the intention to start a business and a second measuring the latent personal characteristics characterizing entrepreneurs. The students had to score each item on a continuous, 7-point Likert scale, according to their level in each one (from 1=lowest, to 7=highest).

Entrepreneurial intentions, Desirability and Feasibility. On this scale, the students were asked about their level of

entrepreneurial intentions (INT), and their level of desirability (DES) and feasibility (FEAS) of starting a business. Each of these constructs was measured using a single item on the Likert scale described above. The items used are an adaptation of Peterman and Kennedy's (2003) scale to measure entrepreneurial intentions and the desirability and feasibility of starting a business among young students.

Attitudes toward entrepreneurship. On the entrepreneurial attitudes scale the students were asked about their level in the following five attitudes: Leadership (LEADER), Creativity (CREATIV), Achievement (ACHIEVE), Personal Control (CONTROL), and Intuition (INTUITION). Each of these constructs was measured using a number of items on the Likert scale described above. The items used to measure each construct are an adaptation of Athayde's (2009) scale to measure Attitudes Toward Enterprise for Young People.

4. Results of Research

To determine the effect of the educational strategy of using the business model approach on young undergraduates' enterprise potential the authors carried out an analysis of variance (ANOVA). The independent variable is the educational methodology, while the dependent variables are, on the one hand, the constructs from the intentions scale, and on the other, the constructs of the entrepreneurial attitudes scale.

Table 1 reports the results of the ANOVA for the scale measuring entrepreneurial intentions, desirability and feasibility. In general, students studying the course with a business model strategy have higher levels in their enterprise potential than the students on the course with the classic business plan strategy. In all three constructs, students in the first group give a higher score, and the differences are significant for INT and FEAS. In contrast, the difference is not significant for DES. These results support hypotheses 1 and 3, but not Hypothesis 2.

Table 1. Influence of educational strategy on entrepreneurial intentions and desirability and feasibility

Construct	BModel(1)	BPlan(1)	F	Sig.		Eta 2
INT	5.73	5.22	4.54	0.04	**	0.04
DES	5.63	5.32	1.66	0.20	ns	0.02
FEAS	5.95	5.60	2.91	0.09	*	0.03

(1)Means of BModel and BPlan

Table 2 shows the results of the ANOVA for the entrepreneurial attitudes constructs. The students on the course with a business model strategy have a higher level in all the attitudes that are latent to enterprise potential except CONTROL. These differences are, however, only significant for CREATIV. Thus, the results of this analysis partly support Hypothesis 4.

Table 2. Influence of educational strategy on entrepreneurial attitudes

Construct	BModel(1)	BPlan(1)	F	Sig.		Eta 2
LEADER	4.98	4.85	1.52	0.22	ns	0.01
CREATIV	5.84	5.43	10.82	0.00	***	0.10
ACHIEVE	4.75	4.72	0.10	0.76	ns	0.00
CONTROL	4.09	4.13	0.24	0.62	ns	0.00
INTUITION	4.59	4.47	2.49	0.12	ns	0.02

(1) Means of BModel and BPlan

5. Conclusions

The main findings of this work concern the different effects on students' enterprise potential of using two alternative pedagogical methodologies in entrepreneurship education: the business model methodology, operationalized through Osterwalder and Pigneur (2010) and Osterwalder, Pigneur and Tucci's (2005) manual, and a more classic methodology based on the development of a business plan. In order to define both concepts, the authors start out from more established theoretical foundations, namely the causation-effectuation dichotomy (Sarasvathy, 2001, 2008; Chandler et al., 2011) and the bricolage concept (Baker and Nelson, 2005).

In general, students have a higher level of enterprise potential on the course that follows the business model

methodology. This result endorses the progressive incorporation and standardization of the business model as an analytical strategy among new entrepreneurs (Leschke, 2013; Magretta, 2002), as well as its generalization as an archetype for strategic decision-making (Shafer, Smith, and Linder, 2005).

Following Peterman and Kennedy's (2003) perspective, the authors have found that the business model methodology seems to improve both the entrepreneurial intentions and the perceived feasibility of starting a business. These findings are coherent with Souitaris et al.'s (2007) results in the sense that the inspirational part of entrepreneurship education programs are particularly effective at impacting students' attitudes and intentions. Therefore, this methodology conceivably manages to make the idea of starting a business more realistic, and more effectively transmits to the student the idea that entrepreneurship is possible and feasible, real and within their grasp. If we accept this conclusion then this concept, which was forged and developed in the business world (George and Bock, 2011; Baden-Fuller and Morgan, 2010), should be incorporated into entrepreneurship education.

The greater effectiveness that the business model approach lends to entrepreneurship education could have something to do with its particular characteristics, such as a greater use of artistic and design elements (Casadesus-Masanell and Ricart, 2011; Zoot and Amit, 2010), a more intensive practical content, and above all, a stronger development of the student's creative potential. This last point seems to be confirmed by the significant difference in favor of the students in the business model group in the development of their creativity during the "Business Administration" course in the entrepreneurship education program. Nevertheless, although these students also have higher levels in the other attitudes making up enterprise potential according to Athayde (2009)—leadership, achievement motivation, personal control and intuition—the differences are not statistically significant for these attitudes.

To sum up, this research suggests that in entrepreneurship education, understood as a method (Neck and Greene, 2011), the business model methodology fits the new competitive environment more closely than the classic approach, at least in the context of young undergraduates. All this should be understood in the framework of a process that is building a new pedadogical paradigm in entrepreneurship education—one that is based on the new technological context and in which the student will take on the central and leading role in education.

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