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Article

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Leveling Entrepreneurial Skills of Vocational Secondary School Students in Indonesia: Impact of Demographic Characteristics

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Abstract

Context: This article aims to determine the entrepreneurial skills of Vocational Secondary School students after the implementation of a new curriculum that promotes entrepreneurship courses in Indonesia. The authors believe that after taking such courses, students will be able to generate entrepreneurial skills. This study also explores the effect of demographic characteristics on students' entrepreneurship skills level, especially with respect to gender, school, and family.

Approach: This study used a quantitative approach, with data collected through a questionnaire with five variables, that is, leadership, reflective communication, risk-taking, creatively innovative, and future orientation. Data were collected from 463 students who had taken entrepreneurship subjects that were chosen randomly. Data were analyzed using linear regression.

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Findings: 52.22% of our respondents had a moderate score for entrepreneurial skills, this is not in accordance with the expected learning outcomes, there are students who have entrepreneurial skills at a high level. With respect to creative innovation, in particular, a majority (53.15%) had a low score and 4.1% had a very low score. Moreover, family had a significant and positive effect on all dependent variables (leadership scores, reflective communication scores, risk-taking scores, creatively innovative scores, future orientation scores, and overall entrepreneurial skills scores). School demographic characteristics had a significant positive effect on the value of future orientation. These results indicate that private schools tend to strengthen the level of reflective communicative scores.

Conclusion: The entrepreneurial skills of most vocational students are middling. This indicates that entrepreneurship subjects at Vocational Secondary schools have not been able to achieve their expected learning outcomes or help students develop entrepreneurial skills at a high level. Thus, further research is needed to determine the causes behind the problem. Schools are expected to be able to establish harmonious relationships by involving families to support the improvement of an informal learning environment that supports the mastery of entrepreneurial skills of vocational students.

Keywords: Entrepreneurial Skills, Entrepreneurship Subjects, Vocational Secondary School, VSS, Demographic Characteristics, Vocational Education and Training, VET

1 Introduction

As recently as 2018, the entrepreneurial skills of Indonesians were still quite limited. Based on data from The Global Entrepreneurship Index (GEI), an institution that measures the quality of a country's entrepreneurial ecosystem on a global scale, Indonesians achieved a low GEI score of 21%, ranking them 94th out of the 137 countries in the world measured. The country with the highest ranking is the United States with a score of 83.6% (Global Entrepreneurship Index, 2019). In Southeast Asia, Indonesia was only able to outperform Myanmar (13.6%). The solution to bridging this widening gap is to develop appropriate entrepreneurial skills in your population. Entrepreneurs have the greatest opportunity for a share of the job market in the 21st century (Bongomin et al., 2018; Hameed & Irfan, 2019; Momani, 2017; Valliere & Peterson, 2009; Wiens & Jackson, 2015).

One strategy for increasing entrepreneurial skills is through education (Kirkley, 2017; Mwasalwiba, 2010; Norberg, 2016). More attention should be paid to schools to help students develop skills that are important for improving their lives, especially for work and entrepreneurship (The United Nations Educational, Scientific, and Cultural Organization [UNESCO], 2017). Education that provides opportunities for students to learn by doing will be more meaningful, in improving both soft skills (including entrepreneurial skills) and hard

skills. Vocational Secondary Schools (VSS) are one type of school in Indonesia with graduates who are ready to work and possess entrepreneurial skills.

The attractiveness of VSS is increased by the variety of vocational majors that students can choose from and faster employment opportunities compared to common Senior Secondary School (SSS) graduates (Johnson & Stokes, 2002). However, the increase in the enrolment rate in VSS has not been matched by an increase in the number of employment opportunities after graduation yet. In Indonesia, there are currently 14,301 units of VSS, where 25.33% are public and 74.67% are private. According to the database of Directorate General of Early Years, Basic, and Secondary Educations, the total number of public and private VSS students is more than 14000, divided into nine areas of expertise, 49 expertise programs, and 146 skill competencies (Directorate General of Early Years, Basic, and Secondary Educations, 2022).

Yet, the employment rate of VSS graduates is still below 50% of all graduates (Mutaqin et al., 2016). This adds to the high number of unemployed people in Indonesia, with the unemployment rates of VSS students consistently dominating the unemployment rates of students attaining other levels of education. According to the Statistics Indonesia (Badan Pusat Statistik), the unemployment rate of VSS graduates was 8.49% of the total workforce of 137.91 million people (Badan Pusat Statistik [BPS], 2020). This is higher than other educational level graduates. Government support and policies are needed to maximize the output of VSS graduates. Approximately 14.85 million (11.56%) VSS graduates are working. This is much lower than the 24.34 million people (18.95%) that represent the total working population. From a policy perspective, the government has issued a regulation to revitalize VSS aimed at improving the quality and competitiveness of the country's human resources. The regulation is aimed at increasing the competitiveness and independence of students at vocational schools so that the human resources of Indonesia are either seeking or creating jobs. Between 2030 and 2040, the population of people of productive age is predicted to reach 64% of the total population, which in turn is projected to be 297 million people (The Ministry of National Development Planning [Bappenas], 2017). For this reason, entrepreneurship at VSS is one of the educational programs that must be carried out to equip the predicted growth in the number of people.

Hisrich (2005) stated the importance of entrepreneurship as a dynamic process of creating additional wealth by providing value products or services. The product or service may or may not be new or unique, but the value must somehow be imbibed by the entrepreneur by receiving and locating the necessary skills and resources. Entrepreneurship is the dynamic, institutionally embedded interaction between entrepreneurial attitudes, entrepreneurial abilities, and entrepreneurial aspirations of individuals, which drives the allocation of resources through the creation and operation of new ventures (Global Entrepreneurship Index [GEI] 2019).

An individual who has a high level of entrepreneurial skills will be able to take advantage of the opportunities around them very well. There are several advantages to having well-developed entrepreneurial skills: (1) Generating freedom and opportunities to control one's destiny; (2) Providing opportunities to implement changes; (3) Providing opportunities to reach one's optimum potential; (4) Having the opportunity to make a profit; (5) Having the opportunity to play an active role; (6) Having the opportunity to do something that one is passionate about (Zimmerer et al., 2008). Furthermore, Isidro (2012) states that there are 10 benefits of having entrepreneurial skills:

1. The freedom to pursue your vision,
2. The control and flexibility you have over your own time,
3. The opportunity to learn and gain knowledge,
4. The highs and lows of self-employment,
5. The sense of pride and fulfilment in accomplishing things,
6. The confidence you gain in knowing that you can do it,
7. Potential earnings exceed a salaried employee,
8. Business owner reaps the full rewards,
9. Each new day is a challenge,
10. The chance to share your learning.

The Indonesian government has begun making improvements to entrepreneurial teaching patterns in VSS, by increasing the number of learning hours for subjects directly related to the mastery of entrepreneurial skills. The expected achievement is that students possess a high level of entrepreneurial skills. It is necessary to assess students' entrepreneurial skills after they study the relevant subjects. Furthermore, this study also attempts to reveal the effect of demographic characteristics on the level of students' entrepreneurial skills. To that end, the research questions that must be answered are:

1. What is the entrepreneurial skill level of most VSS students?
2. Do demographic characteristics affect students' entrepreneurship skill levels?

2 Theoretical Framework

This part reviews the concepts and measurement issues of entrepreneurial skills, entrepreneurial learning, and learning evaluation. Moreover, this part also reviews the previous empirical evidence on demographic characteristics' impact on entrepreneurial skills.

2.1 Entrepreneurial Skills

To achieve the desired level of entrepreneurship, individuals should be directed towards developing entrepreneurial practices in appropriate educational programs. European Commission (2008) states that entrepreneurial skills education significantly improves entrepreneurial behaviors. A study by Trevelyan (2009) reveals that for new entrepreneurs, their attitude towards work is important for differentiating searching strategies, the extent of organizing activity, and the initial operating status of their businesses. The more positively a person thinks about themselves and their career choices, the more likely he/she is to use a broad searching strategy to enhance the process of opportunity recognition. Kruger and Steyn (2021) propose a conceptual model that reviews business competencies and functions for entrepreneurs coping with the transformation of the traditional era into the industrial 4.0. These entrepreneurial competencies include innovation, creativity, the integration of business and technology skills, leadership and communication, networking, and sales.

Several studies have been conducted to identify the character or personality of entrepreneurs (entrepreneurial skills). Raine and Pandya (2019) state that indicators for the formation of entrepreneurial skills lead to three key factors for entrepreneurial success: Curiosity, creativity, and commitment. McClelland (1976) describes the entrepreneur's profile as (1) having a desire for responsibility; (2) preferring medium risk; (3) believing in his/her ability to succeed; (4) innately desiring feedback; (5) having high energy levels; (6) being future-orientated; (7) having organizational skills; and (8) assessing performance as being more important than money. In addition to these eight criteria, Zimmerer et al. (2008) suggest four additional entrepreneurial characteristics: (1) High commitment; (2) tolerance of ambiguity; (3) flexibility; and (4) tenacity. Other experts (Sanchez et al., 2020) simplify the indicators of entrepreneurial skills into five characteristics: (1) Need for achievement; (2) desire for autonomy, (3) creativity and opportunism; (4) risk-taking abilities, and (5) locus of control.

Furthermore, Schelfhout et al. (2016) formulated entrepreneurial skill instruments by considering 10 variables: (1) Performance orientation, (2) creativity, (3) taking the initiative, (4) taking calculated risk, (5) perseverance, (6) leadership, (7) communication skills, (8) planning and organizing, (9) collaboration, and (10) reflection. These instruments can be applied to self-evaluation, peer evaluation, and joint evaluation; they can also be used to presume students' initial skills at the beginning of the learning process.

Entrepreneurial skills are an essential aspect of learning, which determine students' attitudes. In addition, the development of entrepreneurship skills is crucial for supporting students who are motivated to be entrepreneurs. In this sense, entrepreneurial skills can be learned and not controlled by indelible personal characteristics or entrepreneurial education (Hattab, 2014; Ibrahim & Lucky, 2014). There are several characteristics of entrepreneurial skills that are levelled up through education. These characteristics form the basis of economic, social, and cultural entrepreneurship (Gontareva et al., 2018; Krasniqi, 2018; Madgerova & Kyurova, 2019).

Entrepreneurial skills affect students' entrepreneurial cognition in starting new businesses, in terms of identifying the most effective entrepreneurial skills in the education business (risk-taking, critical thinking, problem-solving, and innovation) that lead students to become self-employed. In line with Badawi et al. (2019), the influence of entrepreneurial skills in developing entrepreneurial attitudes through insights into relevant business curricula provides us with more case studies on risk analysis and the cultivation of greater thinking and problem-solving skills, especially through simulations relevant to real-life cases. Students who wish to be entrepreneurs should be able to develop innovative plans such that after graduating they can develop their own businesses; in this case, VSS function as business incubator.

This study measured entrepreneurial skills based on the following five aspects representing the comprehensive measurement of entrepreneurial skills: Leadership, reflective communication, risk taking, creative innovation, and future orientation.

Leadership is the first aspect of entrepreneurial skills, and its essence is reflected in how one can influence others to understand and agree on what needs to be done to achieve common goals. Leitch and Volery (2017) argued that upon closer inspection, the entrepreneur is a leader par excellence capable of identifying opportunities from various stakeholders and also taking advantage of said opportunities to create value. This makes leadership an important aspect of entrepreneurship.

The second aspect of entrepreneurial skills is reflective communication, which is a set of abilities that includes being able to explain, discuss, and market goods or services through interactions (Abbasi et al., 2011). Furthermore, Abbasi et al. (2011) stated that the importance of communication skills precedes that of social skills because the former includes important affective, cognitive, and behavioral aspects. In our study, the reflective communication indicators included (1) warmth in associating, (2) being flexible/adaptive, (3) being tolerant/cooperative, (4) ability to influence others, (5) willingness and ability to self-assess, (6) feeling free and safe, and (7) willingness to improve (receiving feedback).

The third aspect of entrepreneurial skills is risk taking, which is the act or fact of doing something that involves danger or risk to achieve a goal. Petrakis and Katsaiti (2014) distinguished the following four combinations of time orientation and risk predisposition:

Short-term, low-risk behavior; long-term, low-risk behavior; short-term, high-risk behavior; and long-term, high-risk behavior. Entrepreneurs may vary in their approach to risk taking.

The fourth aspect of entrepreneurial skills is creative innovation, which plays an important role in entrepreneurial success (Kabukcu, 2015). Entrepreneurship is often considered to be inseparable from creative innovation, which manifests in the act of starting and running a business (Baldacchino, 2009). Therefore, the value of creative innovation lies in providing an opening for astute entrepreneurship and actively seeking opportunities to do new things in extraordinary ways (Okpara, 2007).

The fifth aspect of entrepreneurial skills is future orientation. Petrakis and Katsaiti (2014) stated that entrepreneurial activities oriented toward innovation are developed by individuals with high levels of the Distant-Future Orientation axis. Entrepreneurs must be directed toward the future so that they are more committed to the activities they undertake.

2.2 Entrepreneurial Learning

Cosenz and Noto (2018) stated that entrepreneurship learning can be done with a start-up business so that students can learn via doing. The experiences gained during entrepreneurial learning can have a positive effect on determining students' entrepreneurial intentions and entrepreneurial mindset (Ahmed et al., 2020; Handayati et al., 2020).

Furthermore, the new curriculum in Indonesia has a mandate to teach an entrepreneurship subject from the elementary school level up to the level of higher education, including at VSS. The first change in the VSS curriculum was the number of teaching hours of an entrepreneurship subject, which increased to up to 524 hours. The second is that the entrepreneurship subject moves to become one of the subjects in the Productive Subjects group, so that it becomes one of the main subjects that support the skills of vocational school graduates. Thus entrepreneurial subjects in productive subject groups must carry out practical learning greater than theory. Students who study in vocational schools set a higher value on practical knowledge compared to theoretical knowledge (Ferm, 2021). The new curriculum ensures that the entrepreneurial subject is taught in a predominantly practice-oriented manner rather than as theoretical knowledge. Learning entrepreneurship by practice provides a lot of enriching experiences for students. Failure or success in attempting entrepreneurship is a valuable experience in itself; an important lesson for students (Liu et al., 2019).

Entrepreneurship education must be fully incorporated into the secondary school curriculum as a core course and not just as a crosscutting concept; the design has to be fully functional (Boehm, 2020; Charity et al., 2017). Thus, entrepreneurship education should effectively support students in becoming entrepreneurs, job creators, and independent individuals through proper training, including courses, seminars, and workshops.

The potential for improving the learning process can be enhanced by attractive, motivating, and effective media, which create favorable situations between students and teachers (Almeida, 2017). This design can generate problem-solving skills and stimulate reasoning that results in core learning competencies. In entrepreneurship, these elements are very relevant because they involve multidisciplinary, creative, explorative, and argumentative thinking skills, which provide a broad understanding of business dynamics, stimulate innovative ideas, and encourage and prepare students to be able to establish independent jobs as well as create new jobs. This is in line with findings in the extant literature that claim that entrepreneurial skills are related to the company creation process (Adeyemo, 2009; Kuratko, 2016; Levie et al., 2010; Liñán, 2008).

It takes students' hard and soft skills, mediated by their personalities, attitudes, and behaviors to be successful entrepreneurs (Ayuningtyas et al., 2015; Barnawi, 2012). Along with soft skills, students should be prepared with reliable entrepreneurial skills. Entrepreneurial skills develop and increase entrepreneurialism in students, while schools deliver graduates who have great concern for society, courage, and independence with the necessary ability and skills when entering employment. Based on this reasoning, VSS must pay quality attention to their students, not only providing knowledge and skills according to the student's talents but trusting them to get involved in real working experiences so that their potential evolves in synchrony as well.

2.3 Learning Evaluation

Stufflebeam and Coryn (2014, p. 14) say that evaluation is "the systematic process of delineating, obtaining, reporting, and applying descriptive and judgmental information about some object's merit, worth, probity, feasibility, safety, significance, and/or equity". Evaluation is a systematic process that describes, obtains, reports, and applies descriptive information and assessments that are useful as the basis of decision-making. Fitzpatrick et al. (2011) state that evaluation is the process of looking for something valuable, i.e., in the form of information about a particular program, production, or alternative procedure(s). They also mention that evaluation is not something new when one becomes an entrepreneur; it is common throughout life. In line with two experts, Bloom (1971) gives his opinion on evaluation; evaluation is the collection of facts that are systematically designed to determine whether there has been a change in the students or not, and to determine the scope of effect in the students' personalities. In general, evaluation aims at exploring the possibility to acquire improvements in a business and, in turn, to further advance the desired goals. In other words, the main purpose of an evaluation is to improve a program or action in the future.

The evaluation that is the focus of this study concerns results (outcome) and comprises two elements: Outcome and impact evaluation (Chen, 1996). Evaluation of problem-based

learning will be more meaningful if it is carried out using mixed techniques (quantitative and qualitative) on observations and questionnaires (Al-Kloub et al., 2014; Byers et al., 2018).

The scope of learning evaluation comprises three elements: Cognitive, affective, and psychomotor (Febriana, 2019). The cognitive feature comprises six levels of ability: Knowledge, understanding, application, analysis, synthesis, and evaluation. The affective element has four levels: Willingness to accept, willingness to respond, assessment, and organization. The psychomotor feature represents the students' ability to exert their bodies and their parts, starting from the simplest movements and advancing to the most difficult ones. There are several verbs to assess psychomotor learning, which are categorized into three groups: (1) Showing movement (muscular or motor skill); (2) repairing, compiling, cleaning, shifting, moving, and shaping (manipulating materials or objects), and (3) observing, applying, connecting (neuromuscular coordination). Entrepreneurial skills have all three elements of evaluation: Cognitive, affective, and psychomotor.

Widoyoko (2019) describes learning outcomes with a slightly different approach. The results of the learning process are divided into two kinds: Output and outcome. Learning output is a short-term learning outcome, which is further divided into two types: Hard skills and soft skills. Hard skills are in turn divided into academic skills and vocational skills. Soft skills are required to achieve a successful life in society. Therefore, soft skills are also divided into two elements: Personal skills and social skills. The variety of student skills as a result of this learning is presented in the following chart.

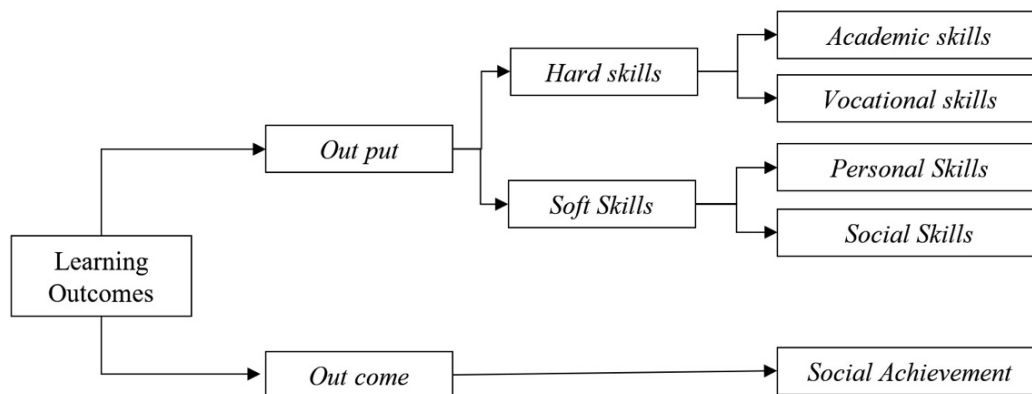


Figure 1: Learning Outcome Classification Chart (Widoyoko, 2019, p. 29)

2.4 Demographic Characteristics and Entrepreneurial Skills

Several factors affect the level of entrepreneurial skills, including financial conditions (Tan, 1999), motivation (Stahl et al., 2002), and the country's governmental policies (Denanyoh et al., 2015). Moreover, there is a group of different demographic characteristics that determine the level of entrepreneurial skills (Karimi et al., 2017; Ozyilmaz, 2011). According to Karimi et al. (2017), there are specific demographic characteristics that have been found to correlate with entrepreneurial intentions and skills. A group of studies shows that several demographic characteristics thought to be the best predictors of entrepreneurial skills and behavior include entrepreneurs' sex, age, origin, educational level, and previous work experience (Brockhaus & Horwitz, 1986; Talaş et al., 2013).

For instance, research conducted by DeTienne and Chandler (2007) pointed out that males and females possess specific elements of human capital that they use differentially to identify business opportunities. However, there was no change in the innovativeness of the opportunities they identified. Devine (1994) found that there were more female entrepreneurs than male ones recently, suggesting that entrepreneurship is no longer seen as an exclusively male-orientated field of work. Another study showed that women are more interested than men in voluntary work, while men are more motivated to open their own businesses (Krstic et al., 2017). Another study conducted by Blanchflower and Oswald (1990) highlighted that young individuals with a self-employed parent tend to establish a business for themselves. This study indicates that family background is highly correlated with entrepreneurial skills.

Soomro et al. (2019) investigated the demographic factors influencing the success of entrepreneurs of small and medium-sized enterprises (SMEs) in Pakistan and showed that there are positive and significant correlations between sex, education, working experience, and business success of entrepreneurs in Pakistan SMEs sector. This research indicates that demographic constructs play a positive and significant role in raising entrepreneurs. Finally, Singh and Singhal (2015) investigated the main association of demographic variables with entrepreneurial intention and skills among students in India. The results revealed that sex, family type, family background, and degree have a significant effect on entrepreneurial objectives.

3 Methods

This study used a quantitative approach. It included 1450 VSS students attending a business and management course in Central Java, which received the title of the Center of Excellence (CoE). A multistage sampling technique was used to reach the target population. In the initial stage, 15 VSS (public and private) were selected using a simple random sampling technique. Then, a list of class 11 and 12 students was collected from each school as the target sample size was drawn using a systematic random sampling technique. Thus, the study respondents

included 495 students from 15 VSS in Central Java, Indonesia. Informed consent from the respondents was obtained and the authors confirm that the relevant ethical approvals were fulfilled. The study was conducted in September and December 2021. The questionnaires were distributed to 495 students with 463 responses received (response rate: 93.5%). Then, instruments were measured by the value of the KMO and Bartlett's Test. The desired correlation between variables was $h > 0.5$ followed by a significance value < 0.05 . The results of the instrument measurement are presented in Table 1.

Table 1: Output of KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.807
Bartlett's Test of Sphericity	Approx. Chi-Square	5376.223
	Df	1035
	Sig.	0.000

Table 1 shows that the results returned a KMO value of 0.807. The p-value associated with Bartlett's Test of Sphericity was 0.000.

Further, we present the correlations between the independent variables, in an Anti-Image Matrices table (Table 2). The value to be considered is the MSA (Measure of Sampling Adequacy); if the MSA value is > 0.5 , the item can be predicted.

Table 2: Score of Measure of Sampling Adequacy (MSA)

Indicator	MSA
Leadership	0.754
Reflective communication	0.732
Risk-taking	0.745
Creatively innovative	0.733
Future orientation	0.773

Table 2 shows that all of the indicators have a value > 0.5 . It can therefore be interpreted that the instrument meets the requirements to be able to predict indicators of leadership, reflective communication, risk-taking, creatively innovative, and future orientation in the sample to be measured.

Furthermore, to determine the influence of demographic characteristics on the level of entrepreneurial skills of VSS students, a linear regression analysis was employed to test the impact of demographic characteristics on the five levels of measured entrepreneurial skills: Leadership, reflective communication, risk taking, creative innovation, and future orientation. In this study, we used the following three demographic characteristics as explanatory variables: Sex, school status, and family background.

The data for sex, school status, and family background were drawn from the main instrument, which also collects these three demographic characteristics. Furthermore, all demographic characteristics were measured as dummy values. First, the dummy for sex was assigned a value of 1 if female, and 0 otherwise. Second, the dummy for school status was assigned a value of 1 if the respondent came from a public VSS, and 0 otherwise. Third, the dummy for family background was assigned a value of 1 if the respondent had an entrepreneurial background (self-employed) and 0 otherwise. Table 3 presents the operational definitions of these variables. Finally, the impact of the three demographic characteristics was tested on the five levels of measured entrepreneurial skills plus the overall score of entrepreneurial skills. Hence, the resulting six models present the impact of demographic characteristics on the level of entrepreneurial skills:

1. Model 1: The influence of demographic characteristics on the score of leadership.
2. Model 2: The influence of demographic characteristics on the score of reflective communication.
3. Model 3: The influence of demographic characteristics on risk-taking scores.
4. Model 4: The influence of demographic characteristics on the score of creatively innovative.
5. Model 5: The influence of demographic characteristics on the score of future orientation.
6. Model 6: The influence of demographic characteristics on the overall score of entrepreneurial skills.

Table 3: Definition of Variables

Dependent Variable	Description of Variables
Leadership	Level of leadership skills
Reflective communication	Level of reflective communication skills
Risk taking	Level of risk-taking skills
Creatively innovative	Level of creatively innovative skills
Future orientation	Level of future orientation skills
Overall score of entrepreneurial skills	Level of overall score for entrepreneurial skills
Explanatory Variable	Description of Variables
Sex	The dummy for sex is assigned as 1 if female and 0 otherwise.
Scholl status	The dummy for the school status is assigned as 1 if the respondent came from public VSS and 0 otherwise.
Family background	The family background is assigned as 1 if the respondent has an entrepreneur background (self-employed) and 0 otherwise.

4 Findings

This section presents the empirical findings of the study. In the first part, the five measurements of entrepreneurial skills levels of VSS students, namely Leadership, Reflective Communication, Risk-Taking, Creativity and Innovation, and Future Orientation, are reported. In the second part, the effects of demographic characteristics on entrepreneurial skills are discussed.

4.1 Entrepreneurial Skills Level of VSS Students

The data on the five variables comprising overall entrepreneurial skills have been processed and yielded the following results.

4.1.1 Leadership

The essence of leadership lies in how one can influence others to understand and agree on what needs to be done to achieve common goals. This makes leadership an important facet of being an entrepreneur. Leitch and Volery (2017) argue that on closer inspection, the entrepreneur is a leader *par excellence* who identifies opportunities from various stakeholders and takes advantage of said opportunities to create value. For this purpose, they created the visionary scenarios needed to select and mobilize supporting members of the group who enact the vision to achieve value creation. In this study, indicators of leadership included task orientation and relationship orientation. The scores for leadership are displayed in Table 4.

Table 4: Level of Leadership Skills

No	Criteria	Amount	%
1	Very high	4	0.86
2	High	102	22.03
3	Middle	270	58.32
4	Low	87	18.79
5	Very low	0	0
	Total	463	100

Table 4 shows that only 22.89% (comprises the very high and high criteria) of respondents capable of learning outcomes have entrepreneurial skills which are high and very high. While as many as 77.11% (comprising the middle and low criteria) are yet to achieve the expected learning outcomes.

4.1.2 Reflective Communication

An entrepreneur must be able to explain, discuss, and market goods or services through interactions. This can be understood as a form of communication. Several previous studies have demonstrated the importance of communication. Abbasi et al. (2011) state that the importance of communication skills precedes that of social skills because the former include important affective, cognitive, and behavioral aspects. In our study, the reflective communication indicators include (1) warmth in associating; (2) flexible/adaptive; (3) tolerant/cooperative; (4) ability to influence others; (5) willingness and ability to self-assess; (6) feeling free and safe; and (7) willingness to improve (receiving feedback).

Table 5: Level of Reflective Communication Skills

No	Criteria	Amount	%
1	Very high	1	0.22
2	High	44	9.50
3	Middle	249	53.78
4	Low	154	33.26
5	Very low	15	3.24
	Total	463	100

From Table 5, the achievement of a very high score is rare; only 0.22% reached this criterion. The high criterion load is 9.50%. Thus, only 9.72% of the total respondents have achieved the required learning outcomes. The number of respondents who have not reached the learning outcome account for 90.28% of all (comprising middle, low, and very low criteria).

4.1.3 Risk-Taking

Entrepreneurship requires taking risks to achieve goals. Entrepreneurs may vary in their approaches to, and considerations of, risk-taking. Some have a short-term and others a long-term orientation, which tends to affect their risk-taking decisions. Petrakis and Katsaiti (2014) distinguish four different combinations of time orientation and risk predisposition. They were short-term, low-risk behavior; long-term, low-risk behavior; short-term, high-risk behavior; long-term, high-risk behavior. Indicators of risk-taking in this study include (1) responsibility, (2) courage in making decisions, (3) willingness to try, and (4) tolerance of failure.

Table 6: Level of Risk-Taking Skills

No	Criteria	Amount	%
1	Very high	7	1.51
2	High	109	23.54
3	Middle	278	60.04
4	Low	68	14.69
5	Very low	1	0.22
	Total	463	100

Table 6 shows that only 1.51% achieved the very high criterion and 23.54% achieved the high criterion. Thus, those who achieved learning outcomes totaled 25.05%, while 74.95% (comprising the middle, low, and very low criteria) failed to achieve the outcomes.

4.1.4 Creatively Innovative

Creative innovation plays an important role in entrepreneurial success (Kabukcu, 2015). Entrepreneurship is often considered inseparable from creative innovation, which in turn is manifested in the act of starting and running a business (Baldacchino, 2009). Therefore, the value of creative innovation is in providing an opening for astute entrepreneurship and actively seeking opportunities to do new things in extraordinary ways (Okpara, 2007). In this study, creatively innovative indicators include (1) originality, (2) fluency, (3) elaboration, (4) flexibility, (5) appropriateness, and (6) innovation.

Table 7: Level of Creatively Innovative Skills

No	Criteria	Amount	%
1	Very high	0	0
2	High	23	4.97
3	Middle	175	37.80
4	Low	246	53.13
5	Very low	19	4.10%
	Total	463	100

From Table 7, there are no respondents who accomplish learning outcomes at a very high level, and only 4.97% achieve a high level. As many as 95.03% (comprising the middle, low, and very low criteria) of respondents have not accomplished learning outcomes. For this variable, the findings are quite surprising because the number of students with low and very low criteria of entrepreneurial skills is dominant (57.23%).

4.1.5 Future Orientation

Petrakis and Katsaiti (2014) stated that entrepreneurial activities which are oriented towards innovation are developed by individuals with high levels of the axis Distant-Future Orientation. Entrepreneurs must be directed toward the future so that they are more committed to the activities they undertake. Thus, Distant-Future Orientation is a very important attribute for entrepreneurs to have. In this study, the indicators of future orientation include (1) anticipatory (prospective), (2) strategic thinking and acting, (3) planning, programming, budgeting (programmed), and (4) a sense of time.

Table 8: Level of Future Orientation Skills

No	Criteria	Amount	%
1	Very high	16	3.46
2	High	113	24.41
3	Middle	237	51.19
4	Low	96	20.73
5	Very low	1	0.22
	Total	463	100

Table 8 shows that respondents who accomplish the learning outcome total 27.87% (comprising the very high and high criteria). Similar to the other sub-indicators, the number of respondents who have not achieved the learning outcome stands at 72.14% (comprising the middle, low, and very low criteria).

4.1.6 Level of Overall Score for Entrepreneurial Skills

All scores on the variables of leadership, reflective communication, risk-taking, creatively innovative, and future orientation are then processed to obtain an overall score for entrepreneurial skills. The level of overall score for entrepreneurial skills of VSS students in our study is presented in Table 9.

Table 9: Percentage Level of Overall Score for Entrepreneurial Skills

No	Criteria	%
1	Very high	1.20
2	High	16.88
3	Middle	52.22
4	Low	28.12
5	Very low	1.55
	Total	100

Table 9 shows that the highest score of the five criteria is the middle criterion at 52.2%, followed by the low and very low criteria at 29.67%. Eventually, based on the overall score of entrepreneurial skills, only 18.08% of respondents reached learning outcomes at high and very high levels.

4.2 Effects of Demographic Characteristic on Entrepreneurial Skills

This section reports the regression results of the impact of the VSS students' demographic characteristics on the five levels of measured entrepreneurial skills. First, we report the multicollinearity tests of the regression models. We employed a correlation test among the independent variables (sex, school status, and family background) to yield the correlation coefficient among the independent variables. The results of the correlation test show that the correlation coefficient between the independent variables in the model has no pair >0.5 . Therefore, there is little possibility of multicollinearity among the independent variables in the model. Then, we examined the multicollinearity of variables in each regression model based on the acceptable variable threshold (tolerance) and the VIF coefficient. The results of the regression analysis show that the variance exaggeration factor VIF for each model is <2 ; thus, it is possible to reject the hypothesis that all models show multicollinearity.

Table 10: The Regression Results of the Impact of Demographic Characteristics on Entrepreneurial Skills

	Dependent variable					
	Leadership	Reflective communication	Risktaking	Creatively innovative	Future orientation	Overall score of entrepreneurial skills
Independent variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Gender	-0.367 (0.337)	-0.060 (0.366)	-0.457 (0.338)	0.631 (0.326)	-0.071 (0.387)	-0.324 (0.511)
School	0.207 (0.223)	-0.950*** (0.243)	-0.209 (0.224)	-0.312 (0.216)	0.911*** (0.256)	-0.352 (0.339)
Family	0.930*** (0.215)	0.969*** (0.233)	0.674** (0.216)	1.420*** (0.208)	1.552*** (0.246)	5.545*** (0.326)
R-square	0.039	0.049	0.018	0.086	0.104	0.370
F stats (Prob)	0.000	0.001	0.000	0.002	0.000	0.000

Note. Std. error in the parentheses. Significant code: 0 ***; 0.001; **, 0.01 *; 0.05 .

Table 10 reports the regression results of the demographic characteristics, the score for each indicator of entrepreneurial skills, and the overall score for entrepreneurial skills. Based on the empirical results, gender has no significant effect on any of the dependent variables. The

results indicate that none of the dependent variables changes significantly with gender. Furthermore, the type of school has a negative significant effect on the reflective communication score (Model 2). This result indicates that private school tends to strengthen the level of reflective communication their students display. In Model 5, the type of school has a positive significant effect on future orientation. This reflects that private school tends to strengthen the level of future orientation of their students. The family background also has a positive significant impact on all dependent variables (Model 1-6). These results indicate that family background can increase the overall score for entrepreneurial skills and also for each sub-indicator of entrepreneurial skills.

5 Discussion and Conclusion

The findings of this study show that the entrepreneurial skills of VSS students can be divided into five indicators. The measurement of these sub-indicators of overall entrepreneurial skills is carried out after the completion of the mandated entrepreneurship courses. The results show that most students' entrepreneurial skills lie in the middle criterion. The learning outcomes of entrepreneurship have thus not been maximally accomplished; in each indicator, there are still several students achieving low and very low scores. This implies several possibilities, especially in the implementation of entrepreneurship learning in VSS. Further research is needed to ensure and improve the desired learning outcomes. In contrast to the other four indicators of entrepreneurship skills, the creatively innovative indicator was particularly low, with 246 people not achieving learning outcomes. Creativity and innovation are core elements of entrepreneurialism. The more entrepreneurs make breakthroughs, the more competitive their future businesses will be. To make breakthroughs, well-planned research is needed, for example, product or market research. Our results show that VSS students do not have these creative and innovative traits yet.

Based on the overall score for entrepreneurial skills of VSS students, most respondents were in the middle criterion, with 242 students. This is better than the results obtained in Sari (2013) where the level of entrepreneurial skills of vocational students was still low, at around 30%. This shows that education is not enough to improve students' entrepreneurial skills (Timmons, 2004); business practices must provide entrepreneurial experience for students. Based on this study, the schools only equip graduates with the knowledge and mentality to find work rather than encouraging creativity and entrepreneurial skills. This is contrary to Zimmerer et al.'s (2008) conclusions, who stated that entrepreneurial learning will instill an entrepreneurial spirit in students, which will then encourage them to create innovations or new businesses by taking risks and betting on uncertainties. Subsequently, it will enable them to achieve profitability and growth by identifying significant opportunities and pooling the required resources so that they can be capitalized appropriately. In addition, Robbins (2006)

said that entrepreneurship is a process where by a person pursues opportunities to fulfill their needs and desires through innovation, without paying attention to the resources they control.

Entrepreneurship education aims to provide soft skills, namely the ability to master entrepreneurial values, and hard skills, i.e., having entrepreneurial or business skills. At the secondary education level, the emphasis needs to be on how students gain attitude stabilization and are provisioned with basic entrepreneurial skills (Manimala & Thomas, 2017; Zeng & Honig, 2016). Entrepreneurship education is a crucial aspect of a nation's economic development and sustainability. Therefore, it is necessary to further investigate the problems in the implementation of entrepreneurship subjects at VSS and why the curriculum has not been able to help students attain these skills.

The level of entrepreneurial skills is proven to be influenced by demographic characteristics, that is, school and family. Private schools tend to strengthen the level of reflective communication and future orientation. The government has many school entrepreneurship development programs, including in VSS, for example, an entrepreneurial program for private school students (Barliana, 2019). In addition to entrepreneurship programs from the government, private schools have mentoring programs that are independently funded. Thus, providing more opportunities for students to be involved in it. Team activities provide many opportunities for students to improve their reflective communication skills. These interactions also open students' minds to having a better future target. In contrast to schools which only affect two sub-indicators of entrepreneurial skills, the family has a positive significant effect on all variables i.e., leadership, reflective communication, risk-taking, creatively innovative, and future orientation. It even has a significant effect on the overall score for entrepreneurial skills. Entrepreneurial parents provide many opportunities for students to have direct or indirect experiences in entrepreneurship activities (Rakieb, 2015). Entrepreneurial families will give their children an entrepreneurial atmosphere, in the form of experiences of failure and success, both of which have a positive influence on increasing students' entrepreneurial skills.

Based on our findings, we summarize that many variables exhibit intermediate standards. This shows that entrepreneurship in VSS has not been able to achieve the expected learning outcomes. Several factors need to be addressed, one of which is the need for an increase in the competence of vocational teachers, especially entrepreneurship teachers. Increased teacher competency is expected to improve the quality of learning (Antera, 2022). Demographic characteristics, especially type of school and family background, have been shown to influence students' entrepreneurial skills. For this reason, it is necessary to support schools and families to create an environment that helps students carry out various entrepreneurial activities.

In closing, further research is needed to identify problems in learning entrepreneurship in VSS. The identification results will be used to formulate alternative solutions to the extant problems. Analysis of entrepreneurship learning development can be done by observing the learning process and conducting in-depth interviews with entrepreneurship teachers at VSS.

Ethics Statement

Informed consent from the participants was obtained and the authors confirm that the relevant ethical approvals were fulfilled.

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References

- Abbasi, M. H., Siddiqi, A., & Azim, R. U. A. (2011). Role of effective communications for enhancing leadership and entrepreneurial skills in university students. *International Journal of Business and Social Science*, 2(10), 242–250. https://ijbssnet.com/journals/Vol.%202_No._10;_June_2011/25.pdf
- Adeyemo, S. A. (2009). Understanding and acquisition of entrepreneurial skills: A pedagogical re-orientation for classroom teacher in science education. *Journal of Turkish Science Education*, 6(3), 57–65. <http://www.tused.org/index.php/tused/article/view/125>
- 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. *International Journal of Management Education*, 18(1), 100327. <https://doi.org/10.1016/j.ijme.2019.100327>
- Al-Kloub, M. I., Salameh, T. N., & Froelicher, E. S. (2014). Nursing students evaluation of problem based learning and the impact of culture on the learning process and outcomes: A pilot project. *Nurse Education in Practice*, 14(2), 142–147. <https://doi.org/10.1016/j.nepr.2013.06.013>
- Almeida, F. (2017). Learning entrepreneurship with serious games - A classroom approach. *International Educational Applied Scientific Research Journal*, 2(1), 4–7. <https://doi.org/10.48550/arxiv.1710.04118>
- Antera, S. (2022). Being a vocational teacher in Sweden: Navigating the regime of competence for vocational teachers. *International Journal for Research in Vocational Education and Training (IJRVET)*, 9(2), 269–293. <https://doi.org/10.13152/IJRVET.9.2.6>
- Ayuningtyas, L. P., Djatmika, E. T., & Wardana, L. W. (2015). Hard and soft skills enhancement in entrepreneurship learning for the twelfth grade students of SMK Kartika IV-1 Malang. *Journal of Education and Practice*, 6(29), 188–194.
- Badan Pusat Statistik. [BPS] (2020). *Februari 2020: Tingkat Pengangguran Terbuka (TPT) sebesar 4,99 persen*. <https://www.bps.go.id/pressrelease/2020/05/05/1672/februari-2020--tingkat-pengangguran-terbuka--tpt--sebesar-4-99-persen.html>
- Badawi, S., Reyad, S., Khamis, R., Hamdan, A., & Alsartawi, A. M. (2019). Business education and entrepreneurial skills: Evidence from Arab universities. *Journal of Education for Business*, 94(5), 314–323. <https://doi.org/10.1080/08832323.2018.1534799>

- Baldacchino, L. (2009). Entrepreneurial creativity and innovation. *First International Conference on Strategic Innovation and Future Creation*, March, 1–15. https://www.researchgate.net/publication/200746590_Entrepreneurial_Creativity_and_Innovation_Management
- Barliana, L. (2019). Vistra mewujudkan sekolah pencetak wirausaha negeri atas awan di SMK Negeri Blado. *Jurnal Penelitian dalam bidang Pendidikan dan Pengajaran*, 13(2), 149–156. <https://doi.org/10.26877/mpp.v13i2.5097>
- Barnawi, M. A. (2012). *School Preneurship* (2nd ed.). Ar-Ruzz Media.
- Blanchflower, D., & Oswald, A. (1990). What makes a young entrepreneur? *Journal of Labor Economics*, 16(1), 26–60. <https://www.andrewoswald.com/docs/entrepre.pdf>
- Bloom, B. S. (1971). *Handbook of formative and summative evaluation of student learning*. McGraw-Hill.
- Boehm, R. (2020). Aggies invent: How an intensive design experience teaches an entrepreneurial mindset. *Advances in Engineering Education*, 8(1), 1–9.
- Bongomin, G. O. C., Munene, J., Ntayi, J. M., & Malinga, C. A. (2018). Determinants of SMMEs growth in post-war communities in developing countries: Testing the interaction effect of government support. *World Journal of Entrepreneurship, Management and Sustainable Development*, 14(1), 50–73. <https://doi.org/10.1108/WJEMSD-06-2017-0026>
- Brockhaus, R. H., & Horwitz, P. S. (1986). *The psychology of the entrepreneur*. *Entrepreneurship*, In D. L. Sexton & R. W. Smilor (Eds.), *The art and science of entrepreneurship*. Ballinger.
- Byers, T., Imms, W., & Hartnell-Young, E. (2018). Comparative analysis of the impact of traditional versus innovative learning environment on student attitudes and learning outcomes. *Studies in Educational Evaluation*, 58, 167–177. <https://doi.org/10.1016/j.stueduc.2018.07.003>
- Charity, D., Ozoji, B. E., Osasebor, F. O., & Ibn Umar, S. (2017). Effects of teaching gardening on science students' attitudes toward entrepreneurial skills acquisition in Jos South, Plateau State, Nigeria. *Science Education International*, 28(2), 136–140.
- Chen, H. (1996). Typology for program evaluation. *Evaluation Practice*, 17(2), 121–130.
- Cosenz, F., & Noto, G. (2018). Fostering entrepreneurial learning processes through dynamic start-up business model simulators. *International Journal of Management Education*, 16(3), 468–482. <https://doi.org/10.1016/j.ijme.2018.08.003>
- Denanyoh, R., Adjei, K., & Nyemekye, G. E. (2015). Factors that impact on entrepreneurial intention of tertiary students in Ghana. *International Journal of Business and Social Research*, 5(3), 19–29.
- DeTienne, D. R., & Chandler, G. N. (2007). The role of gender in opportunity identification. *Entrepreneurship Theory and Practice*, 31(3), 365–386.
- Devine, T. J. (1994). *Characteristics of self-employed women in the United States*. *Monthly Lab. Rev*, 117, 20–34. <https://www.bls.gov/opub/mlr/1994/03/art3full.pdf>
- Directorate General of Early Years, Basic, and Secondary Educations. (2022). *Data pokok pendidikan*. <https://dapo.kemdikbud.go.id>
- European Commission. (2008). *Entrepreneurship in higher education, especially within non- business studies*. European Commission.
- Febriana, R. (2019). *Evaluasi pembelajaran* (1st ed.). Bumi Aksara.
- Ferm, L. (2021). Vocational students' way of handling the academic/vocational devide. *International Journal for Research in Vocational Education and Training (IJRVET)*, 8(1), 1–20. <https://doi.org/10.13152/IJRVET.8.1.1>

- Fitzpatrick, J. L., Sanders, J. R., & Worthen, B. R. (2011). *Program evaluation: Alternative approaches and practical guidelines*. Pearson.
- Global Entrepreneurship Index. [GEI] (2019). *Global Entrepreneurship Index 2018*. <https://knoema.com/infographics/nyyasp/global-entrepreneurship-index-2018>
- Gontareva, I., Chorna, M., Pawliszczy, D., Barna, M., Dorokhov, O., & Osinska, O. (2018). Features of the entrepreneurship development in digital economy. *TEM Journal*, 7(4), 813–822. <https://doi.org/10.18421/TEM74-19>
- Hameed, I., & Irfan, Z. (2019). Entrepreneurship education: A review of challenges, characteristics and opportunities. *Entrepreneurship Education*, 2(3–4), 135–148. <https://doi.org/10.1007/s41959-019-00018-z>
- Handayati, P., Wulandari, D., Soetjipto, B. E., Wibowo, A., & Narmaditya, B. S. (2020). Does entrepreneurship education promote vocational students' entrepreneurial mindset? *Heliyon*, 6(11), e05426. <https://doi.org/10.1016/j.heliyon.2020.e05426>
- Hattab, H. W. (2014). Impact of entrepreneurship education on entrepreneurial intentions of university students in Egypt. *Journal of Entrepreneurship*, 23(1), 1–18. <https://doi.org/10.1177/0971355713513346>
- Hisrich, R. D. (2005). *Entrepreneurship* (4th Ed.). McGraw-Hill.
- Ibrahim, N. A., & Lucky, E. O. I. (2014). Relationship between entrepreneurial orientation, entrepreneurial skills, environmental factor and entrepreneurial intention among Nigerian students in UUM. *Entrepreneurship and Innovation Management Journal*, 2(4), 203–213.
- Isidro, I. (2012, February 8). *Why be self-employed? 10 benefits of entrepreneurship*. <https://www.powerhomebiz.com/starting-a-business/entrepreneurship/why-be-self-employed.htm>
- Johnson, C. D., & Stokes, G. S. (2002). The meaning, development, and career outcomes of breadth of vocational interests. *Journal of Vocational Behavior*, 61(2), 327–347. <https://doi.org/10.1006/jvbe.2001.1859>
- Kabukcu, E. (2015). Creativity process in innovation oriented entrepreneurship: The case of Vakkko. *Procedia - Social and Behavioral Sciences*, 195, 1321–1329. <https://doi.org/10.1016/j.sbspro.2015.06.307>
- Karimi, S., Biemans, H. J., Naderi Mahdei, K., Lans, T., Chizari, M., & Mulder, M. (2017). Testing the relationship between personality characteristics, contextual factors and entrepreneurial intentions in a developing country. *International Journal of Psychology*, 52(3), 227–240. <https://doi.org/10.1002/ijop.12209>
- Kirkley, W. W. (2017). Cultivating entrepreneurial behaviour: Entrepreneurship education in secondary schools. *Asia Pacific Journal of Innovation and Entrepreneurship*, 11(1), 17–37. <https://doi.org/10.1108/apjie-04-2017-018>
- Krasniqi, B. (2018). Routledge handbook of entrepreneurship in developing economies. *International Journal of Entrepreneurial Behavior & Research*, 24(2), 574–575. <https://doi.org/10.1108/ijebr-03-2018-429>
- Kruger, S., & Steyn, A. A. (2021). A conceptual model of entrepreneurial competencies needed to utilise technologies of Industry 4.0. *International Journal of Entrepreneurship and Innovation*, 22(1), 56–67. <https://doi.org/10.1177/1465750320927359>
- Krstic, G., Miric, A. A., & Rakic, J. Z. (2017). Profile of social entrepreneur in Serbia: Motivation and socio, demographic characteristics. *Sociologija/Sociology: Journal of Sociology, Social Psychology & Social Anthropology*, 59(1), 62–80.

- Kuratko, D. F. (2016). *Entrepreneurship: Theory, process, practice*. Cengage Learning.
- Leitch, C. M., & Volery, T. (2017). Entrepreneurial leadership: Insights and directions. *International Small Business Journal: Researching Entrepreneurship*, 35(2), 147–156. <https://doi.org/10.1177/0266242616681397>
- Levie, J. D., Hart, M., & Anyadyke-Danes, M. (2010). The effect of business or enterprise training on opportunity recognition and entrepreneurial skills of graduates and non-graduates in the UK. *Frontiers of Entrepreneurship Research*, 29(23), 1–11. <https://strathprints.strath.ac.uk/27904/>
- Liñán, F. (2008). Skill and value perceptions: How do they affect entrepreneurial intentions? *International Entrepreneurship and Management Journal*, 4(3), 257–272. <https://doi.org/10.1007/s11365-008-0093-0>
- Liu, Y., Li, Y., Hao, X., & Zhang, Y. (2019). Narcissism and learning from entrepreneurial failure. *Journal of Business Venturing*, 34(3), 496–512. <https://doi.org/10.1016/j.jbusvent.2019.01.003>
- Madgerova, R., & Kyurova, V. (2019). Specifics of entrepreneurship in the field of cultural and creative industries. *Entrepreneurship*, 7(2), 103–123. http://ep.swu.bg/images/pdfarticles/2019/specifics_of_entrepreneurship_in_the_field_of_cultural_and_creative_industries.pdf
- Manimala, M. J., & Thomas, P. (2017). *Entrepreneurship education*. Springer.
- McClelland, D. C. (1976). *The achieving society* (with a new introduction). Irvington.
- Momani, B. (2017). *Entrepreneurship: An engine for job creation and inclusive growth in the Arab world*. Brookings Doha Center Policy Briefing. <https://www.brookings.edu/research/entrepreneurship-an-engine-for-job-creation-and-inclusive-growth-in-the-arab-world/>
- Mutaqin, M. K. A., Kuswana, W. S., & Sriyono, S. (2016). Studi eksplorasi keterserapan lulusan sekolah menengah kejuruan negeri di kota bandung pada industri otomotif. *Journal of Mechanical Engineering Education*, 2(2), 247. <https://doi.org/10.17509/jmee.v2i2.1486>
- Mwasalwiba, E. S. (2010). Entrepreneurship education: A review of its objectives, teaching methods, and impact indicators. *Education and Training*, 52(1), 20–47. <https://doi.org/10.1108/00400911011017663>
- Norberg, E. L. (2016). People and places in the global economy article information. *Journal of Enterprising Communities*, 10(4), 29.
- Okpara, F. (2007). The value of creativity and. *Journal of Asia Entrepreneurship and Sustainability*, 3(2). <http://www.asiaentrepreneurshipjournal.com/AJESIII2Okpara.pdf>
- Ozyilmaz, A. (2011). The effects of demographic characteristics on entrepreneurial intention in the pre-venture stage of entrepreneurship. *International Journal of Entrepreneurship and Small Business*, 14(3), 406–424. <https://doi.org/10.1504/IJESB.2011.042761>
- Petrakis, P., & Katsaiti, M. (2014). *Risk, future orientation and entrepreneurship*. <http://elearn.elke.uoa.gr/ppetrakis/en/pdf/RiskFutureOrientationEntrepreneurship.pdf>
- Raine, A. L., & Pandya, M. (2019). Three keys to entrepreneurial success: Curiosity, creativity, and commitment. *Entrepreneurship Education*, 2(3–4), 189–198. <https://doi.org/10.1007/s41959-019-00019-y>
- Rakieb, M. (2015). Effect of industrial work practice and family environment on interest of entrepreneurship to students of vocational high school. *Journal of Education and Vocational Research*, 6(4), 31–37. <https://doi.org/10.22610/jevr.v6i4.205>
- Robbins, S. P. (2006). *Organizational behavior (10th Ed.)*. Prentice Hall College Div.
- Sari, A. S. (2013). Kesiapan berwirausaha pada siswa SMK kompetensi keahlian jasa boga. *Jurnal Pendidikan Vokasi*, 2(2), 154–168. <https://doi.org/10.21831/jpv.v2i2.1025>

- Sanchez, P. L., Abad, P., Cabrero, C. F., & Calero, R. (2020). A university training programme for acquiring entrepreneurial and transversal employability skills, a students' assessment. *Journal of Sustainability (Switzerland)*, 12(3), 1–17. <https://doi.org/10.3390/su12030796>
- Schelfhout, W., Bruggeman, K., & De Mayer, S. (2016). Evaluation of entrepreneurial competence through scaled behavioural indicators: Validation of an instrument. *Studies in Educational Evaluation*, 51, 29–41. <https://doi.org/10.1016/j.stueduc.2016.09.001>
- Singh, S. P., & Singhal, H. (2015). Demographic variables predicts entrepreneurship development. *European Academic Research*, 2(10), 13783–13796.
- Soomro, M. A., Bahadur, R. A., & Abdelmegeed A. N. A., & Shah, N. (2019). The influence of demographic factors on the business success of entrepreneurs: An empirical study from the small and medium-sized enterprises context of Pakistan. *International Journal of Entrepreneurship*, 23(2), 1939–4675.
- Stahl, G. K., Miller, E. L., & Tung, R. L. (2002). Toward the boundaryless career: A closer look at the expatriate career concept and the perceived implications of an international assignment. *Journal of World Business*, 37(3), 216–227. [https://doi.org/10.1016/S1090-9516\(02\)00080-9](https://doi.org/10.1016/S1090-9516(02)00080-9)
- Stufflebeam, D. L., & Coryn, C. L. S. (2014). Evaluation theory, models, and applications. Jossey-Bass.
- Tan, J. (1999). The growth of entrepreneurial firms in a Transition economy. The case of a Chinese entrepreneur. *Journal of Management Inquiry*, 8(1), 83–89.
- Talaş, E., Çelik, A. K., & Oral, İ. O. (2013). The influence of demographic factors on entrepreneurial intention among undergraduate students as a career choice: The case of a Turkish university. *American International Journal of Contemporary Research*, 3(12), 22–31.
- The Ministry of National Development Planning. [Bappenas] (2017). *Bonus demografi 2030-2040: Strategi Indonesia terkait ketenagakerjaan dan pendidikan*. https://www.bappenas.go.id/files/9215/0397/6050/Siaran_Pers_Peer_Learning_and_Knowledge_Sharing_Workshop.pdf
- The United Nations Educational, Scientific, and Cultural Organization. [UNESCO] (2017). UNESCO moving forward the 2030 agenda for sustainable development. *United Nations Educ. Sci. Cult. Organ.*, 22.
- Timmons, J., & Spinelli, S. (2004). *New venture creation: Entrepreneurship for the 21st century (9th edition)*. Irwin.
- Trevelyan, R. (2009). Entrepreneurial attitudes and action in new venture development. *The International Journal of Entrepreneurship and Innovation*, 10(1), 21–32. <https://doi.org/10.5367/000000009787414271>
- Valliere, D., & Peterson, R. (2009). Entrepreneurship and economic growth: Evidence from emerging and developed countries. *Entrepreneurship and Regional Development*, 21(5–6), 459–480. <https://doi.org/10.1080/08985620802332723>
- Widoyoko, E. P. (2019). *Evaluasi program pembelajaran: Panduan praktis bagi pendidik dan calon pendidik* (9th ed.). Pustaka Pelajar.
- Wiens, J., & Jackson, C. (2015, September 14). *The importance of young firms for economic growth*. <http://www.kauffman.org/what-we-do/resources/entrepreneurship-policy-digest/the-importance-of-young-firms-for-economic-growth>
- Zeng, Z. E., & Honig, B. (2016). How should entrepreneurship be taught to students with diverse experience? A set of conceptual models of entrepreneurship education. *Advances in Entrepreneurship, Firm Emergence and Growth*, 18, 237–282. <https://doi.org/10.1108/S1074-754020160000018007>

Zimmerer, T. W., Scarborough, N. M., & Wilson, D. (2008). Essentials of entrepreneurship and small business management. In Kwary, Deny Armos. *Kewirausahaan dan Manajemen Usaha Kecil edisi 5 Book 1 and 2*. Salemba Empat.

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