

The Impact of IT-based Entrepreneurship Education on Entrepreneurial Intention

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Abstract

While the number of entrepreneurship education programs is growing, the use of new technologies like IT and web based platforms can be the drivers and promoters of the efficiency of the entrepreneurship programs. This study aims to investigate the impact of IT-based entrepreneurship education on entrepreneurial intention. For this reason, after the literature review of the topic, a quasi-experimental, ex-ante/ex-post, control group, longitudinal, repeated measures research design was implemented with total of 124 matched pairs among university students who are participated in IT-based entrepreneurship education program. The theory of planned behavior was utilized as the underlying theoretical model. The findings show an insignificant impact of IT-based education on entrepreneurial intention. This insignificant impact was not moderated by the length of IT-based entrepreneurship education. However, those who were self-employed at the beginning, at the end of the entrepreneurship program had showed significantly higher entrepreneurial intention compared to those who are not self-employed. IT-based Entrepreneurship Education is one the major sources of inspirational triggers that positively impact on entrepreneurial intention. Using new approaches like web based or IT-based approaches for entrepreneurship education can enhance and increase the efficiency and innovativeness of these types of programs.

Keywords: Entrepreneurship Education, IT-based, Entrepreneurial intention.

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Introduction

The recent decades have witnessed significant growth in entrepreneurship education in most industrialized countries (Matlay & Carey, 2006). Investment in entrepreneurship programmes is still on the increase (Gwynne, 2008). Public policy makers recognise the importance of entrepreneurship as promoter of economic development and hence support instruments like entrepreneurship education to increase entrepreneurial activity (Fayolle, Gailly, & Lassas-Clerc, 2006). There is the widespread belief in a positive impact of entrepreneurship education. By offering new entrepreneurship education programmes, the initiators follow "conventional wisdom" (Souitaris, Zerbinati, & Al-Laham, 2007). Pittaway & Cope found that the link between entrepreneurship education and outcomes is under-researched (Pittaway & Cope, 2007). Oosterbeek et al (2010) call for more research into different variants of entrepreneurship education programmes, and von Graevenitz et al (2010) state that "little is known at this point about the effect of these [entrepreneurship] courses" (von Graevenitz, Harhoff, & Weber, 2010). Emerging new technologies like information technology have changed the educational systems. Using Information technology in entrepreneurship education can be one of the innovative ways to improve accessibility and efficiency of the program. IT-based and Web-based education is related to the development of adaptive courseware which can accommodate users with very different backgrounds, prior knowledge of the subject and learning goals and which can guide the user adaptively through the course. A special role in this process is to be played by authoring tools for the development of adaptive courseware (Brusilovsky, Eklund, & Schwarz, 1998).

This study was designed to investigate the effect of the IT and web based entrepreneurship program on entrepreneurial intention .some studies like Lorz et.al,(2011) was investigated the effect of entrepreneurship education on entrepreneurial intention .In this study by using their Research especially Lorz et.al(2011) dissertation methodology and some modifications in the research design we want to investigate the effect of the IT-based entrepreneurship education on entrepreneurial intention. Rest of the paper is organized with the following sections: literature review ,research methodology ,results and discussion ,and finally conclusion.

Entrepreneurship

The term entrepreneurship has a history that dates back to 1732, when the Irish economist Richard Cantillon used the word in reference to individuals with "a willingness to carry out forms of arbitrage involving the financial risk of a new venture" (Minniti & Lévesque, 2008). The active form of entrepreneur, "entreprendre", can be translated as "to undertake or start something". In general terms an entrepreneur is described as "one who organises, manages, and assumes the risks of a business or enterprise" (Woolf, 1980). Shane et al. (2000) therefore propose three major sets of research questions:

"(1) why, when, and how opportunities for the creation of goods and services come into existence;

(2) why, when and how some people and not others discover and exploit these opportunities; and

(3) why, when and how different modes of action are used to exploit entrepreneurial opportunities (Shane & Venkataraman, 2000).

Entrepreneurship Education

Entrepreneurship education programme (EEP) is defined: "... as any pedagogical programme or process of education for entrepreneurial attitudes and skills, which involves developing certain personal qualities. It is therefore not exclusively focused on the immediate creation of new businesses." (Fayolle, Gailly, & Lassas-Clerc, 2006). Linan (2004) found that there are four different kinds of entrepreneurship education programmes. The first, "Entrepreneurial Awareness Education", aims to increase knowledge about entrepreneurship and to influence attitudes that may impact intentions. The second category is described as "Education for Start-Up". These programmes are geared toward people who generally already have an entrepreneurial idea and need to solve practical questions about becoming self-employed. The third category, "Education for Entrepreneurial Dynamism", focuses on people who are already entrepreneurs and want to promote dynamic behaviours after the start-up phase. The last category "Continuing Education for Entrepreneurs" describes life-long learning programmes and focuses on experienced entrepreneurs (Linan, 2004). Along with the different types of entrepreneurship education, there are four research streams of entrepreneurship education research (Bechard & Gregoire, 2005). The first stream focuses on the role of entrepreneurship programmes on the individual and society. The second research stream is concerned with the systemisation of entrepreneurship programmes, for example, the use of multimedia environments or curriculum development. The third stream researches the content and its delivery in entrepreneurship programmes, and the fourth stream concentrates on the needs of individual participants in entrepreneurship programmes (Bechard et al., 2005).

IT and Web Based education program

There are different types of educational programs. IT-based educational programs are one the new methods as a teaching and learning tools that information technologies like internet plays an important role in it. Online courses, the primary focus of this study, are those in which at least 80 percent of the course content is delivered online. (Seaman, J., 2010). Face-to-face instruction includes courses in which zero to 29 per cent of the content is delivered online; this category includes both traditional and web facilitated courses. The remaining alternative, blended (sometimes called hybrid) instruction is defined as having between 30 percent and 80 percent of the course content delivered online (Seaman, J., 2010).

Traditional educational programs are the Course with no online technology used — content is delivered in writing or orally. Web Facilitated educational programs are Course that uses web-based technology to facilitate what is essentially a face-to-face course and May use a course management system (CMS) or web pages to post the syllabus and assignments. Blended/Hybrid educational programs are the Course that

blends online and face-to-face delivery. Substantial proportion of the content is delivered online, typically uses online discussions, and typically has a reduced number of face-to-face meeting and finally Online educational programs are A course where most or all of the content is delivered online. Typically have no face-to-face meetings (Seaman, J., 2010).

Impact of Entrepreneurship Education

Education in general is confirmed to have a positive impact on entrepreneurship (Robinson & Sexton, 1994). Robinson et al. (1994) found in their study that there is a strong relationship between education and the probability of becoming an entrepreneur and the probability of having success as an entrepreneur. However, they did not differentiate between the various kinds of education and disregarded the possibility of specifically designed entrepreneurship education programmes. The positive impact of entrepreneurship education is further complemented by meta-studies of entrepreneurship education (Bechard et al., 2005; Dickson, Solomon, & Weaver, 2008; Mwasalwiba, 2010; Pittaway et al., 2007). "...in general, there was a significant and positive correlation between participation in educational programs and selection into entrepreneurship" (Dickson et al., 2008: 245) or "Although most studies vary in terms of approach and theoretical orientations..., their results seem to conclude that entrepreneurship education has some positive impact on students (Mwasalwiba, 2010). Souitaris et al. (2007) analysed two entrepreneurship education programmes and while they found that entrepreneurial intention was raised, they also found, in contrast with Peterman (2003), that entrepreneurship education did not have an impact on perceived behavioural control and attitudes toward behaviour. According to the authors, the insignificant impact was difficult to explain; however, the authors speculate that perceived behavioural control of the students was already high at the beginning and had little room to change. While some entrepreneurship education programmes consist of individual entrepreneurship courses lasting one day (Fayolle, 2006), some last for up to 12 months (Oosterbeek, van Praag, & Ijsselstein, 2010). Is a longer programme better or more effective than a shorter? Oosterbeek et al. (2010) underline duration of an programme as a promising avenue of research.

While most authors focus on learning and improvement of entrepreneurial skills, Souitaris et al. (2007) provide a new perspective on a potential major benefit of an entrepreneurship education programme. Their research found that entrepreneurship education programmes could be a source of entrepreneurial trigger-events that impact on entrepreneurial intention. Souitaris et al. (2007) suggested research on triggers of entrepreneurship education programmes as promising field of research. Research on the impact of entrepreneurship education provides opportunities for different types of studies and research design. Along with testing different variants of entrepreneurship education, the potential moderating effect of duration of IT-based entrepreneurship education, stability of intentions after the end of education, the link between intention and self-employment, and research aspects of this study and the ease and usefulness of the IT-based entrepreneurial education can be some aspects that are investigated in this study.

Literature

Entrepreneurship Intention

Intention models belong to the umbrella of social cognitive theory, proposed and developed by Bandura (1986). The central tenet of "social cognitive theory is that individuals can influence their own actions" (Ratten & Ratten, 2007). Social cognitive theory proposes a framework for understanding, predicting and changing human behaviour (Davis, 2006). Within this umbrella, intention models contribute to the area of predicting behaviour. Intentions represent "a person's motivation to make an effort to act upon a conscious plan or decisions" (Conner & Armitage, 1998). Thompson (2009) defines entrepreneurial intention as "self acknowledged conviction by a person that they intend to set up a new business venture and consciously plan to do so at some point in the future" (Thompson, 2009). Entrepreneurial intentions function as a mediator or catalyst for actions (Fayolle et al., 2006). the decision to become an entrepreneur and set up a business involves careful planning and a thinking process which is highly intentional (Keeley, , 2001;; Krueger, 1993; Tkachev & Kolvereid, 1999). Entrepreneurship is seen as a good example of planned intentional behaviour and therefore applicable for intention models (Autio, Keeley, Klofsten, Parker, & Hay, 2001). Specifically for entrepreneurship education programmes, intentions are applicable as "intentions proved to be best predictor of planned behaviour (Krueger & Brazeal, 1994).

Theory of Planned Behaviour

The theory of planned behaviour has its roots in the theory of reasoned action (TRA), which was proposed by Fishbein and Ajzen in 1975/80 (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). The theory consists of three major constructs, 1) the behavioural intention that depends on 2) subjective norms and 3) attitudes. The stronger the positive attitudes toward a behaviour are and the stronger the social norms toward a behaviour are, the stronger the behavioural intention is. If the intention is high, the individual is likely to perform the specified behaviour. The theory assumes that specific actions are preceded by a conscious intention to act in a specific way. Furthermore, intentions are dependent on attitudes that are affected by previous life experiences, personal characteristics and perceptions drawn from those experiences (Ajzen, 1991).

Methodology

For the research design base, like some studies such as the dissertation of Lorz et.al, (2011), we used the theory of planned behaviour as the theoretical framework for research by emphasizing the IT-based entrepreneurship education programs. The hypotheses were selected to provide the conceptual relationships that would be tested in the study.

Hypothesis 1: An IT-based entrepreneurship education programme positively influences a) attitude toward behaviour, b) subjective norms, c) perceived behavioural control and d) entrepreneurial intention. Hypothesis one must be tested against the

control group, which is expected to remain in all constructs at a similar level throughout the measurement periods

Hypothesis 2: The greater the attitude toward behaviour, subjective norms, and perceived behavioural control, with regard to self-employment, the greater the entrepreneurial intention.

Hypothesis 3: The longer an IT-based entrepreneurship education programme, the stronger the increase in attitude toward behaviour, subjective norms, perceived behavioural control and entrepreneurial intention.

Hypothesis 4: The more time that elapses after the end of an IT-based entrepreneurship education programme, the weaker the attitude toward behaviour, subjective norms, perceived behavioural control and entrepreneurial intention.

Hypothesis 5: The higher the entrepreneurial intention, the higher the probability of becoming self-employed.

Hypothesis 6: Participation in an IT-based entrepreneurship education programme increases the probability of becoming self-employed.

Hypothesis 7: IT framework of the entrepreneurship program increases the level accessibility of the knowledge and skills for the intention of the entrepreneurial activities.

For the research, based on the Lorz et.al,(2011) dissertation and other studies was designed with control group. Data gathering was conducted via structured questionnaires with repeated measures over time and matched pairs. The reasons for choosing this approach lie in the advantage of setting up a pre-post test design (Cohen & Manion, 1989). to measure the development of entrepreneurial intentions of individual participants in the entrepreneurship programme from the beginning to the end of the programme. With questionnaires, we could have a highly structured approach and the controllability of large data samples for data gathering. The sample was the university students of Iran who are participated in IT-based entrepreneurship education program. The sample in the control group comprises university students who were randomly selected and were not taking part in an IT-based entrepreneurship education programme. The questionnaire was designed in the following steps. After reviewing the literature and studies like Lorz et.al,(2011) the main constructs of the questionnaire was designed and developed. The scales reliability was reviewed and confirmed by asking the experts. Internal consistency was examined with a Cronbach internal consistency test scoring $\alpha > 0.85$ for all key scales. The data gathering duration was 6 months from selected sample. Data analysis was done by statistical analyses of the questionnaire data with SPSS. Statistical tests like T-test, Levene's Test, Skewness & Kurtosis and other required tests were conducted with SPSS.

Results and discussion

For the Hypothesis 1, the analysis of the impact of IT-based entrepreneurship education on the constructs of attitude toward behaviour, subjective norms, perceived

behavioural control and entrepreneurial intention, similarly to Osterbeek et al. (2010), Lorz et.al, (2011), the difference scores of $T_{final} - T_{start}$ were taken and compared first within the control and experimental groups. In our study there is significant change for attitude toward behaviour, subjective norms and entrepreneurial intention and also perceived behavioural control. ($p < 0.001$). In direct comparison between experimental and control group, all of them changed significantly in the experimental group. Taking these results into account, hypothesis 1a, b, c is supported, while in other studies like Lorz et.al, (2011) study just hypothesis 1c is supported but hypotheses 1a, b, d are rejected.

For hypothesis 2, two hierarchical regression models were calculated in order to test hypotheses 2a-c. Model 1 utilises entrepreneurial intention in T_{start} as the dependent variable and model 2 entrepreneurial intention in T_{final} . The model has an adjusted R^2 of .852 in step 2 and indicates that group membership (experimental group), attitude toward behaviour and perceived behavioural control significantly (all $p < 0.001$) predict entrepreneurial intention. In model 2, the dependent variable is entrepreneurial intention (T_{final}). Three hierarchical steps of multiple regression are undertaken, the first two are the same compared to model 1, in the third step the constructs of attitude toward behaviour (T_{final}), subjective norms (T_{final}) and perceived behavioural control (T_{final}) on entrepreneurial intention (T_{final}) are included. The model indicates that the values in T_{start} already had a significant (all $p < 0.03$) predictive power in T_{start} on entrepreneurial intention in T_{final} . Step 3 is the same for model 1: Only attitude toward behaviour and perceived behavioural control significantly explain entrepreneurial intention. The overall adjusted R^2 of the model is slightly higher at .862 and is well placed in the range of predictive power of the theory of planned behaviour (Ajzen, 1991); The tests support hypotheses 2a and 2c and reject hypothesis 2b. Taking these results into account, the results supported by other studies like Lorz et.al, (2011) study.

For Hypothesis 3, the GLM multivariate analysis of the different durations of the IT-based entrepreneurship education programmes on the constructs were conducted, The overall model is not significant ($p < 0.35$). the duration of IT-based entrepreneurship education did not impact significantly on the tested constructs. Hypotheses 3 are therefore not supported.

For the Hypothesis 4, In order to test whether constructs lose their strength after the end of an IT-based entrepreneurship education programme, the participants were surveyed two months after the programme. Therefore, a 3-Level GLM repeated measure model with simple contrasts was calculated. In the first part of the model (1), T_{final} (end of the programme) is the reference and the repeated measures are tested against T_{final} . The model indicates no significant differences two months after the end of the programme. In the next step the same model (2) was calculated again with the reference set at as T_{start} (beginning of programme) (all $p < 0.05$). This test shows whether values after an IT-based entrepreneurship education programme fall below the initial values. The tests support hypotheses 4a-d.

For Hypothesis 5, tests whether entrepreneurial intentions at T_{start} already predict the status of being self-employed at T_{final} . For this purpose a binary logistic regression was conducted on the predictive power of entrepreneurial intention and the attitudinal

constructs on the dichotomous variable self-employed (Yes/No). Both models are significant ($p < 0.001$). Entrepreneurial intention is increasing probability of becoming an entrepreneur. Only entrepreneurial intention was significant. Hypothesis 5 is supported.

For Hypothesis 6, Hypothesis 6 tests whether entrepreneurship education increased the probability of becoming self-employed.. Similarly to hypothesis 5, two binary logistic regression models were calculated. The first model regresses the difference scores of entrepreneurial intention on respondents in the experimental group who were self-employed in T_{final} , while the second model controls for those who were already entrepreneurs in T_{start} , hence, only including those who were self-employed in T_{final} and not in T_{start} . While the difference scores in entrepreneurial intention in model 1 are insignificant, they change in model 2 to significant. This confirms that the difference scores of entrepreneurial intention, hence the influence of participating in the entrepreneurship programme, impacted on the status of becoming self-employed. The Hypothesis 6 is supported.

For the hypothesis 7, T-test for the start and final point of times among the control and experimental group were conducted. The results support the hypotheses 7.

Our findings indicates that IT-based entrepreneurship education programs like other programs have some impacts on entrepreneurial intention .our study results indicates that an IT-based entrepreneurship education program positively influences a)attitude toward behaviour ,b) subjective norms, c)perceived behavioural control and d) entrepreneurial intention. While in other studies like Lorz et.al, (2011) study just the influence of entrepreneurship education program on perceived behavioural control is supported but on attitude toward behaviour, subjective norms and entrepreneurial intention are rejected. The length of entrepreneurship education proved not to have a positive or significant impact on attitudes and entrepreneurial intention that is supported by other studies findings like Lorz et al (2011). Also our findings showed that the more time that elapses after the end of an IT-based entrepreneurship education programme ,the weaker the attitude toward behaviour , subjective norms , perceived behavioural control and entrepreneurial intention .

Entrepreneurial intention significantly increases the probability of becoming self-employed when comparing the status of being self-employed in T_{final} with the T_{start} values of entrepreneurial intention. The impact of IT-based entrepreneurship education measured as change in entrepreneurial intention significantly explains the status of being self-employed in the experimental group. The higher the entrepreneurial intention, the higher the probability of becoming self-employed. There was a significant relationship between those who attended IT-based entrepreneurship education courses and those who eventually became self-employed, and there was a significant increase in perceived behavioural control for those in the experimental groups. This should be evaluated as evidence of the benefits and therefore supporting the existence of IT-based entrepreneurship education. Finally IT framework of the entrepreneurship program positively influence and improves the acquisition of and the access to the required knowledge for intention of entrepreneurial activities.

Conclusion

This study contributes to deepen our knowledge of the effect of IT-based entrepreneurship education program on entrepreneurial intention and also contribute to the IT-based entrepreneurship education research and benefits educators. The theory of planned behaviour was applied to the IT-based entrepreneurship education and tested with the IT-based entrepreneurship education programmes among university students. The findings support the further development of the theory of planned behaviour applied to IT-based entrepreneurship education. Using Information technology approaches to the entrepreneurship education can enhance and improve the impacts of the program. This study also contributes to applied research on the impact of entrepreneurship education research. The IT-based entrepreneurship education as one of the new forms of the entrepreneurship education was tested. Our findings indicate that IT-based entrepreneurship education programs have some impacts on entrepreneurial intention. IT-based entrepreneurship education program positively influences a) attitude toward behaviour, b) subjective norms, c) perceived behavioural control and d) entrepreneurial intention. While in other studies like Lorz et.al, (2011) study just the influence of entrepreneurship education program on perceived behavioural control is supported but on attitude toward behaviour, subjective norms and entrepreneurial intention are rejected. The length of entrepreneurship education proved not to have a positive or significant impact on attitudes and entrepreneurial intention that is supported by other studies findings like Lorz et.al (2011)

Entrepreneurial intention significantly increases the probability of becoming self-employed. The higher the entrepreneurial intention, the higher the probability of becoming self-employed. There was a significant relationship between those who attended IT-based entrepreneurship education courses and those who eventually became self-employed. This should be evaluated as evidence of the benefits and therefore supporting the existence of IT-based entrepreneurship education. Finally IT framework of the entrepreneurship program positively influence and improves the acquisition of and the access to the required knowledge for intention of entrepreneurial activities.

Policy makers can use the findings of this to enhance and improve the policy making for entrepreneurship education programs. IT-based Entrepreneurship as an innovative method of entrepreneurship education can bring the benefits of traditional entrepreneurship education with new technologies advantages to foster and improve entrepreneurial intention and increase the level of entrepreneurial activities in the country.

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