Research Article https://doi.org/10.12973/eu-jer.11.3.1669

European Journal of Educational Research
Volume 11, Issue 3, 1669 - 1682.
ISSN: 2165-8714
http://www.eu-jer.com/

Students' Career Decision-Making During Online Learning: The Mediating Roles of Self-Efficacy in Vocational Education

Sutiman* Yogyakarta State University, INDONESIA
Herminarto Sofyan Yogyakarta State University, INDONESIA
Soenarto Yogyakarta State University, INDONESIA
Farid Mutohhari Yogyakarta State University, INDONESIA
Muhammad Nurtanto Universitas Sultan Ageng Tirtayasa, INDONESIA

Received: January 18, 2022 ▪ Revised: April 23, 2022 ▪ Accepted: June 3, 2022

Abstract: In the last decade, vocational education in Indonesia has experienced problems in making career decisions for students, which was exacerbated by the COVID-19 pandemic. Therefore, this research aims to examine the role of self-efficacy and mediate digital literacy, social environment, and counselling guidance in influencing career decision-making. This is an ex-post-facto research design with data collected from a sample of 566 vocational education students in Indonesia through a questionnaire method distributed online using Google Form. The collected data was then analyzed using structural equation modelling (SEM) with path analysis and bootstrap methods. The results revealed that self-efficacy plays a vital role in mediating digital literacy and guiding students in career decision-making. On the other hand, digital literacy, guidance, and counselling have a significant direct effect on self-efficacy and career decision-making. Meanwhile, the social environment only has a significant direct effect on students' career decision-making. The real role of all elements of vocational education in strengthening self-efficacy, growing digital literacy, monitoring social environment interactions, and providing counselling guidance to students is needed to increase optimism and the quality of career decision-making in vocational education.

Keywords: *Career decision-making, online learning, self-efficacy, vocational education.*

To cite this article: Sutiman, Sofyan, H., Soenarto, Mutohhari, F., & Nurtanto, M. (2022). Students' career decision-making during online learning: The mediating roles of self-efficacy in vocational education. *European Journal of Educational Research, 11*(3), 1669-1682. https://doi.org/10.12973/eu-jer.11.3.1669

Introduction

The essence of vocational education is to prepare competent graduates that are competitive in their various fields of work (Arifin et al., 2020; Clark & Winch, 2007; Pavlova, 2009). It is also important in helping students to determine career goals and future development (Kirchknopf, 2020; Rizwan et al., 2021). In Indonesia, this is in line with the national ministry of education policy, which declared that every vocational education in the country needs to properly promote career development (Kurniawati et al., 2021). The aim is to assist students in making decisions about self-awareness, career awareness, life planning, and further education to achieve success in the learning development process (Prasetyo et al., 2021; Wang et al., 2020).

However, the fundamental problem in vocational education in developing countries, including Indonesia, is in the career decision-making of graduates (Kelly & Lee, 2002; Sampson & Toh, 2021). According to preliminary research, graduates in the related industrial world find it difficult to determine the right career path (Afandi & Wijanarka, 2019; Kurniawan et al., 2021). The Central Statistics Agency in Indonesia also confirmed the fact by stating that the open unemployment rate for this category of people is highest compared to other types of education. In line with this, (Xu & Bhang, 2019) stated that students' doubts are one of the causes of this problem.

The pandemic exacerbated this problem, which has also hit Indonesia from March 2020 until now, thereby leading to the transformation of face-to-face learning to online (Hamid et al., 2022; Kholifah et al., 2020; Syauqi et al., 2020; Zapata-Cuervo et al., 2021). This transformation led to a drastic decline in vocational students' career decision-making quality and optimism (Abdullah, 2019; Edy et al., 2020). Graduates are very indecisive in selecting the right career

* **Corresponding author:**
Sutiman, Yogyakarta State University, Indonesia. ✉ sutiman@uny.ac.id

according to their interests and potential (Chen et al., 2022). Additionally, the lack of availability in the job market and career socialization is another reason for their doubts and indecision (Lam & Santos, 2018).

Several important factors led to the loss of job orientation for students during the pandemic. These problems must be addressed immediately because students' career decision-making greatly determines their future and reduces the level of inefficiency in vocational education (Kulcsár et al., 2020). Self-efficacy is the most influencing factor that plays an important role in making crucial decisions (Lam & Santos, 2018; Mahfud et al., 2022; Park et al., 2022; Taylor & Betz, 1983). Moreover, it also provides confidence in one's ability to perform crucial activities (Kim & Yang, 2020). Therefore, growing self-efficacy in students is the essential aspect of vocational education through learning, thereby significantly increasing stability in making career decisions (Stojanovic et al., 2021).

Conversely, the influence of the social environment and counselling guidance are also crucial factors that affect students' stability in making career decisions after graduation. Hence, digital literacy is an important aspect that must be instilled in students because the accessibility to explore various kinds of work is easily advantageous in the current digital era (Mutohhari et al., 2021; Ocaña-Fernández et al., 2020). Furthermore, students' social environment during the online learning period also results in their tendency to make career decisions (Pesch et al., 2017). Meanwhile, the lack of interaction between students and teachers during online learning, reduces students' psychological conditions, hence adequate guidance and counseling is needed (Martin et al., 2021). According to preliminary research, these three factors must receive mediation from self-efficacy (Kim & Lee, 2018; Li et al., 2018; Mittendorff et al., 2012; Pesch et al., 2017; Shilshtein & Margalit, 2019). Therefore, embedding digital solid literacy, positive influence from the social environment, and intensive counselling guidance will significantly increase student self-efficacy (Alemayehu & Chen, 2021; Greason & Cashwell, 2009; Zhou & Yu, 2021).

Based on the descriptions above, this research aimed to: (1) measure the significance of the effect of self-efficacy on career decision-making of vocational education students, (2) measure the significance of the influence of digital literacy, social environment, and counselling guidance on the self-efficacy of vocational education students; (3) measure the significance of the influence of digital literacy, social environment, and counselling guidance on career decision-making of vocational education students; and (4) measure the significance of the influence of digital literacy, social environment, and counselling guidance on career decision-making of vocational education students mediated by self-efficacy. Figure 1 shows the paradigm in this research.

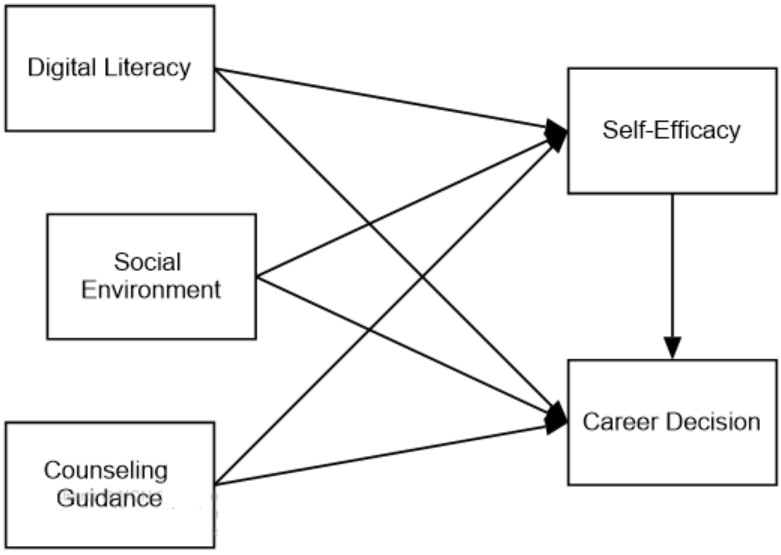

Figure 1. Research Model of the Digital Literacy, Social Environment, Counselling Guidance, Self-Efficacy, and Career Decision

Literature Review

Self-Efficacy in Career Decision

Career decision-making for students in learning institutions or vocational education graduates always requires high confidence or self-efficacy (Chuang et al., 2020; Duru et al., 2021). Bandura (1995); Santrock (2008) stated that self-efficacy is an important psychological capital that provides confidence to complete a job. Its increase or decrease rate is strongly influenced by the level, strength, and generality dimensions (Bandura, 1995). Level refers to the completion of a problem, strength is the optimism of a decision making, and generality is the extent of individuals' belief in their abilities (Bruning et al., 2013; Cecil & Pinkerton, 2000; Fort & Puget, 2022). According to preliminary research, self-efficacy indicators in confidence in selecting a goal are important factors that influence students' career decisions (Bandura, 1977; Park et al., 2019; Walsh & Osipow, 1988). Therefore, self-efficacy is a strong background in improving

the quality and optimism of career decision-making in vocational education students, which led to the formulation of the first hypothesis.

H1: There is a significant positive effect of self-efficacy on career decision-making.

Digital Literacy, Social Environment, Counselling Guidance on Self-Efficacy

Self-efficacy is constructed by important aspects in making a decision (Bandura, 1982). Self-confidence is stimulation that affects the growth associated with the ability to do work, thereby giving rise to a feeling of confidence (Kim, 2019; Kustyarini, 2020). Digital literacy plays a comprehensive role in the growth of students' self-efficacy in making career decisions (Kara, 2019; Monteiro & Leite, 2021). It is defined as a comprehensive understanding of selecting, using, and reaping the benefits of technology to enhance skills and knowledge (Jones & Hafner, 2012; Lankshear & Knobel, 2008). Prior et al. (2016) revealed aspects of digital literacy capable of triggering the growth of self-efficacy in students during online learning.

Besides digital literacy, an aspect capable of increasing the self-efficacy of vocational education students is the social environment where they interact with other people, such as the school and community (McCoy & Bowen, 2015). Preliminary research revealed that the negative influence of the social environment on students' self-efficacy reduces their sense of optimism and motivation in learning (Salta et al., 2022). Students' social interactions in increasing self-efficacy must also be supported by other relevant aspects, such as counselling guidance (Agi, 2013; Asude & Zeynep, 2020). Therefore, these research led to the following hypotheses.

H2: There is a significant positive effect of digital literacy on self-efficacy.

H3: There is a significant positive effect of the social environment on self-efficacy.

H4: There is a significant positive effect of counselling guidance on self-efficacy.

Digital Literacy, Social Environment, and Counselling Guidance on Career Decision Development

In the era of online learning, digital literacy has become the basic capital for students in exploring various relevant careers with high effectiveness and efficiency (Kara, 2019). Meanwhile, digital literacy plays a role in providing a comprehensive understanding to students of the use of digital media for their career interests (Lankshear & Knobel, 2008). Pereira (2020); Staunton (2020) stated that digital literacy significantly affects optimism and quality in individual decision-making.

The social environment is an environment where students learn, and it provides opportunities for them to actively interact in the learning process (Rogers, 2020). However, this environment has shifted towards virtual due to the pandemic (Onyema et al., 2020; Rasmitadila et al., 2020). The lack of interaction between students and teachers in online learning negatively impacts students' communication and collaboration skills (Salta et al., 2022). Da Silva et al. (2014) stated that students develop their potential in an appropriate media through guidance and counselling. Therefore, digital literacy, social environment, and counselling guidance have a strong theoretical influence in influencing career decision-making in students, thereby leading to the following hypotheses.

H5: There is a significant positive effect of digital literacy on career decision-making.

H6: There is a significant positive effect of social environment on career decision-making.

H7: There is a significant positive effect of counselling guidance on career decision-making

Self-Efficacy in Mediating Digital Literacy, Social Environment, and Counselling Guidance on Career Decision-Making

Digital literacy is an important aspect of the era of online learning, as it was held during the COVID-19 pandemic (Jang et al., 2021). It indirectly increases students' confidence in selecting a career because it increases their self-efficacy (Astuti et al., 2022; Mutohhari et al., 2021). Students' self-confidence is indirectly affected by interactions with inappropriate intensity and reference quality (Kim & Lee, 2018). Additionally, an interactive and collaborative social environment will create a mutually cooperative, corrective and consultative process in making a decision (Alqurashi, 2016; Liu et al., 2020). One weakness experienced by most vocational schools is the inability to provide guidance and counselling services to students (Kelly & Lee, 2002; Tran et al., 2020). Career decision-making can be boosted through intensive counselling guidance, which indirectly helps to build self-efficacy (Kim & Lee, 2018; Lee et al., 2018; Pordelan & Hosseinian, 2021). Therefore, self-efficacy indirectly becomes a good mediator, which builds the following hypotheses.

H8: There is a significant positive effect of digital literacy on career decision-making mediated by self-efficacy.

H9: There is a significant positive effect of social environment on career decision-making mediated by self-efficacy.

H10: There is a significant positive effect of counselling guidance on career decision-making mediated by self-efficacy.

Methodology

Research Design

This is an ex-post-facto research design (Cohen et al., 2017) with data collected from vocational education students in Indonesia who were affected by online learning from the beginning of its implementation. The quantitative approach was used to collect data analyzed using SEM techniques to measure the effect of the independent and the dependent variables with or without a mediator. Data on all variables were collected through a questionnaire method distributed online using Google Form. The research was conducted simultaneously with the monitoring and evaluation period from early November 2021 until December 2021.

Sample and Data Collection

Data were collected from 556 level 12 students from 10 public and private vocational education in the province of Yogyakarta-Indonesia determined through the clustering sampling technique. The students were selected using the voluntary submission system by distributing questionnaire as shown in Table 1.

Table 1. Profile of Participants by Gender, Expertise, and Regency (N=566)

Dimensions	Category	Public School	Private School
		F (%)	F (%)
Gender	Male	160 (28.27)	131 (23.14)
	Female	178 (31.45)	97 (17.14)
Expertise	Technology and Engineering	127 (22.44)	81 (14.31)
	Information and Communication Technology	96 (16.96)	68 (12.01)
	Tourism	115 (20.32)	79 (13.96)
Regency	Sleman	75 (13.25)	58 (10.25)
	Yogyakarta City	68 (12.01)	46 (8.13)
	Bantul	67 (11.84)	45 (7.95)
	Kulonprogo	61 (10.78)	40 (7.07)
	Gunung Kidul	67 (11.84)	39 (6.89)

Data were collected using a questionnaire technique via Google Form, which was carried out from the beginning of November to the end of December. The questionnaire consists of four-level scale items with answer options of strongly agree (SA), agree (A), disagree (D), and strongly disagree (SD). The development of the instrument was conducted by adopting the expert opinion of each variable. The instrument is equipped with the respondent's identity, including important dimensions related to gender, area of expertise pursued, and the vocational educations (SMK) district. The total number of items in the questionnaire is 50, which is arranged based on the indicators contained in the variables. Table 2 presents the instrument grid in this research.

Table 2. Instrument Grid (N=50)

Variable	Indicators	Sub-indicators	N of Items	References
Digital literacy	Context & orientation	Understanding the context and orientation of digital technology	3	(Falloon, 2020; Jones & Hafner, 2012; Trilling & Fadel, 2012)
	Accessibility and exploration	Accessibility and exploration effectively and efficiently	3	
	Information evaluation	Selecting information according to purpose	2	
	Digital creativity	Creative use of information	2	
Social environment	Family environment	Students' interaction with family	3	(Liu et al., 2020; Rogers, 2020)
	School environment	Students' interaction with school residents	3	
	Society environment	Student interaction with the community	2	
	Digital environment	Students' interaction with the digital environment	2	
Counselling guidance	Problem-solving	Ability to help students in solving problems	4	(Hughes, 1971)
	Service intensity	The intensity of guidance and counselling to students	3	
	Service quality	Quality of guidance and counselling to students	3	
Self-Efficacy	Self-motivation	Students' ability to motivate themselves	3	(Bandura, 1982, 1995)
	Self-assessment	Students' ability to self-assess	3	
	Believe in goals	Students' optimism on goal	2	
	Believe in problem-solving	Students' optimism in problem-solving	2	

Table 2. Continued

Variable	Indicators	Sub-indicators	N of Items	References
Career Decision	Attitude towards career decisions	Students' attitudes towards the importance of career decision-making	3	(Trilling & Fadel, 2012; Walsh & Osipow, 1988)
	Career appraisal ability	Students' ability to assess career	3	
	Career exploration efforts	Students' efforts in exploring careers	2	
	Relevance of career assessment	Students' assessment of careers according to their field of expertise	2	

Respondents took approximately half an hour to fill out the questionnaire. E-certificates were given to students who filled out the questionnaire to obtain real data and reward the participants. The research instrument was validated using the content validity method by asking the opinion of experts working in the field and evaluated through the confirmatory factor analysis (CFA) method. The validity criteria in the CFA analysis after determining the loading factor number on the indicator is not less than 0.50. Meanwhile, the Cronbach's alpha coefficient on all questionnaires is calculated and considered reliable in measuring reliability, assuming the Cronbach's alpha coefficient is more than 0.70.

Analyzing of Data

The data collected were analyzed using SEM to test the effect of exogenous and endogenous variables. Path analysis was used to measure the direct effect of exogenous variables on the endogenous, while the bootstrap method was used to determine the mediating role. The exogenous variables include digital literacy, social environment, and counselling guidance. Meanwhile, self-efficacy and career decision-making are endogenous. Data were analyzed using the support of the Amos 18 software, while the research hypothesis was formulated based on supporting relevant theories related to the line of influence of exogenous variables on endogenous.

Findings

Research Instrument Validities and Reliabilities

Before testing the hypothesis using SEM analysis, the validity and reliability of the instrument were first evaluated using the CFA and Cronbach's alpha methods to assess the feasibility and consistency of all indicators. The validity test results showed that all indicators have a loading factor value that exceeds 0.50. All indicators met the validity criteria hence none was removed (Johnson & Wichern, 2007). Table 3 shows the results of a more detailed validity test.

Table 3: Validities Instrument of the Digital Literacy, Social Environment, Counselling Guidance, Self-Efficacy, and Career Decision

Variable	Indicator	Validity	
		LF	Decision
Digital Literacy	Indicator 1	0.924	Valid
	Indicator 2	0.668	Valid
	Indicator 3	0.740	Valid
	Indicator 4	0.903	Valid
Social Environment	Indicator 1	0.511	Valid
	Indicator 2	0.590	Valid
	Indicator 3	0.940	Valid
	Indicator 4	0.894	Valid
Counselling Guidance	Indicator 1	0.533	Valid
	Indicator 2	0.579	Valid
	Indicator 3	0.507	Valid
Self-efficacy	Indicator 1	0.634	Valid
	Indicator 2	0.690	Valid
	Indicator 3	0.913	Valid
	Indicator 4	0.718	Valid
Career Decision	Indicator 1	0.772	Valid
	Indicator 2	0.826	Valid
	Indicator 3	0.681	Valid
	Indicator 4	0.808	Valid

Reid (2014) stated that the reliability test determines the numbers with very high criteria on all instruments. This shows that the instrument has a good level of consistency in collecting data for each variable. Table 4 presents the results of the Cronbach's alpha reliability test.

Table 4: Reliabilities Instrument of the Digital Literacy, Social Environment, Counselling Guidance, Self-Efficacy, and Career Decision

Variable	Reliability	
	α	Category
Digital Literacy	0.892	Very high
Social Environment	0.924	Very high
Counselling Guidance	0.927	Very high
Self-efficacy	0.876	Very high
Career Decision	0.915	Very high

Model Fit Test

The model suitability test was used to measure the conformity level of the structural model. The model suitability test result obtained a chi-square number, probability, GFI, AGFI and RMSEA values of 6.471 (small), 0.471 ≥ .05, 0.932 ≥ 0.90, ≥ 0.90 and 0.026 ≤ .08, which were adjusted according to the goodness of fit index. Based on these results, it can be concluded that the model is fit hence the structural model analysis can be conducted (Johnson & Wichern, 2007). The following Figure 2 describes the SEM analysis results and the value of the model suitability test.

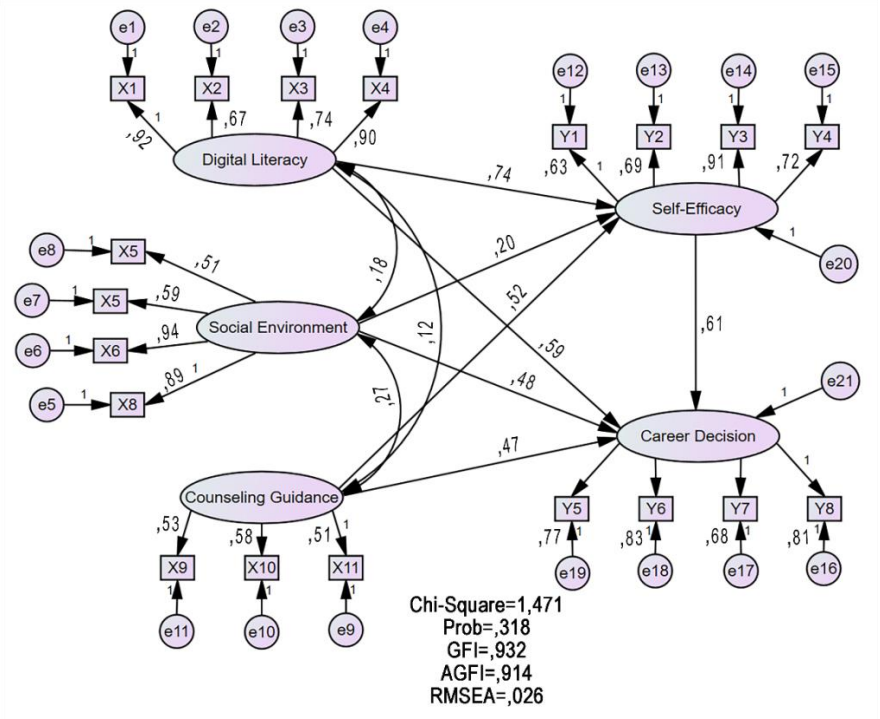

Figure 2. SEM Analysis Result for Digital Literacy, Social Environment, Counselling Guidance, Self-Efficacy, and Career Decision

Hypothesis Test Result: Direct Effect Test

Hypothesis testing was conducted to determine the effect of self-efficacy on students' career decision-making, digital literacy, social environment, and counselling guidance. It was determined based on the results of path analysis with the estimated value and a significance level of 5%. The following Table 4 presents the hypothesis testing results using path analysis.

Table 4. Regression Weights for the Paths in the Mediated Model

Regression Weights	Estimate	SE	CR	*p*
Self-efficacy → Career Decision	0.608	.029	11.983	.***
Digital Literacy → Self-efficacy	0.736	.027	14.525	.***
Digital Literacy → Career Decision	0.592	.016	10.894	.***
Social Environment → Self-efficacy	0.198	.031	1.068	.058
Social Environment → Career Decision	0.482	.080	9.520	.001**
Counselling Guidance → Self-efficacy	0.524	.010	10.218	.***
Counselling Guidance → Career Decision	0.471	.077	8.781	.004**

***Results are significant at $p < .01$

Self-efficacy influences the career decision-making of vocational education students with an estimated value of 0.608 and a significance of .000***, the first hypothesis was accepted. Digital literacy affects self-efficacy with an estimated value of 0.736 and a significance of .000***, H2 was accepted. Digital literacy affects career decision-making with an estimated value of 0.736 and a significance of .001**, H5 was accepted. The social environment affects self-efficacy with an estimated value of 0.198 and a significance of 0.058, H3 was rejected. The estimated value of 0.482 and a significance of .001** on the influence of the social environment on career decision-making, H6 was accepted. Counselling guidance affects self-efficacy with an estimated value of 0.524 and a significance of .000***, H4 was accepted. Finally, counselling guidance affects career decision-making with an estimated value of 0.471 and a significance of .001**, H7 was accepted.

Hypothesis Test Result: Self-Efficacy Mediation Effect Test

The mediation effect test determines how self-efficacy plays a meditative role in digital literacy, social environment, and counselling guidance on career decision-making. The bootstrap method was used to carry out this test because it is the most powerful and reliable technique in explaining the mediating role of a mediator variable to obtain confidence limits for certain indirect effects in most conditions (Preacher & Hayes, 2008).

Table 5 shows that the indirect effect of digital literacy on career decision-making through the mediation of self-efficacy with a 95% confidence level ranged from 0.413 to 0.769, with an estimated effect of 0.418**. Subsequently, it can be concluded that digital literacy has a significant indirect effect on student decision-making through the mediation of self-efficacy, H8 was accepted. Table 6 shows that the indirect effect of social environment on career decision-making through the mediation of self-efficacy range from 0.102 to 0.273, with an estimated impact of 0.144. The social environment does not significantly influence career decision-making through the mediation of self-efficacy, H9 was rejected. Table 7 presents the indirect effect of social environment on career decision-making through the mediation of self-efficacy with probability ranging from 0.343 to 0.701 with an estimated effect of 0.366*. In conclusion, the counselling guidance indirectly impacts student decision-making through the mediation of self-efficacy, H10 was accepted.

Table 5. Mediating Effect Test for Career Decision, Self-efficacy, and Digital Literacy

	CD		SEF		Estimate	S.E.	Bootstrapping BC 95% CI	
	Estimate	S.E.	Estimate	S.E.			Lower limit	Upper limit
DL	0.954***	.016	0.530***	.021				
CD			0.701***	.064				
R^2	0.283		0.464					
Indirect effect					0.418**	.091	0.413	0.769
Direct effect					0.530***	.029	0.313	0.612
Total effect					0.948***	.022	0.825	0.905

Note: CD = Career Decision; SEF = Self-efficacy; DL = Digital Literacy

Table 6. Mediating Effect Test for Career Decision, Self-efficacy, and Social Environment

	CD		SEF		Estimate	S.E.	Bootstrapping BC 95% CI	
	Estimate	S.E.	Estimate	S.E.			Lower limit	Upper limit
SEN	0.617***	.023	0.198	.021				
CD			0.222*	.064				
R^2	0.186		0.243					
Indirect effect					0.144	.066	0.102	0.273
Direct effect					0.198	.081	.091	0.289
Total effect					0.342*	.037	0.314	0.595

Note: CD = Career Decision; SEF = Self-efficacy; SEN = Social Environment

Table 7. Mediating Effect Test for Career Decision, Self-efficacy, and Counselling Guidance

	CD		SEF		Estimate	S.E.	Bootstrapping BC 95% CI	
	Estimate	S.E.	Estimate	S.E.			Lower limit	Upper limit
CG	0.904***	.046	0.524***	.044				
CD			0.608***	.093				
R^2	0.228		0.409					
Indirect effect					0.366*	.077	0.343	0.701
Direct effect					0.524***	.048	0.313	0.612
Total effect					0.890***	.072	0.740	0.867

Note: CD = Career Decision; SEF = Self-efficacy; CG = Counselling Guidance

Discussion

The research results proved the important role of self-efficacy in influencing the level of career decision-making in vocational education students. According to previous research, high and low self-efficacy in students is important for career development (Trilling & Fadel, 2012; Walsh & Osipow, 1988). Self-efficacy provides an overview of various careers that can be assessed, analyzed and adapted to the potential and talents of the students. This is in accordance with the research conducted by (Bandura, 1989; Walsh & Osipow, 1988). Xin et al. (2020) reported that self-efficacy plays a leading role in determining career choices in graduates.

Digital literacy also has a significant positive effect on the career decision-making of vocational education students, both direct and through the mediation of self-efficacy. This strengthens students' self-efficacy in determining the right career according to their potential and talents. Furthermore, digital literacy plays a crucial role in online learning, one of which is providing provisions to explore various digital resources (Kara, 2019; Mutohhari et al., 2021; Pordelan et al., 2021).

Conversely, the social environment, which enables students to interact with each other, can influence their decision-making process. Pesch et al. (2017) stated that a supportive social environment motivates, provides career assistance, and helps influence students to make the right decisions after graduation. This is evidenced in this research, which reveals the significant influence of the social environment directly on vocational education students' career decision-making.

Students' unconditioned self-development in learning makes them feel less confident in making and selecting decisions. Therefore, through guidance and counselling, the development of students in learning at school can also be assisted and grown (Akyol & Bacanlı, 2019; Pordelan et al., 2020). Guidance and counselling can be a forum for developing their potential to be channeled into an appropriate media. Furthermore, students need to recognize their potential and talents that need to be developed through appropriate guidance and counselling (Hughes, 1971).

Efficacy can influence students' career decision-making due to certain factors, such as the growth and development of their potential and talents, followed by performance and learning outcomes (Skipor & Vorobieva, 2021). This opinion is directly proven in this research, which reveals a significant positive influence of counselling guidance on career decision-making, either directly or with the mediation assistance of self-efficacy. Guidance and counselling can indirectly foster high self-confidence, especially during online learning (Li et al., 2018; Mittendorff et al., 2012).

The significant influence of digital literacy, social environment, counselling guidance, and self-efficacy on career decision-making in vocational education students shows the importance of fulfilling their needs. The era of online learning is the basic reason for strong digital literacy for effective career exploration (Astuti et al., 2022; Majid et al., 2020; Pordelan et al., 2021; Purnama et al., 2021). This is because digital media provides various job references, hence literacy is needed to select and filter the right sources (Trilling & Fadel, 2012). The difference in these results is supported by empirical evidence from previous ones, which reveals students in the social environment only directly affect a person's mindset to make or determine a choice (Cadenas et al., 2020; Haley et al., 2014).

This implies that the deep influence of the social environment is less significant, especially during the online learning period, because students are more dominant in interacting virtually (Salta et al., 2022). The need for psychological strengthening and career views after graduation is an important reason for guidance and counselling to influence career decision-making significantly. In line with this, Kelly and Lee (2002) and Pordelan and Hosseinian (2021) stated that the need for high trust and confidence in students in making career decisions is a strong reason for the significant influence of self-efficacy. Strong digital literacy supported by intensive guidance and counselling can also increase self-efficacy in making student career decisions in vocational education (Da Silva et al., 2014; Galindo-Domínguez & Bezanilla, 2021; Pordelan et al., 2020).

Conclusion

In conclusion, equipping digital literacy, strengthening positive social interactions, providing counselling guidance, and growing self-efficacy are the right solutions to increasing optimism and the quality of career decision-making for

vocational education students. Self-efficacy and digital literacy have a significant role in influencing career decision-making for vocational education students, both directly and through mediation. Furthermore, the social environment and guidance and counselling play an important role in influencing students' career decision-making directly or with the mediating role of self-efficacy.

Recommendations

This research indicates the importance of vocational education in strengthening digital literacy, social interaction, counselling guidance, and self-efficacy in supporting student career decision-making in online learning conditions. Relevant offices and vocational education must educate and provide intensive counseling guidance to students during online learning. Additionally, teachers are expected to spur positive interactions between students, themselves, and the surrounding community to broaden career views.

Limitations

This research is limited to the variables and the incompleteness of sample characteristics due to the difficulty in obtaining them during distance learning. Therefore, further research is expected to develop other variables that significantly influence career decision-making. Additionally, the insignificant effect of social interaction with self-efficacy or indirect influence on career decision-making needs to be re-examined using a wider and representative sample to obtain better results.

Authorship Contribution Statement

Sutiman: Study framework development, instrument development; data analysis; manuscript review; and manuscript submitting. Sofyan: Data analysis; manuscript writing; and English proofreading. Soenarto: Data analysis; manuscript writing; and correction. Mutohhari: Data collection and visualization/presentation of data in the text. Nurtanto: Data collection and evidence; data input, typing; correction; and edition.

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Appendix

Test the Validities and Reliabilities of the Data

Variable	Indicators	Sub-indicators	Loading Factor	Cronbach's Alpha (α)
Digital literacy	Context & orientation	Understanding the context and orientation of digital technology	0.924	0.954
	Accessibility and exploration	Accessibility and exploration effectively and efficiently	0.668	0.613
	Information evaluation	Selective information according to purpose	0.740	0.719
	Digital creativity	Creative use of information	0.903	0.704
Social environment	Family environment	Student interaction with family	0.511	0.602
	School environment	Student interaction with school residents	0.590	0.679
	Society environment	Student interaction with the community	0.940	0.542
	Digital environment	Student interaction with digital environment	0.894	0.630
Counselling guidance	Problem-solving	Ability to help students' problem solving	0.533	0.843
	Service intensity	Intensity of Counselling guidance to students	0.579	0.839
	Service quality	Quality of Counselling guidance to students	0.507	0.636
Self-Efficacy	Self-motivation	Students' ability to motivate themselves	0.634	0.604
	Self-assessment	Students' ability to self-assess	0.690	0.539
	Believe in goals	Students' optimism on goal	0.913	0.739
	Believe in problem-solving	Students' optimism in problem-solving	0.718	0.520
Career Decision	Attitude towards career decisions	Students' attitudes towards the importance of career decision-making	0.772	0.937
	Career appraisal ability	Students' ability to assess career	0.826	0.769
	Career exploration efforts	Students' efforts in exploring careers	0.681	0.605
	Relevance of career assessment	Students' assessment of careers according to their field of expertise	0.808	0.530