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-RESEARCH ARTICLE-

THE IMPACT OF UNIVERSITY INNOVATION AND ENTREPRENEURSHIP EDUCATION ON ENTREPRENEURIAL INTENTIONS: EDUCATIONAL IMPLICATIONS FOR E-COMMERCE PROFESSIONALS

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—Abstract—

This study investigates grounded strategies aimed at enhancing the Entrepreneurial Intention (EI) of students, with a particular focus on the influence of Innovation and entrepreneurship education (IEE) among university students. The research utilized a convenient sample of 486 full-time undergraduate students majoring in e-commerce from Chinese universities. Data analysis was conducted using descriptive statistics,

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Vol: 16 **No:** 2 **Year:** 2024 **ISSN:** 2146-0744 (Online) (**pp.** 230-251) **Doi:** 10.34109/ijebeg.2024160212

confirmatory factor analysis (CFA), correlation analysis, and structural equation modelling. The results indicate that IEE moderately influences EI, Personal Attitudes (PA), Subjective Norms (SN), and Perceived Behavioural Control (PBC), but does not have a significant impact on knowledge. Additionally, entrepreneurial self-efficacy (ESE), PA, SN, and PBC were found to positively and significantly affect EI. Furthermore, PA, SN, PBC, and ESE moderate the relationship between IEE and EI. The paper concludes by discussing these findings and offering recommendations for future research.

Keywords: E-Commerce Professionals, Subjective Norms, Entrepreneurial Self-Efficacy, Innovation and Entrepreneurship Education, Personal Attitudes, Entrepreneurial Intention, Perceived Behavioural Control

INTRODUCTION

As China's economy enters a new phase and faces increasing pressures, entrepreneurial spirit plays a crucial role in boosting economic vitality and regional competitiveness (Zaryab & Saeed, 2018). An upsurge in the e-commerce industry is a predominant key within the transformation of economic and entrepreneurial landscapes worldwide (Stoica et al., 2020). New opportunities for business growth have been opened up by platforms such as Alibaba and JD.com in which young professionals have been trained in innovation and entrepreneurship (Krueger et al., 2000). This research studies how targeted Innovation and Entrepreneurship Education (IEE) can equip e-commerce students for success in this dynamic sector.

Entrepreneurship is essential for job creation, innovation, and growth (Stoica et al., 2020). Research suggests that entrepreneurial behaviour is largely driven by EI, rather than merely arising from entrepreneurial opportunities (Nasip et al., 2017; Shah & Soomro, 2017). Personality traits and cognitive factors, such as self-efficacy, PA, SN, and PBC, significantly influence EI among students. Entrepreneurship education (EE) fosters creative thinking and innovation, with many universities worldwide implementing such programmes (Fayolle, 2000). In China, innovation and entrepreneurship have become national priorities, integral to economic development. To enhance economic conditions, higher education institutions must reform teaching methods in IEE, ensuring students acquire the skills and knowledge necessary for entrepreneurial success and employment (Brüne & Lutz, 2020). Empirical evidence suggests that EE enhances opportunities for entrepreneurship and business development, stimulating the economy.

Vol: 16 **No:** 2 **Year:** 2024 **ISSN:** 2146-0744 (Online) (**pp.** 230-251) **Doi:** 10.34109/ijebeg.2024160212

Data from the 2023 "Two Sessions" reveals that the number of Chinese graduates is expected to exceed 11.58 million for the second consecutive year, setting a new record with an increase of 820,000 from the previous year. This indicates a more competitive labour market. The acceptance rates for job offers among job-seeking graduates with associate, bachelor's, and master's degrees are 54.4% and 47.5%, respectively, with bachelor's degree graduates having the lowest employment rate. The rapid growth of the e-commerce sector, driven by the Internet, has generated more entrepreneurial opportunities for students specialising in e-commerce, thereby increasing the demand for their IEE. While many studies have explored the influence of IEE on EI, there remains a need for further research specifically focusing on this area.

This research explores the challenges faced by e-commerce majors regarding EI and IEE and their interrelationship, building on previous studies. It also examines the mediating roles of ESE, personal intentions, perceived behaviour, and PBC, with the aim of identifying practical approaches to enhancing the EI of undergraduate students majoring in e-commerce through IEE.

LITERATURE REVIEW AND HYPOTHESIS

Ecommerce as a platform for entrepreneurial growth and Innovation

E-commerce has transformed the business landscape with its revolutionary advantage of transforming the way businesses do their operations and innovate. In the digital age, it’s a powerful platform encouraging entrepreneurial growth by both startups and established businesses to harness the power of digital tools for market expansion, innovation and competitive advantage. The evolution of technology has been paving the way for e-commerce platforms as the infrastructure needed for businesses to wind away the barriers traditional and exploiter the door to unexplored avenues of value creation. The work by Wu and Hisa (2004) provides a new foundation of scope to the innovative potential of e-commerce through their hypercube model, which analyses the multiple impact of e-commerce on businesses. Their work shows how e-commerce reduces transaction costs, leads to real time information sharing and facilitates connection between stakeholders, and therefore incentivizes innovation. These have not just simplified the operation but helped create an environment that is positive for entrepreneurial activities and businesses have found the right incentive to reimagine their processes, offerings and operations in general.

Especially for small businesses, e-commerce plays a critical role in its power. According

Vol: 16 **No:** 2 **Year:** 2024 **ISSN:** 2146-0744 (Online) (**pp.** 230-251) **Doi:** 10.34109/ijebeg.2024160212

to Hardilawati, Sandri and Binangkit (2019), e-commerce serves as a catalyst for small business's innovation through the provision of tools and platforms to improved efficiency and reach of the market. This research emphasizes the need to bring e-commerce into the small business strategy for the improvement of product delivery, customer access, and operational processes. Small businesses take advantage of e-commerce to compete effectively by opening the doors of international marketplaces, something limited by resource constraints and other geographic limitations.

Alibaba's success is evidence that legitimacy and ecosystem development is strategic to the e-commerce field. Kwak, Zhang, and Yu (2019) analyse the evolution of Alibaba as an ecommerce platform and the constituent parts of how the legitimacy of Alibaba as a player in China's digital economy has been established. By doing this, their study shows that e-commerce platforms can be a hub for entrepreneurial activities by decreasing transaction costs, creating a sense of trust among market players, and introducing entrepreneurs to a big pool of customers and suppliers. This is a ecosystem centric approach which not only increases entrepreneurial opportunities but also makes scaling of businesses a reality in volatile markets.

Another example of the interplay between e-commerce and entrepreneurship in SMEs is found in Shemi and Procter (2018). They provide a case study for myBot to show how e-commerce can power growth and innovation for SMEs. The research show that e-commerce helps entrepreneurs to adopt new flexible business models, reduce supply chain costs and interact with customers directly. On facing rapid change in market environments these capabilities are critical to encourage entrepreneurial resilience and flexibility.

Collectively, these studies show that e-commerce is more than a transactional platform; it is a tool for entrepreneurial growth and innovation. Ecommerce acts as an important cornerstone of modern entrepreneurs to enable them to innovate, expand and adapt in driving economic growth and rewrite of the competitive landscape.

Innovation and Entrepreneurship Education

IEE is defined as an educational activity aimed at developing students' personal qualities, attitudes, skills, and knowledge related to enterprise (Linan, 2008). Some scholars argue that EE should not only cover traditional content, such as entrepreneurial strategies and thinking, but also foster students' entrepreneurial spirit and attitudes (Wang et al., 2022). Research by Pittaway and Cope (2007) highlights that IEE can

Vol: 16 **No:** 2 **Year:** 2024 **ISSN:** 2146-0744 (Online) (**pp.** 230-251) **Doi:** 10.34109/ijebeg.2024160212

effectively enhance students' EI, helping them navigate challenges in the entrepreneurial process. Bell (2016) asserts that IEE should extend beyond business disciplines, integrating across science, engineering, humanities, and other fields to develop students' interdisciplinary thinking and comprehensive abilities. Ratten (2017) underscores the need for a blend of theory and practice in EE, introducing the concept of "action-oriented learning," which involves real entrepreneurial projects and experiential learning to equip students with entrepreneurial skills through hands-on experience. Empirical studies show that students engaged in EE exhibit higher entrepreneurial confidence and capability than their counterparts. Rasmussen and Sørheim (2006) advocate for a practical approach to IEE, emphasizing real entrepreneurial projects and experiential learning to help students acquire essential skills (Sreenivasan & Suresh, 2023) propose an assessment method based on learning outcomes, using data on students' entrepreneurial skills, EI improvements, and success rates to quantitatively assess educational effectiveness.

Theory of Planned Behaviour

The Theory of Planned Behavior (TPB) is a prominent framework in social psychology, used to predict and explain the interaction between attitudes and behaviors. TPB identifies three key factors influencing EI: PBC, SN, and PA (Ajzen, 1991). Research indicates a clear link between intentions and actions. PA refers to the degree to which a person values or dislikes a particular behavior, reflecting their motivation to pursue a goal. SN represents the social approval or disapproval from significant others regarding the individual's choices. PBC reflects the perceived control over the behaviour, with individuals typically opting for actions they believe they can manage and influence. TPB serves as the theoretical foundation for this study, as it has been widely applied and significantly contributed to the understanding of entrepreneurial education (Otache, 2019; Su et al., 2021).

Entrepreneurial Self-Efficacy

The concept of ESE extends Bandura's notion of SE. Research indicates that ESE plays a significant role in shaping EI and entrepreneurial behaviour (Fitzsimmons & Douglas, 2011). ESE is particularly critical in entrepreneurship as it directly influences EI predictions. ESE helps individuals overcome initial anxiety related to starting a business by enhancing confidence, determination, and perseverance. It refers to one's confidence in managing various stages of the entrepreneurial process, such as resource acquisition, opportunity recognition, and marketing (Newman et al., 2019). Liguori and Winkler

Vol: 16 **No:** 2 **Year:** 2024 **ISSN:** 2146-0744 (Online) (**pp.** 230-251) **Doi:** 10.34109/ijebeg.2024160212

(2020) found that support from mentors, friends, and family significantly boosts an entrepreneur's EI by providing essential resources and guidance, thereby increasing confidence in facing challenges. Empirical studies show that ESE positively impacts EI, which, in turn, predicts entrepreneurial behaviour. Newman et al., 2019 suggest that ESE enhances EI and fosters engagement in entrepreneurial activities, while (Santos & Liguori, 2020) argue that ESE helps entrepreneurs manage stress and anxiety, thus improving the smoothness of business operations.

Entrepreneurship Intention

EI is considered a crucial factor for the formation and evolution of business organizations, including their survival, development, growth, and adaptation, as highlighted by (Bird, 1988). Entrepreneurs develop EI through the accumulation of attention, experience, and actions driven by commercial awareness. Esfandiar et al., 2019 argue that EI is a deliberate cognitive state that influences behaviour and attention towards entrepreneurial activities, such as starting a new business or choosing entrepreneurship as a career, depending on the motivational context provided by educational institutions. As such, participation in EE programs and training courses significantly impacts a student's EI. Considered as one of the most accurate indicators of entrepreneurial activity, EI is crucial in the choice to launch a new company (Bird, 1988; Nabi et al., 2010) acting as a pre-action state of awareness.

Hypothesis

Innovation and Entrepreneurship Education and Entrepreneurship Intention

Students' EI is much improved and their entrepreneurial goals are positively changed by entrepreneurship education (Fayolle et al., 2006; Tkachev & Kolvereid, 1999). According to several research, the degree of entrepreneurship education significantly influences personal EI, so enhancing the EI of the students (Mei et al., 2020). According to Kitsios et al. (2021), persons who have received entrepreneurial education show better emotional intelligence than those without such training. Similarly, Cho (1998) suggested that education fosters EI by equipping individuals with the knowledge and skills necessary to establish new enterprises. EI can be further developed through participation in IEE, including business courses and entrepreneurship training (Bonnett & Furnham, 1991; Rasheed, 2000). IEE not only enhances students' employability but also increases their likelihood of pursuing entrepreneurship. Therefore, this study proposes the following Hypothesis,

Vol: 16 **No:** 2 **Year:** 2024 **ISSN:** 2146-0744 (Online) (**pp.** 230-251) **Doi:** 10.34109/ijebeg.2024160212

H1: *IEE positively influences EI.*

Innovation and Entrepreneurship Education and Three Variables of TPB

Maresch et al., (2016) demonstrated how EE improved the entrepreneurial attitudes of science and engineering students. A survey by Marques et al. (2012) also highlighted the significant role of attitudes in enhancing students' EI during the EE process. SN were found to positively influence individuals' entrepreneurial inclinations. Higher education and EE empower students by providing knowledge, skills, and abilities, enabling them to better manage and control their environments. Individuals' PBC can be strengthened through both formal and informal educational experiences, including various educational levels, types, and role models (Zapkau et al., 2015). Based on this discussion, the following hypothesis is proposed,

H2: *IEE has a positively significant impact on university students' PA.*
H3: *IEE has a positively significant impact on university students' SN.*
H4: *IEE has a positively significant impact on university students' PBC.*

Innovation and Entrepreneurship Education and Entrepreneurship of Self-Efficacy

Shinnar, Hsu & Powell (2014) found significant improvements in students' ESE after IEE in a study of 384 students in Guangdong. Wilson et al. (2007) highlighted the role of comprehensive IEE in enhancing students' EI and SE. Several scholars have emphasised the substantial impact of well-structured IEE on ESE, underlining its importance in education. López-Muñoz et al., (2023) identified positive correlations between ESE, EI, and IEE. Al-Qadasi et al., (2023) concluded that IEE boosts ESE by promoting entrepreneurial practice, enhancing qualities, and providing role models. Based on these findings, this study proposes the following hypotheses,

H5: *IEE has a positively significant impact on students' ESE.*

Three Variables of TPB and Entrepreneurial Intention

Entrepreneurship strongly affects emotional intelligence (Krueger Jr et al., 2000). Social norms, which impact a person's intention to do something (Ajzen, 1991), can predict positive or bad behaviour. Researchers believe that cognitive, social, linguistic, and physical skills help form PBC, which can help or impede EI. Based on these findings, this study proposes the following hypothesis,

Vol: 16 **No:** 2 **Year:** 2024 **ISSN:** 2146-0744 (Online) (**pp.** 230-251) **Doi:** 10.34109/ijebeg.2024160212

H6: *PA has a positively significant impact on university students' EI.*
H7: *SN has a positively significant impact on university students' EI.*
H8: *PBC has a positively significant impact on university students' EI.*

Entrepreneurship Self-Efficacy and Entrepreneurial Intention

Dogan (2015) conducted correlational and regression analyses using a random sample of students from five universities in Jiangsu Province to explore the predictive relationship between ESE and EI. Their findings confirmed that ESE is a significant positive predictor of EI. Barakat et al., (2015) expanded on this by categorising ESE into six dimensions: opportunity recognition, interpersonal relationship management, innovation environment creation, team building, product innovation, and risk-taking ability. The study suggested that enhancing these dimensions can positively influence EI. Martin & Widjaja (2019) further refined these dimensions into opportunity recognition, innovation and change, risk tolerance, and relationship coordination. Their research indicated that opportunity recognition, risk tolerance, and relationship coordination significantly and positively impact EI. Based on these insights, the following hypotheses are proposed,

H9: *ESE has a positively significant impact on university students' EI.*

Mediator Role of the Three Variables of TPB

Krueger Jr and Brazeal (1994) proposed that EE should enhance students' likelihood of pursuing entrepreneurship by expanding their knowledge and altering their perspectives on the industry. SN positively impact EI, and both higher education and EE can empower students to manage and contRrol their environments through the acquisition of knowledge, skills, and abilities. In line with the TPB, Brookes (2023) suggested that educators and practitioners can influence students' entrepreneurial attitudes through EE programs. To successfully launch new businesses, individuals require access to resources such as capital, talent, networks, market opportunities, and expertise (Zaryab & Saeed, 2018). These resources, along with institutional support, significantly influence students' EI. Based on the preceding discussions, this research proposes the following hypotheses,

H10: *PA mediates the impact of IEE on university students' EI.*
H11: *SN mediates the effects of IEE on university students' EI.*
H12: *PBC mediates the impact of IEE on EI of university students.*

Vol: 16 **No:** 2 **Year:** 2024 **ISSN:** 2146-0744 (Online) (**pp.** 230-251) **Doi:** 10.34109/ijebeg.2024160212

The intermediary Role of Entrepreneurial Self-Efficacy

Using university students as their study sample, Ahlin et al., (2013) constructed a theoretical model grounded on social cognition and career anchoring. Their results imply that important mediators between EI and ESE are personality qualities and IEE. ESE has shown in past studies to be a positive mediator between EI and IEE (Fuller et al., 2018; Mei et al., 2020; Wardana et al., 2020). Moreover, ESE has been demonstrated to somewhat affect the link between IEE and EI. These exchanges lead this investigation to suggest the following hypothesis,

H13: *ESE mediates the impact of IEE on EI of university students' EI.*

RESEARCH METHODOLOGY

Measurement of Variable

This study adopts a quantitative approach to examine the impact of IEE on the EI of e-commerce undergraduates, using a survey with five sections. The TPB section includes 12 questions on entrepreneurial attitudes (3), social norms (3), and perceived behavioural control (6). ESE is assessed with six questions, while IEE comprises six items, split between theoretical (3) and practical (3) aspects. EI is measured with four items focusing on entrepreneurial readiness (2) and interest (2). All items are adapted to the Chinese context and use a five-point Likert scale.

Sample Distribution

This study employs a quantitative analysis, collecting data through a survey questionnaire. Targeting undergraduate e-commerce majors from 954 full-time Chinese institutions, the survey was conducted using the online platform Wenjuanxing, starting in January 2023. Of the 539 distributed questionnaires, 500 were returned, with 486 valid responses, resulting in an effective response rate of 90.17%. The data were analysed using SPSS 27.0.

RESULTS

Descriptive Analysis

This study focused on undergraduate e-commerce majors from Chinese universities. Of the 539 distributed questionnaires, 500 were returned, with 486 valid responses, resulting in an effective response rate of 90.17%. Descriptive statistical analysis was

Vol: 16 **No:** 2 **Year:** 2024 **ISSN:** 2146-0744 (Online) (**pp.** 230-251) **Doi:** 10.34109/ijebeg.2024160212

conducted on the valid sample's data. The gender distribution of respondents was relatively balanced, with 235 females (48.4%) and 251 males (51.6%). Of the respondents, 324 (66.7%) were from conventional institutions, while 162 (33.3%) were from "Double First-Class" universities. Regarding academic year, 120 were first-year students (24.7%), 125 were second-year students (25.7%), 117 were third-year students (24.1%), and 124 were fourth-year students (25.5%). The fairly even distribution across grade levels provides a robust and well-structured sample for analysis.

Reliability Analysis

The study findings suggest that Cronbach's Alpha coefficients above 0.9 are deemed significant, above 0.8 as good, above 0.7 as acceptable, above 0.6 as troublesome, above 0.5 as harmful, and below 0.5 as undesirable (Ursachi et al., 2015). The internal consistency of variables, as reflected in the Cronbach's Alpha coefficient, contributes to the reliability of the questionnaire. Following the collection of formal questionnaires, the researcher conducted a reliability analysis by calculating the Cronbach's Alpha coefficient, as presented in Table 1. Table 1 shows the six Cronbach's Alpha reliability tests for the variables together with their corresponding item counts. For PA, SN, PBC, ESE, IEE, and EI the Cronbach's Alpha values are 0.781, 0.779, 0.893, 0.860, 0.894, and 0.927, respectively. The questionnaire's Cronbach's Alpha is also 0.927 generally. These results show the great dependability of the used questionnaire for this investigation.

Table 1: Cronbach's Alpha Reliability Test Results (N=486)

Latent Variables	Cronbach's Alpha	Number of Items
Personal Attitude	0.781	3
Subjective Norm	0.779	3
Perceived Behaviour Control	0.893	6
Entrepreneurial Self-Efficacy	0.860	6
Innovation and Entrepreneurship Education	0.894	7
Entrepreneurial Intention	0.862	4
Overall	0.927	29

Validity Analysis

This work validated the scale's factor structure by means of CFA. According to the study, under every variable the standardised factor loadings for every item exceeded 0.5. Each dimension's AVE exceeded 0.5, and the CR was higher than 0.8—far over the recommended level of 0.7. Furthermore, validated were the convergent and

Vol: 16 **No:** 2 **Year:** 2024 **ISSN:** 2146-0744 (Online) (**pp.** 230-251) **Doi:** 10.34109/ijebeg.2024160212

discriminant validity of the scale since the square root of the AVE exceeded the correlation coefficients for each variable.

Table 2: Confirmatory Factor Analysis Results

Latent Variables	Observation Variable	Estimate	S.E.	C.R.	P	CR	AVE
PA	PA1	0.735				0.782	0.544
	PA2	0.709	0.069	13.610	***		
	PA3	0.768	0.071	14.390	***		
SN	SN1	0.731				0.779	0.540
	SN2	0.731	0.072	13.723	***		
	SN3	0.742	0.069	13.867	***		
PBC	PBC1	0.771				0.893	0.583
	PBC2	0.774	0.056	17.562	***		
	PBC3	0.719	0.055	16.149	***		
	PBC4	0.749	0.054	16.929	***		
	PBC5	0.792	0.057	18.051	***		
	PBC6	0.772	0.055	17.510	***		
ESE	ESE1	0.748				0.861	0.507
	ESE2	0.683	0.059	14.391	***		
	ESE3	0.704	0.060	14.853	***		
	ESE4	0.723	0.061	15.261	***		
	ESE5	0.694	0.061	14.627	***		
	ESE6	0.719	0.063	15.187	***		
IEE	IEE1	0.715				0.894	0.547
	IEE2	0.724	0.071	15.052	***		
	IEE3	0.773	0.070	16.051	***		
	IEE4	0.768	0.072	15.943	***		
	IEE5	0.739	0.075	15.364	***		
	IEE6	0.739	0.073	15.351	***		
	IEE7	0.715	0.069	14.869	***		
EI	EI1	0.887				0.867	0.623
	EI2	0.700	0.046	17.647	***		
	EI3	0.868	0.040	24.113	***		
	EI4	0.678	0.046	16.845	***		

Note: ***=P < 0.001, **=P < 0.01, *=P < 0.05

Correlation Analysis

To investigate the relationships between the variables used in this study, Pearson correlation analysis was conducted. Table 3 presents the correlation coefficients for PA, SN, PBC, ESE, IEE, and EI, which are 0.484, 0.462, 0.473, 0.450, and 0.433, respectively. All p-values are below 0.01, indicating significant and strong relationships between these variables.

Vol: 16 **No:** 2 **Year:** 2024 **ISSN:** 2146-0744 (Online) (**pp.** 230-251) **Doi:** 10.34109/ijebeg.2024160212

Table 3: Correlation Analysis

	PA	SN	PBC	ESE	IEE	EI
PA	1					
SN	.483**	1				
PBC	.492**	.413**	1			
ESE	.409**	.463**	.388**	1		
IEE	.337**	.348**	.353**	.319**	1	
EI	.484**	.462**	.473**	.450**	.433**	1
Mean	3.664	3.794	3.493	4.018	3.828	3.916
Std. Deviation	1.024	0.987	1.076	0.810	0.915	0.896

Note: ***=P < 0.001, **=P < 0.01, *=P < 0.05

Structural Equation Modelling Analysis

Modelling Analysis

This study uses IEE as the independent variable, with PA, SN, PBC, and ESE acting as mediating factors, and EI as the dependent variable. Advanced statistical techniques were employed to construct a structural equation model (Figure 1). The model illustrates the direct and indirect relationships between variables, with path coefficients indicating the strength of these associations. Analysis of the model clarified the key factors influencing EI and their varying degrees of correlation. The model fit indices met the required criteria, confirming the feasibility of exploring the model's paths.

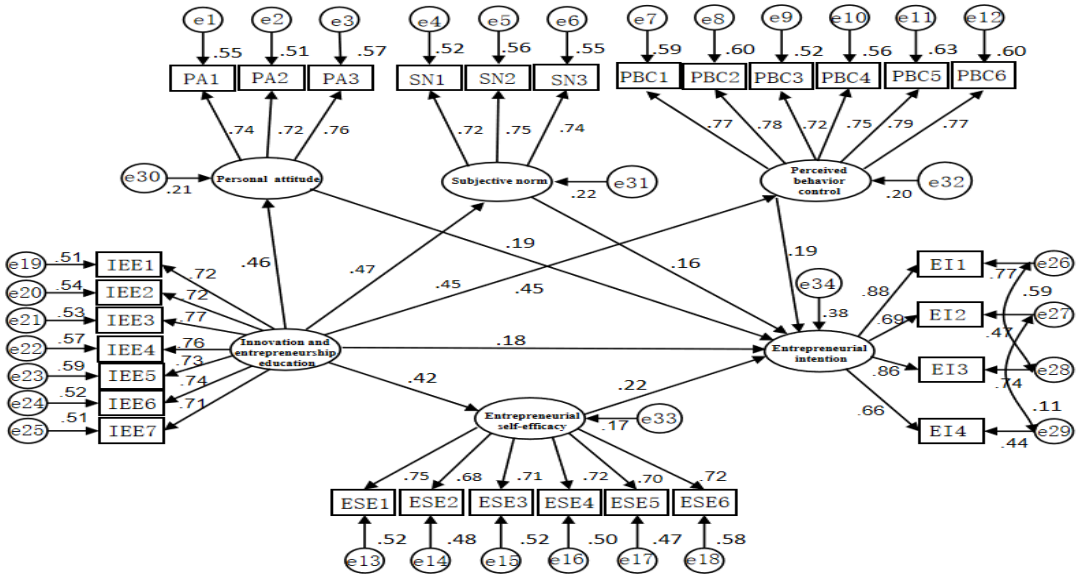

Figure 1: Structural Equation Modelling

Vol: 16 No: 2 Year: 2024 ISSN: 2146-0744 (Online) (pp. 230-251) Doi: 10.34109/ijebeg.2024160212

Path Analysis

As shown in Table 4, IEE is positively associated with EI, with a standardized path coefficient of 0.178 (t = 2.615, p = 0.009 < 0.01). The standardized path coefficient of 0. The path analysis results reveal that IEE has a significant positive direct effect on PA (t = 8.046, p = 0.000 < 0.001). Additionally, IEE has a significant positive direct effect on SN, with a standardized path coefficient of 0.473 (t = 8.0). IEE also shows a positive effect on PBC (t = 8.369, p < 0.001). Furthermore, IEE exerts a strong positive direct effect on ESE, with a standardized path coefficient of 0.420 (t = 7.731, p = 0.000). PA has a significant positive effect on EI with a standardized path coefficient of 0.280 (t = 4.936, p = 0.000 < 0.001). Similarly, SN significantly influences EI, with a positive effect, as indicated by the standardized path coefficient. Additionally, a significant positive correlation is found between PBC and EI, with a standardized path coefficient of 0.224 (t = 4.437, p = 0.000 < 0.01). ESE also significantly influences EI, as demonstrated by the standardized path coefficient of 0.174 (t = 3.492, p = 0.000 < 0.01). Based on these results, hypotheses 1 to 9 are all supported.

Table 4: Path Coefficient between the Variables

Hypothesis	Path		Estimate	S.E.	C.R.	P	Results
H1	IEE	--->	EI	0.178	0.063	2.615	0.000***
H2	IEE	--->	PA	0.463	0.067	8.046	0.000***
H3	IEE	--->	SN	0.473	0.064	8.062	0.000***
H4	IEE	--->	PBC	0.446	0.071	8.369	0.000***
H5	IEE	--->	ESE	0.420	0.056	7.731	0.000***
H6	PA	--->	EI	0.280	0.045	4.936	0.000***
H7	SN	--->	EI	0.203	0.047	3.648	0.000***
H8	PBC	--->	EI	0.224	0.035	4.437	0.000***
H9	ESE	--->	EI	0.174	0.045	3.492	0.000***

Note: ***=P < 0.001, **=P < 0.01, *=P < 0.05

Analysis of Indirect Effects

This study employs a bootstrap technique to test mediation, calculating the 95% confidence interval after 5,000 sample repetitions. The hypotheses and mediating effects are confirmed through the four mediation pathways displayed in Table 5, where the p-values are below 0.05, and the confidence intervals do not include 0.

Moreover, the results in Table 5 indicate that the indirect effect value of PA is 0.130, which accounts for 22.56% of the total effect (0.130/0.576), suggesting a partial mediating role. The indirect effect value of SN is 0.096, representing 16.67% of the

Vol: 16 No: 2 Year: 2024 ISSN: 2146-0744 (Online) (pp. 230-251) Doi: 10.34109/ijebeg.2024160212

total effect (0.096/0.576), also acting as a partial mediator. The indirect effect value of PBC is 0.100, accounting for 17.36% of the total impact (0.100/0.576), and partially mediates the effect. The indirect effect value of ESE is 0.073, representing 12.67% of the total impact (0.073/0.576), functioning as a mediator. These findings confirm that all four hypotheses are supported.

Table 5: Intermediary Effect Test Result Chart

Hypothesis	Parameter	Estimate	Lower	Upper	p	Results
H10	IEE-PA-EI (indirect effect)	0.130	0.050	0.224	0.002**	Accepted
H11	IEE-SN-EI (indirect effect)	0.096	0.020	0.186	0.013*	Accepted
H12	IEE-PBC-EI (indirect effect)	0.100	0.040	0.163	0.001**	Accepted
H13	IEE-ESE-EI (indirect effect)	0.073	0.012	0.139	0.018*	Accepted
	IEE-EI (direct effect)	0.178	0.044	0.304	0.009**	
	IEE-EI (total effect)	0.576	0.476	0.669	0.000***	

Note: ***=P < 0.001, **=P < 0.01, *=P < 0.05

DISCUSSION

Innovation and Entrepreneurship Education and Entrepreneurship Intention

IEE has been shown to have a positive impact on EI, consistent with findings from previous research. Similar conclusions were drawn by domestic scholars such as Wardana et al., 2020, who demonstrated that IEE significantly enhances the influence of EI. Souitaris et al. (2007) also conducted experimental research, revealing that participation in EE courses and training plays a substantial role in shaping students' EI.

Innovation and Entrepreneurship Education and TPB Three Variables, Entrepreneurial Self-Efficacy

IEE has a substantial positive impact on ESE, as well as the three associated factors. Research highlights that attitude plays a crucial role in EE, particularly regarding students' EI (Marques et al., 2012). SN positively influences individuals' entrepreneurial intentions, and through the transfer of knowledge, skills, and capabilities, higher education and EE can empower students to manage and control their environments (Aditya, 2020). Both formal and informal educational models, alongside the quality and extent of education and role models, can enhance an individual's perception of behavioural control (Zapkau et al., 2015). The study’s findings reveal that IEE has the strongest effect on SN, indicating that entrepreneurship mentors significantly shape the IEE process. Consequently, there is a need to enhance training for instructors, and IEE

Vol: 16 No: 2 Year: 2024 ISSN: 2146-0744 (Online) (pp. 230-251) Doi: 10.34109/ijebeg.2024160212

should integrate entrepreneurship mentors to provide guidance. Additionally, IEE fosters ESE by promoting entrepreneurial practice, nurturing entrepreneurial traits, and offering role models in the form of educators (Al-Qadasi et al., 2024).

Three Variables of TPB and Entrepreneurial Intention

The study's findings indicate that PA, SN, and PBC have a significant positive impact on EI. PA is a key determinant in shaping individuals' entrepreneurial intentions (Krueger Jr et al., 2000). SN also plays a critical role in predicting individuals' behaviours, either supporting or hindering them. PBC refers to the perceived ability to facilitate or constrain entrepreneurial intentions. College students' intentions to engage in entrepreneurship are directly influenced by their perceptions of entrepreneurship and their sense of control, which highlights the importance of enhancing EI through targeted educational programs (Ajzen, 1991).

Entrepreneurial Self-Efficacy and Entrepreneurial Intention

This study demonstrates that ESE has a statistically significant positive impact on EI, aligning with findings from several previous studies. Martin & Wajidada (2019) suggest that individuals with high ESE are more likely to exhibit strong EI and are better equipped to engage in entrepreneurial activities. Likewise, Santos and Liguori (2020) found that ESE helps entrepreneurs manage stress and anxiety, facilitating a smoother entrepreneurial process.

Mediator of the Three TPB Variables and Entrepreneurial Self-Efficacy

The study's findings indicate that ESE and the three TPB variables serve as mediators between IEE and EI. According to Krueger Jr and Brazeal (1994), IEE should be linked with enhancing students' knowledge and shifting their attitudes to increase the likelihood of entrepreneurial engagement. It is also important to highlight the appeal of entrepreneurship as a viable career option. Higher education and entrepreneurial education, which provide knowledge, skills, and competencies, can empower students to influence and control their environments. Additionally, SN positively impacts individual EI (Aditya, 2020) and PBC is a predictor of EI (Ambad & Damit, 2016; Fayolle & Gailly, 2005; Yang, 2013; Yurtkoru et al., 2014). Furthermore, ESE plays a critical role in linking individual EI and entrepreneurial education.

IMPLICATIONS:

This study has implications across academia, policymakers, media professionals, and

Vol: 16 **No:** 2 **Year:** 2024 **ISSN:** 2146-0744 (Online) (**pp.** 230-251) **Doi:** 10.34109/ijebeg.2024160212

society at large, in the context of e-commerce. It also provides academically a better understanding of how media narratives and digital platforms both shape public perceptions and its entrepreneurial intentions in state controlled and open market environments. The findings provide policymakers that ethical guidelines must be fostered to balance reporting and inclusive portrayals of marginalized groups and support the digital transformation of entrepreneurship in the e-commerce sector. Media literacy and the economic innovations associated with the availability and pervasiveness of media should be incorporated into curricula as educators work to prepare students for digital economies and entrepreneurial challenges. Media and e commerce professionals are encouraged to develop ethical and empowering strategies; to transcend the clichés, to tell the stories of innovation and resilience. Also, this study emphasizes the bigger societal impact of digital platforms such as e-commerce in shaping behaviors, bridging economic divides, more opportunities for entrepreneurship and inclusive development via fine tuning practices.

CONCLUSION

The study considered the impact of the innovation and entrepreneurship education (IEE) on entrepreneurial intentions in terms of the students majoring in e-commerce. The study deployed a quantitative research method and collected data from a large sample of undergraduate e-commerce students in Chinese universities. Using structural equation modeling (SEM), the data on relationships between variables including entrepreneurial self-efficacy, personal attitudes, social norms, and perceived behavioral control were analyzed. The Theory of Planned Behavior (TPB) is combined with the practical considerations for e commerce education to form a unique study that integrates both, with the focus on the role which IEE plays in the development of the skills and motivation for the success of the digital economy.

Findings show the presence of positive effect of IEE on entrepreneurial intentions mediated by self-efficacy and perceived behavioral control. Further, the findings demonstrate that e-commerce education streamlines student ability to create and innovate, pan the digital platform and be involved in the enterprise activity. These outcomes confirm e-commerce’s power as a driving force for entrepreneurial growth and call for leveraging digital tools to grow market, innovate and gain competitive advantage for students. With focus on theoretical knowledge and practical skills, IEE prepares students for a rich and vibrant career in e-commerce while bridging the gap between education and the challenges of real-life entrepreneurship.

FUTURE DIRECTION

Future research can be carried out to investigate how e-commerce education is cross culturally, track long-term effects of IEE, and explore the integration of advanced digital skills such as AI and block chain into curriculum. Secondly, studies should investigate how e-commerce platforms enhance marginalized entrepreneurship and promote sustainability in entrepreneurship.

REFERENCES

Aditya, S. (2020). The influence of attitude, subjective norms, perception of self-control and entrepreneurship education on entrepreneurial intentions. *Journal of Business and Behavioural Entrepreneurship*, *4*(2), 66-83. https://doi.org/10.21009/jobbe.004.2.06

Ahlin, B., Drnovšek, M., & Hisrich, R. D. (2013). Entrepreneurs' creativity and firm innovation: The moderating role of entrepreneurial self-efficacy. *Small Business Economics*, *43*(1), 101-117. https://doi.org/10.1007/s11187-013-9531-7

Ajzen, I. (1991). The Theory of planned behavior. *Organizational Behavior and Human Decision Processes*. https://doi.org/10.1016/0749-5978(91)90020-T

Al-Qadasi, N., Zhang, G., Al-Jubari, I., Al-Awlaqi, M. A., & Aamer, A. M. (2024). Entrepreneurship education and entrepreneurial behaviour: Do self-efficacy and attitude matter? *The International Journal of Management Education*, *22*(1), 100945. https://doi.org/10.1016/j.ijme.2024.100945

Ambad, S. N. A., & Damit, D. H. D. A. (2016). Determinants of entrepreneurial intention among undergraduate students in Malaysia. *Procedia economics and finance*, *37*, 108-114. https://doi.org/10.1016/S2212-5671(16)30100-9

Barakat, S., Boddington, M., & Vyakarnam, S. (2014). Measuring entrepreneurial self-efficacy to understand the impact of creative activities for learning innovation. *The International Journal of Management Education*, *12*(3), 456-468. https://doi.org/10.1016/j.ijme.2014.05.007

Bell, R. (2016). The continuing search to find a more effective and less intimidating way to teach research methods in higher education. *Innovations in Education and Teaching International*, *53*(3), 285-295. https://doi.org/10.1080/14703297.2014.956780

Bird, B. (1988). Implementing entrepreneurial ideas: The case for intention. *Academy of management Review*, *13*(3), 442-453. https://doi.org/10.5465/amr.1988.4306970

Bonnett, C., & Furnham, A. (1991). Who wants to be an entrepreneur? A study of

adolescents interested in a young enterprise scheme. *Journal of economic psychology*, *12*(3), 465-478. https://doi.org/10.1016/0167-4870(91)90027-Q

Brookes, E. (2023, October 11). The Theory of Planned Behavior - Simply Psychology. https://www.simplypsychology.org/theory-of-planned-behavior.html

Brüne, N., & Lutz, E. (2020). The effect of entrepreneurship education in schools on entrepreneurial outcomes: a systematic review. *Management Review Quarterly*, *70*(2), 275-305. https://doi.org/10.1007/s11301-019-00168-3

Cho, B. (1998). Study of the effective entrepreneurship education method and its process. *Business Education Research*, *2*(1), 27-47. https://www.scirp.org/reference/referencespapers?referenceid=2545043

Dogan, U. (2015). Student engagement, academic self-efficacy, and academic motivation as predictors of academic performance. *The Anthropologist*, *20*(3), 553-561. https://doi.org/10.1080/09720073.2015.11891759

Esfandiar, K., Sharifi-Tehrani, M., Pratt, S., & Altinay, L. (2019). Understanding entrepreneurial intentions: A developed integrated structural model approach. *Journal of Business Research*, *94*, 172-182. https://doi.org/10.1016/j.jbusres.2017.10.045

Fayolle, A. (2000). Exploratory study to assess the effects of entrepreneurship programs on French student entrepreneurial behaviors. *Journal of Enterprising Culture*, *8*(2). https://doi.org/10.1142/S0218495800000115

Fayolle, A., & Gailly, B. (2005). Using the theory of planned behaviour to assess entrepreneurship teaching programmes. *Center for Research in Change, Innovation and Strategy of Louvain School of Management, Working Paper*, *5*, 2005. https://www.researchgate.net/publication/242198993

Fayolle, A., Gailly, B., & Lassas-Clerc, N. (2006). Assessing the impact of entrepreneurship education programmes: a new methodology. *Journal of European industrial training*, *30*(9), 701-720. https://doi.org/10.1108/03090590610715022

Fitzsimmons, J. R., & Douglas, E. J. (2011). Interaction between feasibility and desirability in the formation of entrepreneurial intentions. *Journal of business venturing*, *26*(4), 431-440. https://doi.org/10.1016/j.jbusvent.2010.01.001

Fuller, B., Liu, Y., Bajaba, S., Marler, L. E., & Pratt, J. (2018). Examining how the personality, self-efficacy, and anticipatory cognitions of potential entrepreneurs shape their entrepreneurial intentions. *Personality and Individual Differences*, *125*, 120-125. https://doi.org/10.1016/j.paid.2018.01.005

Hardilawati, W. L., Sandri, S. H., & Binangkit, I. D. (2019). The role of innovation and e-Commerce in small business. Proceedings of the International Conference of

CELSciTech 2019 - Social Sciences and Humanities track (ICCELST-SS 2019). http://dx.doi.org/10.2991/iccelst-ss-19.2019.18

Krueger Jr, N. F., & Brazeal, D. V. (1994). Entrepreneurial potential and potential entrepreneurs. *Entrepreneurship theory and practice*, *18*(3), 91-104. https://doi.org/10.1177/104225879401800307

Krueger Jr, N. F., Reilly, M. D., & Carsrud, A. L. (2000). Competing models of entrepreneurial intentions. *Journal of business venturing*, *15*(5-6), 411-432. https://doi.org/10.1016/S0883-9026(98)00033-0

Kwak, J., Zhang, Y., & Yu, J. (2019). Legitimacy building and e-Commerce platform development in China: The experience of Alibaba. Technological Forecasting and Social Change, 139, 115-124. http://dx.doi.org/10.1016/j.techfore.2018.06.038

Liguori, E., & Winkler, C. (2020). From offline to online: Challenges and opportunities for entrepreneurship education following the COVID-19 pandemic. In (Vol. 3, pp. 346-351): SAGE Publications Sage CA: Los Angeles, CA. http://dx.doi.org/10.1177/2515127420916738

Linan, F. (2008). Skill and value perceptions: how do they affect entrepreneurial intentions? *International entrepreneurship and management journal*, *4*, 257-272. https://doi.org/10.1007/s11365-008-0093-0

López-Muñoz, J. F., Mira-Solves, I., Novejarque-Civera, J., & Pisá-Bó, M. (2023). Entrepreneurial education and opportunity entrepreneurship: the mediation of self-efficacy belief. *Economic Research-Ekonomska Istraživanja*, *36*(3), 1–21. https://doi.org/10.1080/1331677x.2022.2159472

Maresch, D., Harms, R., Kailer, N., & Wimmer-Wurm, B. (2016). The Impact of Entrepreneurship Education on the Entrepreneurial Intention of Students in Science and Engineering versus Business Studies University Programs. Technological Forecasting and Social Change, 104, 172–179. https://doi.org/10.1016/j.techfore.2015.11.006

Martin, N., & Widjaja, H. O. (2019). The effect of entrepreneurial self efficacy and entrepreneurial creativity to entrepreneurial intention from students in Tarumanagara University. *Jurnal Manajerial Dan Kewirausahaan*, *1*(4), 909. https://doi.org/10.24912/jmk.v1i4.6589

N, C. S., Ferreira, J. J., Gomes, D. N., & Gouveia Rodrigues, R. (2012). Entrepreneurship education: How psychological, demographic and behavioural factors predict the entrepreneurial intention. *Education+ training*, *54*(8/9), 657-672. https://doi.org/10.1108/00400911211274819

Mei, H., Lee, C.-H., & Xiang, Y. (2020). Entrepreneurship education and students'

entrepreneurial intention in higher education. *Education Sciences*, *10*(9), 257. https://doi.org/10.3390/educsci10090257

Nabi, G., Holden, R., & Walmsley, A. (2010). Entrepreneurial intentions among students: towards a re-focused research agenda. *Journal of small business and enterprise development*, *17*(4), 537-551. https://doi.org/10.1108/14626001011088714

Newman, A., Obschonka, M., Schwarz, S., Cohen, M., & Nielsen, I. (2019). Entrepreneurial self-efficacy: A systematic review of the literature on its theoretical foundations, measurement, antecedents, and outcomes, and an agenda for future research. *Journal of vocational behavior*, *110*, 403-419. https://doi.org/10.1016/j.jvb.2018.05.012

Otache, I. (2019). Entrepreneurship education and undergraduate students' self-and paid-employment intentions: A conceptual framework. *Education+ training*, *61*(1), 46-64. https://doi.org/10.1108/ET-10-2017-0148

Pittaway, L., & Cope, J. (2007). Entrepreneurship education: A systematic review of the evidence. *International small business journal*, *25*(5), 479-510. https://doi.org/10.1177/0266242607080656

Rasheed, H. S. (2000). Developing entrepreneurial potential in youth: The effects of entrepreneurial education and venture creation. *University of South Florida*, *61*. https://www.researchgate.net/publication/255591589

Rasmussen, E. A., & Sørheim, R. (2006). Action-based entrepreneurship education. *Technovation*, *26*(2), 185-194. https://doi.org/10.1016/j.technovation.2005.06.012

Ratten, V. (2017). Entrepreneurial universities: the role of communities, people and places. *Journal of Enterprising Communities: People and Places in the Global Economy*, *11*(03), 310-315. https://doi.org/10.1108/JEC-03-2017-0021

Santos, S. C., & Liguori, E. W. (2020). Entrepreneurial self-efficacy and intentions: Outcome expectations as mediator and subjective norms as moderator. *International Journal of Entrepreneurial Behavior & Research*, *26*(3), 400-415. https://doi.org/10.1108/IJEBR-07-2019-0436

Shemi, A. P., & Procter, C. (2018). E-Commerce and entrepreneurship in SMEs: Case of myBot. *Journal of Small Business and Enterprise Development*, *25*(3), 501-520. doi:10.1108/jsbed-03-2017-0088

Sreenivasan, A., & Suresh, M. (2023). Twenty years of entrepreneurship education: A bibliometric analysis. *Entrepreneurship Education*, *6*(1), 45-68. https://doi.org/10.1007/s41959-023-00089-z

Stoica, O., Roman, A., & Rusu, V. D. (2020). The nexus between entrepreneurship and

economic growth: A comparative analysis on groups of countries. *Sustainability*, *12*(3), 1186. https://doi.org/10.3390/su12031186

Su, Y., Zhu, Z., Chen, J., Jin, Y., Wang, T., Lin, C.-L., & Xu, D. (2021). Factors influencing entrepreneurial intention of university students in China: integrating the perceived university support and theory of planned behavior. *Sustainability*, *13*(8), 4519. https://doi.org/10.3390/su13084519

Tkachev, A., & Kolvereid, L. (1999). Self-employment intentions among Russian students. *Entrepreneurship & regional development*, *11*(3), 269-280. https://doi.org/10.1080/089856299283209

Ursachi, G., Horodnic, I. A., & Zait, A. (2015). How reliable are measurement scales? External factors with indirect influence on reliability estimators. *Procedia economics and finance*, *20*, 679-686. https://doi.org/10.1016/S2212-5671(15)00123-9

Wang, Z., Sun, Z., Yin, H., Liu, X., Wang, J., Zhao, H., Pang, C. H., Wu, T., Li, S., Yin, Z., & Yu, X. F. (2022). Data-Driven Materials Innovation and Applications. Advanced Materials, 34(36). https://doi.org/10.1002/adma.202104113

Wardana, L. W., Narmaditya, B. S., Wibowo, A., Mahendra, A. M., Wibowo, N. A., Harwida, G., & Rohman, A. N. (2020). The impact of entrepreneurship education and students' entrepreneurial mindset: the mediating role of attitude and self-efficacy. *Heliyon*, *6*(9). https://doi.org/10.1016/j.heliyon.2020.e04922

Wilson, F., Kickul, J., & Marlino, D. (2007). Gender, entrepreneurial self–efficacy, and entrepreneurial career intentions: Implications for entrepreneurship education. *Entrepreneurship theory and practice*, *31*(3), 387-406. https://doi.org/10.1111/j.1540-6520.2007.00179.x

Wu, J., & Hisa, T. (2004). Analysis of e-Commerce innovation and impact: A hypercube model. Electronic Commerce Research and Applications, 3(4), 389-404. doi:10.1016/j.elerap.2004.05.002

Yang, J. (2013). The theory of planned behavior and prediction of entrepreneurial intention among Chinese undergraduates. *Social Behavior and Personality: an international journal*, *41*(3), 367-376. https://doi.org/10.2224/sbp.2013.41.3.367

Yurtkoru, E. S., Kuşcu, Z. K., & Doğanay, A. (2014). Exploring the antecedents of entrepreneurial intention on Turkish university students. *Procedia-Social and Behavioral Sciences*, *150*, 841-850. https://doi.org/10.1016/j.sbspro.2014.09.093

Zapkau, F. B., Schwens, C., Steinmetz, H., & Kabst, R. (2015). Disentangling the effect of prior entrepreneurial exposure on entrepreneurial intention. *Journal of*

Vol: 16 **No:** 2 **Year:** 2024 **ISSN:** 2146-0744 (Online) (**pp.** 230-251) **Doi:** 10.34109/ijebeg.2024160212

Business Research, *68*(3), 639-653. https://doi.org/10.1016/j.jbusres.2014.08.007

Zaryab, A., & Saeed, U. (2018). Educating entrepreneurship: a tool to promote self employability. *International Journal of Entrepreneurship and Small Business*, *35*(2), 143-161. https://doi.org/10.1504/IJESB.2018.094963