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The Role of Perceived University Support in the Formation of Students' Entrepreneurial Intention

by Saadat Saeed, Shumaila Y. Yousafzai, Mirella Yani-De-Soriano and Moreno Muffatto

Entrepreneurship education is central to student entrepreneurship. Previous research has attempted to understand the role of entrepreneurship education in the formation of students' entrepreneurial intention and behavior, albeit in an isolated manner. Universities can support entrepreneurship in many ways, but it is important to measure students' perception of the support that they receive in order to understand the extent of such support and its impact on students. The current study proposed and tested an integrative, multiperspective framework. We have hypothesized that the three dimensions of university support, that is, perceived educational support, concept development support, and business development support, together with institutional support, shape students' entrepreneurial self-efficacy. In turn, entrepreneurial self-efficacy and individual motivations constitute the fundamental elements of the intention to start a business. A sample of 805 university students took part in the study and data were analyzed using structural equation modeling. Our findings showed that perceived educational support exerted the highest influence on entrepreneurial self-efficacy, followed by concept development support, business development support, and institutional support. Self-efficacy in turn had a significant effect on entrepreneurial intention. Individual motivations such as self-realization, recognition, and role had an additional impact on intention. However, intention was not related to financial success, innovation, and independence. The findings suggest that a holistic perspective provides a more meaningful understanding of the role of perceived university support in the formation of students' entrepreneurial intention. Theoretical and practical implications are discussed.

Introduction

The impact of entrepreneurship education (EE), training, and support has been recognized as one of the crucial factors in developing positive perceptions of competence for start-up firms (Hartshorn and Hannon 2005; Zhao,

Seibert, and Hills 2005), the development of favorable attitudes toward self-employment (Krueger and Brazeal 1994), and related entrepreneurship preferences and intentions (Chen, Greene, and Crick 1998). Despite the increasing interest in academic entrepreneurship and new venture creation by students, very little

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empirical research has identified EE and the support factors that can foster entrepreneurship among university students (Walter, Auer, and Ritter 2006). Furthermore, in spite of the growth in the number of entrepreneurship courses and curricula and the link between EE and entrepreneurial behavior (Galloway and Brown 2002; Luthje and Franke 2003), student entrepreneurship figures still remain low (Kraaijenbrink, Groen, and Bos 2010).

Previous studies, which have attempted to examine the effectiveness of formal EE, have been inconclusive, perhaps because of the outcome measures they have used, including student satisfaction and performance in the course, which may be insufficient indicators of educational effectiveness (Cox, Mueller, and Moss 2002). Although self-efficacy has been rarely used as an outcome measure, one study by Peterman and Kennedy (2003) found that participation in an entrepreneurship program significantly increased the perceived feasibility of starting a business, which implies that EE can enhance entrepreneurial intention (EI). Kraaijenbrink, Groen, and Bos (2010) suggested that although universities can support entrepreneurship in many objectively measured ways, in order to understand the effect of such measures it was crucial to gauge the extent to which they could have an impact on students. This can be achieved by measuring students' perceptions of the university support that they receive or "perceived university support" (PUS).

Although EE can increase EI, it is not the only influence affecting it. Therefore, it is important to understand the process that underlies the emergence of EI. Some scholars have focused primarily on individual factors as the potential determinants of EI. These factors include: demographic characteristics, the status of parents and grandparents, role models, entrepreneurial self-efficacy (ESE), locus of control, self-realization, independence, recognition, entrepreneurial experience, personality traits, and subjective norms. Other researchers have focused on organizational factors, such as organizational culture and organizational norms (Louis et al. 1989), university quality (Di Gregorio and Shane 2003), and the impact of EE on students' EI (Souitaris, Zerbinati, and Allaham 2007). Finally, when looking at some of the institutional factors affecting entrepreneurial development, researchers have focused on economic stability (McMillan and Woodruff

2002), capital availability (de Bettignies and Brander 2007), and reduced personal income taxes (Gentry and Hubbard 2000).

These multilevel factors may interact with each other to synergize EI, but most researchers have treated them independently rather than considering the effects of their potential interrelations and interdependency. However, social science research expects a more holistic view to explain phenomena by taking into account the interconnections of various factors. Research has emphasized that although individual-level factors have some impact on EI, it may be better to consider the impact of some contextual factors as well (Turker and Selcuk 2009). Following the argument of [Ireland and Webb \(2007\)](#) that a single perspective in behavioral studies offers an incomplete account of phenomena, our study takes a multiperspective approach to assess the impact of EE on EI.

This paper proposes the following research questions: (1) How do students perceive EE and the support that they receive from their universities?; (2) Does PUS have an impact on students' ESE?; (3) How important is PUS in influencing students' EI within the context of other factors, such as institutional support (IS) and individual motivations?; and (4) How can universities be more effective in their provision of EE and support to their students? To answer these questions, we have developed a conceptual framework that reflects the role of EE within the context of other influences such as IS and individual motivations, rather than studying it in an isolated manner. This should permit a deeper and more meaningful analysis and understanding of the topic.

In our conceptual framework, EI represents a university student's intent to start a new business (Krueger and Brazeal 1994). Such intention is a conscious state of mind that precedes action and directs attention toward the goal of establishing a new business (Bird 1988). In order to understand how this intention is formed, we have followed Shapero and Sokol (1982) by examining the impact of perceived desirability and perceived feasibility on EI. Perceived desirability constitutes our individual-level perspective, comprising six individual motivation factors used by [Carter et al. \(2003\)](#): self-realization, financial success, role, innovation, recognition, and independence. These factors differentiate individuals on the basis of how they discover, evaluate, and exploit

entrepreneurial opportunities. Perceived feasibility has been conceptualized as ESE (Chen, Greene, and Crick 1998). We propose that individuals with a sense of ESE may be drawn to the desirable opportunities and benefits of self-employment, and thus they are likely to form intentions and goals for self-employment. Previous research indicates that self-efficacy is not a static trait, but that it can be changed (Hollenbeck and Hall 2004). Considering that changes may come from targeted educational and institutional efforts, we examine the possible link between EE, IS, and ESE.

Entrepreneurship education is the focus of our paper and constitutes our organizational-level perspective. Following Kraaijenbrink, Groen, and Bos (2010), we have conceptualized PUS by means of three separate but related constructs: perceived educational support (ES), perceived concept development support (CDS), and perceived business development support (BDS). In our framework, we have integrated an institutional-level perspective by conceptualizing students' perception of the support that they receive from the government as perceived IS. This refers to the policies, regulations, and programs that the country has undertaken to support entrepreneurship (Turker and Selcuk 2009). We have hypothesized that the three constructs of PUS and perceived IS would increase perceived feasibility, as measured by ESE.

The main contribution of the paper is to provide a better understanding of the role of EE and support and its impact on EI. The aim of the study is to assess the extent of students' PUS and whether it affects their ESE. In turn, ESE may have an impact on EI. We examine this within the context of other influences, such as IS and individual motivations, which allow us to assess the relative importance of EE. Considering that there are a few studies measuring the impact of EE, our research fills a gap in the literature by measuring the impact of EE within an integrative, multiperspective framework, thus providing a broader view of this topic. The findings will help university managers and policymakers to understand the effectiveness of current practices and initiatives, particularly in developing economies such as Pakistan. During the last decade, Pakistan has been trying to build its economic growth on the basis of educational policies. The Higher Education Commission (HEC) of Pakistan has recently developed the National Business Education

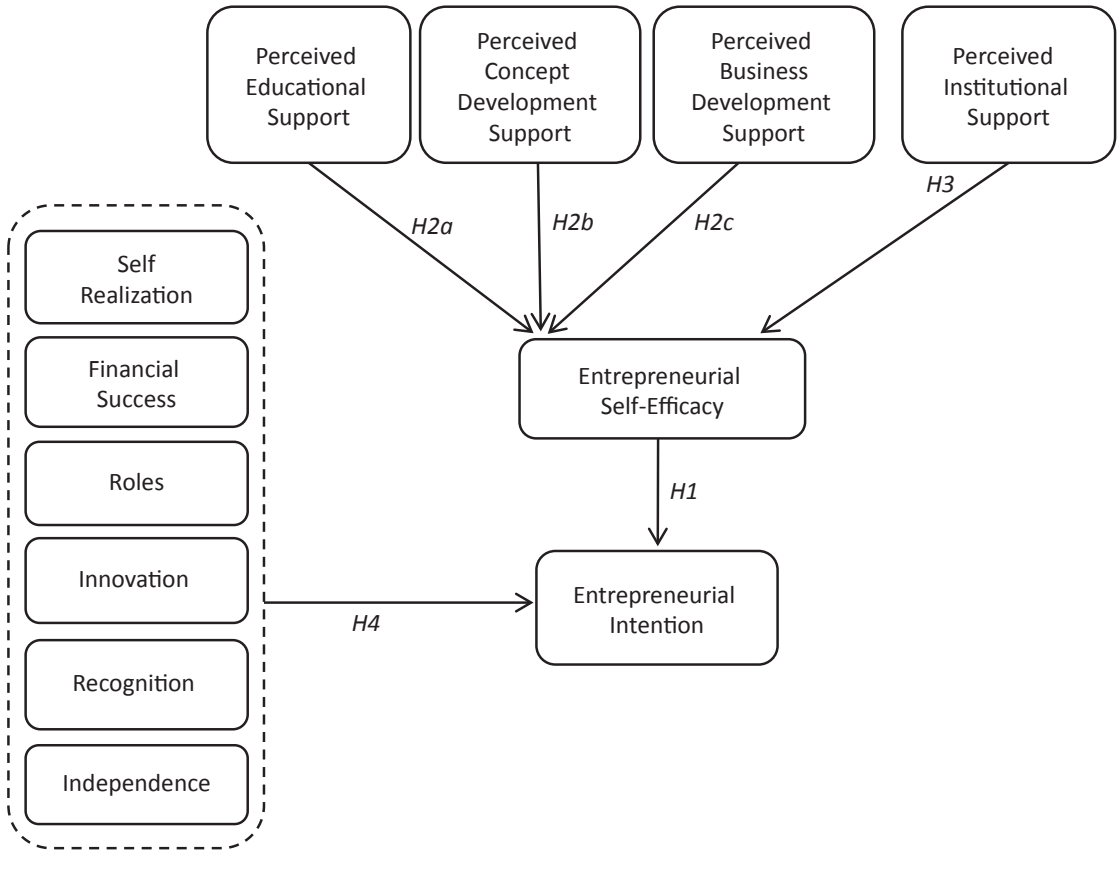
Accreditation Council (NBEAC) to promote business education, particularly with the aim to stimulate EE and culture in Pakistani universities. Entrepreneurship has been selected by students as an elective subject during the final semester of their undergraduate programs. Nevertheless, the NBEAC seeks to promote entrepreneurship as a major field of study in higher education, thus making Pakistan a model context for our study. Our proposed research framework is presented in Figure 1.

Entrepreneurial Intention

Entrepreneurship is the process of venture creation and EI is crucial in this process. EI identifies the link between ideas and action which is critical for understanding the entrepreneurial process (Bird 1988; Krueger and Carsrud 1993). According to Ajzen (1991), intention captures the degree to which people show their motivation and willingness to execute the desired behavior. Intention has also been defined as a state of mind that directs a person's attention (and therefore experience and actions) toward a specific object (goal) or path in order to achieve something (e.g., becoming an entrepreneur) (Bird 1988). Intention has been shown to be the best predictor of planned behavior (Bagozzi, Baumgartner, and Yi 1989), particularly when that behavior is rare, hard to observe, or involves unpredictable time lags (Bird 1988; Krueger and Brazeal 1994). A new business emerges over time and involves considerable planning, and thus entrepreneurship is exactly the type of planned behavior (Bird 1988) for which intention models are ideally suited.

Previous research has proposed several conceptual models for understanding EI, including the Entrepreneurial Event Model (Shapero and Sokol 1982); the Intentional Basic Model (Krueger and Carsrud 1993); the Entrepreneurial Potential Model (Krueger and Brazeal 1994); and the Davidsson Model (Davidsson 1995). However, research has shown that there is little difference in the approaches taken by these models (Krueger, Reilly, and Carsrud 2000). In the current study, our understanding of EI has been guided primarily by two models: (1) Ajzen's (1991) Theory of Planned Behavior (TPB) and (2) Shapero and Sokol's (1982) model of Entrepreneurial Event (SEE). Although these models vary in terms of their underlying concepts, they provide comparable interpretations of EI (Krueger, Reilly, and Carsrud 2000).

Figure 1
Proposed Research Framework



Ajzen (1991) argues that intentions in general depend on the attitude toward the act, social norms, and perceived behavioral control. The attitude toward the act reflects individuals' assessment of the personal desirability of creating a new business. Subjective norms reflect individuals' perceptions of what important people in their lives think about business creation. Finally, perceived behavioral control reflects individuals' perception of their ability to initiate a new business successfully. Interestingly, the domain of entrepreneurship had already provided a model quite similar to the TPB well before Ajzen formulated it. Shapero (1975) proposed that the entrepreneurial event (defined as initiating entrepreneurial behavior) depends on the presence of a salient, personally credible opportunity, which in turn depends on perceptions of desirability and fea-

sibility. Shapero (1975) defined perceived desirability as the attractiveness (both personal and social) of starting a business, and perceived feasibility (both personal and social) as the degree to which an individual feels capable of starting a business.

The fact that two scholars in two different academic areas produced highly similar models attests to the value of intention models. Krueger, Reilly, and Carsrud (2000) tested the TPB and SEE, and found support for both models. They demonstrated that attitudes and subjective norms in the TPB model are conceptually related to perceived desirability in the SEE, whereas perceived behavioral control in the TPB corresponds with perceived feasibility in the SEE model. Considering that perceived behavioral control is largely synonymous with ESE (Boyd and Vozikis 1994), ESE would be the

main indicator of perceived feasibility. Essentially, it can be concluded that perceived desirability and perceived feasibility are the fundamental elements of EI (Douglas and Shepherd 2002).

Perceived Feasibility: Entrepreneurial Self-Efficacy

If the perception that a new venture is feasible is a predictor of the intention to launch it, then it is critical to examine the key indicator of perceived feasibility: ESE. Self-efficacy is the academic term for the belief that one can execute a target behavior. It is firmly based on individuals' self-perceptions of their skills and abilities (Bandura 1986). It reflects individuals' innermost thoughts on whether they have what is needed to perform a certain task successfully. Actual abilities only matter if individuals have self-confidence in those abilities, and also the self-confidence that they will be able to convert those skills effectively into a chosen outcome (Bandura 1989). Evidence suggests that general self-efficacy is central to most human functioning and is based more on what people believe than on what is objectively true (Markham, Balkin, and Baron 2002). Research in this area has consistently emphasized the importance of perceived self-efficacy as a key factor in determining human agency (Bandura 1989), and has shown that those with high perceptions of self-efficacy for a certain task are more likely to pursue and persist in that task (Bandura 1992).

In the field of entrepreneurship, ESE has proved to be a remarkable predictor of EI (Chen, Greene, and Crick 1998; Krueger, Reilly, and Carsrud 2000). Boyd and Vozikis (1994, p. 66) defined ESE as "an important explanatory variable in determining both the strength of entrepreneurship intentions and the likelihood that those intentions will result in entrepreneurial actions." Similarly, Krueger and Brazeal (1994) proposed that ESE constitutes one of the key prerequisites for the potential entrepreneur. Therefore, we hypothesize that:

H1: Entrepreneurial self-efficacy positively influences entrepreneurial intention.

In turn, ESE can be influenced by experience, vicarious learning, social persuasion, and support and personal judgments or physiological states, such as arousal (Boyd and Vozikis 1994; Krueger and Brazeal 1994). Peterman and Kennedy (2003) showed that exposure to EE

programs increases ESE. Subsequently, we discuss the role of PUS and perceived IS in shaping ESE.

Perceived University Support and Entrepreneurial Self-Efficacy. The development of entrepreneurial universities constitutes a widespread phenomenon across the world, which has attracted the attention of policymakers. Entrepreneurial universities are valued because of their economic outputs (such as patents, licenses, and start-up firms) and technology transfer mechanisms (Tijssen 2006). Furthermore, a significant amount of scholarship has considered universities as seedbeds for fostering an entrepreneurial spirit and culture. Universities can play an important role in identifying and developing entrepreneurial traits and inclinations among students and making them capable of starting their own venture, thus effectively contributing to economic prosperity and job creation (Debackere and Veugelers 2005). It is, therefore, important for universities to position themselves as a hub of new venture creation by nurturing an entrepreneurial environment and contributing substantially to the economy and society (Gnyawali and Fogel 1994).

Previous research has recognized the value of EE and support in the development of favorable perceptions of competence for start-up firms (Hartshorn and Hannon 2005; Zhao, Seibert, and Hills 2005). EE has been associated with enhanced attitudes and intentions toward starting a new business (Chen, Greene, and Crick 1998; Krueger and Brazeal 1994). In fact, university students who took entrepreneurship courses had a greater interest in becoming entrepreneurs compared with those who did not take it (Kolvereid and Moen 1997). Upton, Sexton, and Moore (1995) reported that 40 percent of those who attended entrepreneurship courses had started their own businesses. Previous research has suggested that certain university support policies and practices can foster entrepreneurial activities among students, for example, technology transfer offices and faculty consultants (Mian 1996); university incubators and physical resources (Mian 1997); and university venture funds (Lerner 2005). It is clear that an effective EE program and the entrepreneurial support provided by universities are efficient ways of obtaining the necessary knowledge about entrepreneurship and motivating young people to seek an entrepreneurial career (Henderson and Robertson 2000).

However, despite the increasing number of entrepreneurship courses and the link between EE and entrepreneurial behavior (Galloway and Brown 2002; Luthje and Franke 2003), student entrepreneurship figures still remain low (Kraaijenbrink, Groen, and Bos 2010). Wang and Wong (2004, p. 170) pointed out the fact that the entrepreneurial dreams of many students are hindered by inadequate preparation: “their business knowledge is insufficient, and more importantly, they are not prepared to take risks to realize their dreams.” Timmons and Spinelli (2004) suggested that EE is effective when it enables participants to develop a higher capacity for imagination, flexibility, and creativity, as well as developing the ability to think conceptually and perceive change as opportunity.

One way for an EE program to increase the ESE of students is to provide mastery experiences or “learning by doing.” This includes the opportunity to conduct feasibility studies, and develop business plans, and to benefit from business simulation, case studies, guest speakers, and meaningful apprenticeships (Cox, Mueller, and Moss 2002). Another way is to foster a supportive environment, for example, by offering resources such as a network of individuals who can provide specific expertise in areas such as marketing or accounting, the inclusion of role models, and the provision of one-to-one support. This support may give some people the confidence to initiate their own business venture (Kraaijenbrink, Groen, and Bos 2010). Previous studies have suggested that the attitude model of entrepreneurship has implications for EE programs, as attitudes are open to change and, therefore, can be influenced by educators and practitioners (Souitaris, Zerbinati, and Allaham 2007; Wang and Wong 2004). However, empirical studies attempting to identify university support factors that can foster entrepreneurship among university students have remained limited (Walter, Auer, and Ritter 2006).

Kraaijenbrink, Groen, and Bos (2010) suggested that although universities can support entrepreneurship in many objectively measured ways, in order to understand the effect of such measures, it was crucial to gauge the extent to which they could have an impact on students. This can be achieved by measuring students’ perceptions of the university support that they receive. They proposed three aspects of PUS. First, as part of their traditional teaching role,

universities can provide ES by teaching students the general knowledge and skills that are needed to initiate a new venture. Second, considering their commercialization role, universities can also provide individual students or groups of students with a more targeted and specific support for starting their own firm. This targeted support can be of two types: CDS and BDS. CDS can provide awareness, motivation, and business ideas in the early stages of the entrepreneurial process, in which opportunity recognition and development take place (Shane and Venkataraman 2000). BDS is typically given to the start-up firm rather than to individual students in the later stages of the entrepreneurial process.

Krueger and Brazeal (1994) suggested that EE should improve perceived feasibility of entrepreneurship by increasing the knowledge of students, building confidence, and promoting self-efficacy. Thus, it can be inferred that the entrepreneurship programs and related support provided by academic institutions can play an important role in fostering ESE among their students. We propose:

H2a: Perceived educational support positively influences entrepreneurial self-efficacy.

H2b: Perceived concept development support positively influences entrepreneurial self-efficacy.

H2c: Perceived business development support positively influences entrepreneurial self-efficacy.

Perceived Institutional Support and Entrepreneurial Self-Efficacy. Entrepreneurs do not exist in isolation and many social, cultural, economic, and political factors may affect their entrepreneurial behavior. A country’s public and private institutional structures establish the rules of the game for organizations and determine which specific skills and knowledge result in the maximum payoff (North 2005). Whereas public institutions create laws, regulations, and policies regarding government assistance for the promotion of entrepreneurship, private institutions define the culture, norms, beliefs, and expectations of this activity (Ingram and Silverman 2002). A recent study by Bosma, Wennekers, and Amoros (2011) found a correlation between a country’s gross domestic product per capita, national economic

growth rate, and the level and type of entrepreneurial activity in the country. Previous research has also found that some key factors for entrepreneurial development included: economic stability (McMillan and Woodruff 2002), capital availability (de Bettignies and Brander 2007), and reduced personal income taxes (Gentry and Hubbard 2000). These studies suggest that individuals' EI is a reflection of the institutional structure and the economic and political stability of their country. This means that productive entrepreneurship would be at low levels where the incentives supporting it are weak (Baumol 1993). Some of these incentives include access to capital and markets and the availability of information (Basu 1998). Studies on students have revealed that the lack of funds is a major barrier to entrepreneurship (Henderson and Robertson 2000; Li 2007; Robertson et al. 2003).

An institutional environment can use both tangible and intangible measures to support entrepreneurship activities. Tangible measures include flexible and friendly credit conditions, venture capital availability, physical infrastructure, corporate physical assets, R&D laboratories, training opportunities, and business plan competition. Intangible measures include making human capital available and providing sufficient legitimacy for entrepreneurship. If individuals perceive that the institutional environment is supportive, they will be more confident in their ability to become entrepreneurs and thus their ESE would increase (Luthje and Franke 2003; Schwarz et al. 2009; Turker and Selcuk 2009). Therefore, we propose:

H3: Perceived institutional support positively influences entrepreneurial self-efficacy.

Perceived Desirability: Individual Motivations

Schumpeter (1934) defined entrepreneurs as those individuals who attempt to reform or revolutionize the pattern of production by exploiting an invention or untried technical possibility for producing a new commodity or producing an old one in a new way. He further mentioned that these efforts require aptitudes that are present in only a small fraction of the population. It can be inferred from Schumpeter's definition that, in addition to a supportive organizational and institutional environment, the success of entrepreneurial activity depends upon the attitudes, interests

and values of the individuals who are likely to form a new venture (Bird 1988). Thus, the reasons that these potential entrepreneurs give for starting a business should have a significant influence on whether they would actually engage in entrepreneurial activity, that is, their EI (Ajzen 1991; Kolvereid 1996; Krueger and Brazeal 1994; Krueger and Carsrud 1993). In the TPB, these reasons are salient beliefs which determine individuals' attitudes toward self-employment. Similarly, within the SEE framework, they can be seen as perceived desirability factors leading to the formation of EI.

Although a number of researchers have attempted to identify relevant reasons for new business formation, the specific individual motives that are consistently related to EI have shown mixed results. For example, Scheinberg and MacMillan (1988) reported that the need for approval, the perceived instrumentality of wealth, the degree of community, the need for personal development, the need for independence, and the need for escape are factors which have led individuals toward new firm formation. However, these motivational factors were not always supported in other studies (Stewart et al. 1999). Following a thorough review of the entrepreneurship literature and after careful consideration, we decided to represent perceived desirability by means of the six factors identified by Carter et al. (2003) as major reasons or motivations for starting a new venture, namely: self-realization, financial success, role, innovation, recognition, and independence.

Self-realization refers to the motivations involved in pursuing self-directed goals (Carter et al. 2003). This measure corresponds to Birley and Westhead's (1994) need for personal development and McClelland's (1961) need for achievement. Individuals with a high level of self-realization are expected to show a greater willingness to engage in entrepreneurial activity because this provides them with challenges that are associated with goal achievement and personal development (Carree and Thurik 2005). Selecting an entrepreneurial career is no longer underemployment or a "mom and pop" establishment; it is a way to achieve a variety of personal goals (Kirchhoff 1996). Higher self-realization will result in a higher level of EI.

Financial success is described as an individual's desire to earn more money and achieve financial security (Carter et al. 2003). Previous

research has shown mixed results for this construct. On the one hand, McQueen and Wallmark (1991) found that most of the founders of new ventures did not establish their companies to generate wealth, but rather to fulfill their goal of commercializing their technologies. On the other hand, Scheinberg and MacMillan (1988) and Birley and Westhead (1994) both labeled financial success as perceived instrumentality of wealth and found it to be related to EI. We have included financial success to clarify these findings.

Role is the individual's desire to follow family tradition and emulate the example of others (Birley and Westhead 1994; Carter et al. 2003; Shane, Kolvareid, and Westhead 1991). Research has shown that individuals are attracted to role models who can help them to develop themselves further by learning new tasks and skills (Gibson 2004). It has long been acknowledged that role models may have a profound influence on career decisions (Kolvareid 1996; Krueger, Reilly, and Carsrud 2000).

Innovation relates to an individual's desire to accomplish something new (McClelland 1961). It is often referred to as a primary motive behind EI (Mueller and Thomas 2001) and has been shown to have a significant effect on venture performance (Utsch and Rauch 2000). Feldman and Bolino (2000) found that individuals with a strong desire for innovation were motivated to become self-employed because of the opportunity to use their skills and be creative as well as to capitalize on a good business idea.

Recognition describes an individual's desire to gain status, approval, and recognition from family, friends, and the community (Carter et al. 2003). Manolova, Brush, and Edelman (2008) defined recognition as an individual's position relative to others in a given social situation. According to Gatewood (1993), recognition is a second-level outcome or reason for desiring to start a new venture. In our proposed framework, recognition corresponds to the measures "recognition" in Shane, Kolvareid, and Westhead's (1991) new firm formation typology, and "need for approval" in the studies of Birley and Westhead (1994), and Scheinberg and MacMillan (1988).

Independence describes an individual's desire for freedom, control, and flexibility in the use of time (Birley and Westhead 1994; Carter et al. 2003; Scheinberg and MacMillan

1988). As a general rule, individuals requiring a strong need for independence seek careers with more freedom. They choose an entrepreneurial career because they prefer to make decisions independently, set their own goals, develop their own plans of actions, and control goal achievement themselves (Wilson, Marlino, and Kickul 2004). Thus, we propose:

H4: Perceived desirability (measured by self-realization, financial success, role, innovation, recognition, and independence) positively influences entrepreneurial intention.

Method

Sample and Procedure

To ensure the variability and representativity of respondents, we selected universities in the largest province of Pakistan, Punjab. In Punjab, we targeted Lahore, Faisalabad, and Sahiwal, which are considered the educational hub in this region. First, we selected five universities on the basis of their provision of EE and whether they were registered with HEC and thus offered approved programs. Second, we contacted undergraduate students who had studied or were studying a course of entrepreneurship in those universities and had agreed to participate in our study. One thousand questionnaires were distributed and 850 were returned, of which 45 were subsequently discarded. The final sample consisted of 805 participants. Of these, 547 were men (68 percent) and 258 were women (32 percent). The average age was 21 years (standard deviation = 0.54).

Measurement Variables

Table 1 presents the scales used to measure the main variables. *EI* was measured with three statements to assess whether participants intended to start a new business. The first statement, "Have you ever seriously considered becoming an entrepreneur?" was adapted from Veciana, Aponte, and Urbano (2005) and was measured on a dichotomous scale of "yes/no." The other two statements were adapted from Liñán and Chen (2009). *Perceived feasibility* was measured through *ESE* by employing a task-specific scale from Chen, Greene, and Crick (1998). Respondents were asked to rate their skill level in 26 roles and tasks in five areas of entrepreneurship: marketing, innovation, management, risk taking, and financial control.

Table 1
Results of Confirmatory Factor Analysis

Construct (Items)	Factor loading (t-values*)
<i>Entrepreneurial Intention</i> ($\alpha = 0.80$; $CR = 0.90$; $AVE = 0.93$; $\Phi^2 = 0.03-0.52$)	
1. Have you ever seriously considered becoming an entrepreneur? (Yes/No)	0.810 (84.163)
2. I will make every effort to start and run my own firm. ^a	0.820 (94.293)
3. I have got firm intention to start a firm someday. ^a	0.816 (86.577)
<i>Entrepreneurial Self-Efficacy</i> ^c ($\alpha = 0.92$; $CR = 0.90$; $AVE = 0.89$; $\Phi^2 = 0.03-0.52$)	
26 items were used. Respondents were asked to rate their skill level in marketing, innovation, management, risk-management, financial control.	0.835 (73.886)
<i>Perceived Educational Support</i> ^a ($\alpha = 0.6$; $CR = 0.92$; $AVE = 0.88$; $\Phi^2 = 0.02-0.42$)	
1. My university offers elective courses on entrepreneurship.	0.812 (88.692)
2. My university offers project work focused on entrepreneurship.	0.826 (81.260)
3. My university offers internship focused on entrepreneurship.	0.830 (90.886)
4. My university offers a bachelor or master study on entrepreneurship.	0.854 (89.345)
5. My university arranges conferences /workshops on entrepreneurship.	0.621 (80.110)
6. My university brings entrepreneurial students in contact with each other.	0.652 (78.907)
<i>Perceived Concept Development Support</i> ^a ($\alpha = 0.65$; $CR = 0.90$; $AVE = 0.89$; $\Phi^2 = 0.02-0.38$)	
7. My university creates awareness of entrepreneurship as a possible career choice.	0.788 (84.849)
8. My university motivates students to start a new business.	0.609 (66.566)
9. My university provides students with ideas to start a new business from.	0.812 (78.191)
10. My university provides students with the knowledge needed to start a new business.	0.826 (88.471)
<i>Perceived Business Development Support</i> ^a ($\alpha = 0.6$; $CR = 0.92$; $AVE = 0.93$; $\Phi^2 = 0.02-0.32$)	
11. My university provide students with the financial means to start a new business.	0.854 (69.541)
12. My university use its reputation to support students that start a new business.	0.621 (75.540)
13. My university serve as a lead customer of students that start a new business.	0.652 (73.823)
<i>Perceived Institutional Support</i> ^a ($\alpha = 0.80$; $CR = 0.82$; $AVE = 0.75$; $\Phi^2 = 0.04-0.45$)	
1. In Pakistan, entrepreneurs are encouraged by an institutional structure.	0.605 (75.297)
2. Pakistani economy provides many opportunities for entrepreneurs.	0.683 (84.468)
3. Taking bank loans is quite difficult for entrepreneurs in Pakistan. (R)	0.589 (92.943)
4. Pakistani state laws are averse to running a business. (R)	0.509 (92.943)
<i>Self-Realization</i> ^b <i>To what extent is the following reason important to you in establishing a new business:</i> ($\alpha = 0.78$; $CR = 0.84$; $AVE = 0.81$; $\Phi^2 = 0.03-0.38$)	
1. To challenge myself	0.835 (84.235)
2. To fulfill a personal vision	0.720 (78.231)
3. To grow and learn as a person	0.701 (76.325)
4. To lead and motivate others	0.781 (81.254)
<i>Financial Success</i> ^b <i>To what extent is the following reason important to you in establishing a new business:</i> ($\alpha = 0.75$; $CR = 0.78$; $AVE = 0.79$; $\Phi^2 = 0.15-0.25$)	
1. To earn a larger personal income	0.948 (71.258)
2. To give myself, my spouse, and children financial security	0.731 (65.320)
3. To have a chance to build great wealth/high income	0.746 (81.269)
4. To build business my children can inherit.	0.680 (78.362)

Table 1
Continued

Construct (Items)	Factor loading (t-values*)
<i>Role^b To what extent is the following reason important to you in establishing a new business:</i> ($\alpha = 0.80$; $CR = 0.87$; $AVE = 0.83$; $\Phi^2 = 0.07-0.30$)	
1. To continue a family tradition	0.701 (72.356)
2. To follow example of a person I admire	0.710 (78.246)
3. To be respected by my friends	0.670 (80.234)
<i>Innovation^b To what extent is the following reason important to you in establishing a new business:</i> ($\alpha = 0.74$; $CR = 0.80$; $AVE = 0.80$; $\Phi^2 = 0.10-0.35$)	
1. To be innovative at the forefront of technology	0.832 (87.390)
2. To develop an idea for a product	0.726 (80.236)
<i>Recognition^b To what extent is the following reason important to you in establishing a new business:</i> ($\alpha = 0.84$; $CR = 0.87$; $AVE = 0.76$; $\Phi^2 = 0.12-0.47$)	
1. To achieve something/ get recognition	0.839 (77.230)
2. To gain a higher position for myself	0.849 (73.258)
<i>Independence^b To what extent is the following reason important to you in establishing a new business:</i> ($\alpha = 0.90$; $CR = 0.92$; $AVE = 0.86$; $\Phi^2 = 0.09-0.18$)	
1. To get greater flexibility for personal life	0.777 (75.361)
2. To be free to adapt my approach to work	0.614 (83.697)
Model Fit Statistics: $\chi^2_{(94)} = 612.50$ ($p = .036$); RMSEA = 0.046; GFI = 0.95; NFI = 0.95; CFI = 0.98; TLI = 0.85	

*Significant at $p \leq .01$; ^a5-point Likert scale: (1) strongly disagree, (5) strongly agree; ^b5-point Likert scale: (1) to no extent, (5) to a very great extent; ^c5-point Likert scale: (1) None, (2) Basic, (3) Competent, (4) Advanced, (5) Expert.
(R) reversed coding; α , Cronbach's alpha; CR , composite reliability; AVE , average variance extracted.

Perceived ES was measured with a six-item scale rating students' perception of the traditional teaching role of universities, and included statements such as "my university offers project work focused on entrepreneurship" (Kraaijenbrink, Groen, and Bos 2010). *Perceived CDS* was measured with a four-item scale rating students' perception of the support that the university provides beyond teaching, and included statements such as "my university provides students with ideas to start a new business" (Kraaijenbrink, Groen, and Bos 2010). *Perceived BDS* was measured by means of a three-item scale rating students' perception of the support that the university provides to the start-up firm, and included statements such as "my university provides students with the financial means to start a business" (Kraaijenbrink, Groen, and Bos 2010). *Perceived IS* was measured through a four-item

scale developed by Turker and Selcuk (2009). The questions were related to the opportunities provided to entrepreneurs in terms of the ease or difficulty in taking loans from banks, the legal constraints of running a business, and the economic stability in Pakistan. Finally, *Perceived desirability* was assessed by means of these six factors identified by Carter et al. (2003): *Self-realization* (four items); *Financial Success* (four items); *Role* (three items); *Innovation* (two items); *Recognition* (two items); and *Independence* (two items).

Results

Assessment of Measures

Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were conducted. Structural equation modeling (SEM) (AMOS version 18.0, IBM, New York, USA) was employed for the CFA and to test the structural

models and to conduct multigroup moderator analysis by using the maximum likelihood estimation procedure. The intercorrelations and square root of the average variance extracted (AVE) are presented in Table 2. These results suggest that each construct shared more variance with its items than with other constructs. In addition, the correlation matrix provides no evidence of multicollinearity among the variables as all the coefficients were within an acceptable range ($r = 0.16$ to $r = 0.73$) and none of them exceeded the cut-off point of 0.85 (Fornell and Larcker 1981). These analyses provide evidence of discriminant validity. Furthermore, as shown in Table 1, all items loaded significantly on their corresponding constructs with factor loadings ranging from 0.50 to 0.94, thus meeting the threshold of 0.50 set by Hair et al. (2006), and demonstrating convergent validity at the item level. Following Fornell and Larcker (1981), we assessed the convergent validity through item reliability, composite reliability (CR), and the AVE. The Cronbach's alpha for all the constructs were well above the threshold level of 0.70 (Nunnally and Bernstein 1994), with the exception of the newly developed scales by Kraaijenbrink, Groen, and Bos (2010), which showed somewhat lower reliabilities: perceived ES ($\alpha = 0.60$), perceived CDS ($\alpha = 0.65$), perceived BDS ($\alpha = 0.60$). However, Kraaijenbrink, Groen, and Bos (2010) showed reliabilities around 0.90 in their original work. To address this problem, we followed Hair et al.'s (2006) recommendation that the CR should be used in conjunction with SEM to address the tendency of the Cronbach's alpha to understate reliability. Nunnally and Bernstein (1994) recommended a value of 0.70 and higher for CR to be adequate. The CRs for the three Kraaijenbrink, Groen, and Bos's (2010) variables ranged between 0.90 and 0.92, which indicates good reliability.

The final indicator of convergent validity is achieved when AVE equals or exceeds 0.50. In addition, comparisons of the AVE with its shared variance (Φ^2) and other constructs indicated that the measures exhibit discriminant validity, as, in each case, the AVE was greater than the proportion of the shared variance (Fornell and Larcker 1981). In addition, a test was performed to investigate the presence for common method variance. The initial EFA with oblique rotation of items measuring the 10 constructs of interest produced 10 factors with eigenvalues larger than one, which collectively

accounted for 65 percent of the variance. The first factor accounted for 41 percent of the variance, which suggests that common method bias may not be a major concern (Podsakoff et al. 2003).

Testing the Structural Model (Without Moderator Variables)

The results of the structural model presented in Table 3 are within the recommended values, thus providing support to proceed with hypotheses testing. Our first hypothesis, H1, was supported, that is, ESE positively influenced EI ($\beta = 0.47$; $p < .05$). The results showed a highly significant influence of perceived ES ($\beta = 0.37$; $p < .01$), perceived CDS ($\beta = 0.34$; $p < .01$), and perceived BDS ($\beta = 0.32$; $p < .01$) which provide support for H2a, H2b, and H2c, respectively. The results also showed a highly significant influence of perceived IS ($\beta = 0.17$; $p < .01$) on ESE, thus supporting H3. These results explained a substantial proportion of the variance in ESE (42 percent). In H4, we proposed that the six perceived desirability factors would be positively associated with EI. The results, presented in Table 3, partially support this hypothesis. Out of the six variables tested, three showed no significant effect on EI: financial success, innovativeness, and independence. However, self-realization ($\beta = 0.37$; $p < .05$), role ($\beta = 0.30$; $p < .05$), and recognition ($\beta = 0.65$; $p < .01$) showed a significant positive influence on EI. These variables and ESE explained most of the variance in EI (64 percent).

Discussion and Conclusions

The main aim of this study was to assess the extent of students' PUS and its impact on their ESE, which in turn would influence their EI. We examined this proposition within the context of IS and individual motivations. Overall, our results support our hypotheses. In line with previous studies, the results in Table 3 showed the important role of students' ESE in the prediction of their EI (Boyd and Vozikis 1994; Chen, Greene, and Crick 1998; Krueger, Reilly, and Carsrud 2000) and its usefulness in representing perceived feasibility. They also reflected the importance of perceived organizational-level and institutional-level factors in influencing students' ESE. Our results revealed that perceived ES, perceived CDS, perceived BDS, and perceived IS exerted a significant positive influence on students'

Table 2
Correlations and Square Roots of Average Variance Extracted

Constructs	1	2	3	4	5	6	7	8	9	10	11	12
1. Entrepreneurial Intentions	<i>0.96</i>											
2. Entrepreneurial Self-Efficacy	<i>0.49*</i>	<i>0.89</i>										
3. Perceived Educational Support	<i>0.38*</i>	<i>0.63*</i>	<i>0.88</i>									
4. Perceived Concept Development Support	<i>0.35*</i>	<i>0.53*</i>	<i>0.60*</i>	<i>0.89</i>								
5. Perceived Business Development Support	<i>0.16*</i>	<i>0.31*</i>	<i>0.21*</i>	<i>0.25*</i>	<i>0.93</i>							
6. Perceived Institutional Support	<i>0.43*</i>	<i>0.49*</i>	<i>0.35*</i>	<i>0.30*</i>	<i>0.28*</i>	<i>0.87</i>						
7. Self-Realization						<i>0.19*</i>	<i>0.90</i>					
8. Financial Success	<i>-0.09</i>	<i>0.04</i>	<i>-0.01</i>	<i>0.01</i>	<i>0.01</i>	<i>0.17*</i>	<i>0.01</i>	<i>0.89</i>				
9. Role	<i>0.40*</i>	<i>0.59*</i>	<i>0.29*</i>	<i>0.25*</i>	<i>0.19*</i>	<i>0.26*</i>	<i>0.44*</i>	<i>0.05</i>	<i>0.91</i>			
10. Innovation	<i>0.24</i>	<i>0.28*</i>	<i>0.25*</i>	<i>0.19*</i>	<i>0.21*</i>	<i>0.07*</i>	<i>0.22*</i>	<i>0.02</i>	<i>0.29*</i>	<i>0.89</i>		
11. Recognition	<i>0.73*</i>	<i>0.57*</i>	<i>0.28*</i>	<i>0.15*</i>	<i>0.05*</i>	<i>0.20*</i>	<i>0.45*</i>	<i>-0.10</i>	<i>0.45*</i>	<i>0.26*</i>	<i>0.87</i>	
12. Independence	<i>0.37*</i>	<i>0.52*</i>	<i>0.38*</i>	<i>0.31*</i>	<i>0.30*</i>	<i>0.23*</i>	<i>0.44*</i>	<i>0.04</i>	<i>0.48*</i>	<i>0.23*</i>	<i>0.42*</i>	<i>0.93</i>
Mean	3.51	3.75	4.55	4.13	3.48	3.44	3.70	3.0	3.80	3.97	3.52	3.92
Standard Deviation	1.04	0.69	1.21	1.31	1.4	0.84	0.99	1.14	0.95	0.99	0.98	1.01

*Significant at $p < .01$.

Diagonal values represented in italics are square roots of AVE; off-diagonal values are correlations between constructs. AVE, average variance extracted.

Table 3
Results of the Structural Model

Hypothesis	Hypothesized Path	Standardized Estimates	Results
H1	ESE → EI	0.47*	Supported
H2a	Perceived Educational Support → ESE	0.37**	Supported
H2b	Perceived Concept Development Support → ESE	0.34**	Supported
H2c	Perceived Business Development Support → ESE	0.32**	Supported
H3	Perceived Institutional Support → ESE	0.17**	Supported
H4a	Self-Realization → EI	0.37*	Supported
H4b	Financial Success → EI	-0.02	Not Supported
H4c	Role → EI	0.30*	Supported
H4d	Innovativeness → EI	0.20	Not Supported
H4e	Recognition → EI	0.65**	Supported
H4f	Independence → EI	0.18	Not Supported
Model Fit Statistics:			
$\chi^2_{(94)} = 612.50$ ($p = .036$), RMSEA = 0.046, GFI = 0.95, NFI = 0., NNFI = 0.95, CFI = 0.98, TLI = 0.85			

**Significant at $p < .01$; *significant at $p < .05$.

EI, Entrepreneurial Intention; ESE, Entrepreneurial Self-Efficacy.

ESE, which characterizes perceived feasibility. This suggests that self-efficacy is not a static trait, but rather that it can be changed (Hollenbeck and Hall 2004). This has implications for targeted educational and institutional efforts.

Our findings have demonstrated the significant role of EE and entrepreneurial support as students perceived the education and support that they received from their universities as the most important influence on their ability to become entrepreneurs, which is consistent with previous research (Peterman and Kennedy 2003). However, despite the link between EE and entrepreneurial behavior (Galloway and Brown 2002; Luthje and Franke 2003), student entrepreneurship figures are still considered to be low (Kraaijenbrink, Groen, and Bos 2010). More specifically, the results showed that of the three measures of PUS, perceived ES was the most important in developing students' ESE, followed by perceived CDS and perceived BDS. Although students perceived that their university was helpful in providing them with the general knowledge and skills to initiate a new venture, they needed more targeted support in terms of concept development and business development. These results are consistent with those of Kraaijenbrink, Groen, and Bos (2010)

and help to demonstrate the usefulness of their measures to assess PUS. Therefore, universities are able to measure the impact of their provision of EE and support in order to address the specific needs of their students.

In light of our findings and considering that most researchers agree that entrepreneurial perceptions and intentions can be enhanced by EE (Chen, Greene, and Crick 1998; Cox, Mueller, and Moss 2002; Hatten and Ruhland 1995; Kraaijenbrink, Groen, and Bos 2010; Krueger and Brazeal 1994; Peterman and Kennedy 2003; Wang and Wong 2004), we can say that the initiatives taken by the HEC of Pakistan, such as the creation of the NBEAC, seem to be effective. This implies that the institutional efforts to promote business education by stimulating EE and culture in Pakistani universities have been implemented by universities and are being well received by students in general. Perceived ES showed the highest mean scores of PUS ($M = 4.55$) indicating that students were highly satisfied with the provision of general knowledge and skills to initiate a new venture, which includes programs, electives, projects, internships, conferences, and workshops. The variety of these learning strategies is positive as it helps to build students' self-confidence (Bandura 1992; Cox, Mueller,

and Moss 2002). Additionally, universities can increase students' ESE by providing them with opportunities to conduct feasibility studies, develop business plans, perform business simulation, use case studies, listen to guest speakers, and take part in meaningful apprenticeships (Cox, Mueller, and Moss 2002).

However, although students seemed satisfied with traditional entrepreneurship learning, they required more support from their universities regarding both concept development and business development. This considers the commercialization role of universities and translates into providing individual students or groups of students with a more targeted and specific support for starting their own firm. As shown in Table 1, perceived CDS had lower means than perceived ES ($M = 4.13$). Therefore, universities should provide awareness, motivation, and business ideas in the early stages of the entrepreneurial process, in which opportunity recognition and development take place (Shane and Venkataraman 2000). In addition, universities could provide start-up firms with BDS at the later stages of the entrepreneurial process. This support was perceived as the weakest by students ($M = 3.48$). This type of support includes providing students with the funding to start a new business, use the university's reputation to support them, and serve as a lead customer for the new venture. This is important as previous studies have shown that the lack of funding is a major barrier to student entrepreneurship (Henderson and Robertson 2000; Robertson et al. 2003). Therefore, it can be inferred that the broader support provided by academic institutions, beyond their traditional teaching role, can play an important role in fostering ESE among their students.

In addition to perceived ES, IS had a highly significant effect on EI ($\beta = 0.17$), albeit it was less important to students than PUS ($\beta = 0.33$). This suggests that although the main focus of IS is on existing entrepreneurs, students are aware of it as it could affect them in the future, which again seems to confirm the effectiveness of the initiatives taken by the HEC in Pakistan. Our findings are in line with previous research which argued that institutional factors were key to the development of entrepreneurs as a hostile institutional environment hinders individuals' willingness to engage in entrepreneurship activities (Luthje and Franke 2003; Schwarz et al. 2009; Turker and Selcuk 2009).

The strong impact of individual motivation on students' EI is an important finding. This indicates that the perceived desirability of starting a business is a fundamental element in the formation of EI. Three factors exerted a significant influence on the formation of EI: self-realization, recognition, and role. No significant impact was found for financial success, innovation, and independence. These findings are in line with previous studies which found that EI is related to self-realization (Carter et al. 2003; Kolvareid 1996), recognition (Birley and Westhead 1994; Scheinberg and MacMillan 1988; Shane, Kolvareid, and Westhead 1991), and role (Birley and Westhead 1994; Shane, Kolvareid, and Westhead 1991). However, our results do not support previous studies which have found that the intention to be an entrepreneur is stronger for those with more positive attitudes toward innovation (Birley and Westhead 1994; Carter et al. 2003; Mueller and Thomas 2001; Scheinberg and MacMillan 1988; Shane, Kolvareid, and Westhead 1991) and independence (Birley and Westhead 1994; Carter et al. 2003; Shane, Kolvareid, and Westhead 1991). Our finding that financial success is not significantly important to EI is in line with some previous studies (McQueen and Wallmark 1991), but not with others which found the opposite to be true (Birley and Westhead 1994; Carter et al. 2003).

However, the lack of support in the current study for two important influences on EI, namely, innovation and independence, needs further qualification. A possible explanation may be provided in light of the cultural context of the study. According to Hofstede's (1980) cultural dimensions theory, Pakistan ranks high on power distance (PD), masculinity (MAS), and uncertainty avoidance (UA), but low on individualism. High PD means that individuals accept and expect that power in organizations and institutions will be unequally distributed, and that there would be strong hierarchies and control mechanisms. High MAS refers to traditional male values, such as income and recognition. In high UA, individuals are likely to avoid novel or unknown situations. Finally, whereas low IND means that collectivism is valued and individuals exhibit long-term commitment and loyalty to their families and relationships, there is less freedom and autonomy to pursue individual interests.

Considering Pakistan's low IND, high PD, and high UA, it is possible to explain the poor

results for innovation and independence. This reasoning has been supported by previous research, which has found that high rates of innovation were associated with high IND, low PD, and low UA (Shane, Kolvereid, and Westhead 1991), and entrepreneurial activity was positively associated with high IND (Gupta et al. 2010; Hofstede 1980). In addition, Pakistan, as a collectivist society, places significant importance on “face” and so the potential loss of face from failure may also discourage innovativeness. This has been demonstrated in the Global Innovation Index published by INSEAD in 2012, which ranked Pakistan as 133 out of 141 countries, indicating very low levels of innovativeness. However, low IND in Pakistan can help to explain the strong influence of the role factor on EI. Considering that conformity is emphasized as social ties are important for all members of society, the decision to select a career might be influenced by the individual’s family members and friends. Finally, the country’s high MAS means that Pakistan is characterized by values such as income and recognition, in which people “live in order to work” and there is emphasis on competition, achievement, and success. Self-realization and recognition were shown to have strong effects on EI, thus reflecting these cultural characteristics.

On the basis of our findings, we can answer the four questions we posed in this paper:

- (1) Students have a positive perception of the EE and support that they receive from their universities.
- (2) PUS has a significant impact on ESE. Students perceive ES as the most important variable influencing their ESE, followed by CDS, and BDS.
- (3) PUS exerts a much stronger impact on EI than IS and individual motivations.
- (4) Students are satisfied with the traditional EE that they receive, but they need more targeted support from their universities in terms of concept development and business development. Universities should then address these needs in order to be more effective.

In conclusion, we argue that the role of EE and support is fundamental to student entrepreneurship. Therefore, to enhance student entrepreneurship, we suggest that universities should continuously assess the extent of their

support and its impact on students. Our findings show that universities are perceived to be strong in their traditional teaching role, but they are falling short in their commercialization role. They can strengthen their provision with appropriate support throughout the entrepreneurial process. EE is an important influence on EI, but it is not the only one. Thus, we have proposed that the three-dimensional support of universities, together with IS, increases students’ perceived feasibility, as measured by ESE. In turn, ESE and perceived desirability, represented by individual motivations such as self-realization, recognition, and role, shape EI to start a business. Our findings suggest that this holistic approach provides a more meaningful understanding of the role of EE and support in the formation of students’ EI.

Limitations and Directions for Future Research

Our study is subject to some limitations. First, like the vast majority of studies in the literature, our focus is on behavioral intention rather than actual behavior. Although the predictive validity of intention has been established in a general context, it has yet to be established in the entrepreneurial context. As a consequence, our study is unable to predict how many students will actually materialize their EI. A longitudinal study could reveal a better understanding of whether EI actually turns into entrepreneurial behavior. Second, we made a selection of individual, organizational, and institutional variables that were found to be most influential in predicting EI through our extensive literature review, but other variables could be also important. Finally, our study examines students in Pakistani universities, thus our findings may be mostly generalizable to developing countries. However, our framework provides a meaningful understanding of the topic and other researchers can apply it in different contexts in the future.

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