

A Model for Predicting Entrepreneurship Intentions based on Social Cognitive Theory and Entrepreneurship Characteristics

Ng Kim-Soon¹, Osama Yaseen M. Al-Rawi^{2,*}, Salama A. Mostafa^{3,*}, Chew Yee Ling¹, Wisam Subhi Al-Dayyeni⁴, Rabei Raad Ali⁵, Moamin A. Mahmoud⁶ and Banan Al-Rawi⁷

¹Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia, 86400, Johor, Malaysia

²Electrical and Electronic Engineering Department, College of Engineering, Gulf University, Kingdom of Bahrain

³Faculty of Computer Science and Information Technology, Universiti Tun Hussein Onn Malaysia, 86400, Johor, Malaysia

⁴Department of Medical Instrumentations Engineering Techniques, Dijlah University College, 10022, Baghdad, Iraq

⁵National University of Science and Technology, 64004, Nassiriya, Iraq

⁶College of Computer Science and Informatics, Universiti Tenaga Nasional, 43000 Kajang, Selangor, Malaysia

⁷Architectural & Interior Design Engineering Department, College of Engineering, Gulf University, Kingdom of Bahrain

Received: 2 Dec. 2021, Revised: 22 Jan. 2022, Accepted: 5 Feb. 2022.

Published online: 1 Mar. 2022.

Abstract: This research studies whether entrepreneurial characteristics comprising passion, creativity, and self-efficacy are significantly associated with entrepreneurial intentions. Therefore, the final year students from various disciplines from a public university who were potential entrepreneurs and have attended the advance level courses on entrepreneurship were chosen for the data collection. Most of these students have participated in the on-campus business related activities and received some experience through these activities. It was found that there are strong positive correlation between entrepreneurial characteristic factors with entrepreneurial intention. Overall, the R² of the entrepreneurship's characteristics comprising entrepreneurial passion, self-efficacy, and creativity to predict entrepreneurship intention to become an entrepreneur shows very strong explanation power. It implies that this study's proposed model can serve as an assessment tool for selecting students with the higher entrepreneurial intention to engage them in entrepreneurship and activities at the university.

Keywords: Social cognitive theory, entrepreneurial intention, entrepreneurship passion, entrepreneurial self-efficacy, creativity.

1 Introduction

Entrepreneurship is significant in enhancing and achieving a country's economic growth and development [1]. It has generated greater interest in research in today's career entrepreneurial thinking and acting. Thorgren and Wincent [2] claimed that passion is essential for entrepreneurs to acquire. It is vital for the start-up and growth of a business due to engaging in entrepreneurial activities [3]. Creativity is also an entrepreneurial characteristic together with the contextual factors of an individual, it is the individual's cognitive characteristics, personality, and motivational qualities [4]. In [4] explained that in the socio-constructivist approaches, Social Cognitive Theory and creativity are complex socio-cultural processes that support divergent and convergent brain capacities [4]. In [5] reported that

entrepreneurial intentions to become an entrepreneur are important and significantly affect reducing graduate unemployment.

Entrepreneurship has a great impact on a country's economic development, therefore, the student's intention of becoming an entrepreneur is the researchers' focus [6]. Hence, this study investigates whether students' entrepreneurial characteristics of passion, self-efficacy, and creativity significantly affect students' entrepreneurial intention to become entrepreneurs.

This research is significant to Malaysian public university where the research has been conducted and other universities or higher learning institutions providing entrepreneurship education. The Malaysian statistic department has reported that the national labor force unemployment rate in Malaysia for 2019 is 3.3%. The youth unemployment rate stands at

*Corresponding author e-mail: eng.dean@gulfuniversity.edu.bh

10.9% in Malaysia, which is about three times greater than the nationwide unemployment rate. The unemployment rate among youth with degrees and diplomas is also more than twice higher as compared with youth. The latest report indicated that unemployed youth contribute almost 60% of the total graduates who are still unemployed after a year of graduation [7, 8]. Although the Ministry of Education has required that entrepreneurship courses be conducted in all public universities, only 2% of graduates are self-employed upon graduation. This indicates the lack of effectiveness of entrepreneurship education in universities towards nurturing young entrepreneurs. However, policymakers have emphasized entrepreneurship education for building entrepreneurs' capacity to drive the nation for economic growth.

On the other hand, the literature revealed that Malaysian students of higher learning institutions could not connect entrepreneurship among academic teachings and real practices upon graduation [9]. Olaiya reported the need to ascertain entrepreneurship education's performance through outcome assessment on the targeted graduating students. Entrepreneurial intentions to become an entrepreneur are important and significantly affect reducing graduate unemployment [5]. The university students' entrepreneurial intentions are not a simple learning construct. Although passion is very crucial for venture creation and development, there is a dearth of literature on entrepreneurial passion and how it can nurture entrepreneurial intentions to be potentially keen to be an entrepreneur [10]. In [11] revealed a multitude of variables that affect entrepreneurial intentions and found inconclusive results of these predictors on entrepreneurial

intentions. To be an entrepreneur can be one of the career choices. The intention to be self-employed is the cue that motivates researchers to explore and investigate the exact entrepreneurial characteristics that impact entrepreneurial intentions [12]. Kim-Soon et al. [13] advocate that youths who can be entrepreneurs and own a new business are to be targeted to nurture by government entrepreneurship intervention initiatives. The paper's main contribution lies in proposing a social entrepreneurship intention prediction mode. Subsequently, a case study has been carried out on entrepreneurial characteristics comprising entrepreneurial passion, self-efficacy, and creativity in developing entrepreneurial intention to categorize the problems in the teaching of an education course of a public university's entrepreneurship.

2 Methods and Materials

The word entrepreneurship derives from the French word 'entreprendre', which means 'intended to undertake', meet the needs, wants, and to pursue opportunities through innovation [14]. Entrepreneurship creates new jobs and greatly contributes significantly to economic growth [15]. An attitude reflected in an individual's entrepreneurial spirit motivates them to search for opportunities and practice them with rigor to generate new economic values and success [16]. Social Cognitive Theory (SCT) has been applied to formulate this study's research steps, as shown in Figure 1. The SCT has been applied to investigate entrepreneurial passion, self-efficacy, and creativity in developing entrepreneurial intention among a public university final year student.

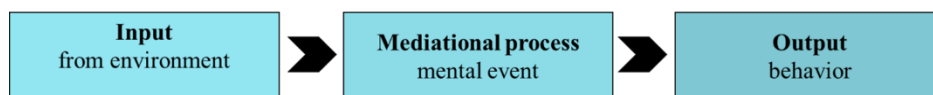


Fig.1: Social Cognitive Theory (SCT) [2].

In the SCT formulation, entrepreneurial passion is an important emotional aspect among novice and present serial entrepreneurs. Self-efficacy is the trust that one's capability for achieving tasks constitutes a unique SCT factor. Self-

efficacy is a dominant characteristic of SCT in improving one's ability to do tasks and achieve their targets and objectives. The construct of self-efficacy is specific in its

context. It gives a high degree of predictive power to the outcomes when the focus is on a specific set of activities [2].

This work aims to identify the entrepreneurial passion, self-efficacy, and creativity in developing entrepreneurial intention among the final year students of a public university. In Figure 2, we show this work's predicting entrepreneurship intentions model.

2.1 Entrepreneurship Characteristics

A. Entrepreneurial Passion

Passion is vital to entrepreneurship which has long been known as a key factor contributing to entrepreneurial

intention and success. It can foster creativity and help seek patterns that make sense from new sources of information essential to explore opportunities [2]. Entrepreneurial passion establishes a distinct emotion in the entrepreneur [3]. Cardon et al. [3] reported that passion was found to enhance competence and confidence within the context of individual intentions. A high level of entrepreneurial passion seems to constitute adequate antecedents for individuals' entrepreneurial intentions [17]. Passion allows a narrower focus on the actual venture creation during the development of entrepreneurship intention even without the consideration of contingencies or obstacles involved in the business venture [18]. Cardon et al. [3] argued that an individual with entrepreneurial passion possesses intense positive feelings of their entrepreneurial activities with a strong determination that is embedded in those feelings. Pihie and Bagheri [19] contended that passion indirectly affects venture growth and is mediated by vision, goals, and self-efficacy. Baum et al. [20] reported that passion intensifies an individual's belief that their work is meaningful, accompanied by energy, pride, commitment, and empowerment. The entrepreneurship passion of an enterprising individual may be essential in the development of start-up intentions to support the process of scouting the lucrative business the exploration of profitable business opportunity. Entrepreneurial passion strongly motivates hard work, sacrifices, and the craving to introduce a change to build the business [21]. Passion may lead to intense attachment and longing with the business venture [3]. Cardon et al. [3] reported that cognitive passion is significant and positively influences the decision of venture capitalists' funding, while affective passion is not related. Passion evolves with salient entrepreneurial identity. According to Thorgren and Wincent [2] passion can facilitate recognizing opportunity, developing the concept, and opportunity implementation of market, organizational design, resource assembly, and product development.

B. Entrepreneurial Self-efficacy

Self-efficacy is the people's confidence in their skill To succeed in achieving the performance demanded of a specific work [22]. Younesi [23] defined self-efficacy as an individual judgment of performing a task in a specific domain. Van Dijk and Poell [24] described that it involves evaluating their own abilities and capability to gather the motivations or courses of action required to manage their life's events. Self-efficacy exerts a significant influence on an individual because they act on their thoughts, feelings, and behaviors. Entrepreneurial self-efficacy is the individual's confidence in using their skills to achieve the targeted highly tasked-oriented work, and it affects individual entrepreneurship [17]. It is an essential pre-requirement of new venture intentions and can be perceived as an interrelated web of an individual's ability to achieve the targeted objective [25].

According to [22], a person with a high degree of self-efficacy will appear to possess a better intellectual ability, effectiveness, and strategic flexibility in dealing with the

environment as well. They will have better-controlling skills to plan the best- and worst-case scenarios, adapt and maneuver their plans, and manage those environmental uncertainties. Individuals with high levels of self-efficacy are better at anticipating hindrances that might deter them from realizing their targeted objectives [22]. Hence, self-efficacy influences entrepreneurial intention via cognitive processes, motivation, and emotional conditions [26]. The self-efficacy characteristic of an individual is an important concept in self-perception that is responsible for improving the entrepreneur in behavioral precedents [27].

C Entrepreneurial Creativity

First we can conceptualized the idea of creativity as a driver behind entrepreneurship to explain economic growth through innovation. Creative ideas are many; however, prolific entrepreneurial ideas are rare and precious [28]. Moreover, the cognitive skills and approaches used by successful entrepreneurs In generating these precious ideas are unclear [19], although creativity is a prominent component of the entrepreneurial skills needed for starting a new business venture [30]. It has been argued that the base of knowledge domain in entrepreneurs is essential for performing creative transformational processes in generating creative new ideas [28]. In refuting this argument, it has been debated that base knowledge can also suppress creativity via bias of prevailing ideas and characteristics of existing recognizable ideals [31]. Creativity is related to identifying opportunities' causal effect on the establishment of a new business venture. As such, it is important to entrepreneurial intention or behavior [32]. Creativity allows an entrepreneur to act on business opportunities to gain a competitive advantage. It is the basis for innovation and business growth; it generally positively influences society [29]. Entrepreneurial creativity sources can arise as the interaction among the environment [31]. Creativity can be accelerated through past success and experience in different fields and through observation of experiences in a similar environment. This is in line with Social Cognitive Theory (SCT), where indirect learning is related to a thinking process of the cognitive model in which knowledge acquisition of an individual can be directly through observing others via social interactions, outside media influences, and experiences [24]. The fresh, innovative ideas often result in new entrepreneurial ventures [33]. Luckman [29] argued that individuals and high perceived creativity are very likely to indicate an entrepreneurial career choice. Hence, they relate creativity to self-employment motivation. Brijlal [15] has empirically investigated different types of creativity affecting potential entrepreneurs' entrepreneurial intentions. They reported that an individual's perceived creativity is significantly related to the likelihood of engagement in business venturing. Liñá and Fayolle, [25] analysis on new firm formation reported that a firm formation is significantly linked with creativity.

venture for the firm's business, survival, and growth. Kim-Soon et al. [13] stated that entrepreneurial intentions normally persist through the

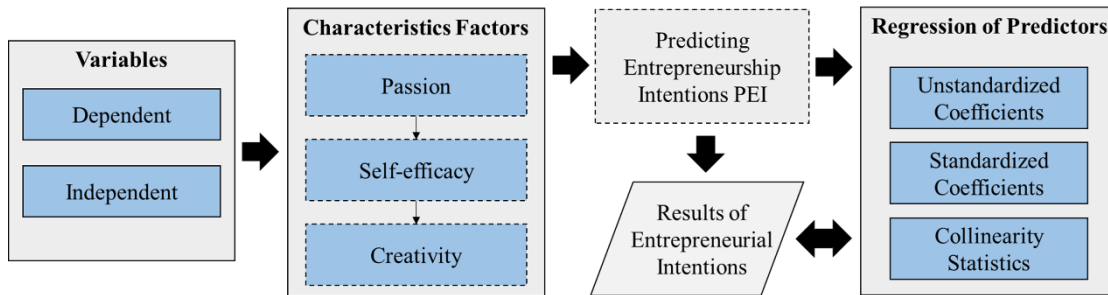


Fig.2: The proposed social entrepreneurship intention prediction model.

Hence, essentially, entrepreneurial creativity allows the creation and practice of appropriate innovative ideas in the establishment of a new business venture [34].

D Entrepreneurial Intention

Entrepreneurial intentions are the specific targeted behavior of a business venture's start-up [13, 35, 36]. It reflects the individual's awareness of a business venture's start-up and makes it a career choice alternative to regular employment [27]. The entrepreneurial intentions strength in the earlier steps may determine the future direction of the ventures to be created due to these intentions help subsequent development and achievement [37]. Yaghmaei et al. [10] proposed that entrepreneurial intentions are personal minds to develop a new value in existing businesses. It is one of the main features of entrepreneurial success because it is the dominant driver of personal behavior [16]. Entrepreneurial intentions are frequently determined as individuals wanting to have their own business or start a new business venture [13].

There are two main research approaches on entrepreneurial intention, one from social psychology and the other based on an area related to entrepreneurship [25]. The social psychology approach is essentially from works [22]. It researches the general human behaviors directed at the individual attitude of how our mind processes inputs to accomplish the actual task [38]. The latter approaches are those mainly from works on entrepreneurship [39].

The drive of entrepreneurial intentions in the initial steps may influence the future way of new business ventures since these intentions are the determinant of subsequent growth and success [10, 37]. Hence, the importance of knowing the drivers of the formation of entrepreneurial intentions as new businesses don't appear suddenly because the outcomes are based on the aimed intention as the deliberated choices made [10]. In Soni and Bakhru [37], entrepreneurial intentions are embedded in the mind to develop new business ideas and concepts and create a new business. It facilitates the formation of a new venture and is crucial to the successful

desire to own a business or run a new business. Kim-Soon et al. [36] echoed that the entrepreneurial intentions are persisted with the commitment to run the new business venture. Hence, entrepreneurial intentions are the intentional states of an individual's minds prior to the sequence of experience that promotes their consideration in the new business venture [35]. Entrepreneurial intention is among the key indications of entrepreneurial success as it is a central driver of personal behavior [16]. Many authors advocated that understanding actual factors influencing students' entrepreneurial intentions is essential for developing policies and programs to promote entrepreneurial behavior [13]. Liñán and Fayolle [25] explained that entrepreneurial intentions could be predicted using cognitive factors such as needs, habits, values, and beliefs. In [37] showed that entrepreneurial intentions could anticipate student participation in entrepreneurial activity and explained students' intention of starting a business venture.

2.2 Social Cognitive Theory (SCT)

The Social Cognitive Theory (SCT) was advanced by Thorgren and Wincent [2], in psychology, prescribed that the acquiring of portions of an individual's information may directly influence and be related to observe another individual through the context of social interactions, experiences, and outside media. The cognitive aspect is how the individual perceives thoughts spontaneously and influences their emotional state and behavioral reactions. The theory is based on the reciprocal cause-and-effect concept of dynamic social interaction among behaviors, personal factors, including cognition and the environment. Thorgren and Wincent [2] coined this theory as reciprocal determinism in which the globe and people's behavior are caused mutually. Human conduct is explained through the reciprocal interaction among environmental determinants and cognitive or behavioral. The social cognitive theory of revolves around the concepts of reinforcement and observation, emphasizing the internal mental processes of interaction of the individual with other individuals. The SCT

describes that observation and imitation dynamically influence the individual through experience, actions of other individuals, parents, educators, friends, and environmental factors. The observation and imitation act on the cognitive aspect to help the individual decide on imitating an observed behavior. It relied on the capacity of reflection, symbolization, and prevention of consequences through comparison, generalization, and auto-evaluation processes. Individuals' beliefs in their self-efficacy directed whether they reproduce an observed behavior.

Also Thorgren and Wincent [2] suggested that individuals' auto-system agrees them to control their opinions, moods, and activities. This auto-system is self-regulated, enabling the individual with their aptitude to exert the cognitive processes and actions and, as such, altering their environment. The application of the SCT to curriculum development and interactions with the student should be helpful to support entrepreneurial behavior among students. Therefore, the SCT is useful for developing the self-evaluation and the self-reinforcement constructs in the various environmental settings..

2.3 Predicting Entrepreneurship Intentions (PEI) Model

The characteristic of creativity being a crucial personal factor is frequently associated as relevant for entrepreneurial intention. It is connected to the identification of opportunities that assist in the result of establishing a novel business venture [32]. The existence of creativity can influence an individual to engage in entrepreneurship, actively seek new ideas, and resolve the problem with processes. Hence, creativity has the power to influence one's intentions to venture into a new business. Creativity thus facilitates and prepares the individual to engage in entrepreneurship. It is getting one's to enter occupations where they possess a certain degree of competency to support the individual to adjust and transform their contextual task interest to the business venture. Based on the concepts mentioned, they

self-efficacy, and creativity, which, along with the environmental features that affect the progress of entrepreneurial intentions, has been formulated conduct this research work. In this case, the independent variable is entrepreneurial characteristics comprising entrepreneurial self-efficacy, entrepreneurial passion, and creativity. While the entrepreneurial intention is the dependent variable. Figure 3 shows the hypotheses for this study.

As shown in Figure 3, H1, H1A, H1B, and H1C are positively related to entrepreneurial intentions. This is quantitative research. It is used to quantify behavior characteristics, attitudes, opinions, and related variables for generalization to the researched population. Information from subject context is translated to objectivity through quantification to enable the data to be interpreted and articulated into useful facts and reveal patterns in this research. In this case, survey questionnaires were distributed through an online method to collect data from the targeted respondents.

The population is the final year students from different faculties, which consist of 8 faculties in a Public University. Almost all the selected students have experienced and participated in the in-campus business activities. In this case, to some extent, they are exposed to entrepreneurial experiences. A structured random sampling procedure has been applied to collect the data from some students. The demography of students is from the various faculties, from the different races and gender, where they are being selected purposefully in a structured manner.

This research questionnaire is divided into two sections. The first Section consists of respondents' demographic profiles. The second Section consists of independent variables and dependent variables. The 5-Point Likert Scale (where 1-strongly disagree and 5-strongly agree) is used in the second Section. The sources of these respective measures for the dependent variables and independent on entrepreneurship are tabled in Table 1.

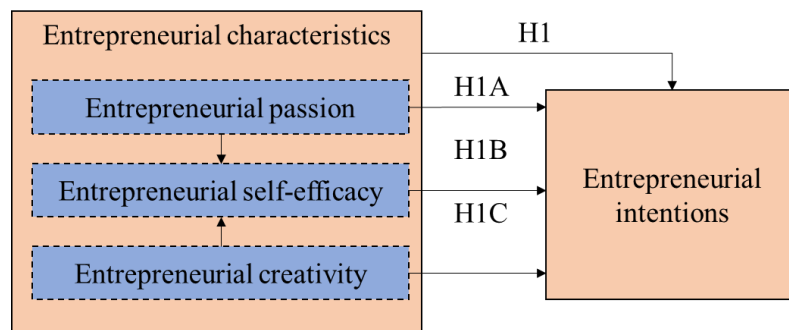


Fig. 3: Hypotheses of the PEI model.

conceptualize the SC1 in a particular task interest context by focusing on the characteristics of entrepreneurial passion,

Table 3 tabulates the central tendency level of entrepreneurial characteristics and intention to become an

Table 1. Source of research questions in the survey questionnaire [18, 40, 41, 42, 43, 44].

No	Questions
a)	Entrepreneurial Passion
1	Establishing a new company is exciting.
2	Nurturing a new business through its emerging success will be enjoyable.
3	Becoming a founder of a business is a very important part of who I want to be.
4	Owning a company will be energizing.
5	The best way to follow my passion is by pursuing entrepreneurship.
b)	Entrepreneurial Self-efficacy
1	I can start my own business
2	I have the knowledge needed to start a business.
3	I have the entrepreneurial skills to start a business.
4	I can resolve the problems in entrepreneurship.
5	I can decide to start and run a business.
c)	Entrepreneurial creativity
1	I usually prefer to try new activities that are not typical but not necessarily risky.
2	In general, I prefer to try a strong emphasis in projects on unique, one-of-a-kind methods rather than revisiting tried and true methods used before.
3	I prefer to try my own unique way when learning new things rather than doing it as everyone else does.
4	I favor experimentation and original approaches to problem-solving rather than using methods others generally use for solving their problem.
5	I usually come up with creative solutions to problems.
d)	Entrepreneurial Intention
1	I have a strong interest in starting a business someday.
2	My professional goal is to become an entrepreneur.
3	I will make every effort to manage my own firm.
4	I have enough potential for knowledge and skills to become an entrepreneur.
5	I prefer to be an entrepreneur rather than an employee in a company.

3 Results and Discussion

3.1 Results

All the 375 survey questionnaires that were distributed were returned and applied in the analysis. Table 2 shows the profile of the respondents. The Cronbach's Alpha results of the items for the entrepreneurship characteristics for passion, self-efficacy, creativity, and entrepreneurship intention are respectively 0.730, 0.804, 0.896, and 0.859.

Hence, all the variables are reliable for further analysis. Skewness values exceeding +/- 2.58 were indicative of a non-normal distribution [34]. Skewness tests showed that all the variables were not exceeding/less than 2.58. Thus, all variables are normally distributed.

entrepreneur. It is observed that all the entrepreneurial characteristics factors, that is, passion, self-efficacy and creativity, and intention to become an entrepreneur, are all rated at high levels. Table 4.0 indicates regression of the entrepreneurial passion, self-efficacy, and entrepreneurial creativity.

The SPSS software regression computation of Variance Inflation Factor (VIF) and tolerance assess whether factors analyzed are correlated to each other. In case of the VIF value exceeds 4.0 or less than 0.2, then there is a problem with each other [34]. In this case, the VIF values are 1.777, 2.285, and 2.122, with Tolerance values of 0.563, 0.438, and 0.471 respectively for entrepreneurial passion, self-efficacy, and creativity, which indicate that there is no issue with each other. Table 3 shows that entrepreneurial characteristics are

significantly related to entrepreneurial intentions. Thus, the main Hypothesis 1: Entrepreneurial

significant. $p < 0.001$ indicates that entrepreneurial passion is significantly and positively related to entrepreneurial

Table 2: The respondents' profile (N=375).

No.	Demographic	Categories	Frequency	Percentage (%)
1.	Gender	Male	169	45.1
		Female	206	54.9
2.	Age (years)	<20	39	10.4
		21 – 23	304	81.1
		24 – 26	32	8.5
3.	Race	Malay	201	53.6
		Chinese	144	38.4
		Indian	30	8.0
4.	Year of Study	1	34	9.1
		2	43	11.5
		3	182	48.5
		4	116	30.9
5.	Faculty	FKAAS	39	10.4
		FKEE	43	11.5
		FKMP	49	13.1
		FPTP	113	30.1
		FPTV	31	8.3
		FSKTM	32	8.5
		FAST	36	9.6
6.	Do you have work experience?	Yes	361	96.3
		No	14	3.7
7.	Have you ever participated in entrepreneurship activities at the UTHM?	Yes	336	89.6
		No	39	10.4
8.	Have your family owned a business?	Yes	100	26.7
		No	275	73.3

Table 3: The central tendency of entrepreneurial characteristics and Entrepreneurship Intention.

No.	Variable	Dimension	No. of Items	Mean	Std. Dev.	Level
1	Entrepreneurial Characteristics Factors	Passion	5	4.04	0.53	High
		Self-efficacy	5	3.73	0.60	High
		Creativity	5	5.03	0.55	High
2	Entrepreneurship Intention	Entrepreneur Intention	5	3.91	0.69	High

Central tendency level based on Likert Scale of 1 to 5, where 1.00-2.33 = Low; 2.34 - 3.66 = Medium; 3.67-5.00 = High [45].

features are positively related to entrepreneurial intentions, is supported. The three entrepreneurial features, entrepreneurial passion, self-efficacy, and creativity, explained 68.8% of entrepreneurial intention. The predictor entrepreneurial passion with $\beta = 0.432$, $t = 11.225$ and is

intention. The effect of entrepreneurial self-efficacy ($\beta = .326$, $t = 7.480$, $p < .001$) indicates that it is positively and significantly related to entrepreneurial intention. Finally, entrepreneurial creativity ($\beta = 0.190$, $t = 4.526$, $p < .001$) indicates that it is also positively and significantly related to

entrepreneurial intention. Hence, the Hypotheses H1A, H1B, and H1C, which respectively state that entrepreneurial passion, self-efficacy, and creativity are positively related to this study's entrepreneurial intentions, are all supported.

3.2 Discussion

This study has analyzed the relationships among three entrepreneurial characteristics, passions, self-efficacy, and creativity, with students' entrepreneurial intention to become an entrepreneur. A total of 375 duly completed questionnaires were collected from the identified students at a public university for the purpose of the study. They are the final-year students who will be joining the workforce soon. Almost 90% of them have participated in university entrepreneurship activities. These data were collected online by distributing questionnaires to all the targeted respondents. At the end of the survey, all the 375 targeted respondents answered the questionnaire, which gives a return rate of 100%. This current research revealed that the level of central tendency for all the means of variables for entrepreneurial characteristics and intention are all rated as high. The result is an indication of successful outcomes of this public university emphasizing entrepreneurship curriculum through embedding entrepreneurship courses as part of component to all the main academic programs offered and, in a way, has raised the profile of its graduate entrepreneurship.

The regression analyses show significant positive relationships among entrepreneurial passion, self-efficacy, and creativity with student entrepreneurial intentions in this study. Cardon et al. [3] exerted that an individual who experiences entrepreneurial passion has intense positive feelings related to the entrepreneurial activities they are involved in and a strong motivational drive to follow those feelings to become an entrepreneur. Biraglia and Kadile [18] reported that in the development of entrepreneurial intentions, passion could lead to better focus on creating new business, as such avoiding unnecessary distraction to unrelated contingencies or obstacles in the process [18]. An exploratory study by Nisula and Olander [43] reported that entrepreneurial passion might be important to develop start-up intentions in an individual and to support the process of exploring a business opportunity. Entrepreneurial passion manifests self-identity via access through intense positive feelings where it is experienced consciously and the involvement in entrepreneurship activities related to the individual roles [3]. Branzei and Zietsma [44] showed that passion is an enabler of positive illusions, a precursor of intention to engage in entrepreneurship. On the other hand, passion fosters confidence and competence within the individual intention's context [2]. Hatak et al. [17] supported the notion that a high level of entrepreneurial passion constitutes adequate precursors toward an individual's intention to become an entrepreneur.

This study found a strong positive relationship between self-efficacy and entrepreneurial intentions. This is in line with previous reports that individuals with higher entrepreneurial self-efficacy exhibit higher entrepreneurial intentions [18].

Higher degrees of entrepreneurial self-efficacy in the early stages of career development will have higher entrepreneurial intentions. This leads Farrukh et al. [45] to suggest that individuals with higher self-efficacy and higher intentions should get involved in entrepreneurship works at a later stage of their lives. Kim-Soon et al. [36] explained that a high self-efficacy contributes to an individual's higher commitment towards their intention to be an entrepreneur. Biraglia and Kadile [18] found that an individual must feel self-efficacious enough to pursue an entrepreneurial career. Entrepreneurship education could enhance students' knowledge and experience to raise students' self-efficacy as this will eventually lead to the enhancement of their entrepreneurial intention. In this case, university entrepreneurship education should focus on a curriculum strategy embedding entrepreneurial characteristics of experiential self-efficacy learning to nurture students' self-efficacy. The third entrepreneurial characteristic of creativity in this research also found that creativity and entrepreneurial intention to become an entrepreneur. Previous works have also provided evidence that creativity is an important antecedent of entrepreneurial intention or behavior, associated with entrepreneurship opportunities identification in new business ventures [18]. Also the previous works reported that the higher the level of creativity, the stronger the entrepreneurial intentions [46]; [47].

An individual who exhibits a higher level of creativity would exhibit a greater likelihood of developing intentions to start a business. For this reason, the university that supports entrepreneurship education should strategize a curriculum that provides an opportunity for experiential learning on entrepreneurship creativity. Overall, the R² of three entrepreneurship characteristics comprising entrepreneurial passion, self-efficacy, and creativity for predicting entrepreneurship intentions to become an entrepreneur is 0.688. It is significant at $p < 0.001$, which shows strong explanatory power. Kim-Soon et al. [13], using the Theory of Planned Behavior model, reported 0.350 and 0.420, respectively. The R² value using the Shapiro-Krueger model is 0.408. The construct in entrepreneurial modeling is specific in its context, and it gives a high degree of predictive power on the outcomes when focusing on a specific set of characteristics or activities.

3.3 Research Implications and Limitations

This research has used the Social Cognitive Theory with self-efficacy to formulate a model to predict entrepreneurship intentions using entrepreneurship characteristics of passion, self-efficacy, and creativity. This research supports Kim-Soon et al. [13] continued to call for authorities to identify youths suitable for developing and nurturing as would-be entrepreneurs. The entrepreneurs have further encouraged authorities, policy, and decision-

positively related to the students’ entrepreneurial intention. The regression analyses show that the three factors

Table 4: Regression of predictors of entrepreneurial intention.

	R	Adjusted R ²	R ² change	F-change	Sig F-change		
	.831 ^a	.688	.691	276.164	.000		
Coefficients							
Model	Unstandardized Coefficients		Standardized Coefficients	Collinearity Statistics		t	Sig.
	B	Error	Beta	Tolerance	VIF		
(Constant)	-.736	.169	-	-	-	-4.365	.000
Entrepreneurial Passion	.561	.050	.432	.563	1.777	11.225	.000
Entrepreneurial Self-Efficacy	.380	.051	.326	.438	2.285	7.480	.000
Entrepreneurial Creativity	.241	.053	.190	.471	2.122	4.526	.000

makers to emphasize the enhancement of entrepreneurship characteristics of passion, self-efficacy, and creativity in the development of their entrepreneurship programs. This implies that institutions offering entrepreneurship programs may modify their education practices, re-orientate students and academia to seek out entrepreneurship opportunities through better-defined personal career development elements.

The sample of this research work entirely relied on final year students from a public university who are going to decide on their immediate career path upon graduation. The students are from the eight faculties. The objectives of the study are to investigate whether entrepreneurship characteristics comprising passion, self-efficacy, and creativity affect entrepreneurship intentions for the students to be entrepreneurs. In this case, this study does not predict the entrepreneurship intentions of non-student populations. As such, these results may not be generalizable to other university and non-student populations.

4 Conclusions

This research was done to determine whether a relationship among entrepreneurial passion affects students' entrepreneurial intention to become an entrepreneur; the relationship among entrepreneurial self-efficacy affects students' entrepreneurial intention to be an entrepreneur, and the relationship among entrepreneurial creativity affects students' entrepreneurial intention to become an entrepreneur. The study's major objective lies in the proposed social entrepreneurship intention prediction model and the implemented case study. It was found that the entrepreneurial characteristics are significantly and

entrepreneurial characteristics comprising passion, self-efficacy, and entrepreneurial creativity are all significantly and positively related to students’ entrepreneurial intention of the final year students at this public university under this research to become entrepreneurs. These findings imply that the research model can be used as an assessment tool to select students with the greater entrepreneurial intention to engage them in entrepreneurship, orientating the university's entrepreneurship course and activities. It should be based on students' characteristics of passion, self-efficacy, and creativity to the market sector toward imparting the appropriate entrepreneurial knowledge and skills.

Funding: The authors express appreciation to the Gulf University in Bahrain for the support for this research paper.

Acknowledgments: The authors would like to thank the Center of Intelligent and Autonomous Systems (CIAS) at the Faculty of Computer Science and Information Technology (FSKTM), Universiti Tun Hussein Onn Malaysia (UTHM) for supporting this work.

Conflicts of Interest: The authors declare that they have no conflict of interest to be addressed related to this work.

Data Availability. The used dataset of this research is available online and has a proper citation within the paper contents.

References

[1] A. Závodská, V. Šramová, V. Konečný, Developing Entrepreneurship Education: Case of the University of Žilina. In: Uden L., Liberona D., Sanchez G., Rodríguez-González S. (eds) Learning Technology for Education Challenges. Communications in Computer and Information Science, Vol. 1011. (2019). Springer, Cham.

- [2] S. Thorgren, and J. Wincent, Passion and Habitual Entrepreneurship, *International Small Business Journal.*, **33(2)**, 216–227, 2015.
- [3] M.S. Cardon, D.A. Gregoire, C.E. Stevens, and P.C. Patel, Measuring Entrepreneurial Passion: Conceptual Foundations and Scale Validation, *Journal of Business Venturing.*, **28(3)**, 373–396. (2013).
- [4] M. Edwards-Schachter, A. García-Granero, M. Sánchez-Barrioluengo, H. Quesada-Pineda, and N. Amara, Disentangling competences: Interrelationships on creativity, innovation and entrepreneurship, *Thinking Skills and Creativity.*, **16**, 27-39, 2015. (2015).
- [5] G.D. Gyamfi, Evaluating Entrepreneurship Education as a Tool for Economic Growth: The Ghanaian Experience, *British Journal of Education, Society & Behavioural Science.*, **4(3)**, 318-335. (2014).
- [6] N. Kim-Soon, A.R. Ahmad, and N.N. Ibrahim, Understanding the Motivation that Shapes Entrepreneurship Career Intention. In book: *Entrepreneurship - Development Tendencies and Empirical Approach*, Publisher - Intechopen, Chapter., **15**, 292-308, 2018.
- [7] The Malay Mail. Minister: Almost 60 pc of graduates remain unemployed a year after graduation, 15 Oct 2019. <https://www.malaymail.com/news/malaysia/2019/10/15/minister-almost-60pc-of-graduates-remain-unemployed-a-year-after-graduation/1800574>
- [8] W. C. Chai, & , S. A. Mostafa, Bright Kids Tuition Centre Management Information System. *Applied Information Technology And Computer Science.*, **2(2)**, 937-957. (2021).
- [9] M.G. Olaiya, The Impact of Entrepreneurship Educations on Entrepreneurial Capacity and Self-Employment, Universiti Tun Hussein Onn Malaysia Doctor of Philosophy in Real Estate and Facilities Management Unpublished Thesis. (2015).
- [10] O. Yaghmaei, I. Ghasemi, and S. Assadian, Effects of Influential Factors on Entrepreneurial Intention of Postgraduate Students in Malaysia. *International Letters of Social and Humanistic Sciences*, 51(2000), 115–124. (2015).
- [11] J.K. Osiri, K. Kungu, and M. Dilbeck, Predictors of entrepreneurial intentions and social entrepreneurial intentions: A look at proactive personality, self-efficacy and creativity. *Journal of Business Diversity.*, **19(1)**, 42-52, 2019.
- [12] L.W. Ni, L.B. Ping, L.L. Ying, and N.H.W. Jia, Entrepreneurial Intention: a Study among Students of Higher Learning Institution. *Entrepreneurial Intention*, 12(August), 181. (2012).
- [13] N. Kim-Soon, A.R. Ahmad, A.Z.M. Saberi, and H.H. Tat, Discriminate analyses of motivators and obstacles on youth entrepreneurial intention, *Asian Social Science.*, **9(17)**, 53-57, 2013.
- [14] A. Zeb, Determinants of successful women entrepreneurship in Pakistan. *Abasyn University Journal of Social Sciences.*, **11(1)**, 2018.
- [15] P. Brijlal, Entrepreneurial perceptions and knowledge: A survey of final year university students. *African Journal of Business Management.*, **5(3)**, 818-825, 2011.
- [16] I. Ajzen, The theory of planned behavior: Frequently asked questions. *Human Behavior and Emerging Technologies.*, **2(4)**, 314-324, 2020.
- [17] I. Hatak, M. Chang, R. Harms, & J. Wiklund, ADHD symptoms, entrepreneurial passion, and entrepreneurial performance. *Small business economics*, 1-21. (2020).
- [18] A. Biraglia, and V. Kadile, The role of entrepreneurial passion and creativity in developing entrepreneurial intentions: Insights from American homebrewers. *Journal of Small Business Management.*, **55 (1)**, 170-188, 2017.
- [19] Z. A. L. Pihie, & A. Bagheri, Self-efficacy and entrepreneurial intention: The mediation effect of self-regulation. *Vocations and Learning*, 6(3), 385-401. (2013).
- [20] J.R. Baum, E.A. Locke, and K.G. Smith, A multi-dimensional model of venture growth. *Academy of Management Journal.*, **44(2)**, 292–303, 2001.
- [21] P. Stenholm, and M. S. Nielsen, Emotional support and passion matters: How emotional support impacts survival through entrepreneurial passion. *Frontiers of Entrepreneurship Research.*, **35(5)**, 12, 2015.
- [22] Baidi and Suyatno. (2018). Effect of entrepreneurship education, self-efficacy and need for achievement toward student's entrepreneurship intention: Case study in FEBI, IAIN Surakarta, Indonesia. *Journal of Entrepreneurship Education.*, **21(2)**, 1-16, 2018.
- [23] N. Younesi, * WINNER* Stress Resistance As a Potential Mediator for the Effect of Self-Efficacy on Depression. *Proceedings of Student Research and Creative Inquiry Day*, 5. (2021).
- [24] J. Van Dijck, & T. Poell, Understanding social media logic. *Media and communication.*, **1(1)**, 2-14, 2013.
- [25] F. Liñán and A. Fayolle, (2015). A systematic literature review on entrepreneurial intentions: citation, thematic analyses, and research agenda, *International Entrepreneurship and Management Journal.*, **11(4)**, 907-933.
- [26] K. Travis, and E. Freeman, Predicting entrepreneurial intentions: Incremental validity of proactive personality and entrepreneurial self-efficacy as a moderator. *Journal of Entrepreneurship Education.*, **20(1)**, 45-57, 2017.
- [27] F. Fesharaki, Entrepreneurial Passion, Self-efficacy, and Spiritual Intelligence among Iranian SME Owner–Managers, *Psychol Stud*.
- [28] U. Witt, How evolutionary is Schumpeter's theory of economic development, In *Rethinking Economic Evolution*. Edward Elgar Publishing. (2016).
- [29] S. Luckman, Craft entrepreneurialism and sustainable scale: Resistance to and disavowal of the creative industries as champions of capitalist growth. *Cultural Trends.*, **27(5)**, 313-326, 2018.
- [30] R. Cannon, The Factors in the Artist-Label Relationship That Influence Creative and Commercial Success: An Initial Exploration. (2019).
- [31] M. A. Runco, *Creativity: Theories and themes: Research, development, and practice*. Elsevier. (2014).

- [32] J. E Bono, T. M. Glomb, W. Shen, E. Kim, & A. J. Koch. Building positive resources: Effects of positive events and positive reflection on work stress and health. *Academy of Management Journal.*, **56(6)**, 1601-1627, 2013.
- [33] A. Dhaliwal, Role of entrepreneurship in economic development. *International Journal of scientific research and management.*, **4(6)**, 2016.
- [34] S. Khairuddin, S. A. Haider, S. Tehseen, & S. Iqbal, Creativity in construction project through entrepreneurial leadership, innovative ambidexterity and collaborative culture. *Advances in Mathematics: Scientific Journal.*, **10(3)**, 1529-1546, 2021.
- [35] N. Kim-Soon, S. A. Mostafa, M. Nurunnabi, L. H. Chin, N. M. Kumar, R. R. Ali, & U. Subramaniam, Quality management practices of food manufacturers: a comparative study between small, medium and large companies in Malaysia. *Sustainability.*, **12(18)**, 7725, 2020.
- [36] N. Kim-Soon, A. I. Abdulmaged, S. A. Mostafa, M. A. Mohammed, F. A. Musbah, R. R. Ali, & O. Geman, "A framework for analyzing the relationships between cancer patient satisfaction, nurse care, patient attitude, and nurse attitude in healthcare systems. *Journal of Ambient Intelligence and Humanized Computing.*, 1-18, 2021.
- [37] A. Soni, & K. M. Bakhru, *Personality Traits and Entrepreneurial Intention Among Chartered.* (2021).
- [38] Y. Shahab, Y. Chengang, A.D. Arbizu, and, M.J. Haider. Entrepreneurial self-efficacy and intention: do entrepreneurial creativity and education matter? *International Journal of Entrepreneurial Behavior Research*, **25(2)**, 259-280, 2019.
- [39] B. Uysal, and S. Güney, Entrepreneurial Intentions of Turkish Business Students: An Exploration Using Shapero's Model. *Journal of Administrative Sciences Cilt.*, **14(28)**, 27-47, 2016.
- [40] A. H. Firmansyah, E. T. Djatmika, & A. Hermawan, The Effect of Adversity Quotient and Entrepreneurial Self-Efficacy on Entrepreneurial Intention through Entrepreneurial Attitude. *Journal of Business and Management.*, **18(5)**, 45-55, 2016.
- [41] D.L. Bolton, and M.D. Lane, Individual entrepreneurial orientation: development of a measurement instrument. *Education + Training.*, **54(2/3)**, 219-233. (2012).
- [42] N. Kim-Soon, A. R. Ahmad, and N. N. Ibrahim, Entrepreneurial motivation and entrepreneurship career intention: case at a Malaysian Public University. *Crafting Global Competitive Economics: 2020 Vision Strategic Planning & Smart Implementation.*, 1001-1011, 2014.
- [43] A. M. Nisula, & H. Olander, The role of creativity in knowledge workers' entrepreneurial intentions: The moderating effect of general self-efficacy. *Journal of Small Business Management.*, 1-27, 2021.
- [44] O. Branzei, and C. Zietsma, Entrepreneurial love: The enabling functions of positive illusions in venturing, Paper presented at the Babson-Kauffman Entrepreneurial Research Conference, Wellesley, MA. (2003).
- [45] M. Farrukh, A. A. Khan, M. S. Khan, S. R. Ramzani, & B. S. A. Soladoye, Entrepreneurial intentions: the role of family factors, personality traits and self-efficacy. *World Journal of Entrepreneurship, Management and Sustainable Development.* (2017).
- [46] B. A. Khalaf, N. A. M. Alhammadi, S. A. Mostafa, A. A. Ramli, H. Mahdin, S. Kasim, ... & M. S. Jawad., Development of a Multi-Agent Approach for a Smart Library Management System. In 2021 4th International Symposium on Agents, Multi-Agent Systems and Robotics (ISAMSR) (pp. 64-69). IEEE, (2021).
- [47] G. Zaman, H. Mahdin, K. Hussain, J. Abawajy & S. A. Mostafa. An Ontological Framework for Information Extraction from Diverse Scientific Sources. *IEEE access.*, **9**, 42111-42124, 2021.