

ENTREPRENEURSHIP READINESS AND NEW VENTURES DEVELOPMENT: ISSUES AND IMPLICATIONS OF ENTREPRENEURIAL EDUCATION IN MEXICAN UNIVERSITIES.



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ABSTRACT

Previous research has demonstrated a positive relationship between perceived self-efficacy and entrepreneurial intention.

A descriptive cross-sectional study was carried out to assess the impact of entrepreneurship education on students' perceived self-efficacy, intentions and orientation within three selected universities in the city of Tijuana, Mexico.

A survey was conducted and data was collected utilizing previously developed instruments. Results were compared and analyzed, identifying the correlations that exist between entrepreneurial education experience and reported levels of entrepreneurial self-efficacy, orientation and intentions.

If universities do not promote entrepreneurship education, it is expected that students would be less likely to pursue new business ventures after school. Our research results although limited, may be useful for university decision makers interested in supporting and establishing formal entrepreneurship coursework in Mexican universities. Such support is necessary in order to facilitate new businesses creation in the country which may lead to future gains in economic growth and development.

RESUMEN

Investigaciones anteriores han demostrado que existe una relación positiva entre la auto-eficacia percibida y la intención emprendedora

Se realizó un estudio comparativo en tres universidades de la ciudad de Tijuana, México, para evaluar el impacto que la educación para el emprendimiento tiene en la auto-eficacia percibida, las intenciones y las orientaciones de los estudiantes.

Se levantó una encuesta para obtener información utilizando instrumentos previamente desarrolladas. Los resultados fueron comparados y analizados identificando

la correlación entre la experiencia de recibir educación emprendedora y los niveles reportados de auto eficacia, orientación e intención emprendedoras.

Si las universidades no promueven la educación emprendedora es de esperarse que los alumnos no intenten comenzar nuevos negocios al terminar sus estudios. Los resultados de nuestro estudio, aunque son limitados, pueden ser de utilidad para las universidades en México que se interesen en apoyar y establecer formalmente la educación emprendedora como parte de sus programas de estudio. Este apoyo por parte de las universidades es fundamental para la apertura de nuevos negocios en el país, que pudieran aumentar el crecimiento económico y el desarrollo del mismo.

1. INTRODUCTION

Over the last few years the entrepreneurship phenomenon in Mexico has gained considerable attention among government officials, small business developers, private investors and the academic community, as a way of promoting self-employment and economic development. But new venture creations in Mexico have shown limited outcomes, in terms of jobs generation and well-being.

By almost any index Mexico has historically struggled in the last century with economic and social growth. For example, A. T. Kearney's (2005) well-respected Globalization Index ranks Mexico 42nd in the world and the United Nations Human Development Reports (2003) ranks Mexico 53rd in its Human Development Index. Recently, however, Mexico appears to have made a commitment to transform into a competitive nation by privatizing state-owned industries, reducing international commerce barriers and tariffs, attracting foreign investment, and establishing free-trade agreements (NAFTA) with neighbors such as the United States and Canada (Young & Welsch, 1993). However, to sustain the changes, a strong and capable group of domestic entrepreneurs are needed in Mexico.

According to Wachtel (1999), several obstacles are inhibiting entrepreneurial success in Mexico, such as business environment, individual culture and a family centered society.

Accessing capital funding in Mexico or obtaining loans to get the necessary start-up assets is very difficult for new business ventures because of high-interest rates, increasing consumer prices, and volatile foreign currency exchange rates. Venture capital investors and business angels are extremely scarce, and because federal taxes are at record levels there is a lack of fiscal stimulus for private investments as well. It is very difficult for start-up companies that need substantial seed capital, to reach break-even or gain a reasonable return on investment without additional support. Mexican government and associated economic institutions are still considered overly bureaucratic, regulated, and corrupt, as evidenced by the low ranking on the various global business indices, such as IMD International's (2005) "business efficiency" index (47th) and Transparency

International's (2005) "corruption perception" index (67th).

Small to medium size family centered organizations, which represent the largest number of businesses in the country, which are extremely closed and myopic, usually reinvest their capital in new related family business ventures solely and rarely allocate money in other diversified companies outside of the family. In addition, it has been suggested that Mexican family business owners are generally adverse to risk, show a lack of confidence, and have discriminatory practices against business women (Lee & Peterson, 2000). Many have suggested that Mexico must take more aggressive measures to develop and maintain an adequate environment that promotes and nurtures new business start-ups, enterprise creation, and risk-taking entrepreneurs. An "entrepreneurial environment" can be defined as the combination of factors that play an important role in the development of new business ventures. It refers both, to the overall exogenous factors that influence people's willingness to undertake entrepreneurial activities, and to the availability of assistance and support services that facilitate start-ups. According to Covin and Slevin (1991), the external environment can include economic, political/legal, and socio-cultural forces that provide a broader context for an organization's operation.

Entrepreneurship in developing economies can flourish if potential entrepreneurs find opportunities in the environment, and if environmental conditions motivate and enhance entrepreneurs' ability to start and manage a new business (Gnyawali & Fogel, 1994; Usman & Postigo, 2000). While certain infrastructure elements, like the existence of research and development programs, and a well-educated and technically skilled labor force can make a substantial impact on the entrepreneurial environment (Bruno & Tyebjee, 1982), previous research (Pennings, 1982; Vesper, 1990; Davidsson, 1991), also indicates that factors such as the presence of universities for training and research are found to be very important to increase the rate of new venture creation. Thus, countries that have low levels of technical and business skills could prevent motivated entrepreneurs from starting a new venture – and according to Unesco, Mexico ranks at best somewhere in the mid-point of the world in second-

ary educational achievement (2000 statistics), and according to the Organization for Economic Cooperation and Development (OECD), last of the member countries in "technical literacy" (1999 statistics).

Vesper (1990) identified four elements in venture creation: a profitable business opportunity, technical know-how of the entrepreneur, business know-how of the entrepreneur, and entrepreneurial initiative, which comprises at the same time education and intentions. This suggests that education is a key environmental force that enables and provides a way for nascent entrepreneurs to identify opportunities and gain the necessary business and technical skills to nurture their self-efficacy to the point of initiating actions toward starting a new venture (Luthje & Franke, 2003). Previous research (DeNoble, et al., 1999) has demonstrated a positive relationship between perceived self-efficacy and entrepreneurial intentions, and there is also empirical evidence showing a positive relation between formal education and new venture success. A study by Veciana (2002) found that the failure rate between entrepreneurs with higher education and entrepreneurs without any is almost four to one.

Accordingly, the purpose of this project as a starting point for further research, was to investigate the impact of entrepreneurship education on students' perceived self-efficacy and orientation toward new venture intentions, within a sample of Mexican universities at a very particular site, regardless of any other environmental or moderating factors that may influence the entrepreneurial process. Our study examines the following key research questions:

1. With Mexican students, to what extent does entrepreneurial education exposure help nascent entrepreneurs and students develop entrepreneurial intentions and orientation?
2. Is Entrepreneurial Self-Efficacy (ESE) enhanced by Mexican entrepreneurial education?
3. Is there a positive relationship between Mexican universities' entrepreneurial curricula and students' entrepreneurial intentions?

If universities do not promote entrepreneurship education regardless of other environmental factors, we would expect that students would be less likely to pursue efforts toward starting a new business venture.

Particularly, as Gnyawali and Fogel (1994) have suggested, it seems that training and education services are very important in emerging market economies because entrepreneurs lack basic business skills.

The need for economic development and prosperity is influencing universities to include entrepreneurship courses in their curricula to promote entrepreneurial capabilities among students (Laukkanen, 2000; Hindle & Rushworth, 2000). There is growing consensus that education plays an important role for the creation of new ventures, enhancing students' managerial skills which increases the probability of developing entrepreneurial activities (Van Praag & Cramer, 2001; Kantis, Postigo, Federico, & Tamborini, 2002a).

Although there is a global trend toward more entrepreneurial education and an increasing number of Mexican universities have recently instituted entrepreneurship courses in their curricula, the vast majority still have not. This developing situation presents an ideal setting to investigate the issues posed in this study, particularly among several universities in Tijuana, B. C. that are including at some extent, entrepreneurial courses in their educational offering.

2. LITERATURE REVIEW

2.1. ENTREPRENEURSHIP EDUCATION: HISTORICAL OVERVIEW

Entrepreneurship education constitutes a novel academic field, particularly in countries and cultures where even the term "entrepreneurship" has somewhat different meanings. The discipline is still unknown by a large number of university professors, students, business owners, and community members within developing countries. The introduction and promotion of new entrepreneurship curricula at both graduate and undergraduate levels, embraces major challenges for universities' entrepreneurship program developers and business school faculty.

Within the United States, for example, more than half a century ago the first entrepreneurship courses were introduced at the Harvard Business School, but the subject evolved very little and was not generally popular in the decades that followed. By the 1960s less than 10 universities offered some type of entrepreneurship education. In 1970, the number of business schools and universities in the United

States that offered entrepreneurship courses began to increase. From the 16 universities that were offering entrepreneurship courses at the time, 12 had started to include them in the preceding two years (Vesper & Gartner, 1997). The first entrepreneurship majors were offered in some American universities by the 1980s (Sexton, Upton, Wachlotz, & McDougall, 1997). In 1993, about 400 colleges and universities in the United States were offering one or more courses in entrepreneurship.

During 2000 every business program in the United States probably offered one or more courses in entrepreneurship, with many universities offering or developing actual concentrations in entrepreneurship (Vesper, 1993; Fiet, 2001; Solomon, Duffy, & Tarabishy, 2002; Katz, 2003).

In an emerging field such as entrepreneurship, there is likely to be less educator consensus than in other better-established fields (Finkle & Deeds, 2001). Most universities business schools are highly departmentalized by functions and often do not have an identifiable "home" for "entrepreneurship." Entrepreneurial education is inter-functional and does not properly fit within any business department. Entrepreneurship course-work is generally offered in management departments within Business Schools and less often within the marketing and finance areas (Hills, 1988).

Several universities offer more than one or two related courses. Early research by Vesper (1985) identified at least three models for an entrepreneurship program. First, there is the "conceptual baseline" that includes the business plan, the business life cycle, and business functions. Most introductory courses in entrepreneurship focus on an overview of the business plan. Another model, often used in MBA programs, is highly related to the "business life cycle" stages. Some universities offer a course in small-business management with a focus on established firms. The third model is the one that treats entrepreneurial education as a set of "additional courses" within the finance, accounting, legal, and/or marketing areas, fitting the functional organization of business colleges (Hills, 1988; Gorman, Hanlon, & King, 1997; Solomon et al., 2002). Some authors stated the need to experiment with an unstructured approach to teaching entrepre-

neurship, much like a doctoral seminar, which is a partial response to evidence that entrepreneurship students exhibit characteristics that demand more flexibility (Hills & Welsch, 1986; Relf, 1995; Vesper & Gartner, 1997). At this regard, Ronstadt (1985) implies that students must be oriented into a multiple venture career and toward adaptive flexibility to evolve successful configurations. Many students should not be required to develop full business plans, but instead create less detailed feasibility studies. Such variations are based on evidence as to the different types of students who take entrepreneurship courses and the strength of their entrepreneurial intentions (Hills & Barnaby, 1977). While entrepreneurship education has clearly progressed over the years (Gorman et al., 1997; Solomon et al., 2002) the basic models of entrepreneurship education appears to have remained fairly constant, with the exception that more specific majors are now being offered.

Similar models, with some variations unique to the European educational system, have been developed at many universities in Western and Central Europe. The entrepreneurial phenomena has also impacted Latin American universities, as increasingly more schools are now committing to develop and nurture entrepreneurial capabilities among students (Ussman & Postigo, 2000; Varela & Jimenez, 2001; Postigo & Tamborini, 2002). According to a recent study regarding Latin America business development, half of most enterprising new start-ups were ventures created by university graduates (Kantis, Ishida, & Komori, 2002).

Entrepreneurship education in Mexico has evolved at a slower pace than in the United States, however the first entrepreneurial education efforts started in 1978, when the ITESM (Instituto Tecnológico y de Estudios Superiores de Monterrey) created their revolutionary "Business Enterprise Program" (Programa Empresario), which later became the "Entrepreneur Program" (Programa Emprendedor).¹¹ The program was conceptualized as a series of integrated entrepreneurship courses to promote a proactive approach to business venturing among undergraduate students that were studying in their last few semesters. The program is still running and it is

¹¹Programa Emprendedor History. <http://www.mty.itesm.mx/daf/centros/ceprode/historia/historia.html>

considered as the pioneer project of entrepreneurial education in Mexico.

By the early 1990s, a decade or so after the "Programa Emprendedor" was launched, several Mexican universities started including different entrepreneurship courses in their Business Administration programs. Some of these courses, such as "New Product Development" or "Strategic Planning," do not have formal academic support and are not related to any entrepreneurial curricula. Most schools tend to include new business or new product development courses in their curricula just because competitor universities are offering them. The Mexican educational environment that can nurture future entrepreneurs' skills, competencies, and capabilities appears to be at the moment, very limited.

2.2. SELF-EFFICACY

Bandura (1978) defines self-efficacy as "a judgment of one's ability to execute a particular behavior pattern", or the "personal assessment of the capability to accomplish a certain level of performance." Thus, an individual's behavior, environment, and cognitive factors are highly interrelated, and play a key role in that individual's motivation and achievement. Self-efficacy beliefs determine how much effort a person will spend on a task and how long he or she will persist with it. People with strong self-efficacy beliefs exert greater efforts to master a challenge, while those with weak self-efficacy beliefs are likely to reduce their efforts or even quit. There are four major sources of information, in which some of them education plays an active role, that are used by individuals when forming self-efficacy judgments:

"Performance Accomplishments" refers to personal assessment information that is based on an individual's personal mastery accomplishments (i.e. past experiences).

"Vicarious Experience" is gained by observing others' success activities and performance (modeling).

"Social Persuasion" refers to activities where people lead, through suggestion, into believing that they can cope successfully with specific tasks. Coaching and giving evaluative feedback on performance are common types of social persuasion.

The final source of information is the individual's physiological and emotional states which influences self-efficacy judgments, both positive and negative, of one's ability to complete a task (Bandura, 1977; Bandura & Cervone, 1986). Perceived self-efficacy helps to account for a wide variety of individual behavior, including: changes in coping behavior produced by different modes of influence, levels of psychological stress reactions, self-regulation, achievement strivings, growth of intrinsic interest, and choice of career pursuits (Bandura, 1982).

2.3. ENTREPRENEURIAL SELF-EFFICACY

Entrepreneurial Self-Efficacy (ESE) has to do with the self-belief, willingness, and persistence to overcome the initial anxiety that a new start-up process delivers. Entrepreneurs with a high degree of confidence in their potentiality and capabilities to successfully accomplish the needed tasks and required actions to create a new venture or launch a new product to the market will have more positive results and outcomes than others. Self-efficacy beliefs may support direction, intensity, and the entrepreneur's persistence (De Noble, Jung, & Ehrlich, 1999; Luthje & Franke, 2003; Arenius & Minniti, 2005).

Self-efficacy has a number of practical and theoretical implications for entrepreneurial success because initiating a new venture requires unique skills and mind sets. Self-efficacy is linked to initiating and persisting a behavior under uncertainty, to setting higher goals, and reducing threat rigidity and learned helplessness (Bandura & Cervone, 1986). This is important because opportunity recognition depends on situational perceptions of controllability (Dutton, 1993) and self-efficacy (Krueger & Dickson, 1994).

Entrepreneurs pursue opportunity regardless of the resources at hand. Individuals who perceived themselves as "entrepreneurially capable" are expected to be alert and sensitive to opportunities, and able to take advantage of such opportunities if they consider the endeavor worthwhile. Doubts upon self-entrepreneurial skills and initial capital funding, were perceived by university students as two of the key obstacles associated with new venture creation (Postigo, Lacobucci, & Tamborini, 2003), while increased self-efficacy may facilitate opportunities perception (Krueger & Dickson, 1994). If entrepre-

neurial competence is understood as the combined capacity to identify and pursue opportunities, and to obtain and coordinate resources (Erikson, 2002), universities' entrepreneurial courses may be a fundamental element to provide the needed skills and the right knowledge to future entrepreneurs.

De Noble *et al.* (1999) developed a scale to measure a person's "entrepreneurial self-efficacy" (ESE) or the personal belief of one's abilities to carry out the required tasks to create a new enterprise, based on several entrepreneurial skills that were uniquely different from general managerial skills. They identified six dimensions of entrepreneurial skill requirements and utilized them as a basis for developing the ESE scale. The measure can help researchers understand what makes entrepreneurs persist in their efforts to capitalize on new venture opportunities, and explain their cognitive characteristics.

One key implication that De Noble *et al.* (1999) found, is the possibility of nurturing the necessary skills and to build the supportive confidence among university students, through entrepreneurial education, coursework, and training, reinforcing their self-belief as would-be entrepreneurs. Noel (2001) found that students who had taken entrepreneurship courses showed higher levels of self-efficacy and intentions to launch new business ventures than those who did not. Although these findings demonstrate a positive relationship between entrepreneurial intentions and perceived self-efficacy, in contrast, a subsequent study by Cox, Mueller, and Moss (2002) found that entrepreneurial education might in fact, decrease a student's ESE as a result of revealing the complex nature of entrepreneurial pursuits to these nascent individuals.

2.4. ENTREPRENEURIAL INTENTIONS MODELS

Intentions are generally the single best predictor of any planned behavior, including entrepreneurship (Bagozzi, Baumgartner, & Yi, 1989). In his Theory of Planned Behavior (TPB), Ajzen (1991) proposes a model that in its simplest form shows that intentions predict behavior, while in turn certain specific attitudes predict intentions. There are three attitudinal antecedents of intention. The first two, which are personal attitudes toward outcomes of the behavior (expectations and beliefs about personal impacts)

and perceived social norms (expectations and beliefs about social groups' impacts), reflect the perceived desirability of performing the behavior. The third one perceived behavioral control, reflects the perception that the behavior is personally controllable. Perceived behavioral control reflects the perceived feasibility of performing the behavior and is thus related to perception of situational competence (self-efficacy). Feasibility perceptions drive career related choices, including self-employment as an entrepreneur. Intentions toward behavior are absolutely critical for understanding other antecedents. These include situational role beliefs, subsequent moderators, including the perceived availability of critical resources, and the final consequences, including the initiation of a new venture. To understand the consequences of intentions—particularly actions—requires that we understand the antecedents of intention. Much of entrepreneurship is intentional and therefore, the use of well thought-out and research-tested intention models should provide a good means of examining the precursors to business start-up (Krueger, Reilly, & Carsrud, 2000).

Shapero's (1982) "Entrepreneurial Event" model (EE), which is an implicitly intention construct, states that intentions to start a business derive from perceptions of desirability, feasibility, and a certain disposition to act upon opportunities. In such a case, behavior depends on the relative "credibility" of alternative behaviors plus some "propensity to act." "Credibility" requires a behavior to be seen as both desirable and feasible. "Perceived desirability" is the personal attractiveness of starting a business, including both intrapersonal and extra-personal impacts. "Perceived feasibility" is the degree to which one feels personally capable of starting a business (he proposes a testable eight-item inventory of questions aimed at different aspects of perceived desirability and feasibility). Shapero (1982) conceptualizes "propensity to act" as the personal disposition to act on one's decision, based on control perceptions and reflecting volitional aspects of intentions: that is, the desire to gain control by taking action.

A well-established conceptualization of this phenomenon is "learned optimism," which is a valid, reliable measure that consistently predicts the commitment to goal-directed behavior in many settings (Seligman, 1990). A person who has a high propen-

sity to start a business is more likely to start it if he or she sees an opportunity in the environment and feels confident in his or her ability to enterprise. The greater their entrepreneurial business skills, the greater their ability to enterprise (Vesper, 1990; Gnyawali & Fogel, 1994). This was demonstrated by a study about job creation in various states of the US, showing that for every 1% increase in a state's college-educated population, there was a 1.2% increase in jobs created by small firms (Phillips, 1993).

Attitudes influence behavior through effects on intentions; thus intentions and attitudes depend on the situation and person. Accordingly, intentions models predict behavior better than either individual or situational variables, and provide superior predictive validity. Personal and situational variables typically have an indirect influence on entrepreneurship by influencing key attitudes and general motivation to act (Krueger *et al.*, 2000). As much self-efficacy predicts opportunity recognition, self-perceptions are also pivotal to self-employment intentions (Scherer, Adams, Carley, & Wiebe, 1989).

Research findings suggest that individual self-addressed intentions to start a new business are increased by exposure to entrepreneurship education. Particularly, participatory courses have demonstrated to enhance students' perceived desirability and feasibility (Delmar & Davidsson, 2000; Cowling & Taylor, 2001; Fayolle, 2002; Peterman & Kennedy, 2003).

2.5. ENTREPRENEURIAL ORIENTATION

Entrepreneurship is a multi-dimensional process that starts with an opportunity, and opportunities are rooted in the external environment. Whether or not certain contexts nourish the development of enterprises, a strong EO within potential entrepreneurs or firms depends on a wide array of environmental conditions. The abundance of resources in the environment seems to have an impact on the firm's EO. Entrepreneurs can only know their environment via their perception, and their perceived environmental munificence may be a key determinant of their EO and self-belief of acquiring the necessary resources (Chandler & Hanks, 1994).

Brown and Kirchoff (1997) found that small businesses owners' perception of resource availability affects her or his EO and subsequently, the firm's

rate of growth. Self-reported competencies are predictive of entrepreneurial performance (Chandler & Jansen, 1992). According to Lumpkin and Dess (1996), "Entrepreneurial Orientation" (EO) refers to the entrepreneurial process, namely how entrepreneurship is undertaken—the methods, practices, structures, and decision—making styles (behaviors) used to act entrepreneurially. Individuals' EO can be determined by assessing five salient dimensions consisting of autonomy, innovativeness, risk taking, proactiveness, and competitive aggressiveness.

Autonomy refers to the independent spirit and necessary freedom to create a new venture. However, in order for the autonomy dimension of EO to be strong, entrepreneurs must operate within contexts that promote them to act independently, to maintain personal control, and to seek opportunities in the absence of social constraints. Whether or not entrepreneurs operate in environments that support new ideas, experimentation, novel solutions to problems, and creative processes of entrepreneurs will determine the strength of the innovativeness dimension of EO. Risk taking is the willingness of entrepreneurs to assume risk and accept the uncertainty associated with being self-employed. Risk-taking is an important component of a strong EO. Proactiveness has to do with the implementation stage of the entrepreneurial process. Proactive individuals do what is necessary to bring their concepts to fruition and gain an advantage by being the first to capitalize on new opportunities. Competitive aggressiveness refers to the tendency on assuming a combative posture toward rivals and to employ a high level of competitive intensity in attempts to surpass them. This is another key component of EO because new ventures are much more likely to fail than established firms. Thus, an aggressive stance and intense competition are critical to the survival and success of new start-ups (Lumpkin & Dess, 1996).

2.6. ENTREPRENEURIAL INTENSITY

A given individual or organization is capable of producing a number of entrepreneurial events (EE) over time (Stevenson & Jarillo, 1990). Schumpeter (1934) defined entrepreneurship in terms of five types of events: introduction of new goods or new quality of goods, introduction of new methods of production, opening of a new market, utilization

of new sources of supply, and carrying out new organizational forms (Gartner, 1985; Vesper, 1990). Whereas pursuing one of these events is entrepreneurship, there is some evidence to suggest that entrepreneurship is also associated with multiple events. Covin and Slevin (1991) argue that entrepreneurial organizations are those in which behavioral patterns are recurring. A continued effort to develop new products, services and/or markets, is indicative of a highly entrepreneurial operation and frequency (Morris & Sexton, 1996).

Accordingly within an educational context, comparative research regarding entrepreneurial education intensity between Colombian universities, showed that highest investment in entrepreneurial courses and training, resulted in higher-new venture creation rates among students (Varela & Jimenez, 2001).

Entrepreneurial intensity, as stated by Morris and Sexton (1996), can be defined as a variable that results from the combination of the “entrepreneurial frequency” or the number of events (new ventures, products, services, processes) in which a firm becomes involved, and the “entrepreneurial degree,” which is the extent to which any one event is innovative, risky, and proactive. Accordingly, entrepreneurship is not an either/or determination, but

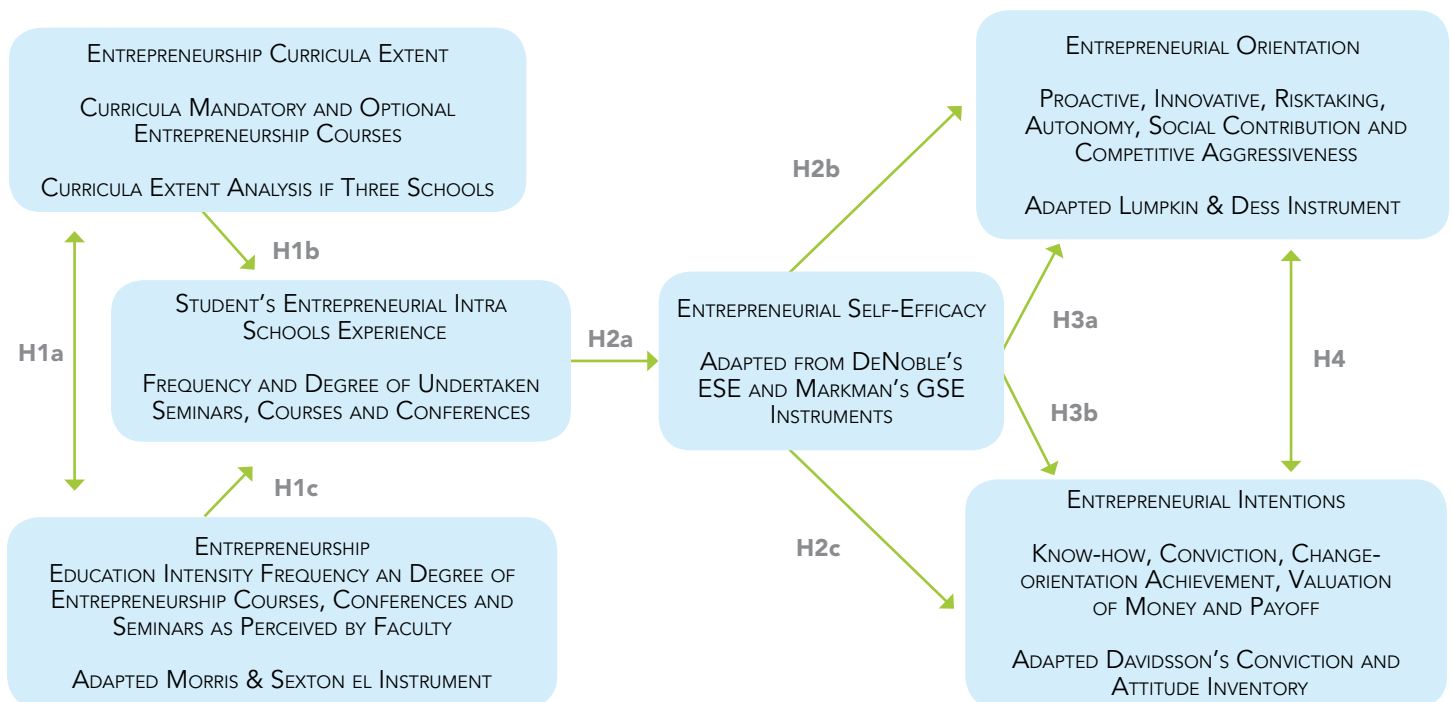
a question of “how often” and “how much.” The “entrepreneurial degree” and “entrepreneurial frequency” constructs derive from previous research.

Underlying entrepreneurial attitudes and behavior are three key dimensions: innovativeness, risk-taking, and proactiveness (Miller, 1983; Ginsberg, 1985; Morris & Paul, 1987; Covin & Slevin, 1989; Miles & Arnold, 1991). Innovativeness refers to the seeking of creative unusual or novel solutions to problems and needs. Risk-taking involves the willingness to commit significant resources to opportunities having a reasonable chance to costly failure. Proactiveness is concerned with implementation—with doing whatever is necessary to bring an entrepreneurial concept to fruition. It usually involves considerable perseverance, adaptability, and a willingness to assume some responsibility for failure. To the extent that an undertaking demonstrates some amount of innovativeness, risk taking and proactiveness, it can be considered an EE and the person behind it an entrepreneur (Morris & Sexton, 1996).

3. RESEARCH MODEL AND HYPOTHESIS

The proposed research model explains the relationships between students’ entrepreneurial education experience, and their entrepreneurial self-efficacy, intentions and orientation (Fig. 1).

Fig 1
Research Model



3.1. HYPOTHESES

Hypothesis 1: Entrepreneurial Curricula Extent, Educational Intensity and Students' Experience

Constructing upon Morris and Sexton's (1996) concept of "entrepreneurial intensity," within an educational context, we propose that the number of entrepreneurial courses that a university includes in its curricula can be related with the frequency and degree of "entrepreneurial education events" that happen at school, encompassing all mandatory and optional entrepreneurship courses included in each university's academic programs, and new product development workshops, business start-up simulations, and seminars offered to students. When a school enrolls into nurturing an entrepreneurial environment, by offering students a formal set of courses and supporting entrepreneurship activities within campus, it actually can produce a large number of entrepreneurial events (new business and product development challenges, new business plans contests, marketing trade-shows, seminars, conferences, etc.). "Entrepreneurial education intensity" can be defined as the number, extent and innovativeness of any entrepreneurial activity (both practical and theoretical), that a school performs, yet as part of the formal coursework or as occasional initiatives to promote new business development ideas or bringing updated information regarding the particular field. Previous research states that academic courses, workshops, and conferences are infrastructure elements and environmental conditions that motivate and enhance students' entrepreneurial abilities (Bruno & Tyebjee, 1982; Gnyawali & Fogel, 1994).

H1a: A university's extent of entrepreneurship educational curricula has a positive impact on faculty perceptions of school's entrepreneurial intensity and entrepreneurial orientation.

Diverse empirical findings support the idea that entrepreneurial aspirations and success can be taught, and that such knowledge and experiences will eventually translate into new venture creations. The "entrepreneurial intra-school experience" is defined as the number of courses, seminars, workshops or entrepreneurial related activities in which a student gets involved while attending school. Such experiences can build up the necessary confidence to eventually develop a business venture once the student

leaves the university. Vesper and McMullan (1997) showed that entrepreneurship courses help former students make better decisions in the startup process, and other research stated that undergraduate Irish students that participated in a student business plan competition indicated that process did have a "very important" impact on their subsequent career choices (Fleming 1994).

Hypotheses H1b and H1c assume that students' "entrepreneurial intra-school experience" is directly related to the extent of entrepreneurial academic curricula (H1b), and degree and frequency of entrepreneurial events, as of workshops, seminars and conferences conducted and taught at school (H1c).

H1b: A larger number of entrepreneurial courses results in a higher level of entrepreneurial experiences for students.

H1c: A higher frequency and degree of entrepreneurship instructional activities lead to a higher level of students' entrepreneurial intra-school experience.

Hypothesis 2: Intra-School Experience and Entrepreneurial Outcomes

Entrepreneurial self-efficacy or the self-believed on entrepreneurial capabilities and competencies is an outcome of students' entrepreneurial experiences. Previous research has demonstrated a positive effect of education on the creation of future entrepreneurs and the link between university training and the success of new ventures.

Departing from the self-efficacy implication that an individual's behavior, environment, and cognitive factors are highly integrated, and are major influences in an individual's motivation and achievement (Bandura, 1978), another set of assumptions are based on the concept that education in entrepreneurship encourages graduates to start their own businesses. Students' frequency and degree of exposure to entrepreneurship education will positively influence their perceived entrepreneurial self-confidence, as well as their as a higher level of perceived conviction and attitudes toward new venture creation and the predisposition to act entrepreneurially. According to Clark, Davis and Harnish (1984), of a sample of students enrolled in an introductory

entrepreneurship course in a midsize university, 80% showed willingness and predisposition in setting up their own business after school, and eventually, 75% of those did start a new venture. Also McMullan, Long and Wilson (1985) reported a high rate of new enterprise creation among MBA students who attended more than three entrepreneurship-related courses at a Canadian university.

It is expected that a higher exposure to entrepreneurial courses, seminars, workshops, etc., by students (entrepreneurial intra-school experience), will reflect on a higher perceived-of entrepreneurial self-efficacy, entrepreneurial intentions (conviction and attitudes), and entrepreneurial orientation (predisposition to act entrepreneurially) within the sample of Mexican universities.

H2a: Students' entrepreneurial intra-school experience has a positive impact on student's perceived entrepreneurial self-efficacy.

H2b: Students' entrepreneurial intra-school experience correlates positively with their entrepreneurial intentions, expressed by their conviction and attitudinal determinants.

H2c: Students' entrepreneurial intra-school experience has a positive relation with their entrepreneurial orientation to act accordingly.

Hypothesis 3: Entrepreneurial Self-Efficacy, Conviction and Predisposition

Entrepreneurs' behavior results from their environmental perceptions and self-beliefs (Chandler & Hanks, 1994). If someone believes that he/she is actually capable of doing something, like starting a new business, it will be reflected in his or her conviction and predisposition of doing it, and in the manifest methods, entrepreneurial practices and decision-making patterns to act accordingly (Lumpkin & Dess, 1996).

As entrepreneurial self-efficacy is understood as the perceived self-confidence on being an entrepreneur, and intentions could be the best predictors of any planned behavior, including entrepreneurship (Bagozzi et al., 1989), it is likely that higher level of students' perceived situational competenc-

es (entrepreneurial self-efficacy) will have a positive correlation with students' conviction of manifesting an entrepreneurial behavior (entrepreneurial intentions), and a predisposed way to behave (entrepreneurial orientation).

Hypotheses H3a and H3b suggest that students' perceived entrepreneurial self-efficacy (control and feasibility perceptions) would be positively correlated with their entrepreneurial predisposition and conviction to act accordingly. The higher perceived entrepreneurial self-efficacy, the higher the intentions and orientation toward developing new ventures in the future.

H3a: Students' level of entrepreneurial self-efficacy (control and feasibility perceptions) has a positive relation with students' perceived level of propensity to act entrepreneurially (entrepreneurial orientation).

H3b: Students' level of entrepreneurial self-efficacy (control and feasibility perceptions) has a positive relation with students' perceived level of conviction and attitudes toward new business venturing (entrepreneurial intentions).

Hypothesis 4: Relation of Entrepreneurial Intentions and Orientation

The last hypothesis suggests that students' perceived entrepreneurial orientation will have a positive correlation with students' entrepreneurial intentions, hence certain entrepreneurial intentions determinants (Davidsson, 1995) reflect personal convictions and attitudes that are consistent with some of the entrepreneurial orientation salient dimensions (Lumpkin & Dess, 1996), regarding achievement motivation, social contribution, aggressiveness, competence, change-orientation and risk-taking.

Someone who is convinced that acting in some particular way will eventually produce certain expected outcomes, will show more proclivity to manifest particular behavioral patterns that are consistent with its beliefs and values, which will eventually guide his or her attitudes. It can be expected that higher entrepreneurial certainty and predilection indicators, will be positively correlated with higher levels of entrepreneurial orientation, and conversely.

H4: Students' entrepreneurial intentions correlate positively with students' entrepreneurial orientation.

4. DATA AND METHODOLOGY

To conduct the research we selected three major local universities from the city of Tijuana, B.C., Mexico that are well known for their business schools and high academic standards: Centro de Enseñanza Técnica y Superior (CETYS Universidad), Universidad Autónoma de Baja California (UABC), and Universidad Iberoamericana (UIA). Owing to the close proximity with San Diego, California which has several university programs in entrepreneurship (San Diego State University, University of San Diego, etc.) it was felt that Tijuana schools would also have a fairly broad selection of entrepreneurial courses compared with other locations in Mexico.

CETYS Universidad is a private school with a regional presence in Baja California. It was founded 45 years ago and has three major campuses in Mexicali, Tijuana, and Ensenada, and is considered among the top ten private universities in the country, according to the Mexican Private Colleges and Higher Education Institutions Federation (FIMPES).² CETYS Universidad offers 12 different undergraduate and 14 graduate academic programs, ranging from Engineering to Law, and from Business Management and Accounting to Psychology.³

The UABC, or Autonomous University of Baja California, is a state-owned institution with the largest number of enrolled students in Baja California and in the city of Tijuana. UABC comprises 17 schools and 8 research institutes with a broad variety of undergraduate and graduate programs. It has the largest School of Business Administration and Accounting among local universities and is recognized by its high academic standards as compared with other state-owned institutions nationally.⁴

While UABC and CETYS are both regional universities, Universidad Iberoamericana, or UIA, is a renowned national and international private university with

more than 60 years of history. The Iberoamericana University is part of the UIA-ITESO system, Mexico's second largest privately owned educational conglomerate with campuses in Mexico City, Guadalajara, Tijuana and three other major mid-size Mexican cities. UIA offers 30 undergraduate and 31 graduate programs, and more than 190 Extended Studies courses.⁵

To test the hypothesis stated in this study, data were collected simultaneously from faculty and students at each institution during 2003. We measured faculty perceptions of entrepreneurial education intensity within each school by conducting personal interviews with each university's School of Business principals and with the faculty in charge of the Entrepreneurship Program. A total of 6 professors were interviewed (two from each university).

During the interviews we applied faculty members an adapted 34 item questionnaire to faculty members, based on Morris and Sexton's instrument (Morris & Sexton, 1996), to measure their perceptions on each school's "entrepreneurship education intensity" (frequency and degree of entrepreneurship education events). We gathered and categorized the academic entrepreneurship curricula of each school, both optional and mandatory, and the compared it to establish their entrepreneurship courses' extent and the differences between them.

We conducted a survey with approximately 300 students attending the three universities. Respondents were randomly selected and a 65% rate of response was obtained. (Tables 1 and 2).

The survey consisted of 104 items that was translated from English to Spanish and then translated back to English. Several measures were sub-divided into three sections. Some of the questions were reverse-coded to reduce bias.

The first part of the questionnaire was designed to assess the students' self-belief and confidence in developing new ventures by adapting the "Entrepreneurial Self-Efficacy" instrument ESE developed by De Noble, et al. (1999). The second section of the questionnaire was focused on determining students' entrepreneurial intentions, orientation, and general

⁵Universidad Iberoamericana. <http://www.uia.mx>

²Federación de Instituciones Mexicanas Particulares de Educación Superior. <http://web.fimpes.org.mx>

³CETYS Universidad. <http://tj.cetys.mx>

⁴Universidad Autónoma de Baja California. <http://www.uabc.mx>

Table 1

Rate of Response

	SCHOOL 1 UIA	SCHOOL 2 UABC	SCHOOL 3 CETYS	
TOTAL SAMPLES QUESTIONNAIRES	100	100	100	300
RETURNED USABLE QUESTIONNAIRES	75	79	41	195
RESPONSE RATE	75%	79%	41%	65%
INTERNATIONAL BUSINESS STUDENTS	13	11	13	37
MARKETING STUDENTS	0	8	0	8
ACCOUNTING STUDENTS	0	1	6	7
OTHER PROGRAMS STUDENTS*	20	0	0	20

* Other programs: Engineering (3), Architecture (4), Graphic Design (7) and Law (6).

Table 2

Sample Statistics

		SCHOOL 1 UIA	%	SCHOOL 2 UABC	%	SCHOOL 3 CETYS	%	TOTAL	%
SEX									
	MALE	32	42.7	37	46.8	8	19.5	77	39.5
	FEMALE	43	57.3	42	53.2	33	80.5	118	60.5
AGE									
	18-19	22	29.3	3	3.8	3	7.3	28	14.4
	20-21	36	48.0	39	49.4	27	65.9	102	52.3
	22-23	12	16.0	23	29.1	8	19.5	43	22.1
	24-25	2	2.7	5	6.3	2	4.9	9	4.6
	26-27	3	4.0	9	11.4	1	2.4	13	6.6

self-efficacy utilizing five-point scales, by adapting the "Conviction and Attitude" item inventory developed by Davidsson (1991), the "General Self-Efficacy" scale used by Markman, Balkin, and Baron (2002), and Lumpkin & Dess (1996) "Entrepreneurial Orientation" instrument, where we measured students' level of autonomy, innovativeness, risk taking, proactiveness, conviction, changeorientation, valuation of money, achievement motivation, social contribution, payoff, and competitive aggressiveness. In the third section, we measured students' entrepreneurial educational exposure (intensity) by quantify-

ing the frequency of "entrepreneurship education events" of every student (number of taken courses, feasibility studies conducted, market research projects, etc.) and their regretful thinking level, by once again adapting the Morris and Sexton instrument (Morris & Sexton, 1996), and Markman et al. (2002) regretful thinking questions. Finally, we compared and statistically analyzed the results, identifying the types of correlations that exist between exposure to entrepreneurial education and reported levels of ESE, orientation, and intentions.

Table 3

Curricula Analysis of Schools of Business Undergraduate Programs

	SCHOOL 1 UIA	SCHOOL 2 UABC	SCHOOL 3 CETYS	TOTAL
SCHOOL FO BUSINESS CURRICULA (ALL COURSES) BUSINESS ADMINISTRATION. ^a (1)(2)(3) INTERNATIONAL BUSINESS/TRADE MANAGEMENT (1)(2)(3) ACCOUNTING (2)(3) MARKETING MANAGEMENT (3) HOTEL MANAGEMENT (2) NEW PRODUCT/NEW BUSINESS RELATED COURSES	52	54	54	106
MANDATORY	20	19	28	67
OPTIONAL	5	3	0	8
TOTAL	25	22	28	75
ENTREPRENEURSHIP SPECIFIC COURSES				
MANDATORY	2	5	0	7
OPTIONAL	0	2	2	4
WORKSHOPS	1	1	1	3
TOTAL	3	8	3	14

Data are bases on information provided by school officials and registered undergraduate programs.

^a (1)(2)(3) Programs offered by different schools: (1) UIA; (2) UABC; (3) CETYS.

5. RESULTS AND FINDINGS

5.1. ENTREPRENEURSHIP CURRICULA

We found minor differences between the three schools' "entrepreneurial curricula extent" (see Table 3).

Of the different academic programs that were reviewed, only three of them had some kind of mandatory entrepreneurship courses included. Thirty-six business management and accounting-related courses were quantified, and from these, only five were related to new product or new business development. We did not find any specific "entrepreneurial curricula" within the three universities. Actually,

there were not any "entrepreneurship programs" in the strict sense. Most of the schools offered just a few optional and isolated "new business," "new product" or "small business development" courses, but without any formal continuum or programmatic instruction. UABC, the largest public university in the state, was the only one that offered a more comprehensive number of entrepreneurship-related courses, including "entrepreneurship workshops." Entrepreneurial courses in UABC represented almost 27% of the total business-related courses within four different graduate programs, and 15% of the total academic curricula. Both CETYS and UIA showed limited entrepreneurship courses within their respective curricula as compared with UABC.

5.2. ENTREPRENEURIAL EXPOSURE AND ENTREPRENEURIAL CURRICULA INTENSITY

In general, faculty's perceptions of the extent of the entrepreneurial curricula at each school, appeared to be a significant indicator of each school's entrepreneurial intensity and orientation.

Table 4 presents a Pearsons two-tailed bivariate analysis of students' perceived "students' entrepreneurial experience" (aggregated sample) and faculty's perceived "entrepreneurial courses extent and intensity," show significant positive correlations

Table 4

Research Variables Correlations / General Sample

	1	2	3	4	5	6	7
1. COURSES ENTENT ^a	1.000						
2. COURSES INTENSITY ^b	.742**						
3. STUDENTS EXPERIENCE ^c	.151*	.025					
4. ENTREPRENEURIAL SELF-EFFICACY	.075	0.59	.297**				
5. ENTREPRENEURIAL INTENTIONS	0.47	-.002	.284	.286**			
6. ENTREPRENEURIAL ORIENTATION	0.20	.033	.277**	.765**	.662**		
7. GENERAL SELF-EFFICACY	-.016	.061	-.116	.058	-.098	.015	1.000

* $p < .05$ level (2-tailed)

** $p < .01$ level (2-tailed)

N= 195

^a Courses Extent refers to the number of entrepreneurial courses within the educational curricula as perceived by faculty.

^b Courses Intensity refers to the degree and frequency of entrepreneurial education events (courses, seminars, workshops and conferences) as perceived by faculty.

^c Students Experience refers to the intra-school entrepreneurial courses, workshops or seminars undertaken by students during their undergraduate studies.

5.3. ENTREPRENEURIAL SELF-EFFICACY AND GENERAL SELF-EFFICACY

The results, however, do not support any significant relationship between students' perceived ESE and their general self-efficacy. This implies that a person's self-belief and conviction, does not necessarily indicate that at any given moment, his or her self-trust and willingness for developing and pursuing a new business venture.

at the 0.05% level. This finding positively supports our assumption that a higher number of entrepreneurial courses and entrepreneurial events such as seminars, business plans contests and conferences, may be linked to higher students' "entrepreneurial exposure" and their reported level of "entrepreneurial experience". After disaggregating the students' sample into separate arrays by school, we also found a significant positive correlation at the 0.01% level in the between UABC students' entrepreneurial exposure and their reported levels of ESE, intentions and orientation.

5.4. ENTREPRENEURIAL EXPOSURE, ENTREPRENEURIAL SELF-EFFICACY, INTENTIONS AND ORIENTATION

The research results also indicated that students' exposure to entrepreneurship education has a positive impact on ESE, intentions, and orientation as perceived by the respondents (see Table 5). After dividing the sample into specific graduate programs, we found that Business Administration and

related program students (Marketing, Accounting, and International Business), had significantly higher correlations in terms of their entrepreneurship education exposure, and their self-efficacy, intentions and orientation, than those that were studying non-business-related programs, such as Engineering, Architecture, or Law. This suggests that eventually entrepreneurial education does have an impact on future entrepreneurial outcomes for students.

6. CONCLUSIONS AND IMPLICATIONS

Although it has its limitations, this study addressed a gap in the entrepreneurship education research literature highlighted by Bechard and Gregoire's (2005). Their comprehensive content analysis of 103 peer reviewed entrepreneurship education articles indicated a paucity of research focusing on social-cognitive implications. Our preliminary results indicate that entrepreneurial education is probably a major contributor in the formation of nascent entrepreneurs. However, other related factors that were overlooked such as family business background, personal entrepreneurship experiences, and other environmental conditions need to be considered in further studies. Eventually cognitive know-how and self-confidence are constant elements for nurturing entrepreneurial intentions and orientation toward new business venture developments. We found significant correlations between professors' perceived entrepreneurial curricula extent and students' perceived exposure to entrepreneurial courses, and a high relation between such instruction experience and students' ESE, intentions, and orientation toward starting their own business ventures. Although we did not find significant differences between universities' entrepreneurial curricula and course extent, or between general self efficacy and ESE, we

did find positive correlations between schools' entrepreneurial courses extent, schools' entrepreneurial intensity, and mandatory entrepreneurial courses that students undergo. Given the correlative nature of our analysis, these results must be thought of as "preliminary" and focusing only on general and broad areas of interest.

The research results, however, may be useful for university decision-makers and education officials in Mexico, interested in supporting and promoting the establishment of formal coursework in entrepreneurship in order to design adequate educational policies which can nurture a better entrepreneurial environment. Such support is necessary in order to facilitate new business creation in the country, which may lead to future gains in economic growth and development. Supporting and promoting entrepreneurship education in universities will facilitate business creation. The research findings are related only to students' entrepreneurial intentions and orientation. Future longitudinal studies should be conducted in order to determine whether such intentions and orientation would eventually translate into new business ventures.

The fact that this research was conducted within a particular location implies that results may vary depending on diverse environmental factors and educational infrastructure associated with different locations. Future research questions will have to do with finding significant differences between students and entrepreneurial curricula extent from regional and local schools or between national and international universities. Cultural dimensions between different locations in Mexico may also play an important role as moderating factors of entrepreneurial intentions.

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