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UNIVERSITY BUSINESS INCUBATORS AND STUDENTS' ENTREPRENEURIAL INTENTIONS: IMPACT AND EFFECTIVENESS

INCUBADORES DE EMPRESAS UNIVERSITÁRIAS E INTENÇÕES EMPREENDEDORIAS DE ALUNOS: IMPACTO E EFICÁCIA

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Abstract: This study focuses on the impact and effectiveness of University Business Incubators (UBIs) on student's Entrepreneurial Intention (EI). The study is quantitative in nature comprising empirical investigation of relationship between effectiveness of UBIs and student's EI. Primarily, five Pakistan's universities have been targeted which offer entrepreneurship courses and also provide incubation facility to their students to start up their own business idea. Partial Least Square (smart PLS 3) software is used for the data analysis. The paper provides a quantitative analysis of 300 sample size that shows a positive impact of UBIs on student EI. Further, an effective incubation facility provided by a university also influence student's mind and increase EI among them thus, are to be more motivated to start their own business. Moreover, this study also reveals that students who have entrepreneurial family background consume stronger influence over EI than those who do not have entrepreneurial family background. The paper includes implications for universities to gauge success of UBIs and other entrepreneurship facilities provided for business development. Further, it attempts to suggest that UBI can be a better tool in shaping activity of new business creation among university graduates. The contribution of this study is to explain how UBI enhances EI of university students' which ultimately help in economic development through creation of new business start-ups and other entrepreneurial activities.

Keywords: Entrepreneurial Intentions. Business start-ups. Business Development. Family firms.

Resumo: Este estudo enfoca o impacto e a eficácia das Incubadoras de Empresas Universitárias (UBIs) na Intenção Empreendedora (IE) dos alunos. O estudo é de natureza quantitativa, compreendendo investigação empírica da relação entre a eficácia dos UBIs e a IE do aluno. Principalmente, foram visadas cinco universidades do Paquistão que oferecem cursos de empreendedorismo e também fornecem instalações de incubação para seus alunos iniciarem sua própria ideia de negócio. O software Partial Least

Square (smart PLS 3) é usado para a análise de dados. O artigo fornece uma análise quantitativa de 300 amostras que mostra um impacto positivo dos UBIs na IE do aluno. Além disso, uma instalação de incubação eficaz fornecida por uma universidade também influencia a mente do aluno e aumenta a IE entre eles, portanto, ficam mais motivados para iniciar seu próprio negócio. Além disso, este estudo também revela que os alunos que têm histórico familiar empreendedor consomem maior influência sobre a IE do que aqueles que não têm histórico familiar empreendedor. O documento inclui implicações para as universidades avaliarem o sucesso dos UBIs e outras instalações de empreendedorismo fornecidas para o desenvolvimento de negócios. Além disso, tenta sugerir que o UBI pode ser uma ferramenta melhor para moldar a atividade de criação de novos negócios entre graduados universitários. A contribuição deste estudo é explicar como o UBI melhora a IE dos estudantes universitários, o que acaba por ajudar no desenvolvimento econômico por meio da criação de novos negócios e outras atividades empreendedoras.

Palavras-chave: Intenções Empreendedoras. Criação de Empresas. Desenvolvimento de Negócios. Empresas Familiares.

Introduction

Entrepreneurship is considered as an essential component for economic progress of a country, it helps improve a country's economic outlook; the field of entrepreneurship is flourishing universal and every nation attempts to explore new avenues in business to overcome unemployment and economic imbalances. Since last few years research work is observed intensified in this area, probably because of changing global business patterns on one hand, and the quest for more knowledge on the part of social scientists to find out novel ways and solutions for prosperity of global society on the other hand. In this regard universities serve both a platform to carry out research, explore new ways of business and to provide business solutions for the betterment of society and contribute in overall economic development of a nation. Worldwide economic state of affairs exhibit struggle for investment, efforts in increasing growth rate, foreign direct investment, improving Gross Domestic Product (GDP), and diminishing unemployment rate. Furthermore, with regard to reducing unemployment rates, business incubators play a vital role in creating businesses, which also offer numerous market plans, business capital collection and specialized professional service (Sharma, Shukla, & Joshi, 2019). Thus, it is revealed that, entrepreneurship has recognized its status as an effective economic force and an instrument of growth across the globe (Kuratko, 2005). Hence, economic conditions may force university's management to take initiative for creation of such start-ups or business incubators which ultimately contribute in reducing unemployment rate of a country (Huda & Rejito, 2020). In this regard many universities across the world started amending their curriculum by introducing entrepreneurship as an independent course in their education system as a result of this, majority of universities offer entrepreneurship as a specialized course and provide students with business incubator facility.

Entrepreneurship education increases creativity, learning, self-vision, think outside the box approach, and, it creates opportunity among students which ultimately can contribute in the development of a society provided that, the knowledge acquired is transformed into practice. The knowledge of entrepreneurship enables an individual to improve and develop characters that are related with the success of entrepreneurial activities and deliver entrepreneurial skills beneficial for entrepreneurs (Badri & Hachicha, 2019), it is also emphasized that entrepreneurship education should be combined and continued through official education (Kent, 1990). with respect to Entrepreneurship Education and Training (EET) several countries have initiated or reformed their previous program and policy structures to support EET in order to certify entrepreneurial activities (Cheung, 2008; Pittaway & Cope, 2007). One of the important factors in consideration of "Entrepreneurship Education" is the student's "Entrepreneurial Intention". Much of the literature is available on entrepreneurship, business incubators, incubation and role of incubators in the growth of a nation (Etzkowitz, 2004; Fukugawa, 2021; Grandi & Grimaldi, 2005; Li, Ahmed, Qalati, Khan, & Naz, 2020; Sanyal & Hisam, 2018; Sharma et al., 2019). There is no dearth of literature with regard to a university's role in entrepreneurial courses, education, family traditions, university entrepreneurial training and support, students motivation towards start-ups, impact of external factors (Altinay, Madanoglu, Daniele, & Lashley, 2012; Audretsch, Colombelli, Grilli, Minola, & Rasmussen, 2020; Badri & Hachicha, 2019; Bergmann, Hundt, & Sternberg, 2016; Ferreira, Raposo, Rodrigues, Dinis, & do Paço, 2012; Zhang, Duysters, & Cloodt, 2014). There are some universities where start-ups rates for students are extremely high, like Babson College in the USA and the University of Twenty in the Netherland. Focus on business incubation facility and its support have been highlighted in the existing literature as research explains that entrepreneurial universities dominant entrepreneurial culture, expectation of entrepreneurial realization is at strategic priority. Apart from that these universities provide high tech incubator facility and are more adequately equipped to facilitate student start-up (Deakins, O'Neill, & Mileham, 2000). Some studies are available on "Entrepreneurial Intention" (Shahzad, Khan, Saleem, & Rashid, 2021; Wegner, Thomas, Teixeira, & Maehler, 2019) and a few studies are existing on impact of incubation on students intentions to stat-ups (Badri & Hachicha, 2019; Zreen, Farrukh, Nazar, & Khalid, 2019). However, the direct impact of "University Business Incubator" is missing in living literature therefore, this study raises an important question whether University Business Incubators (UBI) have impact on student's Entrepreneurial Intention (EI); to what extent UBI influence students EI to enhance their motivation for business start-ups.

This study is in the backdrop of Pakistan's universities' recent approach towards development of business incubators and incubation facility to students; since many years, some universities started entrepreneurship as a major course in their curriculum yet the impact of the initiative is missing, because universities only focused on providing mere knowledge through course of "Entrepreneurship" however, practical implications were insignificant. Nevertheless, few universities like Sukkur IBA University, Lahore University of Management Science (LUMS), Karachi IBA, National University of Science and Technology (NUST), Comsat, Baluchistan University of Information Technology, Engineering and Management Sciences (BUITEMS) University and Bahria University have taken initiative of introducing business incubator system although, the impact of such business incubator system is yet to be explored. Therefore, this piece of research work is assumed in response to fill this literature gap and the study focuses on the effectiveness of university incubator system to ascertain its impact on student EI in Pakistani context by targeting few Pakistani universities which invest in UBI.

The article proceeds as follows: The second part draws on the existing literature on entrepreneurship with specific focus on EI and entrepreneurial activities, it then uncovers the concept of business incubator(s) with special attention on UBI(s) and its role in start-up a new business, and then it raises a key question regarding relationship, impact and effectiveness of UBI with EI, besides impact of family business towars EI mong university students. The third part demonstrates the methodological aspects of the study and explains the sampling and analysis techniques. The fourth part uncovers the results of the study. The fifth part discusses research results and then the last part concludes with limitation and future directions for further study.

1. Literature review

Entrepreneurial Intention and Entrepreneurial activities

Previous research has shown the decision to form a business is linked with personality traits of an individual (Brockhaus Sr, 1980; McClelland, 1969; Nasip, Amirul, Sondoh Jr, & Tanakinjal, 2017) and designate "entrepreneurs" to those who possess certain psychological traits for instance commitment, total control and inclination for challenge and uncertainty (Mitton, 1989). An appraisal of relevant literature gauging the impact of general "education" on "entrepreneurship" and entrepreneurial activity proposes some probable generalizations and shows an important and affirmative link between "education" and "entrepreneurship". Indeed, several scholarship support the notion that the psychological traits, associated with

entrepreneurship can be developed (Ferreira et al., 2012; Radu & Redien-Collot, 2008; Wincent & Örtqvist, 2009). An entrepreneurial knowledge gained via educational programs inspire students (Souitaris, Zerbinati, & Al-Laham, 2007), help them overcome their inhibitions and take up entrepreneurial activities as a part of their profession (Karimi, Biemans, Lans, Mulder, & Chizari, 2012). By focusing on entrepreneurial activities of students, one concept of Entrepreneurial Intention (EI) emerges which describes, how much a student is likely to give importance to the entrepreneurial activities. Intention is a mental condition which denotes responsiveness, understanding, and behaviour toward a definite object or manner of behaving (Bird, 1988). The intention catches motivational features that guide behaviour, signify amount of an effort an individual intent to achieve the behaviour (Ajzen, 1991). Yet psychological theory of planned behaviour asserts intention as precursor of behaviour (Ajzen, 1988; Wegner, Thomas, Teixeira, & Maehler, 2020). However, EI is a tendency of an individual towards entrepreneurial activities; in the context of university students, it is likelihood or bent of mind towards venture creation during or post-graduation thus, EI is beyond the efforts that a student put in completing his/her degree, it is rather transforming education or knowledge into practice.

For the purpose of investigation of EI-influencing factor among students, previously, two theories have been used: Ajzen's Theory of Planned Behaviour (TPB); Ajzen (1991) asserted that "Intentions are assumed to capture the motivational factors that influence a behaviour; they are indications of how hard people are willing to try, or how much of an effort they are planning to exert, in order to perform the behaviour". He further proposes that person's attitude toward the subjective norm, behaviour and perceived behavioural control form their intentions. The other theory is Entrepreneurial Event Theory (EET) presented by Shapero and Sokol (1982) "suggests that individuals reporting high perceived desirability and high perceived feasibility have a higher likelihood of becoming entrepreneurs with regard to an entrepreneurial event (i.e. new venture creation)". The application of EET and TPB, on students' EI, many researchers used different independent variables while testing the impact of students' EI: Henry, Hill, and Leitch (2005) studied the impact of "training and support" gained from university and concluded, start-up activities and entrepreneurship can be acquired by culture and experience, therefore can favourably be inclined by training and support acquired from university; Badri and Hachicha (2019) considered the composite variables- students' internal and external socio-cultural background, their profiles in terms of theoretical and practical knowledge in new business start-up and concluded among personal characteristics (age, gender and, above all, educational level),

are the most determining variables affecting their intention to engage in business start-ups. Furthermore, EI and that starting up a business is a career choice that is clearly planned in nature involving decision-making processes. Consequent to review of extant studies, this study is relevant to the TPB model to the development of EI through educational process (Fayolle, Gailly, & Lassas-Clerc, 2006; Ferreira et al., 2012; Radu & Redien-Collot, 2008; Wegner et al., 2020). Influence of family business (Farrukh, Khan, Khan, Ramzani, & Soladoye, 2017; Georgescu & Herman, 2020; Palmer, Fasbender, Kraus, Birkner, & Kailer, 2021) also effect the student EI; it is found that if any family member or in family background of a student is involved in any kind of business, he has more tendency towards initiation of his/her own business. Additionally, parents who are business owner can influence their children's entrepreneurial career choices and share a similar preference for entrepreneurial activity (Fairlie, 2002). Family background have shown positive impact on student EI, and it influences the interest of student in entrepreneurial activities and results reported suggest that "EI is influenced by family history; individuals who come from entrepreneurial parents tend to become, or, to develop, entrepreneurial behaviour and intention. (Herman, 2019; Schmitt-Rodermund, 2004). Further, another study revealed perceived family environment supportive to creativity can predict increased levels of entrepreneurial intentions among students"' (Souitaris et al., 2007).

The rising body of literature claims, EI plays a significant role in the decision making and aim to start a new business or firm. According to (Bird, 1988; Liñán, 2004) EI is the "cognitive representation of actions to be implemented by individuals to either establish new independent venture(s) or to create new value within existing companies."; "EI is the first step in evolving a business and sometimes—long process of venture creation" (S. H. Lee & Wong, 2004). Moreover, Crant (1996) defines "EI as one's judgments about the likelihood of owning one's own business." EI increases entrepreneurial behaviour of an individual, if one person intends to start his/her own business then his/her entrepreneurial behaviour is modified accordingly. Thus it is widely agreed that the main predictor of future entrepreneurial behaviour of an individual is EI (Do Paço, Ferreira, Raposo, Rodrigues, & Dinis, 2015)because "individuals will stimulate their entrepreneurial potential once they accept they truly have the ability, that there are environmental possibilities and that there is social support" (Do Paço et al., 2015; Ferreira et al., 2012; J. F. Hair, W. C. Black, B. J. Babin, R. E. Anderson, & R. Tatham, 2006a; Wegner et al., 2020). Universities also play an important part in promoting entrepreneurial environment, cater supportive kits in shaping entrepreneurs and ultimately increase motivation of students to start-

up their own business (Badri & Hachicha, 2019; Shahzad et al., 2021). Further, research also reveals that university's fresh alumni determine the maximum tendency towards opening their own firm thus outgoing students are more incline to start innovative business projects (Bosma & Levie, 2010; Lüthje & Franke, 2003). Many universities ventured to polish latent entrepreneurs' skills among students and have initiated entrepreneurial training programs (Guerrero, Urbano, Cunningham, & Gajón, 2018) such as Science Park and incubation-curricula along with entrepreneurship education to increase students' EI, provide innovative environment, and create close links with industry and the business world. Therefore, the introduction of targeted entrepreneurship programs, internships, and other "hands-on" business experiences, coupled with broad private-public partnerships in university research and the creation of business incubators can be extremely fruitful in fostering entrepreneurship among university students" (Almobaireek & Manolova, 2012; Lyken-Segosebe, Montshiwa, Kenewang, & Mogotsi, 2020).

University Business Incubators

In its generic form, the term "business incubator" can be used to describe "a wide range of organizations that help entrepreneurs develop their ideas from inception through to commercialization and the launching of a new venture" (Carvalho & Galina, 2015). However, UBIs are institutionally designed platforms aimed to assist and equip students with fundamentals of business process knowledge (Rice, 2002; Rice, Matthews, & Kilcrease, 1995; Sherman, 1999); "UBIs have become popular as they seek to provide a unique opportunity to nascent entrepreneurs, benefit from the talent and resources that are located in the university" (S. S. Lee & Osteryoung, 2004; Rothaermel & Thursby, 2005). UBI is a new type of business concept which work as an essential tool to develop positive attitude(s) among students in starting up new creative business whose main task is to raise cost-effective growth in a country by supporting entrepreneurial firms through their progress at growth stage consequently, UBIs provide value added component in entrepreneurial environment of a university; These UBIs also cater an optimal set of technology and business incubation services to occupants which in result increase their managerial intervention, business know-how, sharing of entrepreneurial skills and psychological support. An important study highlights the financial and non-financial support delivered by universities is venture creation (Hossinger, Block, Chen, & Werner, 2021), this non-financial support systems provided by a university can be an entrepreneurship incubator. An incubator generally provides positive environment to the early-stage ventures by offering rental office space, shared office services, and business counselling assistance at very low costs (Allen &

Rahman, 1985), and UBIs increase the perception of entrepreneurship and create innovative environment for students within a university. Research also manifest that "a good incubator has demonstrated to provide a great survival rate, a positive impact on the perception of entrepreneurship, and a structural way to financial markets" (Aernoudt, 2004). Another researcher explained that the establishment of incubator network is closely related to the success of the start-up (Hackett & Dilts, 2004). Yet, UBIs largely furnish supportive environment within the universities for students who want to start their own business and focus on innovation, and a good example is technology transfer offices which serve as support mechanism in the process of creation of university spin-offs (Link & Scott, 2017; Mian, 1996; Niosi, 2006); UBIs assist students in improving entrepreneurial skills, strengthen their capabilities in order to create opportunities for others (Lyken-Segosebe et al., 2020). Research also exhibits, the entrepreneurial support measures are including small university businesses, research facilities, research groups or quasi firms, liaison offices, technology transfer offices and university incubators. These support methods enable students and/or academics to strengthen their entrepreneurial expertise and competences, and also give them opportunity to spend numerous months to interact entrepreneurial market, industries, or organizations in order to improve experience and knowledge that ultimately lead to strengthen their professional experience (Grandi & Grimaldi, 2005; J. Lee & Win, 2004; Link & Scott, 2017). There are many variables that have been tested previously in order to check the impact of university environment and its support (Guerrero et al., 2018; Guerrero, Urbano, & Gajón, 2020). Among such studies the theoretical and empirical work of Hassan (2020), is an important regarding evolution and role of UBIs in enhancing entrepreneurial aspects and outcome; and is revealed UBIs prove a link to both scientific inquiry and economic development through entrepreneurial activities however, the study assessed indirect impact of UBI, incubator contribution in supporting entrepreneurship education and start-ups. Nevertheless, considering the lack of empirical research linking university environment and support to students' EI, this study has adopted the framework suggested by (Kraaijenbrink, Spender, & Groen, 2010), which describes that, university can provide three types of support for entrepreneurial attitude: educational support, targeted cognitive support and targeted non-cognitive support. At targeted cognitive and non-cognitive support level, as opined by (Tijssen & Van Leeuwen, 2006), the emerging entrepreneurial universities are expected to play key role by providing support mechanisms like patents, technology transfer, and incubation among other necessary facilities to budding entrepreneurs. In short positive university environment and support would help students gain various tangible (finance, know-how, etc.) and intangible

(motivation, self-confidence, awareness of related regulation) resources and skill set that results increased EI. Ultimately, this positive environment and support to budding entrepreneurs, help feel more empowered to start a business and enhance stronger intention to become entrepreneurs. Therefore, this study comprises following alternative hypothesis on the basis of aforementioned literature review.

H1: There is a positive and significant relationship between effectiveness of University Business Incubators and student Entrepreneurial Intention.

H2: Entrepreneurial Intention will be stronger in students from an entrepreneurial family background (whose family is involved in business) than from those who come from other family.

2. Methodology

Due to scarcity of experimental studies that consider the effect of UBIs and students' EI in Pakistan context, this study followed an exploratory research approach based on survey with students who avail UBI for business start-up from five different universities (Karachi IBA, LUMS, Sukkur IBA University, Bahria University, and COMSAT University). The following sections describe data and sample, as well as data analysis procedures.

Data and sample size

The survey was sent to students from aforementioned seven Pakistan universities. In order to avoid possible cultural differences impacting the background of EI (Guerrero et al., 2018) the authors decided to collect data from students of universities in the same country. All five universities provide business incubator facility.

Data were collected during classes in all universities through both physical (2 universities) and electronic mode-email and Google form (3 universities) due to time and distance constrain. Initially a sample size of 320 filled questionnaire were collected, after cleaning process the final total size reached 300. From 300 respondents 198 (66%) were male students and 102 (34%) were female students. Among these students 208 (69.3%) belonged to public sector universities and 92 (30.7%) were from private sector universities. And department wise 214 (71.3%) were from Business Department, 27 (9%) from Engineering Department, 25 (8.3%) students from Computer Science Department, 17 (5.7%) were from BS (Accounting and Finance) Department, 8 (2.7%) students from Information Technology Department and 9 (3%) were from other departments. On the basis of their Family involvement in business 74 (24.7%) students reported

that their family involve in business and 226 (75.3%) students reported no family involvement in any business.

Description of variables

The dependent variable of this study was EI. Students were presented with six statements relating to their intentions to become entrepreneurs (Liñán & Chen, 2009). With reference to each statement, a five-point 1 to 5 Likert scale was used: 1 suggested "Strongly disagree", and 5 "Strongly agree" (Taherdoost, 2019). All six statements were loaded on a single component with reference to a Principal Component Analysis (PCA). This measure had a Cronbach's alpha of 0.91. Component scores relating this component were used as the dependent variable in the following analysis. While, the independent variable was UBIs. (S. S. Lee & Osteryoung, 2004) constructed success or effectiveness factors of UBI and presented five effectiveness factors including goal strategy, physical/human resources, incubator services, networked programs and incubate. The questionnaire in this study was adopted on the basis of effectiveness factors of S. S. Lee and Osteryoung (2004) with some modification as some factors appeared irrelevant in Pakistan's universities context.

For sampling adequacy against each variable Kaiser-Meyer-Olkin (actor loading of items) test was run on focus group selected 20 items from UBI questionnaire collected from students of Sukkur IBA Univerity through exploratory factor analysis (Tabachnick & Fidell, 2001). The factor loading of 8 questions was less than .5 so items were deleted (question) one by one and halted up to 12 questions in UBI scale. The factor loading of remaining 12 items valued between .862-.542. The reliability of these 12 items was satisfactory and measure Cronbach's alpha 0.936 which is up to the mark.

3. **Result**s

Data analysis was achieved using Partial Least Squares 3 software (PLS) Structural Equation Modeling. PLS "procedure is used to estimate the latent variables as a linear combination of its indicators with an aim to maximize the explained variance for the indicators and constructs. The indicators' weight provide an exact linear combination of the indicators for forming construct score. This value is both maximally correlated with its own set of indicators and with other latent variables according to the structural/theoretical model" (Wold, 1985). In order to assess discriminant validity authors used correlations among indicators and constructs meaning this "items should have higher correlation with their own construct than with any other,

signifying that they are perceived by individuals as fitting in that theoretical construct" (Messick, 1988). In this study following result were revealed with respect to the reliability, validity, significance and relationship of EI-dependent and UBI-independent variable however, family business was taken a dummy variable.

Internal Reliability

Internal reliability was examined via Cronbach's Alpha and composite reliability. The value of Cronbach's Alpha of all the constructs was found above threshold 0.7. The table. I, shows the Cronbach's Alpha of dependent variable EI (0.948), Family business (1.00) which was taken as a dummy variable whereas, the alpha value of independent variable UBI was recorded (0.898). Therefore, results confirm the reliability of both dependent and independent variable with reference to standard value of 0.7.

Table 1: Internal reliability via Cranach's alpha

	Cronbach's Alpha	rho_A
EI	**0.948**	**0.948**
Family Business	**1.000**	**1.000**
UBI	**0.898**	**0.900**

J. F. Hair, W. C. Black, B. J. Babin, R. E. Anderson, and R. L. Tatham (2006b) mentions "Composite reliability measures the overall reliability of a set of items loaded on a latent construct and value ranges between zero and one; Values greater than 0.70 reflect good reliability and between 0.60–0.70 as acceptable if other indicators of the construct's validity are good". Table. II shows the composite reliability of dependent variable EI (.0947), Family Business (1.00) as dummy variable and UBI (.0894) hence exhibits the constructs have a higher value than threshold 0.70, indicating adequate internal consistency.

The convergent validity was indicated by Average Variance Extracted (AVE) in Structural Equation Modeling (SEM), which satisfy the reference threshold of 0.5 (Hair et al., 2006a) as indicated in Table II. The AVE of dependent variable EI (.0750) and Family Business (1.00) as dummy variable. However, the AVE of UBI (.0417), found below the threshold. Yet this value is adequate because composite reliability of the scale is greater than 0.6 (Fornell & Larcker, 1981), the AVE of UBI is (.417) and composite reliability is (.0894), which is acceptable and convergent validity is adequate.

Table 2: Composite Reliability and Variance

	Composite Reliability	Average Variance Extracted (AVE)
EI	**0.947**	**0.750**
Family Business	**1.000**	**1.000**
UBI	**0.894**	**0.417**

Discriminant Validity

"Discriminant validity is the extent to which a construct is truly distinct from other construct. Discriminant validity check is done by comparing the AVE's with the squared correlation for each of the constructs. The AVE of a latent variable should be higher than the squared correlations between the latent variable and all other latent variables. The rule of thumb for assessing discriminant validity requires that the square toot of AVE be larger than the squared correlations between constructs" (Cooper & Zmud, 1990; HAIR JUNIOR, Black, Babin, Anderson, & Tatham, 1998). The acceptable threshold for discriminant validity in Fornell and Larker criteria (Hair et al., 2006b) is the square root of AVE should be greater than the correlation with any other construct. Table III indicates the square root of AVE is greater than 0.5 and is higher than the correlation with any other construct.

Table 3: Discriminant Validity (Fornell-Larcker Criterion)

	EI	Family Business	UBI
EI	**0.866**		
Family Business	-0.326	**1.000**	
UBI	0.621	-0.121	**0.645**

Structural Model

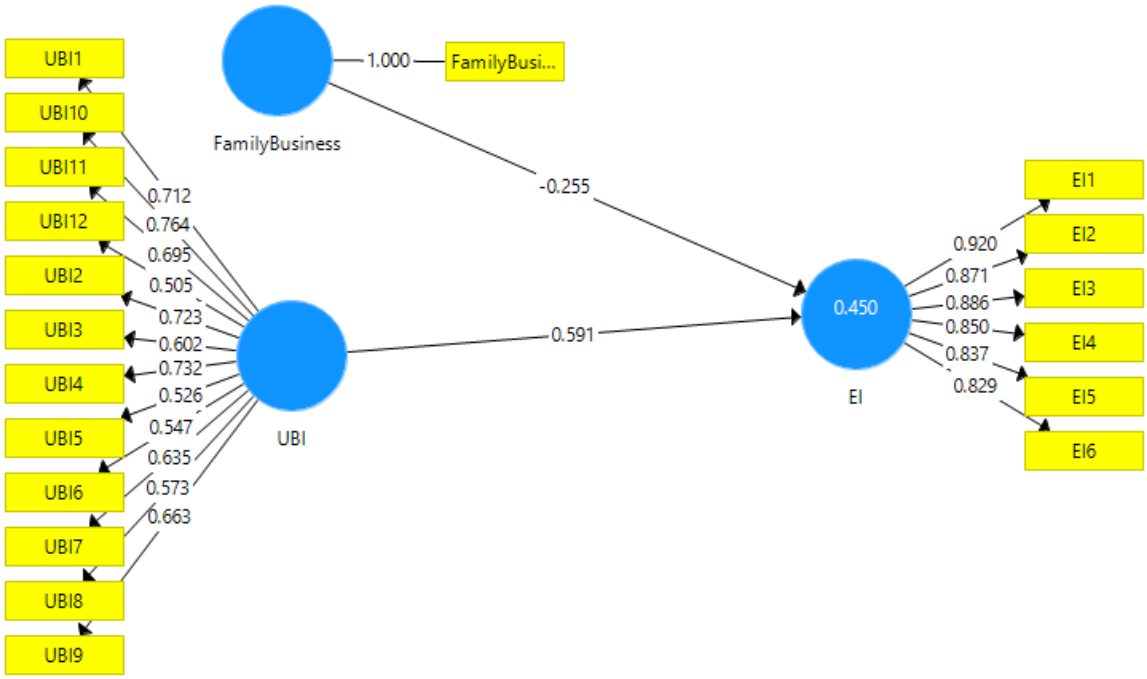

Figure 1. Conceptual Model of UBI and entrepreneurial Intentions along with family business

The above diagram shows an overall picture of the model in which UBI is an independent variable, FB is a dummy variable and EI is a dependent variable. Tabachnick and Fidell (2001) Explains that the cut off of factor or outer loading should be greater than .5. In this model independent variable UBI comprises of 12 items and dependent variable EI contains 6 items, outer/factor loading of each item qualifies the threshold of .5 s shown in figure I which ranges between .505-.920.

The table IV exhibits the path coefficient and displays mean, standard deviation, t-statistic and P values which indicate hypothesis test: a significant relationship of the variables. For H1 "there is a relationship between University Business Incubator and Entrepreneurial Intention" : UBI > EI positive significant relationship as the sample mean of this relationship (.548), standard deviation (.043), t- statistic (12.701) with P value (0.000). With respect to H2 "Entrepreneurial intention is stronger in students from an Entrepreneurial family background (whose family is involved in any business) than those who come from other family". Under his model H2 is measured with the dummy variable in which question was asked from student about family business while selecting 'YES' as 1, 'NO' as 2 in the data file. From the sample of 300,

only 74 (24.7%) students reported that their family involve in business while 226 (75.3%) students reported no family involvement in any business. Thus, results revealed, Family Business > EI hence has positive significant relationship. The above structural model also exhibits the value 1.00 means "Yes" students have family business and the sample mean of family business > EI (-.0251) as it is dummy variable and only two possible values lies either 0 or 1, standard deviation (0.038) and t- statistic (6.775) with P value (0.000).

Table 4: Path coefficient: mean, standard deviation, t statistic and P values of variables

	Original Sample	Sample Mean	SD	T Statistics	P Values
Family Business -> EI	-0.255	-0.251	0.038	6.775	0.000
UBI -> EI	0.545	0.548	0.043	12.701	0.000

The predictive power of the model was assessed using R^2 (Coefficient of determination); R^2 of an endogenous variables in the model is computed. Table V shows R^2 value of the construct EI (0.45). According to Chin (1998) R^2 values for endogenous latent variables are assessed as follow 0.67 substantial, 0.33 moderate and 0.19 weak. Yet, the value of R^2 (0.45) appears in the model is greater than 0.19 therefore confirms the model has predictive power. The effect size (f2) is computed using the formula f^2 (R^2included – R^2 excluded)/(1-R^2 included). With reference to Cohen (1988) guidelines, $f2 \geq 0.02$, $f2 \geq 0.15$, and $f2 \geq 0.35$ represent small, medium, and large effect sizes, respectively. The value of f^2 for UBI (0.625) indicates strong effect size of Independent Variable (I.V) over Dependent Variable (D.V) if it is greater than .35. Therefore, aforementioned f2 value (.0625) of UBI has greater effect size on EI.

Table 5: Predictive Power (Coefficient of determination). R^2 of two endogenous variables

	R Square	R Square Adjusted	F Square
EI	0.450	0.446	
UBI			**0.625**

4. Discussion

For the last few years, universities role is worth note in catering entrepreneurial education among undergraduates, directed to create positive impact in respective communities. Several universities espoused a new program of entrepreneurship which included activities focused on concept development and new business creation (Badri & Hachicha, 2019; Rasmussen & Sørheim, 2006); some universities ventured to provide even business incubators for having launching on new business (Songkajorn, Aujirapongpan, Deelers, Rakthai, & Jutidharabongse,

2020). Yet, there are contentious outcomes concerning the impact and effectiveness of universities approaches (Saeed, Yousafzai, Yani-De-Soriano, & Muffatto, 2018) and, other important study focuses on overall university ecosystem of offering UBIs and entrepreneurial education (Guerrero et al., 2020). Nevertheless, to the best of authors' knowledge, there are hardly studies available on the direct impact and effectiveness of UBIs on students' EI while considering role of family business on EI.

While in previous studies, UBI has been tested with other variable like Entrepreneurial Development (ED), value added services of tenant firms, affecting impact on number of graduates, impact on success of start-ups, university environment and support and government support, (Bergek & Norrman, 2008; Chandra & Chao, 2011; Peters, Rice, & Sundararajan, 2004; Soetanto, 2004). This study reveals that there is a positive significant relationship between the impact of UBI and student EI. The t- statistic shows UBI-EI (12.071) with P values (0.000), which is consistent with earlier studies (Aernoudt, 2004; Hassan, 2020; Wegner et al., 2020) and therefore, indicates that "a good incubator provides a great survival rate, a positive impact on the perception of entrepreneurship, and a structural way to financial markets." The results of this study confirms previous studies (Martínez, Fernández-Laviada, & Crespo, 2018; Su et al., 2021; Zreen et al., 2019) which argue that business incubators, placement programs and facilitating conditions have a robust and positive statistically significant impact on EI. Further, another study highlights that high contribution of environmental (formal and informal) and internal (resources including incubators) factors shows a significant and positive interrelationship and also develops positive entrepreneurial attitude among academic, researcher, staff and university students (Shahzad et al., 2021).

This study further checked the impact of Family Business and measured it as dummy variable; student having entrepreneurial family background were marked 1 otherwise 0. The result of dummy variable indicated the positive significant relationship with student EI. The t-statistic of dummy variable Family Business-EI (6.775) with P value (0.000). This result is consistent with the earlier studies (Schmitt-Rodermund, 2004; Wang, Wang, & Chen, 2018), which suggest EI is affected by family history; individuals who come from entrepreneurial parents tend to become, or, to develop, entrepreneurial behaviour and intention. Further, perceived family environment supportive to creativity can predict increased levels of entrepreneurial intentions among students (Zampetakis & Moustakis, 2006). The dummy variable result also support the underlying hypothesis of this study it is therefore, concluded

student who have entrepreneurial family background have stronger influence over EI than those who do not have family entrepreneurial background.

5. Conclusion

There is no dearth of literature with regard to a university's role in entrepreneurial courses, education, family traditions, university entrepreneurial training and support, students motivation and EI towards start-ups, impact of external factors (Altinay et al., 2012; Audretsch et al., 2020; Badri & Hachicha, 2019; Bergmann et al., 2016; Ferreira et al., 2012; Zhang et al., 2014). However, a few studies were available on impact of UBI on students' EI specially in Pakistan context (Saeed et al., 2018; Zreen et al., 2019) this study focuses in the backdrop of Pakistan's universities' recent approach towards development of business incubators and incubation facility to students; since many years, some universities started entrepreneurship as a major course in their curriculum yet the impact of the initiative is missing, because universities only focused on providing mere knowledge through course of "Entrepreneurship" however, practical implications were insignificant. Nevertheless, few universities like Sukkur IBA University, Lahore University of Management Science (LUMS), Karachi IBA, National University of Science and Technology (NUST), Comsat, Baluchistan University of Information Technology, Engineering and Management Sciences (BUITEMS) University and Bahria University have taken initiative of introducing business incubator system. The aforementioned universities help increase entrepreneurial environment in Pakistan and attempt to give best technology support to their graduates having desire to create new opportunities for themselves and for others. As extant research exhibits, a positive university environment and support (including incubation) would help students gain various tangible (finance, know-how, etc.) and intangible (motivation, self-confidence, awareness of related regulation) resources and skill set that results into increased entrepreneurial intention (Tijssen & Van Leeuwen, 2006; Wegner et al., 2020). Findings reveal UBI enhances students' EI and above mentioned universities incubator facility work efficiently and UBIs have significant positive impact on Pakistani student's EI. Thus, it is concluded, UBI increases EI among student which consequently increases likelihood to start their own business with the support provided from university in highly technological environment.

Moreover, the impact of dummy variable-Family Business appeared also positive; the results demonstrated only 74 (24.7%) Pakistani students out of 300 have entrepreneurial family background and those students have stronger influence over EI than those who do not have any

kind of family entrepreneurial background. It is further uncovered, parents who are business owner can influence their child entrepreneurial career choices and sharing a similar preference for entrepreneurial activity (Fairlie, 2002). The finding of this study also support the living literature and therefore, reaffirms, supportive family background, influences entrepreneurial activities, and augment students intentions more to start their own business and create opportunities for others. This study further adds theoretical contribution in the growing body literature by revealing students EI and effectiveness of UBI. Furthermore, the study opens research vista for other researchers to investigate more about UBI effectiveness against the Theory of Planned Behaviour or Entrepreneurial Event Theory with student EI in different context.

Some limitations of the study are to be acknowledged. First the data is cross sectional and findings may differ, if the data collected on longitudinal basis. Second this research includes only one independent variable more independent or using mediator variable will give further contribution in growing body of literature. Third, due to time limitation data is only taken from 300 respondents, more the sample size, better would be the results and those findings can be generalized to whole of population as reliability increases by increasing sample size. Last, data is collected on student EI so this study is merely based on intentions of students' yet, data collected based on actual theory of Entrepreneurial Intention proposed by (Ajzen, 1991) may lead to different results.

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