RESEARCH AND TRENDS IN THE STUDIES OF ENTREPRENEURSHIP EDUCATION: A REVIEW OF SELECTED JOURNALS

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Abstract: Entrepreneurship education (EE) is a growing research field with increasingly diverse topics and complex methodologies. This paper examined ten recent quantitative studies in EE by comparing and contrasting their research areas, methodologies and data analysis methods. This paper also identifies five research areas in EE and discusses the trend of EE research in general, in which survey designs and the use of structural equation modeling (SEM) are common in the reviewed studies. Furthermore, this paper highlights the lacunae in the selected studies and suggests the directions for future research in EE. Tabulated comparison and the summary of the selected studies are also presented at the end of this paper.

Keywords: *Entrepreneurship Education, Quantitative Studies, Research Areas, Research Methodology*

INTRODUCTION

Entrepreneurship education (EE) is generally perceived as a way to produce more entrepreneurs as well as improving their quality (Matlay, 2005). The terms 'entrepreneurship' and 'entrepreneurship education' has garnered international attention as they are believed to be the solutions of an array of socio-economical and political problems (Matlay, 2005). This paper examined ten selected studies in entrepreneurship education published in recent years and discusses their similarities and differences in terms of research areas, methodologies and data analysis methods. According to Moberg et al. (2014), EE encompasses content, approaches and activities that help develop motivation, competences and experience to manage and take part in value-creating processes and to build entrepreneurial characters. As a rapidly growing research area, studies in EE have been advancing with increasingly sophisticated methodologies and data analysis methods, as well as expanding research topics in this area. Review studies of EE published in recent years, such as the studies by Fellnhofer (2019), Henry (2018) as well as Deveci and Seikkula-Leino (2018) did not investigate the literature from the angle of methodology and the scope of their reviewed studies was to the year of 2016. A review study of EE done by Blenker et al. (2014), which investigated the methodologies used in EE studies, focused only studies from 2002 to 2012.

RESEARCH PURPOSE

It is hoped that current paper would enlighten readers on the trens of the research and their findidngs in justifying the importance of entrepreneurship education. An effort of understanding the more recent development of the research in EE would help to shed a light on the current status of research and provide some suggestions for future research.

METHODOLOGY

The selected articles were retrieved from the Web of Science, and were from various educational journals based on ten quantitative research articles in EE published in years 2015-2020. The focus of the paper is to provide a discussion of literatures, offer value added and provide directions for future studies (Gilson & Goldberg, 2015). Studies published in the last five years were analysed as there is a dearth of papers that discuss research articles in EE that were published after 2015. In this paper, only quantitative studies were selected as the study intends to have a more focused, detailed and richer discussion that would contribute to the body of quantitative studies in EE. The selected studies were coded based on their research areas, methodologies and data analysis methods. After the coding process, an analysis of comparing and contrasting the ten studies was conducted. A tabulated summary of the analysis is presented in Appendix A. The detailed tabulation of the ten selected studies was also presented in Appendix B.

RESULT AND DISCUSSION

Similarities among the Selected Studies

From the selected studies, entrepreneurial intention is the most researched topic. In most of the selected studies, the goal was to investigate the influence of researched variables on learners' entrepreneurial intention (e.g. Chou et al., 2015; Zampetakis, 2015; Barral, Ribeiro & Canever, 2017; Azizi & Mahmoudi, 2018; Dou et al., 2019; Iwu et al., 2019; Ahmed et al., 2020). This shows that learners' entrepreneurial intention is an important indicator of the effectiveness of EE. Furthermore, prominent theories in EE, such as Azjen's (1991) theory of planned behaviour and Shapero's Entrepreneurial Event (Shapero & Sokol, 1982) included entrepreneurial intention as a vital construct towards entrepreneurship. Hence, studies that were theoretically driven by these prominent theories would include entrepreneurial intention as a construct or a variable in their studies.

In terms of data collection methods, all the selected studies conducted surveys to obtain their data. This finding is in line with the Blenker's (2014) findings that surveys are the main source of data in quantitative studies. In the studies of EE, the most effective way of capturing the affective and cognitive constructs of entrepreneurship is by using questionnaires. Other means of quantitative data collection, such as using test scores might not be applicable in these cases as these cognitive constructs are difficult to measure and define by using scores. Most of the studies also involved more than 200 respondents to establish the generalisability and enhance the representative of the findings to larger population. In most quantitative studies, the larger the sample size, the more precise the finding would be (Biau et al. 2008). Thus, with the availability of the resources, quantitative researchers would collect data from as many respondents as possible.

Of all the reviewed studies, the most commonly used analytical method is structural equation modelling (SEM) (e.g. Ahmed et al., 2020; Wei, Liu & Sha, 2019; Dou, et al., 2019; Azizi & Mahmoudi, 2018; Chou et al., 2015). SEM is a method used to analyse complex survey data and it shows the causal relationship between variables. By employing SEM in EE studies, it allows the researchers to construct multidimensional models and identify the interrelationship of different latent factors in the studied phenomena. It is a relatively new approach and has grown tremendously over the last two decades (Teo & Myint, 2009). In this review study, a similar trend of EE studies is observed as SEM has been used to challenge the existing models by including more factors and dimensions into consideration.

Variation among the Selected Studies

Even quantitative methods are used in all the selected studies, there are some discernible differences that demonstrate the variety of quantitative studies conducted in EE. One of the most distinct aspects is the research areas covered by the selected studies. From the ten selected studies in this review, there are five identifiable areas that are being investigated: a) *Programme Development* (e.g. Ahmed et al., 2010; Dou et al. 2019; Azizi & Mahmoudi, 2018; Zampetakis et al., 2015), b*) Students' Affect and Cognition* (e.g. Dou et al., 2019; Iwu et al., 2019; Wei, Liu & Sha; 2019, Azizi & Mahmoudi, 2018; Schelfhour, Bruggeman & De Mayer, 2016; Zampetakis et al., 2015; Chou et al., 2015), c) *Learning Environment* (e.g. Barral et. al., 2017; Bergnmann et al., 2018), d) *Lecturers' Competency* (e.g. Iwu et al., 2019) and e) *Instrument Development* (e.g. Schelfhour, Bruggeman & De Mayer, 2016). Some of the studies researched on more than one area of EE studies and it appears that students' cognition and affect, such as their entrepreneurial intentions, attitudes and self-efficacy is the most researched area in EE studies. The diversity of the research area in EE shows the importance of EE in the current education agenda and indicates the concerns of researchers in expanding the understanding of EE from different angles and perspectives.

In terms of research method, the methodologies employed the selected studies had differences even though all of them used survey as their primary data collection method. Studies such Ahmed et al. (2020), Dou et al. (2019) and Iwu et al. (2019) conducted one-time surveys. On the other hand, Zampetakis et al. (2015) adopted a pretest and posttest design to collect survey data. The study by Bergmann et al. (2018) which involved 8009 students, used secondary survey data from two previous EE projects conducted in Germany. The analysis shows that survey as a data collection method can be carried out in different ways. The diversity of data collected by using the survey method serves different functions: 1) to identify the relationship/ interrelationship between different variables/ factors/ dimensions in EE; 2) to compare and contrast the climate of entrepreneurship in different settings and 3) to investigate the effectiveness of programme interventions.

Based on the aforementioned functions of survey data, the data collected in the selected studies were also analysed in different ways. Other than using SEM, other statistical measures such as analysis of variance (ANOVA), factorial

analysis and regression analysis were also used the selected studies. SEM was used to construct a model that represent the interrelationship between variables which was often complemented with factorial analysis to group variables into different dimensions. However, not all studies that used factorial analysis used SEM in their studies. For instances, the study conducted by Barral et al. (2017) used factorial analysis to measure the influence of the researched dimensions (e.g. social norms, perceived desirability and perceived viability) in their comparative study. The study by Schelfhout et al. (2016) intended to use factorial analysis to validate the instrument that they developed and their research did not intend to propose any model. The use of ANOVA in Zampetakis et al.'s (2015) study was to compare the effects of the entrepreneurship programme intervention. Moreover, regressions were used in studies such as Iwu et al. (2019), Wei et al., (2019), Bergmann et al. (2018) and Zampetakis et al. (2015) to identify the relationship between the independent variables and dependent variables. Thus, the selection of the statistical measure used in the selected studies were driven by the purpose of the studies.

DIRECTION FOR FUTURE RESEARCH

Based on the findings in this paper, there are a few recommendations for future studies based on the observed research gap. It is recommended that more comparative studies can be conducted in order to shed light on how EE can be applied in different contexts. Comparison of EE between regions, types of institutions and EE environments might give researchers better reflection on the elements that constitute successful EE.

From the observation of the selected studies, all of the studies focused primarily on the economic content and it lacked interdisciplinary perspectives. Studies drawing from an interdisciplinary perspective might be necessary to broaden the scope of EE that may discover new dimensions of EE. The proposal of incorporating interdisciplinary perspective in EE studies is in line with the view suggested by Fellnhofer (2019). For instance, studies that bridge linguistics and EE might be useful to elucidate the underresearched area of study.

Other than this, there are also other constructs of entrepreneurship that are still being researched in EE and call for more investigation. Constructs such as entrepreneurial mindset, entrepreneurial cognition and entrepreneurial attitudes are still being researched in current body of research.

From the perspective of research design, most of the selected studies did not employ longitudinal design in researching EE. In order to investigate the developmental aspects of EE, there is a need for researchers to conduct longitudinal research to observe how learners' entrepreneurial characteristics develop over a longer period of time.

Moreover, the increasing number of studies that employed SEM shows that there is a need to improve the existing models of EE. Therefore, the efforts of including other variables in refining models of EE seems to be necessary. Some of the variables, such as the roles of feedback and scaffolding in improving entrepreneurial intentions have not been mentioned in any of the selected studies.

CONCLUSION

From the analysis of the ten recent quantitative studies in EE, it is observed that these studies covered different scopes of EE which can be categorised into five major areas. The methodologies employed in these studies, though sharing some similarities, were different according to the designs of the studies. SEM seems to be a popular analytical method in these studies but other inferential statistic methods, such as ANOVA and regressions were also used in some of the selected studies. The analysis shows that rigorously conducted quantitative studies are still relevant in the body of EE research and recommendations for future studies are proposed in this paper. The similarities and differences of the selected studies are tabulated in Appendix A and the tabulated summary of each study is presented in Appendix B.

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REFERENCES

Ahmed, T., Chandran, V. G. R., Klobas, J. E., Liñán, F., & Kokkalis, P. (2020). Entrepreneurship education programmes: How learning, inspiration and resources affect intentions for new venture creation in a developing economy. *The International Journal of Management Education, 18*(1), 100327. doi:https://doi.org/10.1016/j.ijme.2019.100327

Azizi, M., & Mahmoudi, R. (2019). Learning outcomes of entrepreneurship education: Entrepreneurship education for knowing, doing, being, and living together. *Journal of Education for Business, 94*(3), 148-156. doi:10.1080/08832323.2018.1502139

Azjen, I. (1991). The theory of planned behavior. *Organ Behav Hum Decis Process, 50*(2), 179-211.

Barral, M. R. M., Ribeiro, F. G., & Canever, M. D. (2017). Influence of the university environment in the entrepreneurial intention in public and private universities. *RAUSP Management Journal, 53*(1), 122-133. doi:https://doi.org/10.1016/j.rauspm.2017.12.009

Bergmann, H., Geissler, M., Hundt, C., & Grave, B. (2018). The climate for entrepreneurship at higher education institutions. *Research Policy, 47*(4), 700-716. doi:https://doi.org/10.1016/j.respol.2018.01.018

Biau, D. J., Kernéis, S., & Porcher, R. (2008). Statistics in brief: the importance of sample size in the planning and interpretation of medical research. *Clinical orthopaedics and related research, 466*(9), 2282-2288. doi:10.1007/s11999-008-0346-9

Blenker, P. (2014). Methods in entrepreneurship education research: a review and integrative framework. *Education + Training, 56*(8/9), 697-715. doi:10.1108/ET-06-2014-0066

Chou, C.-M., Shen, C.-H., Hsiao, H.-C., & Chen, S.-C. (2017). Tertiary students' entrepreneurial career intentions of entrepreneurship-embedded internship programs. *Studies in Higher Education, 42*(11), 2116-2133. doi:10.1080/03075079.2015.1125596

Department of Statistics, M. (2019). Graduate Statistics 2018. Retrieved from https://www.dosm.gov.my/v1/index.php/index.php?r=column/cthemeByCat&cat=476&bul_id=cDJkZjM5b2hjdjJZMDlvNDlueU54Zz09&menu_id=Tm8zcnRjdVRNWWlpWjRlbmtlaDk1UT09

Deveci, I., & Seikkula-Leino, J. (2018). A review of entrepreneurship education in teacher education. *Malaysian Journal of Learning and Instruction, 15*(1), 105-148.

Dou, X., Zhu, X., Zhang, J. Q., & Wang, J. (2019). Outcomes of entrepreneurship education in China: A customer experience management perspective. *Journal of Business Research, 103*, 338-347. doi:https://doi.org/10.1016/j.jbusres.2019.01.058

Fellnhofer, K. (2019). Toward a taxonomy of entrepreneurship education research literature: A bibliometric mapping and visualisation. *Education Research Review*. doi:https://doi.org/10.1016/j.edurev.2018.10.002

Gilson, L. L., & Goldberg, C. B. (2015). Editors' Comment: So, What Is a Conceptual Paper? *Group & Organization Management, 40*(2), 127-130. doi:10.1177/1059601115576425

Henry, C. (2018). A review of entrepreneurship education research: Exploring the contribution of the Education + Training special issues. *Education + Training, 60*(3), 263-286. doi:10.1108/ET-12-2017-0189

Matlay, H. (2005). Researching entrepreneurship and education: Part 1: what is entrepreneurship and does it matter? *Education + Training, 47*(8/9), 665-677. doi:10.1108/00400910510633198

Moberg, K., Fosse, H. B., Hoffman, A., & Junge, M. (2015). *Impact of Entrepreneurship Education in Denmark 2014*. Retrieved from www.ffe-ye.dk/videncenter

Schelfhout, W., Bruggeman, K., & De Maeyer, S. (2016). Evaluation of entrepreneurial competence through scaled behavioural indicators: Validation of an instrument. *Studies in Educational Evaluation, 51*, 29-41. doi:https://doi.org/10.1016/j.stueduc.2016.09.001

Shapero, A., & Sokol, L. (1982). The social dimensions of entrepreneurship. In C. Kent, D. Sexton, & K. Vesper (Eds.), *The encyclopedia of entrepreneurship* (pp. 72-90). Englewood Cliffs: Prentice-hall.

Timothy, T., & Myint Swe, K. (2009). *Structural Equation Modeling in Educational Research*. Leiden, The Netherlands: Brill | Sense.

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*, 1557-1557. doi:10.3389/fpsyg.2019.01557

Zampetakis, L. A., Lerakis, M., Kafetsios, K., & Moustakis, V. (2015). Investigating the emotional impact of entrepreneurship programs. *Journal of Business Venturing Insights, 4*, 38-41. doi:https://doi.org/10.1016/j.jbvi.2015.10.002

Appendix A
Similarity and Differences of the Selected Studies

Similarities

Research Area	Researching on intention and competence.
Research Methodology	Survey is the most commonly used data collection methods. Most studies involved more than 200 participants.
Analysis	Structural equation modelling is a common method used to analyse the data in most studies.

Differences

Research Areas	**Programme Development**	**Students Affect and Cognition**	**Learning Environment**	**Lecturers' Competency**	**Instrument Development**
	Ahmed et al. (2020)	Dou et al. (2019)	Barral et al. (2017)	Iwu et al. (2019)	Schelfhout, et al. (2016)
	Dou et al. (2019)	Iwu et al. (2019)	Bergmann et al. (2018)		
	Azizi & Mahmoudi (2018)	Wei et al. (2019)			
	Zampetakis et al. (2015)	Azizi & Mahmoudi (2018)			
		Schelfhout, et al. (2016)			
		Zampetakis et al. (2015)			
		Chou et al. (2015)			

Research Methodology	**One-time Survey** Ahmed et al. (2020) Azizi & Mahmoudi (2018) Barral et al. (2017) Dou et al. (2019) Iwu et al. (2019) Schelfhout, et al. (2016) Chou et al. (2015) Wei et al. (2019)	**Pretest and Posttest** Zampetakis et al. (2015)		**Comparison of Secondary Survey Data** Bergmann et al. (2018)
Analytical Method	**Structural Equation Modelling (SEM)** Ahmed et. al. (2020) Azizi & Mahmoudi (2018) Dou et al. (2019) Chou et al. (2015)	**Analysis of Variance (ANOVA)** Zampetakis et al. (2015)	**Factorial Analysis** Barral et al. (2017) Iwu et al. (2019) Schelfhout et al. (2016)	**Regression** Bergmann et al. (2018) Iwu et al. (2019) Zampetakis et al. (2015) Wei et al., (2019)

Appendix B.
Tabulated Summary for the Selected Studies

Authors	Research Areas	Research Methodologies	Analysis Methods	Investigated Aspects	No. Participants	Duration
Ahmed et. al. (2020)	Entrepreneurship Programme Entrepreneurship Development	Survey/ questionnaire	Covariance-based structural equation modelling (SEM) Confirmatory factor analysis (CFA)	1. Attitudes towards entrepreneurship 2. Subjective norms 3. Perceived behavioural control 4. Entrepreneurial intentions 5. Entrepreneurial behaviours 6. Entrepreneurship education learning 7. Entrepreneurship education inspiration 8. Entrepreneurship education: Incubation resources	348 participants from 8 universities in Pakistan	Cross-sectional
Azizi & Mahmoudi (2018)	Entrepreneurship Education High School Entrepreneurship Intention	Survey/ questionnaire Focus group	Structural equation modelling (SEM)	Learning outcomes of entrepreneurship education 1. Learning to know 2. Learning to do 3. Learning to be 4. Learning to live together	305 completed questionnaires for analyses	Cross-sectional
Barral et al. (2017)	Entrepreneurial intention Comparison of public and private universities	Survey/ questionnaire	Comparative analysis Difference-in-differences econometric method Factorial Analysis	1. Social norms 2. Perceived desirability 3. Self-efficacy 4. Perceived viability	566 students. 332 from private HEI and 234 from public HEI	Cross-sectional

				5. Entrepreneurial intentions		
Bergmann et al. (2018)	Entrepreneurial climate	Data from surveys	Multilevel regressions	Variables in the context level Variables in the individual level	8009 students at public university in Germany (secondary source).	Cross-sectional
Dou et al. (2019)	Customer experience	Survey/ questionnaire	Structural equation modelling (SEM) Confirmatory factor analysis (CFA)	1. Perceived values of university-owned resources 2. Perceived values of regulatory environment resources 3. Perceived values of social environment resources 4. Entrepreneurial attitude 5. Entrepreneurial intentions	Effective sample of 417 students	Cross-sectional
Iwu et al. (2019)	Entrepreneurial Intentions Lecturer Competency	Survey	Factorial Analysis Regression Analysis	1. Perception of entrepreneurship education 2. Perceived relevance & adequacy of curriculum and course content 3. Perceived competence of lecturing team 4. Student entreprenuerial intention	1000 students from South African university	Cross-sectional Cross-sectional

Schelfhout, Bruggeman & De Mayer (2016)	Entrepreneurial competence	Mixed methods:	Kaiser-Meyer-Olkin (KMO) standard to determine suitability of the data	11 subcompetences of entrepreneurial competency and related behavioural indicators.		
	Evaluation instrument	1) Focus group interview 2) Survey	Principal component analysis (PCA) Confirmatory factor analysis (CFA)		5 for focus group 201 students for survey	
Zampetakis et al. (2015)	Anticipated emotions	Pretest-posttest control group design	One-way ANOVA	1. Entrepreneurial intentions	60 engineering students	Cross-sectional at two points of time
	Entrepreneurial intentions Entrepreneurship programme		Hierarchical regression analysis	2. Attitudes towards entrepreneurship 3. Subjective norms 4. Perceived bahavioural control 5. Anticipated positive affect 6. Anticipated negative affect.	51 control group participants	
Chou et al. (2015)	Entrepreneurial career intentions (ECIs)	Survey	Structural equation modelling (SEM)	1. Computer self-efficacy 2. Entrepreneurial career intentions 3. Entrepreneurship cognition	1630 tertiary students	Cross-sectional
Wei, Liu & Sha (2019)	Innovation Political skills Entrepreneurship opportunity recognition	Survey	Model fit, reliability and validity tests Descriptive statistics Regression bootstrapping Structural equation modelling (SEM)	1. Innovation 2. Political skills 3. Entrepreneurship opportunity recognition 4. Entrepreneurship education	269 valid questionnaires	Cross-sectional