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The Impact of Entrepreneurship Education on Opportunity Recognition: Testing the Mediation Role of Entrepreneurial Culture

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Abstract: Entrepreneurial culture and its role in entrepreneurial opportunity discovery among individuals who received entrepreneurship education is somehow ambiguous. This study sought to clarify this uncertainty. The study, therefore sought to establish whether entrepreneurship education predicts opportunity recognition. Further, the study investigated whether entrepreneurial culture mediates the relationship between entrepreneurship education and opportunity recognition. A quantitative research methodology as guided by the positivist paradigm was adopted. An explanatory research design was followed. A survey was used to collect primary data. Self-administered questionnaires were distributed to 170 respondents who were purposefully sampled. Two hypotheses were formulated and simple linear regression analysis was performed with respect to H1. Hierarchical regression analysis was performed with respect to H2. Results reveal that entrepreneurship education predicts opportunity recognition while entrepreneurial culture partially mediates the relationship between entrepreneurship education and opportunity recognition. From the findings, we can learn that entrepreneurship education and entrepreneurial culture are variables that academics, practitioners, and policymakers can rely on to promote opportunity recognition. With this in mind, the study concludes that important steps can be taken to develop a quality entrepreneurship curriculum that responds to the needs of South African students who prefer self-employment as a career.

Keywords: Entrepreneurship education, Entrepreneurial culture, Opportunity recognition, Curriculum, Mediation

1. Introduction

The role of entrepreneurship in global economic growth is not to be underestimated. In emerging economies like South Africa, entrepreneurship is expected to create jobs, reduce poverty and enhance business skills for entrepreneurs. It is widely believed that entrepreneurship is a skill and therefore it can be taught to anyone willing to learn. Across the globe, institutions of higher learning have responded to the demand for entrepreneurship education and designed entrepreneurship courses to accommodate those in need. Seemingly, the demand for entrepreneurship education is increasing globally. In response, Almahry, Sarea and Hamdan (2018) emphasized that eentrepreneurship education enables individuals to beware of the link between entrepreneurship and economic growth. This is critical to individuals who are not aware of this link but have the desire to contribute towards economic growth. In other words, entrepreneurship education empowers people to kick start entrepreneurial initiatives resulting in a vibrant entrepreneurship culture in a society.

Wei, Liu and Sha (2019) argued that most student entrepreneurs have unleashed entrepreneurial resources through entrepreneurship studies. In addition, they are better able to gather critical information for decision making, designing new product development processes, forge new partnerships and maintaining them, resulting in sustained entrepreneurial success. In the South African context, entrepreneurship education is identified as an uncultivated field where business training is prioritised to strengthen small and medium-sized enterprise (SME) success rates (Price & Ronnie, 2021). Entrepreneurship education is encouraged to unveil entrepreneurial opportunities to students and graduates (Sierlkhatim & Gangi, 2015). When students and graduates recognize and exploit these opportunities, they somehow condition their mindset to a life and career in entrepreneurship. This mindset is critical to a sustained entrepreneurship culture (Krauss *et al*., 2005; Shepherd *et al*., 2010).

The concept of entrepreneurial culture in organisations and communities has been a subject of research in the past years (Shava, 2022). More

studies have focused on the role of innovation and creativity leading to growth of entrepreneurial culture at organisational level (Danish, Asghar, Ahmad & Ali, 2019). However, significant research work exploring the relationship between entrepreneurship education and entrepreneurial culture, leading to opportunity recognition is lacking. Entrepreneurship education and entrepreneurial culture are two key variables concerning economic growth and that is why research investigating the relationship between these variables and their role concerning opportunity recognition is critical. This is more importantly so in the South African context where an entrepreneurship career has been identified as a key mitigating factor to unemployment challenges that South Africa is facing. This study will contribute to the literature by investigating whether entrepreneurship education predicts opportunity recognition, and by determining whether entrepreneurial culture is a mediator between entrepreneurship education and opportunity recognition. The thinking is that as much as entrepreneurship is highly encouraged in South Africa, there is no clear model for promoting entrepreneurial success and this study will develop one. The structure of the study is as follows: literature review, research methodology, results, discussion and the study's conclusion.

2. Literature Review

2.1 Theoretical Foundation

Two schools of thought regarding opportunity recognition exist and both of them have their roots in evolutionary economics. One school of thought emphasizes on active search for information in the external environment while the other advocates for individual alertness in identifying entrepreneurial opportunities. According to Schumpeter (1942), the discovery of entrepreneurial opportunities is a result of the active search for information in the external environment. In other words, Schumpeter (1942) dismissed the argument that opportunities sometimes accidentally emerge, as others would argue. Stevenson and Gumpert (1985) concurred and pointed out that the external environment presents abundant entrepreneurial opportunities. Kaish and Gilad (1991) added that since entrepreneurial opportunities exist in the external environment, an individual must scan the environment to single out the unfulfilled needs, which can be exploited profitably.

To exploit opportunities that readily exist in the environment, the entrepreneur needs to be creative and innovative. Through creativity and innovativeness, the entrepreneur brings to the market new organisational processes, products, and services, among others, with the goal of exploiting the identified entrepreneurial opportunity. Therefore, entrepreneurial opportunities are determined by the environment (McMullan & Long, 1990), but can only be identified by entrepreneurs who actively engage in information search (Busenitz & Barney, 1996). The second school of thought (Austrian School of thought) argues that opportunity recognition is a critical aspect of the entrepreneurial activity and that in a competitive market, there are no limitations to access to knowledge. However, the value of information differs across individuals depending on the type of information they possess (Hayek, 1945; Kirzner, 1973). Timmons (1999) concurred and added that only individuals who stand out in search of resources are most likely to recognise entrepreneurial opportunities with little difficulties.

2.2 Entrepreneurship Education

Entrepreneurship education has become a very important tool that industries around the world are counting on to be more competitive (Liguori & Winkler, 2020). Businesses that survived the COVID-19 lockdown owe a great deal to entrepreneurship education. According to Jardim, Bártolo and Pinho (2021), entrepreneurship education is perceived to be a highly impactful discipline. Thus, when implemented correctly can, it yields positive outcomes on issues related to economic growth, income inequality, collaborations, organizational competitiveness and individual fulfilment. To ensure that entrepreneurship education plays a more advantageous role among students, for example, developing their competencies and the capacity to alter to rising technologies, entrepreneurs tend to pursue possibilities within the market (Beynon *et al*., 2016). Higher education needs to enforce entrepreneurial skills courses in universities as a mandatory tool or programme to equip student graduates with entrepreneurial dispositions and qualities, knowledge, and business skills. Ratten (2020) affirmed that a well-formulated and implemented entrepreneurship curriculum practically empowers students to participate in entrepreneurship endeavours. Consequently, a particular need has been identified to improve the impact of entrepreneurship training. Therefore,

awareness of entrepreneurship programs offered by public and private institutions may be useful. Furthermore, entrepreneurship education should be able to identify students who can and who cannot pursue a career in entrepreneurship successfully. This will help effectively allocate scarce entrepreneurial resources necessary to start and sustain entrepreneurial careers (Boldureanu, Ionescu, Bercu, Bedrule-Grigorut & Boldureanu, 2020).

Chang *et al*. (2014) noted that well-designed EE programmes enhance problem-solving and team-building skill ability, which assists the students in recognition and disclosure of business knowledge and current trend information. According to Barnett (2009), individual skills and knowledge require continuous improvement to ensure their relevance in a fast-paced world. Improving attitudes, behaviours, and capacities at the individual level is perceived as a primary purpose of entrepreneurship education (Boubker, Arroud & Ouajdouni, 2021).

2.3 Entrepreneurial Opportunity Recognition

Manesh and Rialp-Criado (2019) contended that higher education enhances entrepreneurship education with the influence of opportunity recognition on entrepreneurial intention. Hayton, Chandler and Detienne (2011) posited that the opportunity recognition process is considered the main element of the entrepreneurship process. In a study by Bint Hashim (2017), it was found that the recognition of opportunities should be integrated as part of the curriculum, and it should form the core of programmes/training geared toward potential entrepreneurs. Entrepreneurial opportunity recognition (EOR) is an essential constituent of foundational entrepreneurship and has emerged as a key subject matter within the current entrepreneurship literature (George, Parida, Lahti & Wincent, 2016). Moreover, different scholars (see Sambasivan, Abdul & Yusop, 2009) raised a concern highlighting that the role of EOR in SMEs is a challenging issue that requires profound consideration.

2.4 Entrepreneurship Culture

Different authors perceive entrepreneurship culture (EC) as a theoretical construct that encompasses all three views of entrepreneurship (organisational, behavioural, and performance) (Stuetzer, Audretsch, Obschonka, Gosling, Rentfrow & Potter, 2018). An entrepreneurship culture is viewed as an informal institution determining the legitimacy of entrepreneurship and informing the economic behaviour (Kibler, Kautonen & Fink, 2014). Entrepreneurial culture defines commonly accepted practices within each community. These practices encourage collaboration and capitalises on entrepreneurship opportunities, creating jobs for many years to come (Fritsch & Wyrwich, 2016).

2.5 Hypotheses Development

2.5.1 The Impact of Entrepreneurship Education on Opportunity Recognition

Entrepreneurship education is defined as a learning programme designed to instil, stimulate and sustain individual entrepreneurial behaviour (Fayolle, Gailly & Lassas-Clerc, 2006). Research points out the importance of entrepreneurship education, for example its key role in the development of entrepreneurial intentions among students (Anwar & Saleem, 2019), the role it plays in enhancing the influence of attitude and self-efficacy on entrepreneurial intentions (Bazan *et al*., 2019), including the potential to increase an individual entrepreneurial intention by 1.3 times (Dehghanpour Farashah, 2013).

Entrepreneurial intentions are critical in the entrepreneurship equation as they drive an individual to seek entrepreneurial opportunities for exploitation. This is important because the individual in question will have been empowered with the knowledge and understanding of how to differentiate a feasible and viable entrepreneurial opportunity from those that are not (Hassan, Saleem, Anwar & Hussain, 2020). In other words, there is direct link between entrepreneurship education, entrepreneurial intentions and entrepreneurial opportunity recognition. Given this discussion, the study hypothesises that:

H1: Entrepreneurship education predicts opportunity recognition

2.5.2 Entrepreneurial Culture, Entrepreneurship Education and Opportunity Recognition

Although research points out that entrepreneurial culture affects the entity's existing approach towards supporting and engaging in activities earmarked for prolonging entrepreneurship (Zahra, Hayton & Salvato, 2004), there is also consensus that entrepreneurial culture promotes continuous opportunity recognition and exploitation (Cruz, Hamilton & Jack, 2012). Entrepreneurial culture is affected by many factors, for example entrepreneurial education

(Altinay, 2008). The primary goal of entrepreneurship education is to develop and prepare future entrepreneurs (Vanevenhoven, 2013). On the contrary, research further indicates that entrepreneurial education is not a pre-requisite to becoming an entrepreneur. However, educated individuals who opt for entrepreneurship careers may see their careers outlasting those of individuals who did not receive entrepreneurial education (Altinay & Altinay, 2006; Basu & Altinay, 2002; Casson, 1991). It could be that after receiving entrepreneurial education, an individual is able to carry out a feasibility and viability study of the opportunity recognised with the skills at their disposal. In other words, entrepreneurship education has the potential of enhancing a culture of entrepreneurial success.

Entrepreneurial education also promotes entrepreneurial culture but the degree to which its influence will matter lies in the design of entrepreneurship modules and teaching strategies in place. According to Bell and Bell (2020), an impactful entrepreneurship education must empower students with entrepreneurship theory and the practical component to be an entrepreneur. The experience of being an entrepreneur is essential as it sharpens other entrepreneurial competencies already possessed by the student. Lackéus (2020) concurred and pointed out that entrepreneurship education practical skills aiming at creating values can enhance students to identify entrepreneurial opportunities. Esmi, Marzoughi and Torkzadeh (2015) heeded the call for effective entrepreneurship education and successfully designed a widely accepted entrepreneurship course that educators have relied on to enhance students' entrepreneurial skills. Various teaching strategies were infused together to accommodate the needs of all stakeholders. However, Heinrichs (2016) designed an entrepreneurship course dominated by entrepreneurship cases resulting in the curriculum being theoretically sound rather than practical. Based on this discussion the study hypothesises that:

H2: Entrepreneurial culture mediates the relationship between entrepreneurial education and opportunity recognition.

3. Research Methodology

The study was quantitative in nature and the positivist research paradigm was adopted. An explanatory research design was followed. Data was collected once implying that the study was cross sectional. Primary data was gathered through a survey. Self-administered questionnaires were distributed to 170 respondents. Primary data was gathered from individuals who flocked wholesalers that specialised in selling bulk products to individuals who run their own entrepreneurial ventures across the Eastern Cape Province, South Africa. Most of these enterprise owners are highly visible when it is time to restock inventory and the entities they often visit are those that cater for their bulky inventory needs. Thus, the mall intercept technique was employed. This technique was preferred because collecting data from entrepreneurs who are scattered around the Eastern Cape Province as opposed to being populated in one area is too costly. Therefore, the researcher purposefully sampled the respondents who were also asked to indicate if they had received entrepreneurship education during their college or university period. This was an important criterion for an individual to participate in this study. Therefore, qualifying and consenting respondents completed the pen-to-paper questionnaire in the presence of the fieldworker. The pen-to-paper questionnaire used was comprised of closed-ended questions divided into demographic, entrepreneurial education, entrepreneurial culture, and recognition sections.

3.1 Data Analysis, Measures and the Outcome of Reliability Tests

The study made use of measures that have been utilised by some scholars; however, their internal consistency levels were verified through the Cronbach alpha coefficient. To measure entrepreneurial education, the entrepreneurial education (learning) subscale with three items and the entrepreneurship education (inspiration) subscale with three items were used. Souitaris, Zerbinati and Al-Laham (2006) originally designed the mentioned scales but these were modified to suit the context of this study. The Cronbach alpha coefficient for the entrepreneurship education (learning) subscale was derived as .959. The Cronbach alpha coefficient of the entrepreneurship education (inspiration) subscale was derived as .930. A five point Likert scale was used to measure the two subscales.

To measure entrepreneurial culture, three dimensions were used, namely perceived appropriateness, perceived consistence, and perceived effectiveness. The mentioned scales were adopted from Adekiya and Ibrahim (2016) who also modified the scales

originally designed by De-Pillis and Reardon (2001) and de Pillis and DeWitt (2008). However, the scale items were modified to suit the South African context. The derived Cronbach alpha coefficient for the perceived appropriateness scale is .979. The perceived consistence subscale had six items and the Cronbach alpha coefficient equal to .990. The perceived effectiveness subscale had eight items and the Cronbach alpha coefficient was derived as .985. The perception of entrepreneurial success subscale had four scale items and the Cronbach alpha coefficient for the subscale was derived as .969.

To measure entrepreneurial recognition, a scale with five items was used and the Cronbach alpha coefficient was derived as .964. The scales used in this study all achieved a Cronbach alpha coefficient of above .70 implying that their internal consistency scores were within the accepted threshold. To draw meaning from the data, simple linear regression and hierarchical regression analysis were performed with respect to H1 and H2 respectively.

4. Results

4.1 Hypotheses Testing

The hypothesis stating that entrepreneurship education predicts opportunity recognition was tested through simple linear regression. Bootstrapped coefficients and their significance levels were requested as both the independent variable (IV) and the dependent variable (DV) data did not conform to the assumption of normality. The findings reveal that there is a strong positive correlation between entrepreneurship education and opportunity recognition (r = .830). In addition, the results reveal that entrepreneurship education accounted for approximately 69% of the variance in opportunity recognition (R^2 = .689). To determine whether we can rely on the model in predicting entrepreneurial opportunity recognition, the F-ratio was observed and it was found to be significant, F = 371.712, p = .000. This result indicates that we can successfully depend on the model if we are to predict opportunity recognition as opposed to the use of the mean value. The results are summarised in Table 1.

The parameter estimates of the model show b_0 = .631, and b_1 = .847. The result implies that given a one unit change in entrepreneurship education will result in a corresponding positive increase in opportunity recognition equivalent to .847 units, more importantly, it is significant given p = 001. Given this result, the study's findings therefore provide sufficient evidence supporting the hypothesis stating that entrepreneurship education predicts opportunity recognition. The discussed results are outlined in Table 2.

4.2 The Mediating Role of Entrepreneurial Culture in the Relationship Between Entrepreneurship Education and Opportunity Recognition

Hierarchical regression analysis was performed and the Hayes Process Macro procedure of performing hierarchical regression was followed. The mentioned procedure was undertaken to test the hypothesis stating that entrepreneurial culture mediates the relationship between entrepreneurship education and opportunity recognition. The results of the first output where entrepreneurial culture is depicted as the outcome variable reveal

Table 1: Simple Linear Regression Model Fit and Summary for Entrepreneurship Education on Opportunity Recognition

Source	*df*	Sum of Squares	Mean Square	*F*	*Pr > F*	*r*	R^2	Adjusted R^2	Estimated Standard Error
Model summary	-	-	-	-	-	.830	.689	.687	.48726
Regression	1	88.254	88.254	371.712	0.000*	-	-	-	-
Residual	168	39.888	.237	-	-	-	-	-	-
Total	169	128.142	-	-	-	-	-	-	-
Note: Predictors: Entrepreneurship education. Outcome variable: Opportunity recognition; *, significant at $p < 0.05$									

Source: Authors

Table 2: Parameter Estimates for Entrepreneurship Education on Opportunity Recognition

Parameter	Unstandardised Co-efficient			95.0%CI for B:LB & UB
	B	Standard Error	Significance	
Constant	.631	.154	.001*	[0.364 - 0.963]
*Entrepreneurship education	.847	.038	.001*	[0.762 - 0.915]
Note: Predictors: *Entrepreneurship education. Outcome variable: Opportunity recognition. LB = lower bound, UP = Upper bound. *, significant at $p < 0.05$				

Source: Authors

that entrepreneurship education accounts for approximately 73% of the variance in entrepreneurial culture (R^2 = .7282). The results also indicate that entrepreneurship education has a positive impact on entrepreneurial culture, and the effect is significant, b = .833 [.7558, .9109], t = 21.689, p = .000. This result is denoted in Figure 1 as path "a".

The second mediation analysis output portrays opportunity recognition as the outcome variable and the impact of entrepreneurship education on opportunity recognition is measured in the presence of the mediating variable (entrepreneurial culture). In statistical terms, the direct effect is depicted by c' in Figure 2. The results show that in the presence of entrepreneurial culture, entrepreneurship education has a positive and significant impact on opportunity recognition, b = .4099 [.2624, .5573], t = 5.4884, p = .000. In addition, both entrepreneurship education and entrepreneurial culture account for approximately 76% of the variance in opportunity recognition (R^2 = .7573). The results further reveal that entrepreneurial culture has a positive and significant impact on opportunity recognition, b = .5251 [.3741, .6760], t = 6.8661, p = .000, the path denoted by letter "b" in Figure 2.

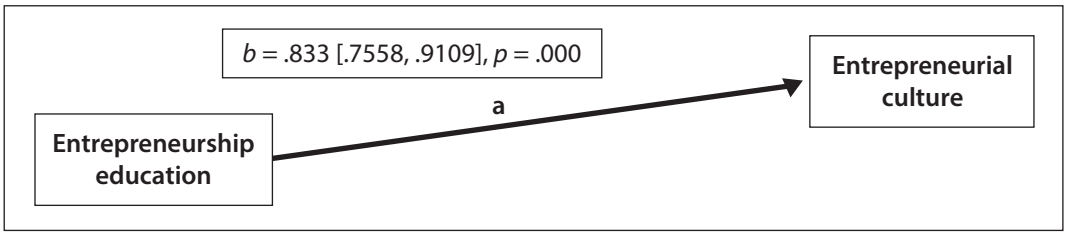
The results shown so far and summarised in Figures 1 and 2 enable the researcher to determine the indirect effect of entrepreneurship education on opportunity recognition in the presence of entrepreneurial culture. That is, path "a" in Figure 1, multiplied by path "b" in Figure, (.833 * .525 = .4373). Having derived the indirect effect, that is, .4373, and also having identified the direct effect, b = .4099, the model's total effect is therefore the sum of the direct and indirect effect, .4374 + .4099 = .8473. Figure 3 summarises the total effect model results.

To determine whether entrepreneurial culture mediates the relationship between entrepreneurship education and opportunity recognition, and also to establish the nature of mediation that exists, both the direct and indirect effects were examined to determine if they were significant. The direct effect was found to be significant, b = .4099 [.2624, .5573], t = 5.4884, p = .000. The indirect effect was also found to be significant where b = .4375 [.2551, .6560]. Given this result, the study provides evidence that entrepreneurial culture partially mediates the relationship between entrepreneurship education and opportunity recognition. To sum up the hierarchical regression analysis results in relation to the formulated hypothesis, this study sought to assess whether entrepreneurial culture mediates the relationship between entrepreneurship education and opportunity recognition and the results revealed a significant indirect effect of impact of entrepreneurship education on opportunity recognition (b = .438, t = 4.231). Therefore, with this result, the study's hypothesis stating that entrepreneurial culture mediates the relationship between entrepreneurship education and opportunity recognition is supported. In addition, the direct effect of entrepreneurship education on opportunity recognition in the presence of the mediating variable was found to be significant (b = .4099, t = 5.488, p .000). Therefore, it was found that entrepreneurial culture partially mediated the relationship between entrepreneurship education and opportunity recognition. Table 3 summarises the discussed results.

5. Discussion

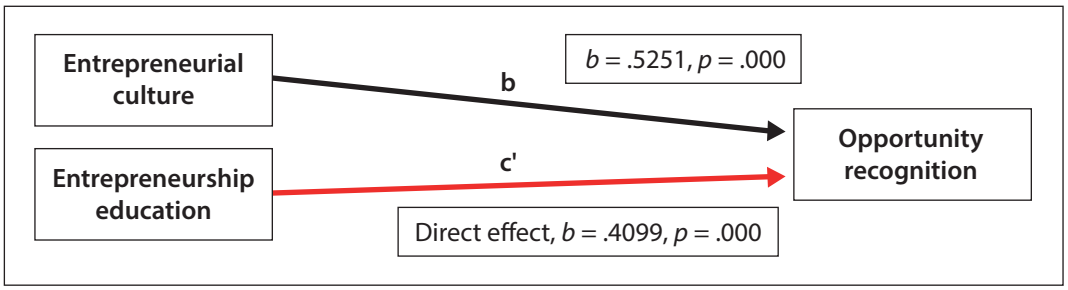
The study provided evidence that entrepreneurship education plays a significant role in opportunity recognition. As evident, entrepreneurship education accounts for approximately 69% of the variance in opportunity recognition, leaving just 31% to be accounted for by other variables not investigated in this study. More importantly, a one-unit increase in entrepreneurship education leads to a significant

Figure 1: Impact of Entrepreneurship Education on Entrepreneurial Culture



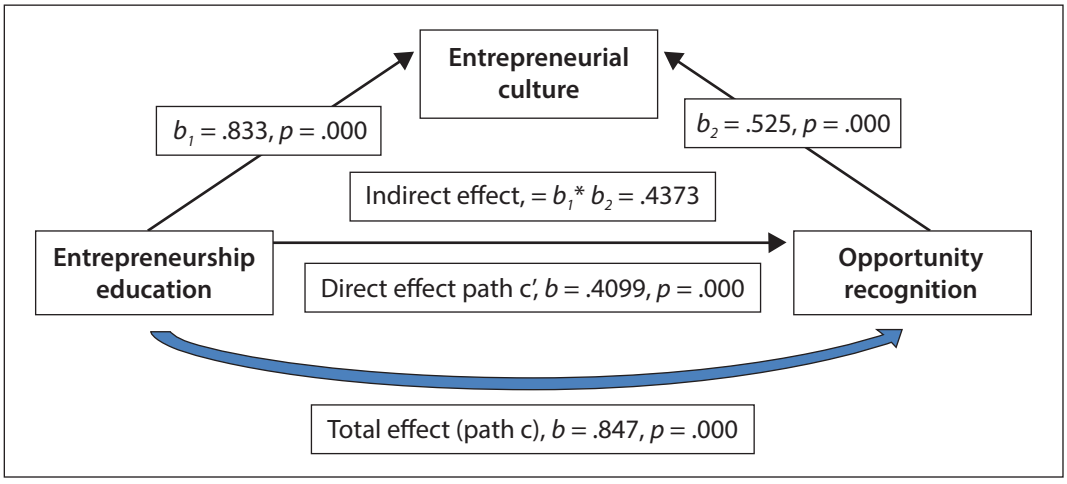
Source: Authors

Figure 2: The Impact of Entrepreneurship Education on Opportunity Recognition in the Presence of Entrepreneurial Culture (The Direct Effect)



Source: Authors

Figure 3: The Total Effect Model



Source: Authors

Table 3: Linear Predictors of Opportunity Recognition

Relationship	Total Effect	Direct Effect	Indirect Effect	Confidence Interval		t-statistics	Conclusion
				Lower Bound	Upper Bound		
EEd* > EntC** > OpRec***	.847 (.000)	.4099 (.000)	.438	.2551	.6560	4.231	Partial mediation
*EEd= entrepreneurship education, **EntC = Entrepreneurial culture, ***OpRec = Opportunity recognition.							

Source: Authors

positive increase equivalent to .847 units in the recognition of entrepreneurial opportunities. The study's findings are in line with empirical evidence which pointed out that individuals who have had effective entrepreneurship education are more likely to have a significant entrepreneurship career (Henderson & Robertson, 2000). By so doing, the study provides valuable evidence that entrepreneurship education can be relied on when designing intervention mechanisms earmarked to promote opportunity recognition and entrepreneurial success. More importantly, entrepreneurship education was found to account for approximately 73% of the variance in entrepreneurial culture. This result is critical as it shows that for society to have a positive and meaningful entrepreneurial culture, entrepreneurship education is one factor playing a leading role, and therefore, intervention mechanisms must revolve around it. However, both entrepreneurial education and entrepreneurial culture account for 76% of the variance in opportunity recognition, meaning that both entrepreneurship education and entrepreneurial culture are important variables, which can play a prominent role when policies and strategies earmarked to promote opportunity recognition are being designed. This is in line with Fritsch and Wyrwich (2016) who pointed out that entrepreneurial culture sets to identify "norms, values, and codes of conduct that promote social acceptance and approval of entrepreneurial activities resulting in high self-employment rates which persist over time" (pp. 1-2).

5.1 Implications to Theory

The study provided evidence suggesting that entrepreneurial education predicts opportunity recognition. Theoretical findings pointed out that entrepreneurial opportunities exist in the external environment and can only be identified by individuals who actively scan the environment for information which can direct them towards such opportunities (Schumpeter, 1942; Busenitz & Barney, 1996). Since the evidence in this study indicates that entrepreneurial education predicts opportunity recognition, the entrepreneurial courses must emphasise the subject of environmental scanning to equip learners with information search skills and enhance their chances of discovering entrepreneurial opportunities for exploitation. In addition, the results of the study reveal that entrepreneurial culture partially mediates the relationship between entrepreneurship education and opportunity recognition. In other words, the study successfully designed a model that can be relied on to enhance opportunity recognition and sustain a culture of entrepreneurial success through effective entrepreneurship education.

5.2 Implications to Managerial Practice

Entrepreneurship education has the potential to mitigate social challenges and possibly leverage the South African economy from recurring social unrest because of unemployment challenges. According to Ozgen and Minsky (2007), for a person to recognise an entrepreneurial opportunity in a given sector, that person must first have the knowledge of the domain and be able to implement it. Entrepreneurship education provides that key knowledge to kick-start a successful entrepreneurial career. Therefore, there is a need to promote widespread quality entrepreneurship education to empower individuals, especially in the rural areas where unemployment rates and income inequality gaps are high. To mitigate these challenges, quality entrepreneurship education must be promoted. Quality entrepreneurship education refers to a curriculum that fosters human development and promotes economic growth at national level (Li, Shen & Lv, 2020). Therefore, the curriculum must not lack the practical component, as applicability in real life may be impossible (Azila-Gbettor & Harrison, 2013). In other words, when the curriculum lacks applicability by being too theoretical, it fails to respond to the needs of the students who prefer self-employment as a career. Institutions of higher learning must therefore ensure that students enrolled for entrepreneurship courses accumulate both theoretical and practical experience. Having a resourceful entrepreneurship hub on site could be an answer to the problem of poor quality entrepreneurship education. In addition, through entrepreneurship hubs, extracurricular campus activities such as innovation and creativity competitions where prizes such as prototype development expenses, initial start-up sponsorships and mentorship from established entrepreneurs can promote the entrepreneurial culture at campus level and society at large (Li *et al*., 2020).

5.3 Areas for Further Research and Limitations

Research can be undertaken to investigate the performance of entrepreneurial entities in various sectors of the economy that are owned by individuals

who actually received entrepreneurship education during their college or university training. To a certain degree, this will help evaluate the quality of entrepreneurship education being offered by South African institutions of higher learning. The limitations of the study are that a nationwide scale of the study could not be pursued owing to resource limitations. Therefore, the reader must exercise caution in generalising the results of the study to the entire nation.

6. Conclusion

The study designed a model with the goal of promoting opportunity recognition, and entrepreneurship education and entrepreneurial culture were the factors identified as those that could take a prominent role in ensuring that this materialises. Empirical literature supported this view and primary data gathered also supported the notion as entrepreneurship education was found to predict opportunity recognition and entrepreneurial culture was found to partially mediate the relationship between entrepreneurship education and opportunity recognition. Based on these findings, the study concludes that both entrepreneurship education and entrepreneurial culture are linear predictors of opportunity recognition.

References

Adekiya, A.A. & Ibrahim, F. 2016. Entrepreneurship intention among students. The antecedent role of culture and entrepreneurship training and development. *The International Journal of Management Education*, 14(2):116-132. Available at: https://doi.org/10.1016/j.ijme.2016.03.001.

Almahry, F.F., Sarea, A.M. & Hamdan, A.M. 2018. A review paper on entrepreneurship education and entrepreneurs' skills. *Journal of Entrepreneurship Education*, 21(2S):1-7.

Altinay, L. 2008. The relationship between an entrepreneur's culture and the entrepreneurial behaviour of the firm. *Journal of Small Business and Enterprise Development*, 15(1):111-129. Available at: https://doi.org/10.1108/14626000810850874.

Altinay, L. & Altinay, E. 2006. Determinants of ethnic minority entrepreneurial growth in the catering sector. *The Service Industries Journal*, 26(2):203-221. Available at: https://doi.org/10.1080/02642060500369354.

Anwar, I. & Saleem, I. 2019. Exploring entrepreneurial characteristics among university students: An evidence from India. *Asia Pacific Journal of Innovation and Entrepreneurship,* 13(3): 282-295. Available at: https://doi.org/10.1108/APJIE-07-2018-0044.

Azila-Gbettor, E.M. & Harrison, A.P. 2013. Entrepreneurship training and capacity building of Ghanaian polytechnic graduates. *International Review of Management and Marketing*, 3(3):102-111.

Barnett, R. 2009. Knowing and becoming in the higher education curriculum. *Studies in Higher Education*, 34(4):429-440. Available at: https://doi.org/10.1080/03075070902771978.

Basu, A. & Altinay, E. 2002. The interaction between culture and entrepreneurship in London's immigrant businesses. *International Small Business Journal*, 20(4):371-393.

Bazan, C., Shaikh, A., Frederick, S., Amjad, A., Yap, S., Finn, C. & Rayner, J. 2019. Effect of Memorial University's environment and support system in shaping entrepreneurial intention of students. *Journal of Entrepreneurship Education,* 22(1):1-35.

Bell, R. & Bell, H. 2020. Applying educational theory to develop a framework to support the delivery of experiential entrepreneurship education. *Journal of Small Business and Enterprise Development*, 27(6):987-1004. Available at: https://doi.org/10.1108/JSBED-01-2020-0012.

Bint Hashim, N. 2017. Impact of entrepreneurship education on entrepreneurial opportunity recognition. *IOSR Journal of Business and Management (IOSR-JBM)*, 19(11):74-79.

Boldureanu, G., Ionescu, A.M., Bercu, A., Bedrule-Grigorut, M.V. & Boldureanu, D. 2020. Entrepreneurship education through successful entrepreneurial models in higher education institutions. *Sustainability,* 12(3):1-33.

Boubker, O., Arroud, M. & Ouajdouni, A. 2021. Entrepreneurship education versus management students' entrepreneurial intentions. A PLS-SEM approach. *The International Journal of Management Education*, 19(1):100450.

Busenitz, L.W. & Barney, J.B. 1997. Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision-making. *Journal of Business Venturing,* 12:9-30.

Casson, M.C. 1991. *The Entrepreneur: An Economic Theory*. Gregg Revivals, London. Chaudhry.

Chang, J.Y.C., Benamraoui, A. & Rieple, A. 2014. Stimulating learning about social entrepreneurship through income generation projects. *International Journal of Entrepreneurial Behaviour & Research,* 20(5):417-437.

Cruz, A.D., Hamilton, E. & Jack, S.L. 2012. Understanding entrepreneurial cultures in family businesses: A study of family entrepreneurial teams in Honduras. *Journal of Family Business Strategy*, 3(3):147-161. Available at: https://doi.org/10.1016/j.jfbs.2012.05.002.

Danish, R.Q., Asghar, J., Ahmad, Z. & Ali, H.F. 2019. Factors affecting "entrepreneurial culture": The mediating role of creativity. *Journal of Innovation and Entrepreneurship*, 8(1):1-12.

de Pillis, E. & DeWitt, T. 2008. Not worth it, not for me? Predictors of entrepreneurial intention in men and women. *Journal of Asia Entrepreneurship and Sustainability*, 4(3):1-13.

De Pillis, E. & Reardon, K.K. 2001. Culture, personality, role models, persuasion: What makes one want to become an entrepreneur? In *Proceedings of the Eighteenth Annual Entrepreneurship Research Conference*. Babson College Babson Park, MA.

Dehghanpour Farashah, A. 2013. The process of impact of entrepreneurship education and training on entrepreneurship perception and intention: Study of educational system of Iran. *Education & Training,* 55(8-9):868-885.

Esmi, K., Marzoughi, R. & Torkzadeh, J. 2015. Teaching learning methods of an entrepreneurship curriculum. *Journal of Advances in Medical Education & Professionalism*, 3(4): 172-177.

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.

George, N.M., Parida, V., Lahti, T. & Wincent, J. 2016. A systematic literature review of entrepreneurial opportunity recognition: Insights on influencing factors. *The International Entrepreneurship and Management Journal,* 12(2):309-350. Available at: https://doi.org/10.1007/s11365-014-0347-y.

Hassan, A., Saleem, I., Anwar, I. & Hussain, S.A. 2020. Entrepreneurial intention of Indian university students: The role of opportunity recognition and entrepreneurship education. *Education and Training,* 62(7/8):843-861.

Hayek, F. 1945. The use of knowledge in society. *American Economic Review,* 35(4):519-530.

Hayton, J., Chandler, G.N. & Detienne, D.R. 2011. Entrepreneurial opportunity identification and new firm development processes: A comparison of family and non-family new ventures. *Entrepreneurship and Innovation Management,* 13(1):12-31.

Heinrichs, K. 2016. Dealing with critical incidents in the postformation phase: Design and evaluation of an entrepreneurship education course. *Vocations and Learning*, 9(3):257-273.

Henderson, R. & Robertson, M. 2000. Who wants to be an entrepreneur? Young adult attitudes to entrepreneurship as a career. *Career Development International,* 5(6):279-287.

Jardim, J., Bártolo, A. & Pinho, A. 2021. Towards a global entrepreneurial culture: A systematic review of the effectiveness of entrepreneurship education programs. *Education Sciences*, 11(8):398. Available at: https://doi.org/10.3390/educsci11080398.

Kaisch, S. & Gilad, B. 1991. Characteristics of opportunities search of entrepreneurs vs. executives: Sources, interest, and general alertness. *Journal of Business Venturing,* 6:45-61.

Kibler, E., Kautonen, T. & Fink, M. 2014. Regional social legitimacy of entrepreneurship: Implications for entrepreneurial intention and start-up behaviour. *Regional Studies,* 48(6):995-1015. Available at: https://doi.org/10.1080/00343404.2013.851373.

Kirzner, I.M. 1973. *Competition and Entrepreneurship*. Chicago, IL: University of Chicago Press.

Lackéus, M. 2020. Comparing the impact of three different experiential approaches to entrepreneurship in education. *International Journal of Entrepreneurial Behavior & Research*, 26(5):937-971. Available at: https://doi.org/10.1108/IJEBR-04-2018-0236.

Li, Y., Shen, W. & Lv, Y. 2020. Quality evaluation of entrepreneurship education in Chinese medical colleges – from the perspective of student cognition. *Frontiers in Psychology*, 11:1093. Available at: https://doi.org/10.3389/fpsyg.2020.01093.

Liguori, E. & Winkler, C. 2020. From Offline to Online: Challenges and Opportunities for Entrepreneurship Education Following the Covid-19 Pandemic. *Entrepreneurship Education and Pedagogy*, 3(4):346-351. Available at: https://doi.org/10.1177/2515127420916738.

McMullan, W.E. & Long, W.A. 1990. *Developing new ventures. The entrepreneurial option*. Orlando, Florida: Harcourt Brace Jovanovich, Inc.

Ozgen, E. & Minsky, B.D. 2007. Opportunity recognition in rural entrepreneurship in developing countries. *International Journal of Entrepreneurship*, 11:49-73.

Price, K. & Ronnie, L. 2021. Contextual factors influencing entrepreneurship education at a South African University of Technology. *Southern African Journal of Entrepreneurship and Small Business Management,* 13(1):a394. Available at: https://doi.org/10.4102/.sajesbm.v13i1.394.

Ratten, V. 2020. Coronavirus (Covid-19) and the entrepreneurship education community. *Journal of Enterprising Communities: People and Places in the Global Economy*, 14(5):753-764. Available at: https://doi.org/10.1108/JEC-06-2020-0121.

Sambasivan, M., Abdul, M. & Yusop, Y. 2009. Impact of personal qualities and management skills of entrepreneurs on venture performance in Malaysia: Opportunity recognition skills as a mediating factor. *Technovation*, 29(11):798-805. Available at: https://doi.org/10.1016/j.technovation.2009.04.002.

Schumpeter, J.A. 1942. *Capitalism, Socialism and Democracy* (5th edn.). London: Allen & Unwin.

Shava, H. 2022. Predicting entrepreneurial barriers and intentions: The role of university environment, entrepreneurial culture and public infrastructure. *Eurasian Journal of Social Sciences*, 10(1):49-67. Available at: https://doi.org/10.15604/ejss.2022.10.01.005.

Souitaris, V., Zerbinati, S. & Al-Laham, A. 2007. Do entrepreneurship programmes raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration and resources. *Journal of Business Venturing*, 22(4):566-591. Available at: https://doi.org/10.1016/j.jbusvent.2006.05.002.

Stevenson, H. & Gumpert, D. 1985. The Heart of Entrepreneurship. *Harvard Business Review,* 63:85-94.

Stuetzer, M., Audretsch, D.B., Obschonka, M., Gosling, S.D., Rentfrow, P.J. & Potter, J. 2018. Entrepreneurship culture, knowledge spillovers and the growth of regions. *Regional Studies*, 52(5):608-618.

Timmons, J.A. 1994. *New Venture Creation: Entrepreneurship for the 21st Century* (4th edn.). Homewood, IL: Irwin.

Vanevenhoven, J. 2013. Advances and challenges in entrepreneurship education. *Journal of Small Business Management*, 51(3):466-470. Available at: https://doi.org/10.1111/jsbm.12043.

Wei, X., Liu, X. & Sha, J. 2019. How does the entrepreneurship education influence the students' innovation? Testing on the multiple mediation model. *Frontiers in Psychology*, 10:1557.

Zahra, S.A., Hayton, J.C. & Salvato, C. 2004. Entrepreneurship in family vs. non-family firms: A resource-based analysis of the effect of organizational culture. *Entrepreneurship Theory and Practice*, 28(4):363-381. Available at: https://doi.org/10.1111/j.1540-6520.2004.00051.x.