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Entrepreneurship Education in the Age of Effectuation: Teaching Strategies Evidence from Mexico and Germany

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ABSTRACT

The positive impact of Entrepreneurship on economic development has been supported by many research studies (Drucker 1985). Based on those, education and training have been confirmed as relevant factors in promoting and fostering an entrepreneurial perspective (Gibb 1994; Peterman and Kennedy 2003; Kuratko 2005; Pittaway and Cope 2007). Therefore, universities have increasingly incorporated entrepreneurship modules into their educational programs at undergraduate, masters, and doctoral levels (Kirby 1992; Vesper and Gartner 1997; Katz 2003). Even counterarguments on the general effectiveness of entrepreneurship education agree that entrepreneurial skills are teachable (Aronsson 2004). In recent years, the effectuation theory has emerged, arguing that while it was hitherto known that entrepreneurs focus on discovering and exploiting existing opportunities with a set target in mind, research findings suggest another equally valid approach (Sarasvathy 2008). In the age of effectuation, potential entrepreneurs may derive their entrepreneurial ideas and decisions from the realities of their life and individual value systems. Therefore, the same person can use both causal and effectual reasoning at different times depending on what the circumstances call for (Sarasvathy 2001a). As a result, a scientific debate about the role of effectuation in entrepreneurship education has emerged. In particular, teacher-centered classroom teaching was exposed as a purely causal element, due to its sequential progression from an initial business idea to its respective market potential and financial projections (Sarasvathy 2001b). This study aims to demonstrate the existence of a range of effectuation elements in current entrepreneurship education programs and identify the teaching strategies adopted. The methodology followed the multiple case study approach, applied to the entrepreneurship education programs at a Mexican and a German University respectively. The main implication highlights the role of both teaching methodologies and teaching models in entrepreneurship education in the 'Age of Effectuation.'

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I. INTRODUCTION

The positive impact of Entrepreneurship on economic development has been supported by many research projects (e.g., Drucker 1985). Based on that, education and training have been confirmed as a relevant factor in promoting and fostering an entrepreneurial perspective (Gibb 1994; Peterman and Kennedy 2003; Kuratko 2005; Pittaway and Cope 2007). As a consequence, for more than twenty years, universities have increasingly incorporated entrepreneurship modules into their educational programs at undergraduate, masters, and doctoral levels (Kirby 1992; Vesper and Gartner 1997; Katz 2003). Even counterarguments on the general effectiveness of entrepreneurship education agree that entrepreneurial skills are teachable (Aronsson 2004).

In recent years, a new theory has emerged introducing a novel approach to the phenomenon of entrepreneurship: effectuation. Its author, Sarasvathy, argues that while it was hitherto known that entrepreneurs focus on discovering and exploiting existing opportunities with a set target (i.e., target market) in mind, research findings suggest another equally valid approach. In the age of effectuation, potential entrepreneurs may derive their entrepreneurial ideas and decisions from the realities of their life and individual value systems (Sarasvathy 2008). From this perspective, the same person can use both causal and effectual reasoning at different times depending on what the circumstances call for (Sarasvathy 2001a; Sarasvathy 2005).

As a result, a scientific debate about the role of effectuation in entrepreneurship education has emerged. In particular, teacher-centered classroom teaching was exposed as a purely causal element, due to its sequential progression from an initial business idea to its respective market potential and financial projections (Sarasvathy 2001b). Based on that, the present study aims to demonstrate the existence of a range of effectuation elements in current entrepreneurship education programs. Our study draws upon the literature on effectuation and entrepreneurship education. The methodology adopted was the multiple case study approach (Yin 1984). Its findings highlight the practical implications for entrepreneurship education and training.

II. ENTREPRENEURSHIP EDUCATION AND EFFECTUATION THEORY

Teaching outcomes in entrepreneurship programs are generally assessed (e.g., Luethje and Franke 2003; Zhao et al 2005; Mueller 2008) using the theory of planned behavior (Ajzen 1991) as a framework. Measuring changes in an individual's entrepreneurial intention or self-efficacy (Bandura 1977; Chen et al. 1998; Ajzen 2002) before and after their entrepreneurship training, Ajzen's framework allows predicting (planned) behavior. In addition, the impact of entrepreneurship education on entrepreneurial intent has been proven to depend on the individual's personality (Zhao et al 2010). The current challenge in entrepreneurship education is therefore not to justify the discipline's reason for being by proving the outcome, but rather to enhance the outcome (Fiet 2001a and 2001b). In response to this challenge - and in line with modern education models (Shuell 1996; Terhart 1999) -, teaching experts from different countries have called for a more interactive and action-based teaching model in entrepreneurship education (Fiet 2001b; Braukmann 2002; Rasmussen et al 2006).

In 2001, Sarasvathy introduced a new approach that argues that venture creation can be pursued in one of two, equally successful, ways: either traditionally, i.e. with the goal in mind

(termed “causal” or “causation-based”), or in an inverse way, i.e. starting with the entrepreneur’s given set of means. The latter is termed “effectuation.” Table 1 illustrates the main distinctions between causal and effectual reasoning. According to Sarasvathy (2001a), reasoning based on effectuation is preferred by entrepreneurs in the early stages of a new venture. As the venture matures, most entrepreneurs increasingly adopt a more causal reasoning. In addition to a venture’s life cycle phase, the entrepreneur’s approach will depend on who the entrepreneur is, what they know, and whom they know (Sarasvathy 2001b).

III. METHODOLOGY DESIGN

The proposed research is based on case study methodology (Yin 1984). A case study is an empirical enquiry that investigates a contemporary phenomenon within its real-life context. It is especially useful when the boundaries between phenomenon and context are not clearly evident (Yin 1984). Hence, exploratory case study research is the design recommended for studying a complex and underexplored area (Eisenhardt 1989; Yin 1984) such as demonstrating the existence of effectuation elements in current entrepreneurship education programs. Case study research can encompass both single- and multiple-case studies (Yin 1984).

Table 1. Distinctive aspects of Reasoning within Causation versus Effectuation

Elements	Causal reasoning	Effectual reasoning
The challenge for the entrepreneur is:	How to take the “right” decision	How to leverage skills and circumstances
The underlying rationale is:	Based on a chosen target	Based on a given set of means
This approach is useful whenever:	The future is predictable	The future is unpredictable
The entrepreneur	Begins with a pre-determinate goal, and seeks to identify the best way to achieve it	Begins with a set of means and create/s opportunities. Allows goals to change over time, thus keeping flexibility for arising contingencies

Source: Authors based on Sarasvathy (2001a, 2001b, 2005 and 2008).

Table 2. University characteristics

Country	University	Founded	Undergraduate Students	Academic professors	Staff	Type (funding)
Mexico	General	1957	30,000	500	3,500	Public
Germany	Technological focus	1879	29,000	320	2,200	Public

Source: Authors.

Multiple cases are generally regarded as more robust than single-case studies, providing the observation and analysis of a phenomenon in several settings. The multiple-case study design also enables a replication logic in which the cases are treated as a series of independent experiments (Eisenhardt 1989; Yin 1984). In this research, a multiple-case approach was adopted to investigate the main elements of effectuation in entrepreneurship education in two different countries. The research comprises a detailed field study of two universities, one located in Mexico, the other in Germany. A preliminary desk research was conducted in order to identify the entrepreneurial education modules to be assessed. In two different research rounds the following aspects were considered:

- a) Desk research:
 - Curricular entrepreneurship courses (i.e., those with credit points only), addressing a multidisciplinary target audience;
 - The respective courses' syllabi (cf. Gartner and Vesper 1994);
- b) Field research (by way of qualitative interviews):
 - Confirming the results derived from desk research;
 - The teaching methodology applied (cf. Gartner and Vesper 1994), especially during idea generation;
 - Examples of entrepreneurial projects developed in the classes.

In addition, a replication approach was adopted. In this approach, we first studied the cases independently and subsequently made cross-case comparisons. Both universities studied feature an entrepreneurship offering that addresses students of all disciplines (i.e., not only business students). The main data of the universities analyzed in this research is presented in Table 2.

Data was collected based on modules offered in 2009 and using qualitative methods. To triangulate the case findings and enhance the validity and reliability of the study (Yin 1984), interviews with teachers as well as diverse secondary sources were used at different stages. Regarding data analysis, a set of programs directed at undergraduate, graduate and postgraduate students in economics and engineering from higher education institutions with entrepreneurship education offerings were analyzed. In this sense, the numbers of participants in this study were:

- a) Number of participating teaching staff (of entrepreneurship education programs)
 - Mexico: 2
 - Germany: 4
- b) Number of participating students (based on data from 2009)
 - Mexico: 67 (summer term) and 55 (winter term); i.e., 20 teams (summer) and 18 teams (winter)
 - Germany: 29 (summer term) and 47 (winter term); i.e., 8 teams (summer) and 13 teams (winter)

In the next step, individual curricular courses were selected for a profiling of the teaching methodologies applied, thus increasing the reliability of the entire research (Yin 1984). The selection criteria used were: (a) the course had to be part of the respective university's entrepreneurship syllabus; (b) it had to be offered to a multi-disciplinary student audience; and (c) it had to be curricular (i.e. to be awarded with credit points). The qualitative data was categorized and analyzed according to the key informants' own words and narratives. They provided the basis for delineating themes and aggregate dimensions through the comparison of key events. In the last step, the evidence obtained was examined by adopting an inductive approach (Eisenhardt 1989).

IV. FINDINGS

The main characteristics of the cases analyzed are described in Table 3. In general terms, both programs are relatively younger but with relevant differences such as the number of students and start-ups created.

Table 3. Cases Analyzed

Case	Type of course	Year introduced	Students per term	Academics per programme	Disciplines covered	Credits	Team Projects per term	Start-ups
Mexican	Entrepreneurship Course (compulsory)	2005	122	3	<ul style="list-style-type: none"> • 25% Management • 60% Accounting • 15% Engineering 	10	38	5
	Entrepreneurship Course (voluntary, curricular)	2004	76	1	<ul style="list-style-type: none"> • 40% Management and Engineering • 30% Computer Sciences • 10% Architecture • 10% Social Sciences • 10% others 	6	21	3
German								

Source: Authors.

Table 4. Causal and effectual elements in current entrepreneurship education in both Mexico and Germany

Entrepreneurship Education Program		Education elements	
		Causation elements	Effectuation elements
INPUTS	Content	Idea generation based on market needs	Idea generation based on individual strengths and existing network
	Sample Methodologies	Business planning based on a defined target market per se = causation	Mentoring/ coaching (when allowing for individual preference for effectuation approach) Computer simulations
	Teaching model	Teacher-centered instructions (mainly lecturing)	Student-centered instructions (involving group discussions)
OUTPUTS	Type of projects generated	<p>Resulting projects demonstrate a blend of causation and effectuation elements applied:</p> <p>Based on participants' own profiles a team decided to pursue an online gaming venture (effectuation) and then defined this as their target market (causation).</p> <p>Based on team members' skillset (effectuation), a team identified a market need and existing niches (causation) and decided to offer search engine optimization to small and specialized law firms.</p>	

Source: Authors.

Based on the syllabi and information obtained, both educational programs are focused on causation; however, although none of it is mentioned in the course syllabi, the programs already feature elements of effectuation (see Table 4).

Despite cultural differences between the two universities' countries of origin, the underlying target audiences of the respective teaching programme proved to be similar (cf. Table 3): Participating students stem from diverse study backgrounds including engineering and management studies. Moreover, participants' grading is taken into consideration for their final grade, as both courses are curricular. Hence, similar educational outcomes were expected for participants. Based on that, the following findings emerged from our study:

1. Neither of the syllabi so far includes a mentioning of effectuation, be it the formal term, or its objectives;
2. As expected, both educational programs displayed a clear focus on causation. It was, however, possible to provide evidence of elements of effectuation already applied in both of the modules studied;
3. Effectuation elements were identified in the course methodologies as well as in the underlying teaching models;

4. Most impressively, the resulting team projects were found to have been a result of a “blended” approach of causation and effectuation: The student projects assessed showed different ways and “levels” of actioning or building on both;
5. Our interviews also showed that the choice of a causation-based approach to both teaching and the resulting venture creation is not a result of entrepreneurial learning but rather result of a personal preference/ personality style. This applies to both participating students and teaching staff.
6. Both Mexican and German program showed the same findings, despite the slight differences in methodologies and teaching models.

V. CONCLUSIONS

This study set out to assess to what extent the upcoming theory of Effectuation has been put into practice already, whether being explicitly labeled as such, or not.

The authors chose two different entrepreneurship education programs in two different continents. Despite cultural differences between the two universities’ countries of origin, the underlying parameters of the respective teaching programme proved to be comparable (cf. Table 3). Not only were both modules assessed registered as “curricular” (thus awarding credit points to participants), but they were also both directed at students from diverse study backgrounds including engineering and management studies. Hence, similar educational outcomes were expected for participants.

The resulting findings demonstrated that effectuation as a methodology in training future entrepreneurs has already been part of the curriculum. However, it was found to have been practiced without being explicitly mentioned, thus students practiced it almost intuitively. To what extent this was influenced by the respective teaching staff and their background, and/or by the participating students’ preferences, was not part of this study and would have to be looked into in a next step.

In contrast to the effectuation-based methodologies applied in both programs, there was no mentioning of effectuation in either module’s official description. The corresponding syllabi assessed were thus found to lag behind. Undoubtedly they will be updated as effectuation becomes more widely known in both academic and teaching arenas. The new ‘Age of Effectuation’ will require an update of entrepreneurship education programs around the globe.

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