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The Impact of Entrepreneurship Education Programs (EEPs) on the Entrepreneurial Attitudes among Higher Education Students

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Using the Theory of Planned Behavior (TPB), this study aimed to investigate the impact of Entrepreneurship Education Programs (EEPs) on entrepreneurial attitudes and intentions among university students in the Kingdom of Saudi Arabia (KSA). Following the quantitative approach of enquiry, a self-administered questionnaire was distributed among two groups of students: participants studying entrepreneurship courses as part of their degrees (EEPs Group) and participants not taking any entrepreneurship course (Control Group). Data collection took place in the beginning of the semester (Pre-test/t1) and at the end of the semester (Post-test/t2). The results showed that the intention to become self-employed was positively and significantly associated to attitudes towards self-employment, subjective norms and perceived behavioral control. University students' attitudes towards self-employment, subjective norms and perceived behavioral control not only had significant and positive associations with students' intentions to become self-employed but also predicted it significantly. Therefore, while providing useful insights on the situation of entrepreneurship education, these findings help university and government planners to address unemployment of young people by creating greater entrepreneurial awareness, and jobs through entrepreneurship activities.

Keywords: Entrepreneurship, higher education, entrepreneurship education programs, entrepreneurship intention, Saudi Arabia

JEL: I23, L26

In recent decades, entrepreneurship has been widely recognised because of its proven effects on the society, the economy and the individual citizens in developed countries and developing countries alike. Many researchers have focused on this domain because of the importance associated to entrepreneurship as a source of innovation, development of new small and medium businesses, creation of employment opportunities and wealth creation for individuals and societies (Dana, 2001). Due to the positive influence of entrepreneurship on the general growth of economies, it is considered as the engine that drives the economies of the majority of nations (Gorman *et al.*, 1997; Navarro, Torres and Iglesias, 2009).

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As an engine of economic growth, there is intense interest from policymakers and academics towards entrepreneurship and entrepreneurship education (EE). Based on the assumption that such linkages must exist, there has been a dramatic increase in entrepreneurship education (Solomon *et al.*, 2002; Matlay, 2009; Rae *et al.*, 2012), with more research in the field of graduate entrepreneurship in the developing world warranted (Nabi and Linan, 2011).

Saudi Arabia, which is the focus of this study, has a number of issues associated with unemployment that has been increasing in last years; pushing policy makers to seek alternative job creation opportunities. The World Economic Forum report (2011) on entrepreneurship in the Arab world states that large-scale transformations combined with social dynamism particularly among the youth, have clearly put the employment challenge on the top of the regional agenda, with entrepreneurship being a key imperative. The unemployment rate and lack of diversification in the general economy have impeded economic development despite the vast increase in the wealth.

There is a recognised need to develop a framework and investigate, evaluate and accordingly compare programs in terms of objectives, target audiences, formats and pedagogical approaches for designing potential EEPs. Aside from this, there is also a need to test frameworks, models and programs empirically in different cultures in order to establish their generalisation. In line with the literature and recent increased interest of researchers regarding the link between entrepreneurship and education, this study focused on investigating the impact of EEPs on the development of intentions towards self-employment, with the idea that individual's intentions are effective in predicting the planned behavior. With the support of the Theory of Planned Behavior (TPB), behavioral intentions are predicted through consideration of attitudes towards certain behaviors, subjective norms and perceived behavioral control. In this vein, it is argued in this study that attitudes and beliefs predict intentions, and those intentions predict behaviors. A link between the development of these attributes and entrepreneurship education will be established in this study to confirm whether entrepreneurship education increases students' intentions to become self-employed in Saud Arabia. By doing so, this study aims to create awareness on the importance of entrepreneurship education in the country, advances the understanding on factors that influence entrepreneurial intention and creation, and

provides useful insights into the state of entrepreneurship education for policymakers and planners. Particular understanding will be brought up with regard to the young generation admitted in universities and the effectiveness as well as contributions of entrepreneurship education.

In particular, the study seeks to achieve three objectives: fist, it seeks to assess the extent to which Saudi students develop intentions to become self-employed through necessary start-up activities after taking EEP courses. Second, to examine the effects of attitudes, subjective norms, and perceived behavioral control factors on students' intentions towards becoming self-employed. Lastly, to unveil the effect of TPB factors on developing the entrepreneurial intention after taking EEP courses.

The remainder of this paper is organized as follows: Section 2 presents the economy, unemployment and entrepreneurship of Saudi Arabia. Literature review and hypotheses development are presented in section 3. We then introduce research methods and data analysis in section 4 and 5. Finally, section 6 concludes and summarizes the study.

Economy, Unemployment and Entrepreneurship in Saudi Arabia

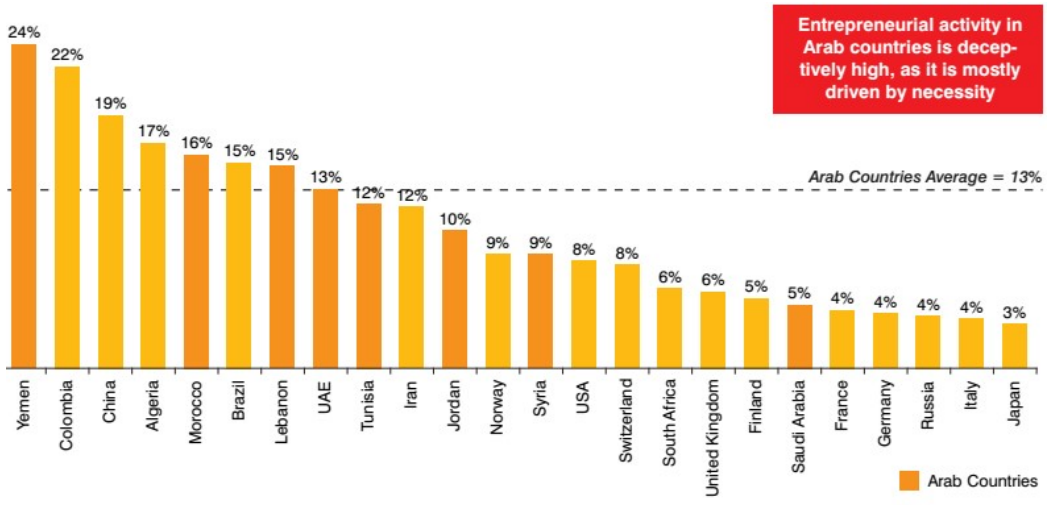
-Saudi Arabia

According to demographic survey of the Saudi bureau of statistics, known as the General Authority of Statistics (2016), the population of Saudi Arabia is growing at an annual average rate of 2.54 percent. The total population reached 31.7 million in 2016 (of whom 18.2 are males, and 20 million are Saudis and 11.67 million are non-Saudis); an increase of 16.5 percent from 27.2 million in 2010. The majority of the population (82.6%) is living in urban areas. over 72 percent (22.8 million) of the total population is aged between 15 years and 64 years.

Saudi Arabia is largely dependent on the economic activities of oil industry accounts for some 45 percent of the total Gross Domestic Product (GDP) and around 90 percent of the total exports (Samargandi *et al*., 2014). Nevertheless, the oil sector employs no more than 4 percent of the labor force. There is a serious challenge to reform the Kingdom's financial and economic model from being dependent on the natural wealth to one based on the capitalistic economic model to reflect changing demographics and the needs of the younger generation, and more cosmopolitan population. The new long-term economic strategy,

dubbed Vision 2030 is aimed at weaning the Saudi economy off its addiction to oil, helping Saudi Arabia stay competitive in a low-oil-price world. It is also targeted at more than tripling non-oil revenues by 2030 and creating more than 450,000 jobs, including jobs for women, in the private sector. The Kingdom has been steadfast in believing that the best solution towards sustainable economic development is to encourage private business. Initially, there have been clear indications in Saudi's 7th and 8th Development Plans (2000-2005 and 2005-2010 respectively) that the country continued proactive development plans to promote the private, independent business sector. However, the successive five-year developmental plans failed to include an entrepreneurship sector and addressed the most pressing unemployment problem facing the economy (Kayed and Hassan, 2011), thus, leading to failure in the government reforms (Dudley, 2016). Unemployment of the population aged 15 years and above exceeded 11 percent in 2016 (General Authority for Statistics website).

According to the World Economic Forum report (2011), Middle East and North Africa (MENA) region face enormous opportunities and challenges in terms of employment. It has one of the world's youngest workforces with more than one-half of its population aged below 25. The report also argues that the drive for entrepreneurship and the strategy to tackle unemployment in the Arab countries seems to revolve around



Source: World Economic Forum (2011, p. 9).

Figure 1. Early Stage Entrepreneurial Activity (% Adult Population 2009)

the Arab youth. Motivated generation of young working people can propel growth and prosperity for entire countries. In Saudi Arabia, only 5 percent of the working population is involved in entrepreneurial activity, which is smaller than 13 percent average in the Arab world.

-Education and Entrepreneurship Education in Saudi Arabia

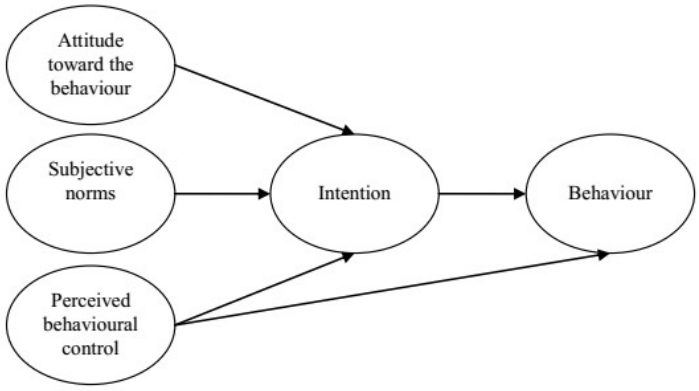
Saudi government have invested exponentially in university infrastructure and education over the last decades (Clark, 2014; El-Katiri, 2016). As for now, according to the Saudi Arabia Education website, citing the ministry of higher education, the number of Higher Education Institutions (HEIs) includes 25 public universities, 10 private universities and 36 private colleges. A total of 1,165,091 students were enrolled in public universities in 2013 including 1,064,880 students involved in undergraduate programs (General Authority of Statistics website). In the same time, new public enrollment at the bachelor's level has risen from 82,075 students in 1999-2000 to 339,836 in 2013-14. At the master's level, new entrants rose from 1,640 in 1999-2000 to 10,844 in 2013-14, with total enrollments at the master's level growing exponentially in recent years from 11,007 in 2008-09 to 19,952 in 2009-10 and 37,753 in the last academic year (Clark, 2014). Yet, with these internal achievements, the government continues sending good number of university students overseas. In the United States, for instance, this number amounts to over 9,300; making Saudi Arabia the fifth largest source of international graduate students (Clark, 2014).

As stated early, research addressing entrepreneurship education in Saudi Arabia is still in an infant stage. Therefore, questions on what shapes this phenomenon, what drives its occurrence, and what perception policymaker is holding in its favor are yet to be answered. Available studies remain limited in terms of their scope and findings. The conceptual study of Almahdi and Dickson (2010) emerged to contribute in this gap. Based on the works of Pittaway and Cope (2007) and Dickson *et al*. (2008), a conceptual framework that incorporates facets (based on entrepreneurship/experience and entrepreneurship education) of entrepreneurship education in the Kingdom of Saudi Arabia was proposed. This study also aimed to propose certain recommendations for strengthening the role of Saudi universities in further development.

LITERATURE REVIEW

The Theory of Planned Behavior (TPB) and Entrepreneurship Education

In recent years, The TPB has become one of the most widely used psychological theories to predict human behavior. It has been applied to a variety of behaviors for example leisure choice, family planning behaviors and customer behavior (Ajzen and Fishbein 2000). It links personal attitudes and behaviors with individual intentions so that, by extension, it could relate entrepreneurial behavior to business start-up activities (Fishbein and Ajzen, 1975; Ajzen and Fishbein 1980). The dominant focus of TPB is on attitude towards self-employment, the degree to which a person has a favorable or unfavorable evaluation about self-employment, subjective norms as a social pressure to perform a behavior or not and perceived behavioral control as the perceived ability, ease or difficulty of performing the entrepreneurial activity (Figure 2). The efficacy of the theory is in predicting human behavior and cognitive decision-making, which may underline behaviors with respect to starting a business. Individual intentions are effective in predicting planned behavior; with the support of TPB theory, behavioral intention is predicted by attitudes.



Source: Ajzen (1991)

Developments of Hypotheses

This paper is focused on investigating the impact of EEPs on the development of intentions towards self-employment with the idea that individual intentions are effective in predicting planned behavior. With the support of the TPB, behavioral intentions are predicted by attitudes, i.e. attitudes towards the behavior, subjective norms and perceived behavioral control. In this regard, the researchers argued that attitudes and beliefs predict intentions, and those intentions predict behaviors; thus, the researchers attempted to link the development of these attributes to entrepreneurship education in an attempt to confirm whether

entrepreneurship education increases students' intention of self-employment. The conceptual approach and the theoretical model presented in this study could provide a link to identify the evidence of EEPs in terms of developing students' attitudes and intentions. This conceptualisation was in line with the studies of Krueger and Carsrud (1993), Kolvereid (1996b), Luthje and Franke (2003), Fayolle *et al.* (2006) and Souitaris *et al.* (2007). The model was used to assess the impact of EEPs.

In this conceptual approach, the researchers focused on assessing the impacts of EEPs in terms of developing participants' attitudes and intentions regarding entrepreneurial behavior through the TPB. Through this model, independent variables utilise the types of benefits of education program to students, such as learning from a module, learning from inspiration and university incubation resources. However, dependent variables relating to the antecedents of entrepreneurship behavior used, included attitude towards behavior, subjective norms, perceived behavior control and entrepreneurial intention. This integrative conceptual framework was developed based on the TPB in an attempt to examine students' subsequent behaviors and intentions. This theory suggests that attitudes and beliefs predict intentions, and intentions predict behaviors (Ajzen, 1991). Thus, the link between individuals' attitudes (toward self-employment, subjective norms and perceived behavioral control) and intention to become self-employed through targeted education has been empirically tested. In this connection, the researchers argued that education in entrepreneurship affects the attitudes and intentions of individuals, which subsequently may change career choice and compel an individual to start his or her own business.

The scope of this study further developed previous works, such as prior research from an economics perspective into why people become self-employed, which typically have relied on theoretical arguments. In this regard, however, the TPB was used to investigate the role of the EEPs for a developing country, particularly an Arab culture in Saudi Arabia. In this vein, researchers such as Luthje and Franke (2003), Fayolle and Gailly (2005), Fayolle *et al.* (2006), Souitaris *et al.* (2007) and Johansen and Schanke (2012) have empirically assessed EEPs in order to find out ways to enhance the behaviors and intentions of individuals. In order to gain further insights, this study extended the scope of previous studies to investigate the role of entrepreneurship education and the consequences of such education on students' entrepreneurial

behavior and intentions. This extension is in line with the recommendations of both Lee and Wong (2006) and Souitaris *et al.* (2007), who suggested that future research should focus on the influence of education towards entrepreneurial intentions and attitudes.

Following the researchers' conceptualisation for the study where educated people can become more entrepreneurial, there is an increased interest in entrepreneurial careers and their greater contribution to economic development. This idea leads to the development of intentions for initiating business activities, which are best predicted by attributes such as attitudes towards behavior, subjective norms and perceived behavioural control. Eventually, the development of entrepreneurial attitudes and behaviors to become self-employed can be facilitated through entrepreneurial education. Thus, there is increasing interest in entrepreneurship attitudes and intentions through entrepreneurial education. In educational context, entrepreneurship education programs have been found to influence both the current behavior and the future intentions (Kolvereid and Moen, 1997; Tkachev and Kolvereid, 1999; Fayolle, 2002; Fayolle *et al.*, 2006). Moreover, different attitudes and intentions have been found to be significant between students who have taken entrepreneurship courses and those who have not.

Although researchers have witnessed that people who start their own businesses have a higher level of education than those who do not (Bowen and Hisrich, 1986), more specifically some researchers have argued that nascent entrepreneurial success is often a function of relevant entrepreneurship education (Borjas, 2000**;** Parker, 2004). Based on the literature review following hypotheses are proposed:

H_{1a}: The intention to become self-employed (Entrepreneurial Intention) is positively related to the attitude towards self-employment.

H_{1b}: The intention to become self-employed (Entrepreneurial Intention) is positively related to perceived behavioral control.

H_2: After taking an EEP course, there is increased propensity to become a nascent entrepreneur.

H_{3a}: After taking an EEP, the student's attitude towards self-employment and intention to become self-employed will be improved compared to what it was at the beginning of the EEPs.

H_{3b}: After taking an EEP, the student's intention to become self-employed will be improved

compared to what it was at the beginning of the EEPs.

In the domain of entrepreneurship, entrepreneurs are made not born; thus, the emphasis on learning has been directed towards the necessity of developing skills and knowledge in terms of starting-up a business, problem-solving and leadership, all through education programs (Gorman *et al*., 1997; Henderson and Robertson, 2000; Rae *et al*., 2012). The concept of entrepreneurial learning is "learning to recognise and act on opportunities, and interacting socially to initiate, organise and manage ventures" (Rae, 2005). This concept has a dual purpose, such as learning the theory, as well as learning through entrepreneurial activity. However, there might be apparent differences between enterprise education and enterprise (or entrepreneurial) learning. In the case of entrepreneurial learning through education, the literature provides intellectual and pedagogical foundations for the development of enterprise activity through learning under conditions of change and uncertainty (Gibb, 2002 a,b). Researchers, such as Hannon (2004) and Hytti and O'Gorman (2004), have increasingly turned to a recursive theme, considering the cultural divide in education between the "bureaucratic-corporate and entrepreneurial" values manifested in a polarisation between educational and enterprise learning modes, which persist in education (Gibb, 2002 a,b; Rae and Draycott, 2009). Most commonly, researchers' focus on enterprise education has shifted towards experiential learning, learning 'for' rather than 'about' entrepreneurship (Garavan and O'Cinneide, 1994; Gorman *et al*., 1997; Hannon, 2004; Pittaway and Cope, 2007). However, the dominant focus in the literature has been made with learning as activity, as a means of sense-making, connected with individual emergence and articulating and theorising from learning (Cope and Watts, 2000**;** Cope, 2003, 2005). In this regard, entrepreneurial education is considered important in the development of entrepreneurs (Breen, 2004). Therefore, following hypotheses are proposed:

H_{4a}: The greater the learning from the EEPs modules, the higher the post-program improvement in the student's attitude towards self-employment, and intention to become self-employed.

H_{4b}: The greater the learning from the EEPs modules, the higher the post-program improvement in the student's subjective norms and intention to become self-employed.

METHODOLOGY

The study was carried out in public and private sector Higher Education Institutions (HEIs) where entrepreneurship courses are offered at the undergraduate and postgraduate levels. The study considered a regional balance in the selection of the institutions in order to cover almost all regions of the country using a random sampling strategy. The advantages of random sampling include representativeness, freedom from human bias and classification errors, and ease of sampling and analysis while its limitations include errors in sampling, and need for more time and high labor.

From the selected institutions, all students who were engaged in taking entrepreneurship courses at degree level and those students who did not take these courses were included. The participating students were divided into two groups as follows: The first group included those participants who were engaged in taking entrepreneurship courses at degree level and this group was named as the entrepreneurship education programs group (EEPs Group). The second group consisted of those students who did not take any entrepreneurship courses during their degree studies and the group was named the Control Group. Data were collected from both groups at two different times: Pre-test, when students were starting their courses, and Post-test, when students had completed their studies. The participating students belonged to different study areas such as the business administration, home economics, engineering and industrial management. The researchers used a survey questionnaire at two time intervals i.e. t_1 (pre-test) and t_2 (post-test). At Pre-test, a questionnaire was distributed among 632 students who had just joined EEPs course and were undergoing their semester (at the beginning of the course), known as the EEPs Group. A questionnaire was distributed at the Post-test to the same 632 students as they were about to complete the EEPs at the end of their semester (at the end of the course). Out of 632 questionnaires distributed, the researchers collected 516 questionnaires from the EEPs Group at Pre-test and 523 at Post-test, with response rates of 81.6 percent and 82.7 percent, respectively. The researchers discarded 13 questionnaires from pre-test and 15 from post-test because they were incomplete and missing relevant data. The researchers also found six outliers in Pre-test and five in Post-test for the EEPs group. A total of six mismatched surveys were found from Pre-test and 12 from Post-test for the same group. Finally, 491 samples were selected at each time i.e. t_1 (pre-test) and t_2 (post-test) for the EEPs group.

A survey questionnaire was adapted and applied for data collection. We developed a survey questionnaire with demographic questions first, followed by questions regarding the variables of interest. In this study, a letter accompanied the survey questionnaire to inform the participants about the objectives of the study. The style of questions was closed, with rating scales in which the researchers provided a range of answers for each question. From the language point of view, this study was conducted in HEIs in Saudi Arabia where the native language is Arabic; however, it is worth noting that English is the second most common language after Arabic in the country. The survey questionnaire was divided into ten sections as follows: demographic characteristics and family background, reasons for becoming an employee of an organisation, reasons for becoming a full-time self-employed person, subjective norms, perceived behavioral control, occupation status choice intentions, learning from modules and learning from inspiration start-up activities.

For the study, the first Likert scale measured attitudes towards organisational employment and included five factors: security, work load, social environment, avoidance of responsibility and career development. The second Likert scale measured attitudes towards self-employment and included six factors: economic opportunity, challenge, autonomy, authority, self-realisation and ability to participate in the whole process (see Table 5- Appendix-VI). Other Likert scales measured the subjective norms, perceived behavioural control, intention to become self-employed, learning from modules, learning from university incubation resources, learning from inspiration and start-up activities, which included nascency, business planning, financing the new firm and interaction with the external environment. Table 1 (Appendix-II) below summarizes the questionnaire items that are used in the study.

Data Analyses

To test the hypotheses the intention to become self-employed (Entrepreneurial Intention) is positively related to the attitude toward self-employment (H_{1a}), and perceived behavioral control (H_{1b}), the researchers calculated the Pearson's correlation coefficients and conducted multiple regression analysis for the two time points (t_1 and t_2). This was carried out firstly for the EEPs Group and then for the Control Group, and then for the combination of both groups.

As predicted by the TPB, intention to become self-employed (entrepreneurial intention– EI) was found to have a statistically significant correlation with the attitude toward self-employment, subjective norms and perceived behavior control at both times. The results (see Table 2-Appendix-III) revealed that there was a significant positive correlation between intention to become self-employed and attitude towards self-employment (Pre-test: r =.29, $p<.01$; Post-test: r =.29, p <.01). Similarly, a positive and significant correlation was found between intention to become self-employed and subjective norms before and after EEPs (Pre-test: r =.35, $p<.01$; Post-test: r =.41, $p<.01$), and with perceived behavioral control (Pre-test: r =.31, $p<.01$; Post-test: r =.35, $p<.01$).

The significant and positive results suggested that the higher the intention to become self-employed, the higher the attitude toward self-employment, subjective norms and perceived behavioral control. As a result, H_1 hypothesis was fully accepted i.e. H_{1a} and H_{1b} were accepted.

Regression analysis (Table 3-Appendix-IV) was conducted to further assessing the above hypothesis (H_1). The regression results showed an adjusted R^2 coefficient for the pre-test as R^2_{adj}=.23, $p<.01$; post-test: R^2_{adj} =.27, p =.01. The resulting standardised beta (β) coefficients showed that attitude towards self-employment (Pre-test: β =.24; post-test: β =.19), subjective norms (pre-test: β =.28; post-test: β =.30) and perceived behavioral control (pre-test: β =.22; post-test: β =.26) were all significant predictors of the intention to become self-employed ($p<.01$). Hence, the regression results provided supporting evidence to accept hypotheses H_{1a}, and H_{1b}.

In the EEPs Group, the results showed that there was no significant correlation between intention to become self-employed and nascence (r =.07, p >.05) (Table 3). In addition, no significant correlation was found between the intention to become self-employed and the number of start-up activities (r =.02, p >.05). Based on these outcomes, the hypothesis H_2 was rejected. Results of regression analysis (see Table 3) were used to predict intention to become self-employed, revealed insignificant adjusted R^2 when nascence and start-up activities were used as predictors (R^2_{adj}=.001, p =.25). The resulting standardised beta (β) coefficients showed that neither 'nascence' (β =.06) nor 'start-up activities' (β =.02) were significant

predictors of the intention to become self-employed (p >.05). This outcome thus suggested rejection of hypothesis H_2 in total i.e. both the H_{2a} and H_{2b} were rejected.

A repeated measures t-test was conducted to test the impact of EEPs on students' attitudes toward self-employment, subjective norms, perceived behavioral control and intentions to become self-employed (see Table 4). This was done by comparing the scores of each variable before and after the EEPs. By looking at the boxplot (Figure 3-Appendix-I) it can be observed that when considering all variables the data can be considered as normally distributed.

In the EEPs Group, the results of the t-test indicated that EEPs resulted in significant improvements in the Pre-test and Post-test values for attitude to self-employment t (490) = 6.20, p < .01) (pre-test = .64, post-test =1.02). Similarly, EEPs were found to have significant effects on subjective norms t (490)=6.32, p <.01) (pre-test =3.66, post-test =3.97) and on perceived behavioral control t (490)= 3.96, p <.01) (pre-test =2.63, post-test =2.87), as well as on the intention to become self-employed t (490)=8.66, p <.01) (pre-test =3.60, post-test =4.12). The results thus suggested that the hypothesis H_3 can be fully accepted i.e. all the hypotheses i.e. H_{3a-d} were accepted.

H_4 states that there is a difference in attitude toward self-employment (H_{4a}), subjective norms (H_{4b}), perceived behavioral control (H_{4c}) and intention to become self-employed (H_{4d}) when pre-test and post-test periods were compared in the Control Group.

Again, a repeated measures paired-samples t-test (Table 4-Appendix-V) was conducted for the Control Group; this was done by comparing the scores of each variable at the pre-test and the post-test. The results showed no significant differences or any improvements at the post-test.

Results of paired-samples t-tests showed no significant differences in the mean scores of the attitude towards self-employment t (183)=-1.33, p >.18) (pre-test =.59 post-test =.43), subjective norms t (183)=-.96, p >.33) (pre-test =3.40, post-test =3.34), perceived behavioral control t (183)=-1.15, p >.24) (pre-test =2.63, post-test =2.59) or intention to become self-employed t (183)=1.12, p >.26) (pre-test =2.98, post-test =3.18). Therefore, the hypothesis H_4 was completely rejected i.e. hypotheses H_{4a-d} were rejected.

DISCUSSION

Data were collected from students enrolled in five public and private universities in Saudi Arabia that were offering entrepreneurship courses. Two groups of students were selected: students who had selected entrepreneurship education programs (EEPs Group) and students who had not chosen any entrepreneurship education programs (the Control Group). Data were collected at two time points: at the beginning of the course (pre-test) and at the end of the course (post-test). After data collection, the researchers followed multiple procedures to infer results from the data. Data were recorded with coding and then screened and cleaned for further tests. The researchers applied factor loading tests and confirmed the related items of variables, as adapted from the relevant literature. After the exploratory factor loading, inferential statistics were calculated and the hypotheses were tested. The results showed that intention to become self-employed was positively and significantly correlated to the three factors i.e. attitude towards self-employment, subjective norms and perceived behavioral control at pre-test. However, different results were found at post-test; at this time, the link between intention to become self-employed and start-up activities were not positively and significantly correlated. Furthermore, the results indicated that entrepreneurial education supported the development of entrepreneurial attitudes. These findings are discussed in the light of previous published literature in the next section.

This study investigated the role of EEPs in the development of individuals' attitudes and intentions towards self-employment. Additionally, the researchers examined the benefits of EEPs for students in terms of learning from modules, inspiration and university resources. The researchers developed an approach based on the TPB in terms of the evolution of students' attitudes and intentions. In this study, the researchers argued that the intentions of individuals can be developed through EEPs. Based on this argument, this approach was investigated in the HEIs of Saudi Arabia for graduate students who undertook EEPs; the results for this group were contrasted with students who did not undertake such courses, known as the Control Group. To this end, the researchers evaluated the students' responses in reference to the phenomenon under study at two time points: pre and post the courses.

Finally, results were inferred by applying statistical tests. The results of the study showed that intention to become self-employed was positively and significantly related to attitude towards self-

employment, subjective norms and perceived behavioral control for both groups. However, at the end of the semester for both groups, no significant relationships were found between intentions to become self-employed, nascence and start-up activities. The results however indicated that students' attitudes towards self-employment, subjective norms, perceived behavioral control and intentions to become self-employed were higher after taking EEPs. In contrast, for the Control Group, there were no significant differences at the end of the semester in attitudes towards self-employment, subjective norms, perceived behavioral control and intentions to become self-employed. Additionally, the results showed that the EEPs Group had greater learning from modules, learning from inspiration and university incubation resources than the Control Group.

The key findings of this empirical study are summarised as follows: University students' attitudes towards self-employment, subjective norms and perceived behavioral control have statistically significant and positive associations with the students' intentions to become self-employed. Moreover, attitude towards self-employment, subjective norms and perceived behavioral control are significant predictors of intention to become self-employed. These predictors can explain up to 23.6 percent and 27.5 percent of the variance in Saudi university students' intention to become self-employed before and after entrepreneurship education programs, respectively.

IMPLICATIONS AND LIMITATIONS

The researchers were motivated to conduct this study because previous research has not successfully established whether or not EEPs affect intentions and subsequent start-up activities. The results of this research study indicate that intention to become self-employed is positively and significantly related to attitude towards self-employment, subjective norms and perceived behavioral control for both groups at both time intervals. However, no significant relationship between intention to become self-employed, nascence and start-up activities was found following the EEPs. The study has a number of significant theoretical contributions as follows:

1. The primary contribution of this study is the testing of the TPB regarding the development of entrepreneurial intentions for self-employment career choices in a developing country, particularly an Arab country i.e. Saudi Arabia.

2. A further contribution is that the theoretical framework was tested for students who did and did not select entrepreneurship education, with data collected before (pre) and after (post) the courses.

3. Another contribution of this research is that the results represent an empirical attempt to complement existing, mainly conceptual, literature on the role of entrepreneurship education in the development of students' intentions towards self-employment. The development of attitudes towards the behaviors associated with self-employed career choices promotes the explanation of entrepreneurial intentions. As such, the results of the present empirical study could have a significant impact upon the knowledge of behavioral theory's contribution to entrepreneurial intentions.

4. This study has shown that it is possible to design a test based on attitudinal and behavioral approaches and to measure entrepreneurial intentions among university students, while taking into account a number of other influences on university students' intentions towards enterprise.

5. Additional contribution of this study is that it was carried out in HEIs, and there has been less research at this level.

For the managerial contribution of the study, this study has investigated the link between the individual's intentions and attitudes towards becoming self-employed while in university education. The literature showed that research on entrepreneurship in the educational system appears to be biased towards studies of HEIs and university studies in particular (Mahieu, 2006; Fayolle and Gailly, 2008). The researchers linked the relationships between attitudinal behavioral factors to examine the intentions of students who took entrepreneurial courses at the university level. It was proposed that if the results of this study show that the selection of a course on entrepreneurship at the graduate level led to innovative potential entrepreneurs, then universities need to focus strongly on courses of entrepreneurial education. The goal of these courses should be creating and promoting entrepreneurial activities intensively in shaping more potential entrepreneurs. In addition, this study was conducted in HEIs where data were collected from two groups of

students at two different times. The results showed that attitudes toward self-employment, subjective norms and perceived behavioral control were good predictors of intention towards self-employment for the group of students who took entrepreneurial courses. This finding suggests that students should be given more knowledge which they can transform into practical experience. To this end, universities should incorporate such courses in entrepreneurial education into business studies programs so that the students can understand the real business world. Thus, this study can be the basis for recommendations to policy makers to implement policies that match the needs of potential entrepreneurs. Moreover, this study has highlighted the importance of the entrepreneurial approach in generating employment, solving economic problems and controlling employment. It argues that any policy recommendations on these factors should be based on analysis; for instance, in facing competition from other developing economies, most mainstream entrepreneurs are advised to upgrade their education. The major inference of the present research study is that potential entrepreneurs may develop intentions to become self-employed on the basis of their education related to entrepreneurialism. This concept was raised some time ago, but the present study has filled the gap relating to the lack of empirical evidence from the Arab culture and also in other Middle Eastern countries with similar cultures and environments.

This study has a number of limitations related to the design, measurement and samples, as follows:

-This study used limited choices for selecting variables and data collection. In terms of selecting meaningful variables, the researchers acknowledge that other factors related to social, cultural, religious, political, demographic, and other factors e.g. environmental factors could also influence intentions towards self-employment, and these factors along with the existing factors may provide more effective theoretical framework and insights in investigating the intentions of potential entrepreneurs.

- This study used single-source and cross-sectional data, which is another limitation because researchers suggest that the seriousness of an issue depends on the research question and the nature of variables under consideration (Crampton and Wagner, 1994). Present study could have used in-depth interviews from the sample to confirm the results obtained from the quantitative sources through a self-completed questionnaire survey.

- The major limitation is the research design, which did not allow complete investigation of the attitudes and intentions of individuals towards self-employment.

-The cross-sectional survey design of the study is another limitation because it was not a longitudinal study.

-Furthermore, the measurement scales used to investigate the entrepreneurial behavior (particularly after attending courses) have not been widely tested for their validity and reliability across cultures.

-A sample limitation also existed in this study. The sample of the study was based on a few selected public and private business and engineering schools in five HEIs in Saudi Arabia. The selection of the institutions may have been biased because other schools were not selected. Moreover, the samples were not drawn from all of the university population.

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Appendix-I

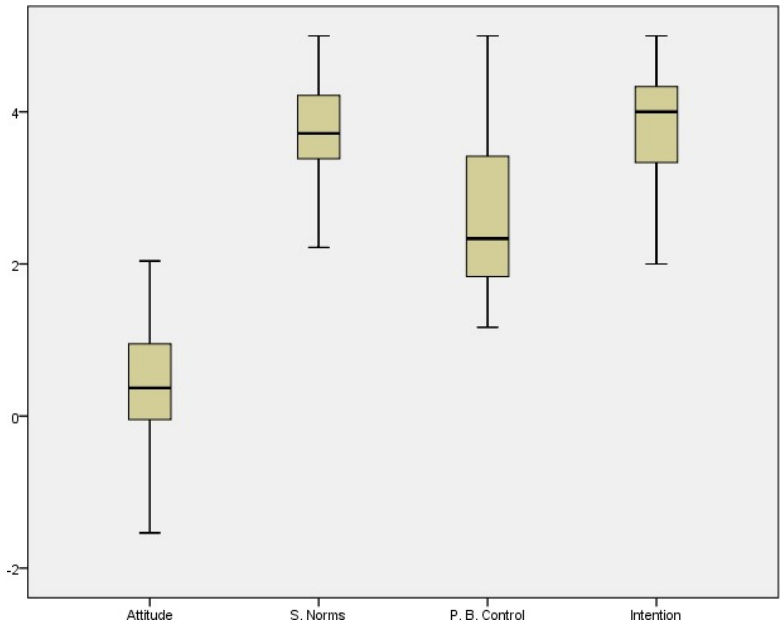

Figure 3. Boxplot for Mean Scores of the Main Variables for the EEPs Group

Appendix-II

Section	Question / Item Number	Variables (code name)	Source / Reference
Demographic	1-10	Demographic (DEMG)	Din (1992)
Reasons for becoming an employee	11-24	Reasons for becoming organisationally employed (OEMP)	Koleverid (1996) and Souitaris *et al*., (2007)
Subjective Norms	44-49	Subjective Norms (SUNO)	Koleverid (1996) and Souitaris *et al*., (2007)
Perceived Behavioural Control:	50-55	Perceived Behavioural Control (PEBC)	Koleverid (1996) and Souitaris *et al*., (2007)
Intention	56-58	Status Intention (OSCI)	Koleverid (1996) and Souitaris *et al*., (2007)
Learning from Module	59-63	Learning from Module (LEMO)	Johannisson(1991) and Souitaris *et al*., (2007)
University Incubation Resources: Questions in this	66-76	University Incubation Resources(UPRI)	Zahra (1993) and Souitaris *et al*., (2007)
Start-up Activities: (questions asked were about evaluating new business and starting a business)	77-97	Start-up Activities for Nascence- (STBU)	Alsos and Koleverid(1998) and Souitaris *et al*. (2007).

Source: Developed for the purpose of this study

Table 1. Summary of the Questionnaire Items

Appendix-III

	Variables	1	2	3	4	5	6	7	8
1	ATSE- Pre-test	(.76)							
2	SN- Pre-test	.20*	(.79)						
3	PBC-Pre-test	.35**	.10*	(.81)					
4	IBSE- Pre-test	.29**	.21**	.20**	(.79)				
5	ATSE- Post-test	.31**	.15**	.23**	.26**	(.84)			
6	SN- Post-test	.13	.10*	.40**	.14**	.24**	(.77)		
7	PBC- Post-test	.21**	.15**	.13**	.14**	.20**	.13**	(.81)	
8	IBSE- Post-test	.29**	.41**	.35**	.24**	.49**	.28**	.35**	(.83)

n= 471
p *<0.05
p **< 0.01

Table* 2. *Correlation Matrix for EEPs at Pre and Post-tests (n=491)

Appendix-IV

Variables	Experimental Group		Control Group	
	Std. Beta (β)	Sig (*p*)	Std. Beta (β)	Sig (*p*)
Attitude towards Self-Employment-Pre-test	0.240	0.000	0.208	0.002
Subjective Norm-Pre-test	0.282	0.000	0.224	0.001
Perceived Behavioural Control-Pre-test	0.221	0.000	0.284	0.000
Adjusted R^2	0.236	0.000	0.206	0.000
Attitude towards Self-Employment-Post-test	0.199	0.000	0.250	0.000
Subjective Norm-Post-test	0.309	0.000	0.190	0.007
Perceived Behavioural Control-Post-test	0.266	0.000	0.278	0.000
Adjusted R^2	0.275	0.000	0.233	0.000

Table 3. Regression Analysis for EEPs and Control Groups at Pre- and Post-tests

Appendix-V

			Paired Differences						
					95% Confidence				
	Variables			**Std.**	**Interval of the**				
			Std.	**Error**	**Difference**				**Sig. (2-**
		Mean	**Deviation**	**Mean**	**Lower**	**Upper**	***t***	***df***	**tailed)**
	Attitude to Self-employment Post-test								
Pair 1	Attitude To self-Employment. Pre-test	-.15184	1.53894	.11345	-.37568	.07200	-1.338	183	.182
	Subjective Norm. Post-test								
Pair 2	Subjective Norms. Pre-test	-.08696	1.21741	.08975	-.26403	.09012	-.969	183	.334
	Perceived Behavioural Control. Post-test								
Pair 3	Perceived Behavioural Control Pre-test	-.11051	1.29552	.09551	-.29894	.07793	-1.157	183	.249
	Intention. Post-test								
Pair 4	Intention. Pre-test	.10960	1.32324	.09755	-.08287	.30207	1.124	183	.263

Table 4. t-test Results at Pre and Post Tests for Control Group Paired Samples Test

Appendix-VI

Items	1	2	3	4	5	6	7	8	9	10	11
SERE2	.819										
SERE1	.802										
SERE4	.793										
SERE3	.780										
WOLO1		.804									
WOLO2		.765									
WOLO4		.726									
WOLO5		.672									
CHAL2			.819								
CHAL1			.807								
CHAL4			.674								
CHAL3			.653								
AUTO4				.762							
AUTO3				.762							
AUTO2				.736							
AUTO1				.692							
AVRE2					.822						
AVRE1					.771						
AVRE3					.769						
ECOP3						.806					
ECOP2						.757					
ECOP1						.644					
CARE2							.900				
CARE1							.875				
SOEN2								.885			
SOEN1								.868			
SECU1									.834		
SECU2									.816		
AUTH2										.869	
AUTH1										.837	
PAPR2											.830
PAPR1											.813

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalisation.
Rotation converged in 7 iterations

Table 5. Factor Loading for EEPs Group at Pre-test