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Multiliteracy and Work Readiness: The Central Role of Career Adaptability in the Digital Era

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Abstract

Digital transformation has become a global phenomenon that fundamentally changes the competencies required of college graduates to enter the workforce. Therefore, the multiliteracy concept, encompassing entrepreneurial literacy, human literacy, and digital literacy, is a crucial indicator that can influence the work readiness of the younger generation. This study aims to analyze the model of student work readiness formation in the digital era through the role of career adaptability as a psychosocial mechanism that bridges the relationship. This study uses a quantitative approach with a questionnaire as a data collection technique. Furthermore, the data is processed using Structural Equation Modeling analysis. This study found that human literacy and digital literacy have a direct effect on work readiness. Furthermore, entrepreneurial literacy contributes to increased career adaptability. Meanwhile, career adaptability is a determinant that can strengthen the relationship between multiliteracy and work readiness, emphasizing the importance of adaptive capacity in facing professional dynamics in the digital era. The results of this study have implications for the importance of higher education institutions developing needs-based educational curricula oriented toward work readiness and Outcome-Based Education-based learning.

Keywords: Entrepreneurial Literacy, Human Literacy, Digital Literacy, Job Readiness

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1. Introduction

Digital transformation has become an interesting issue and phenomenon that continues to develop globally. This transformation requires individuals to have adequate competitive capabilities. The changing landscape of the world of work in the digital era has brought new challenges for college graduates. Technological developments, automation, and economic globalization require the younger generation to have adaptive, creative, and competitive abilities to be able to face rapid and uncertain changes. The shift from an industrial-based economy to a knowledge-based economy makes work readiness one of the important indicators of the success of higher education in preparing superior and competitive human resources (Suarta et al., 2017). In this context, students are not only expected to have academic competencies, but also 21st-century literacy skills, including digital literacy, human literacy, and entrepreneurial literacy as important prerequisites for facing the era of the Industrial Revolution 4.0 and Society 5.0 (Binkley et al., 2012; OECD, 2018).

In Indonesia, the issue of low job readiness among college graduates remains a serious concern. Data from the Central Statistics Agency (BPS, 2024) shows that the open unemployment rate among graduates reached 5.21%, with the primary cause being a mismatch between educational competencies and industry needs. This condition indicates a gap between the skills acquired during education and the abilities needed in the workplace (skills mismatch). Various studies have shown that digital literacy plays a crucial role in improving individuals' ability to adapt to technological developments and new work patterns (Prensky, 2018; Rachmawati & Hidayat, 2022). Meanwhile, entrepreneurial literacy enables students to develop an independent, creative, and innovative mindset in creating and managing career opportunities (Lestari et al., 2021). Furthermore, human literacy, which encompasses communication, collaboration, empathy, and critical thinking skills, is a crucial foundation for students to interact and work effectively in an increasingly complex work environment (Trilling & Fadel, 2009).

These three aspects of literacy are closely related to career adaptability, namely an individual's ability to adjust to various changes, challenges, and uncertainties in the world of work (Savickas & Porfeli, 2012). Career adaptability allows students to navigate the transition from education to the world of work with more flexibility and resilience. However, although many studies have discussed the factors that influence student work readiness (Suarta et al., 2017; Rahmah et al., 2023), most studies still focus on single factors such as soft skills or internship experience, without comprehensively

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examining the multidimensional role of entrepreneurial literacy, human literacy, and digital literacy in shaping work readiness through career adaptability.

Furthermore, there remains a research gap regarding the role of career adaptability as a mediating mechanism between multidimensional literacy and student work readiness, particularly in the context of higher education in Indonesia. Human Capital theory (Becker, 1964) emphasizes that investment in knowledge, skills, and adaptability is a form of human capital that determines an individual's productivity and career success. On the other hand, Career Construction theory (Savickas, 2005) highlights the importance of psychological adaptation processes in building a meaningful and sustainable career. Therefore, integrating these two theoretical approaches is crucial to understanding how entrepreneurial literacy, human literacy, and digital literacy can simultaneously enhance student work readiness through career adaptability.

Based on the description, this study attempts to answer the main questions: (1) how do entrepreneurial literacy, human literacy, and digital literacy influence students' work readiness; and (2) how does career adaptability mediate the relationship between these three types of literacy and work readiness. The purpose of this study is to analyze the direct and indirect influence of the three literacy dimensions on students' work readiness with career adaptability as a mediating variable. Theoretically, this study is expected to broaden the understanding of the relationship between multiliteracy and work readiness using the Human Capital Theory and Career Construction Theory approaches. Practically, the results of this study can be the basis for developing a higher education curriculum based on Outcome-Based Education (OBE) that integrates digital literacy, human literacy, and entrepreneurial literacy to produce graduates who are adaptive, innovative, and ready to face the challenges of the world of work in the digital era.

2. Literature Review

2.1 Student Work Readiness

Work readiness is a multidimensional construct that describes an individual's level of ability to meet the demands and expectations of the workplace (Caballero & Walker, 2010). This concept encompasses technical skills (hard skills), social skills (soft skills), and psychological readiness such as self-confidence and achievement motivation. In the context of higher education, work readiness serves as a benchmark for curriculum effectiveness in producing competent and competitive graduates (Suarta et al., 2017).

Recent research shows that student work readiness is influenced by a combination of internal and external factors, such as internship experience, digital literacy, career orientation, and career adaptability (Rahmah et al., 2023; Lee & Clarke, 2021). The biggest challenge for students today is adapting to digital transformation and changing job structures that demand flexibility and continuous learning. Therefore, studying the factors shaping work readiness is relevant for strengthening the Outcome-Based Education (OBE) model in higher education.

2.2 *Entrepreneurial Literacy*

Entrepreneurial literacy refers to an individual's ability to understand, manage, and apply entrepreneurial principles in career decision-making (Yanti et al., 2021). This literacy dimension encompasses an understanding of business opportunities, risks, innovation, and entrepreneurial values such as creativity, resilience, and future orientation (Wardana et al., 2020).

Research by Setiawan et al. (2022) found that students with high levels of entrepreneurial literacy tend to have better self-confidence and career readiness. Entrepreneurial literacy also shapes an entrepreneurial mindset, a mindset that encourages students to not only seek but also create jobs. Within the context of Human Capital Theory (Becker, 1964), entrepreneurial literacy can be seen as a form of human capital investment that increases productivity and an individual's ability to adapt to changes in the labor market.

Furthermore, a study by Neneh (2022) showed that entrepreneurial literacy is relevant not only for aspiring entrepreneurs but also for those working in organizations because it enhances initiative, problem-solving skills, and innovation orientation. This strengthens the argument that entrepreneurial literacy positively contributes to students' job readiness.

2.3 Human Literacy

Human literacy is a skill that focuses on human aspects such as empathy, communication, collaboration, leadership, and social awareness (Trilling & Fadel, 2009). In the digital era, this literacy has become a crucial pillar of 21st-century competencies because it complements technological skills with emotional intelligence and social ethics (Fadel et al., 2015).

Several recent studies (Klehe et al., 2020; Haris et al., 2023) show that students with high human literacy have better career adaptability and work readiness. They are better able to work in cross-cultural teams, resolve interpersonal conflicts, and demonstrate collaborative leadership in dynamic work environments. Furthermore, human literacy also strengthens character values such as responsibility and empathy, which serve as moral foundations in the professional world.

According to Human Capital Theory, human literacy is a non-cognitive skill that significantly contributes to work productivity. Meanwhile, from the perspective of Career Construction Theory (Savickas, 2005), human literacy facilitates the development of a meaningful career identity through social interaction and self-reflection.

2.4 Digital Literacy

Digital literacy extends beyond the ability to use digital devices, encompassing an understanding of information, communication, cybersecurity, and the ethics of technology use (Ng, 2012). In the workplace, digital literacy is key to success in navigating technology-driven industrial transformations such as artificial intelligence, big data, and automation (Prensky, 2018; Belshaw, 2020).

Research by Rachmawati and Hidayat (2022) shows that digital literacy significantly influences students' job readiness by improving their ability to adapt to technology. Students with high digital literacy are more likely to adapt to technology-based work systems, collaborate online, and develop digital professional networks.

Furthermore, a study by Anggraeni et al. (2023) found that digital literacy also has a positive relationship with career adaptability. The ability to understand and manage digital technology makes individuals more confident in facing career uncertainty and able to design sustainable career development strategies. Therefore, digital literacy functions not only as a technical skill but also as a strategic resource for job readiness in the Industry 4.0 era.

2.5 Career Adaptability

The concept of career *adaptability* was introduced by Savickas (2005) in Career Construction Theory, which emphasizes that career success is determined not only by technical skills but also by an individual's ability to adapt to changes in the work environment. Career adaptability encompasses four main dimensions: concern (career future), control (self-direction), curiosity (curiosity about career opportunities), and confidence (confidence in one's own abilities). Empirical research shows that career adaptability acts as a mediator between personal factors and work readiness. For example, Guan et al. (2021) found that career adaptability bridged the relationship between career competency and successful work transitions in Chinese college students. Another study by Santoso and Hasanah (2022) also confirmed that career adaptability strengthens the relationship between digital literacy and work readiness by enhancing career reflection and decision-making skills. Thus, career adaptability is a crucial component explaining how multidimensional literacies (entrepreneurial, human, and digital) can simultaneously contribute to students' work readiness.

Based on the integration of theory and empirical findings, this research is grounded in Human Capital Theory (Becker, 1964) and Career Construction Theory (Savickas, 2005). Human Capital Theory explains that investment in entrepreneurial, human, and digital literacy is a form of human capital strengthening that increases productivity and work competitiveness. Meanwhile, Career Construction Theory explains that career success is determined by the extent to which an individual is able to adapt and construct their professional identity through learning and experience.

Conceptually, entrepreneurial literacy, human literacy, and digital literacy are assumed to positively influence student work readiness, both directly and indirectly through career adaptability as a mediating variable. Therefore, this study seeks to fill the literature gap by developing a comprehensive model linking multiliteracy and student work readiness in the digital era.

3. Research Methods and Materials

3.1. Research Design and Approach

This research uses field research with a quantitative approach to explain the relationship between each variable construct built in the research model.

3.1.1. Data Collection and Samples

The sample in this study comprised all university students in Indonesia. The sample size was determined using a rule-of-thumb approach for Structural Equation Modeling (SEM), which recommends 5–10 times the number of indicators analyzed (Sarstedt et al., 2022). With a total of 20 indicators, the minimum sample requirement ranges from 100 to 200 respondents. To ensure statistical power, parameter stability, and accommodate possible missing or incomplete data, this study targeted a final sample size of 200 respondents, with 100 respondents set as the minimum limit to maintain the validity of the SEM analysis.

3.1.2. Measurement Model

Evaluation of the reflective measurement model in PLS-SEM follows four main steps: indicator reliability, internal consistency reliability, convergent validity, and discriminant validity using the PLS Algorithm (Hair et al., 2017). First, indicator reliability is assessed through outer loadings, where a value above 0.708 is recommended because it indicates that the construct explains more than 50 percent of the indicator's variance (Hair et al., 2013). Indicators with loadings between 0.40 and 0.708 can be considered for removal if their removal improves reliability and validity, while indicators below 0.40 should be removed (Hair et al., 2021). Second, internal consistency reliability evaluates the degree of correlation between indicators, which is commonly assessed using Cronbach's alpha, rho_A, and Composite Reliability (CR).

For composite reliability criteria, higher values indicate a higher level of reliability. Values between 0.60 and 0.70 can be considered acceptable in exploratory research, while results between 0.70 and 0.95 represent satisfactory to good levels of reliability (Hair et al., 2019). However, values above 0.95 are problematic because they indicate nearly identical and redundant items, which can occur due to (nearly) identical item questions in the survey or undesirable response patterns such as straight-lining (Hair et al., 2017).

Third, convergent validity tests the extent to which a construct explains the variance of its indicators, using the Average Variance Extracted (AVE). A minimum AVE value of 0.50 is required, indicating that the construct captures at least half of the variance of its indicators (Hair et al., 2019). Finally, discriminant validity assesses whether the constructs are empirically distinct from each other, which in this study was evaluated using the Fornell-Larcker criterion. Finally, to ensure that collinearity between indicators does not bias the measurement model, this study examined the Variance Inflation Factor (VIF) value. A VIF value below the recommended threshold of 5 (Hair et al., 2019) indicates the absence of critical collinearity issues.

3.1.2. Data analysis

Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS software version 3.3.3. PLS-SEM was chosen due to its ability to handle complex models involving latent variables and its flexibility in accommodating both reflective and formative constructs (Fattore et al., 2018; Md Salleh et al., 2021). This method is particularly suitable for exploratory research, as it does not require strict assumptions regarding data distribution, making it highly relevant to the social sciences and business studies (Cepeda-Carrion et al., 2019; Hair et al., 2017; Sarstedt et al., 2022). The analysis was conducted in two stages: first, the measurement model was evaluated to assess construct validity and reliability; second, the structural model was examined to test the hypothesized direct and indirect relationships between exogenous and endogenous variables using bootstrapping methods (Hair et al., 2017, 2021).

4. Results and Discussion

4.1. Research Result

4.1.1. Respondent Demographics

Based on the results of data analysis, it is known that the respondents consisted of 243 respondents with a gender distribution dominated by men (70.37%) compared to women (29.63%). In terms of age, the majority of participants were 21 years old (38.27%), followed by those aged 20 years (26.75%), while smaller proportions were seen in respondents aged 22 years (13.58%), 19 years (11.52%), 23 years (3.70%), and 25–32 years (6.17%). This indicates that the sample mostly consisted of individuals in the early stages of emerging adulthood. Regarding educational level, the majority of participants were undergraduate students (S1, 95.88%), with only a small portion enrolled in D4 (3.70%) and D3 (0.41%) programs. Overall, the demographic profile indicates that respondents mostly represent young undergraduate students, especially men aged around 20–21. The following is a summary of the demographic table of the study respondents:

Table 1. Respondent Demographics

Basic Characteristics	Full Sample	
	Amount	Percentage (%)
Gender		
Man	171	70
Woman	72	30
Age		
19 – 24 Years	219	90
Over 25 Years	24	10
Level of education		
Bachelor degree)	233	96
Diploma IV (D4)	9	3.7
Diploma III (D3)	1	0.41

Source: Author's Analysis, (2025).

4.1.2. Measurement Model

Based on the evaluation of the reflective measurement model in Table 2, all constructs in this study demonstrated strong indicator reliability, internal consistency reliability, and convergent validity. The outer loadings of all items exceeded the recommended threshold of 0.708, confirming that each indicator contributes significantly to the corresponding construct. Internal consistency reliability, as measured by Cronbach's alpha, rho_A, and Composite Reliability (CR), also met the required standards, with all CR values ranging from 0.884 to 0.931—well above the minimum threshold of 0.70 and below the critical upper limit of 0.95. This indicates satisfactory to good reliability with no redundancy. Furthermore, the Average Variance Extracted (AVE) values for all constructs were above 0.50, ranging from 0.742 to 0.794. This indicates that more than half of the variance in each construct is explained by its indicators. These findings collectively confirm that the measurement model has strong reliability and convergent validity, providing a strong foundation for further analysis of the structural model.

Table 2. Analysis of Construct Loadings, Reliability, and Convergent Validity

Item Code	Item Description (Construct)	Loading	Alpha	Rho_A	CR	AVE
	Entrepreneurship Literacy (EL)					
EL1	I feel like I understand the concepts of entrepreneurship well.	0.895				
EL2	I feel capable of recognizing business opportunities around me.	0.865	0.913	0.914	0.939	0.794
EL3	I feel I have the skills to create a business plan.	0.921				
EL4	I feel capable of taking calculated risks in business.	0.882				
	Digital Literacy (DL)					
DL1	I feel capable of using digital devices and applications to complete tasks or work.	0.851	0.884	0.885	0.920	0.742
DL2	I understand the importance of data security and cybersecurity in digital activities.	0.873				

DL3	I am able to search, evaluate, and manage digital information effectively.	0.880				
DL4	I use social media and digital platforms to develop my career or business.	0.840				
	Human Literacy (HL)					
HL1	I have good interpersonal communication skills.	0.842				
HL2	I am able to work effectively in a team.	0.900				
HL3	I am able to take initiative and demonstrate leadership in a group.	0.894	0.898	0.899	0.929	0.767
HL4	I have empathy and social awareness when interacting with others.	0.865				
	Career Adaptability (CA)					
CA1	I feel flexible in adapting to career and job changes.	0.878				
CA2	I have the ability to learn independently and continuously.	0.885	0.889	0.891	0.923	0.75
CA3	I have a clear long-term career plan.	0.874				
CA4	I am ready to change fields of work or work environments if necessary.	0.826				
	Work Readiness (WR)					
WR1	I feel I have technical skills that align with my field of study.	0.860				
WR2	I am ready to face the job interview and selection process.	0.901	0.901	0.901	0.931	0.771
WR3	I am confident entering the workforce after graduation.	0.883				
WR4	I am able to compile CV, portfolio and cover letter effectively.	0.866				

Source: Author's Analysis, (2025)

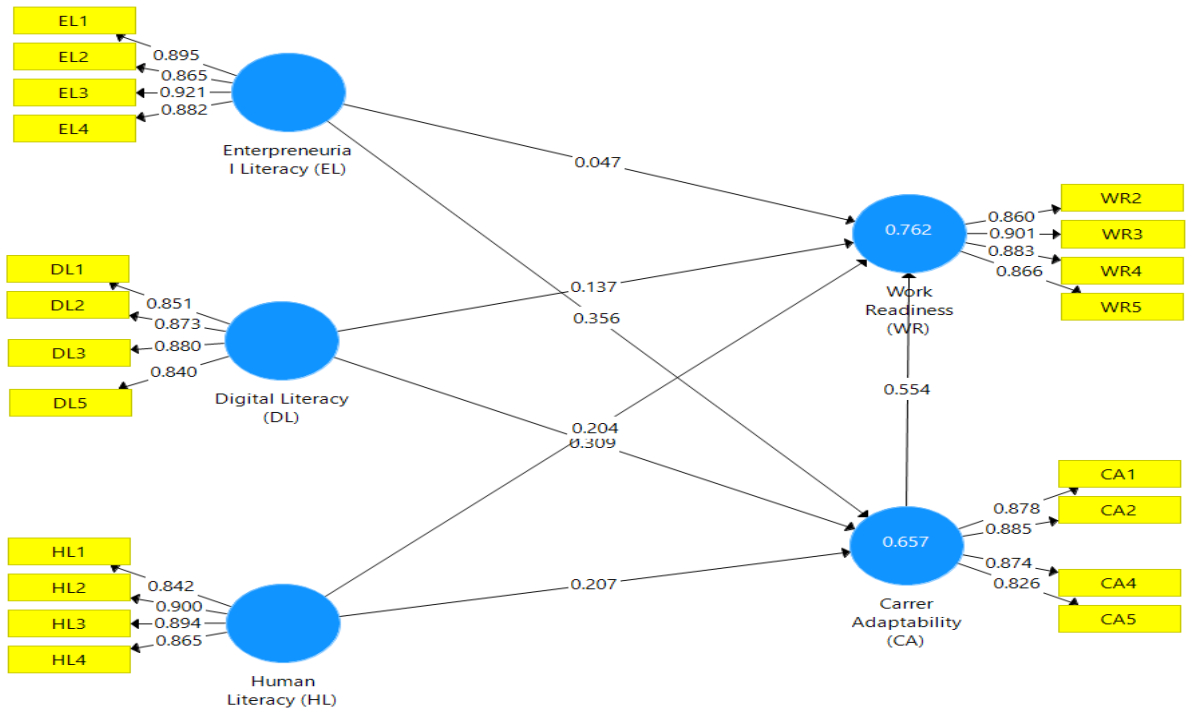

Figure 1. Path Analysis

Next, discriminant validity was assessed. This study applied the Fornell-Larcker criterion, which requires that the square root of the Average Variance Extracted (AVE) of each construct must be greater than its correlation with other constructs (Fornell & Larcker, 1981; Franke & Sarstedt, 2019; Hair et al., 2019). Fulfillment of this criterion indicates that a construct shares more variance with its own indicators than with other constructs. As presented in Table 3, all constructs met this requirement, thus confirming that discriminant validity has been established in the measurement model.

Table 3. Fornell-Larcker results

	Career Adaptability (CA)	Digital Literacy (DL)	Entrepreneurship Literacy (EL)	Human Literacy (HL)	Work Readiness (WR)
Career Adaptability (CA)	0.866				
Digital Literacy (DL)	0.753	0.861			
Entrepreneurship Literacy (EL)	0.757	0.765	0.891		
Human Literacy (HL)	0.745	0.829	0.791	0.876	
Work Readiness (WR)	0.844	0.759	0.732	0.767	0.878

Source: Author's Analysis, (2025)

The Fornell-Larcker results in Table 3 indicate that discriminant validity has been established, as the square root of the Average Variance Extracted (AVE) for each construct (diagonal values) is greater than its correlation with other constructs (off-diagonal values). For example, Career Adaptability shows a square root of AVE of 0.866, which is higher than its correlation with Digital Literacy (0.753), Entrepreneurial Literacy (0.757), Human Literacy (0.745), and Work Readiness (0.844). Similarly, Digital Literacy (0.861), Entrepreneurial Literacy (0.891), Human Literacy (0.876), and Work Readiness (0.878) all exceed their respective correlations with other constructs. These findings confirm that each construct shares more variance with its own indicators than with indicators of other constructs, thus meeting the Fornell-Larcker criteria and providing sufficient evidence of discriminant validity in the measurement model. The final step in assessing a reflective measurement model is to assess collinearity using the Variance Inflation Factor (VIF). In PLS-SEM, assessing the outer VIF value is recommended to detect potential multicollinearity issues among indicators within the same construct. A VIF value below the threshold of 5 indicates that collinearity is not a problem (Hair et al., 2019).

Table 4. Outer VIF Results

Item Code	VIF
EL1	2,949
EL2	2,535
EL3	3,651
EL4	2,675
DL1	2,261
DL2	2,441
DL3	2.51
DL5	2,029
HL1	2,144
HL2	2,971
HL3	2,947
HL4	2,382
CA1	2,633
CA2	2,677
CA4	2,397
CA5	1,985
WR2	2,258
WR3	3,019
WR4	2,727
WR5	2,412

Source: Author's Analysis, (2025)

As shown in Table 4, all outer VIF values for the indicators ranged from 1.985 to 3.651, which is well below the recommended threshold of 5. This indicates that multicollinearity among the indicators is not a problem in the measurement model, thus confirming that each indicator contributes uniquely to its respective construct.

4.1.3. Structural Model

To assess the structural model, this study used the Consistent Partial Least Squares (PLS) method with a bootstrapping procedure using SmartPLS. First, multicollinearity among the predictor constructs was examined using the Variance Inflation Factor (VIF), where values below the recommended threshold of 5 indicate no collinearity problems (Hair et al., 2019). Next, the explanatory power of the model was evaluated using the R^2 value, with thresholds of 0.75, 0.50, and 0.25 representing substantial, moderate, and weak explanatory power, respectively (Henseler et al., 2009). The effect size f^2 was then assessed to determine the contribution of each exogenous construct to the R^2 value of an endogenous construct, where values of 0.02, 0.15, and 0.35 indicate small, medium, and large effects, respectively (Cohen, 2013). Additionally, the predictive relevance of the model was evaluated using the Q^2 value obtained through a blindfolding procedure, with values greater than zero confirming predictive relevance and values above 0.50 indicating strong predictive accuracy (Hair et al., 2019).

Table 5. VIF of Inner Model

Path	VIF
CA → WR	2,913
DL → WR	3,551
EL → WR	2,977
HL → WR	3,943
WR → DL	3,829
WR → EL	3,346
WR → HL	4,067

Source: Author's Analysis, (2025)

As presented in Table 5, all inner VIF values ranged from 2.913 to 4.067, which is below the recommended threshold of 5 (Hair et al., 2019). These results indicate that multicollinearity is not a problem among the predictor constructs in the structural model, confirming that each construct contributes uniquely to explaining variance in the endogenous variables.

Table 6. Results of R^2, f^2, Q^2

Endogenous Construct	R^2	f^2 (Effect Size)	Q^2
Career Adaptability (CA)	0.657	–	0.568
Work Readiness (WR)	0.762	–	0.601
Digital Literacy (DL)	–	0.078	0.558
Entrepreneurial Literacy (EL)	–	0.124	0.638
Human Literacy (HL)	–	0.032	0.596
Career Adaptability (CA → WR)	–	0.444	–

Source: Author's Analysis, (2025)

As presented in Table 6, the R^2 values indicate the explanatory power of the endogenous constructs in the model. Career Adaptability (CA) has an R^2 of 0.657, reflecting a moderate to substantial level of explanatory power, while Work Readiness (WR) shows an R^2 of 0.762, indicating substantial explanatory power. According to Henseler et al. (2009), these results indicate that the exogenous constructs explain a substantial proportion of the variance in CA and WR, providing strong support for the model's predictive power at the structural level. In addition to explanatory power, the f^2 effect size values provide insight into the contribution of individual predictors to the endogenous variables. Digital Literacy (0.078) and Human Literacy (0.032) show small effect sizes, Entrepreneurial Literacy (0.124) indicates a small to medium effect, while Career Adaptability (0.444) shows a large effect on Work Readiness. According to Cohen (2013), these findings imply that Career Adaptability is the strongest predictor of Job Readiness, while other constructs contribute smaller but still significant effects.

Finally, the Q^2 values obtained through the blindfolding procedure indicate the predictive relevance of the constructs. All Q^2 values are well above zero, with CA (0.568), WR (0.601), DL (0.558), EL (0.638), and HL (0.596), indicating strong predictive relevance for all constructs in the model. Following Hair et al. (2019a), values above 0.50 represent strong predictive accuracy, thus confirming that the model has excellent ability to predict the indicators of its constructs. Then, the significance of the hypothesized relationships was tested through a bootstrapping procedure with 10,000 resamples at a 5% significance level, which allows for the assessment of both direct and indirect effects in the structural model (Hair et al., 2021). In this context, the path coefficient reflects the strength and direction of the relationship between constructs, while the t-statistic is used to test the significance of this relationship, with values above 1.96 indicating significance at the 5% level. The results of this analysis can be seen in Table 7.

Table 7. Hypothesis Testing

Hypothesis	Path coefficient (β)	T Statistics	p-value	Conclusion
EL → CA	0.356	4,521	0.000	Supported
EL → WR	0.047	0.745	0.228	Not Supported
DL → CA	0.309	3,849	0.000	Supported
DL → WR	0.137	1,999	0.023	Supported
HL → CA	0.207	2,261	0.012	Supported
HL → WR	0.204	2,336	0.010	Supported
CA → WR	0.554	7,704	0.000	Supported
EL → CA → WR	0.197	3,876	0.000	Supported
DL → CA → WR	0.171	3.118	0.001	Supported
HL → CA → WR	0.115	2,364	0.009	Supported

Source: Author's Analysis, (2025)

Direct effect analysis showed that entrepreneurial literacy (EL) had a significant positive impact on career adaptability (CA) ($\beta = 0.356$, $t = 4.521$, $p < 0.001$), but its direct effect on work readiness (WR) was not supported ($\beta = 0.047$, $t = 0.745$, $p > 0.05$). This finding suggests that although EL improves students' career adaptability, it does not directly contribute to their readiness to enter the workforce. In contrast, digital literacy (DL) significantly affected both CA ($\beta = 0.309$, $t = 3.849$, $p < 0.001$) and WR ($\beta = 0.137$, $t = 1.999$, $p < 0.05$). This indicates that digital skills play a dual role in shaping adaptability and preparing students for professional demands. Similarly, human literacy (HL) had a significant positive effect on both variables, namely CA ($\beta = 0.207$, $t = 2.261$, $p < 0.05$) and WR ($\beta = 0.204$, $t = 2.336$, $p < 0.05$). This finding confirms the importance of interpersonal, social, and leadership skills in improving not only adaptability but also direct job readiness. Among all predictors, CA showed the strongest direct effect on WR ($\beta = 0.554$, $t = 7.704$, $p < 0.001$). This confirms its central role as a key determinant of students' readiness to enter the labor market.

Regarding the mediation effect, the results confirmed that CA significantly mediated the relationship between EL, DL, and HL with WR. Specifically, EL ($\beta = 0.197$, $t = 3.876$, $p < 0.001$), DL ($\beta = 0.171$, $t = 3.118$, $p < 0.01$), and HL ($\beta = 0.115$, $t = 2.364$, $p < 0.01$) each showed a significant indirect effect on WR through CA. This finding indicates that although EL may not directly improve WR, its influence is fully realized through the enhancement of CA. Meanwhile, DL and HL strengthen WR both directly and indirectly through CA, indicating partial mediation. Overall, CA emerges as a key construct that bridges students' literacy competency with their readiness to enter the workforce.

4.2. Discussions

The research findings revealed that entrepreneurial literacy (EL) has a significant positive effect on career adaptability (CA), but its direct effect on work readiness (WR) was not evident. This is in line with studies that suggest that entrepreneurial skills primarily serve to foster adaptability and resilience in the face of career uncertainty, rather than directly enhancing work readiness (Kaiyanan et al., 2024; Lee & Jung, 2021). Previous research also suggests that entrepreneurial competencies often manifest in the form of opportunity recognition and problem-solving abilities, which strengthen adaptability more than work readiness itself (Rodriguez & Lieber, 2020). Furthermore, previous studies emphasized that EL requires intermediary mechanisms, such as adaptability, to translate into employability-related outcomes (Lim et al., 2021). Thus, the results of this study highlight that EL indirectly contributes to WR by enhancing CA, confirming adaptability as a critical pathway through which entrepreneurial competencies shape work readiness.

One possible explanation for why entrepreneurial literacy (EL) does not directly impact employability (WR) lies in the contextual and temporal nature of entrepreneurial skills. While EL equips individuals with creativity, risk-taking, and opportunity recognition, these competencies are often more strategic and long-term in nature, rather than directly applicable to entry-level job requirements (Dada et al., 2023). In contrast, employers often emphasize technical proficiency, domain-specific knowledge, and behavioral skills in the workplace—factors that may not be directly addressed by entrepreneurial literacy (Morris et al., 2023). Another consideration is that students or individuals early in their careers may not have had sufficient opportunities to apply their entrepreneurial skills in real-world work situations, creating a gap between entrepreneurial knowledge and demonstrable employability (Morris et al., 2023). Therefore, EL indirectly contributes to WR by strengthening career adaptability, which in turn facilitates the transfer of entrepreneurial competencies into employability-related outcomes.

Furthermore, this study demonstrates that digital literacy (DL) exhibits both direct and indirect effects on employability, making it a critical factor in students' transition into the workforce. Previous studies have shown that digital competency is increasingly recognized as an essential employability skill that directly enhances students' ability to meet labor market demands (Cham et al., 2021; Tee et al., 2024). Furthermore, research indicates that DL enhances CA by equipping individuals with the flexibility to navigate technological change and complex work environments (Gupta & Mahajan, 2023). Furthermore, prior evidence highlights that organizations consistently prioritize candidates with strong digital skills, which strengthens both immediate employability and long-term adaptability (Mahajan et al., 2022). Therefore, this dual effect of DL confirms its central position as both a direct driver of WR and an indirect driver through CA.

Furthermore, Human Literacy (HL) significantly predicted both CA and WR, underscoring the importance of interpersonal and socio-emotional skills in developing employability. Previous studies consistently found that teamwork, communication, and leadership are among the most sought-after skills by employers, directly contributing to students' employability (Ingsih, 2023; Putra et al., 2020; Schweinsberg & Garivaldis, 2020). Furthermore, HL supports adaptability by fostering collaboration, empathy, and leadership in dynamic environments, which are key to navigating transitions and uncertainties in the labor market (Onsomu et al., 2025). Other research also shows that HL builds social capital, enabling students to mobilize networks and opportunities that enhance both adaptability and employability outcomes (Cady et al., 2024). Consequently, these findings reinforce HL as a foundation of employability, shaping both direct WR and adaptability-driven development.

Furthermore, career adaptability (CA) emerged as the strongest predictor of WR, highlighting its crucial role in preparing students for the workforce. Previous studies confirm that CA serves as a psychosocial resource that enables individuals to navigate career transitions, uncertainty, and complex employment challenges (Johnston, 2018; Ojala et al., 2023). Evidence also suggests that higher levels of CA are associated with greater perceived employability, career engagement, and job search success (Matijaš & Seršić, 2021). Furthermore, recent research suggests that CA mediates the influence of various personal competencies, such as digital and entrepreneurial skills, on employability outcomes (Gerçek, 2023). Therefore, these findings confirm that CA is a central mechanism in enhancing WR, establishing it as a critical development target in higher education.

Furthermore, further mediation analysis confirmed that CA significantly mediated the relationships between EL, DL, and HL with WR, with varying strengths of indirect effects. This finding aligns with previous studies identifying adaptability as a key mechanism translating personal and professional competencies into employability outcomes (Chen et al., 2023). Specifically, this result aligns with evidence showing that EL primarily exerts an indirect effect on WR through CA, indicating full mediation (Aminjafari et al., 2023). In contrast, DL and HL exhibited both direct and indirect paths, suggesting partial mediation consistent with findings that digital and social competencies provide direct employability benefits while enhancing adaptability (Sou et al., 2022). Collectively, these results confirm CA as a bridging construct that strengthens the impact of students' literacy competencies on WR, highlighting its strategic importance for employability development.

5. Conclusions and Limitations of the Research

Based on the research results, it can be *concluded* that this study empirically proves that multiliteracy, including entrepreneurial literacy, human literacy, and digital literacy, is an important variable in shaping students' work readiness in the digital era. The findings show that all three types of literacy contribute significantly to career adaptability, but not all directly affect work readiness. Digital literacy and human literacy are proven to have a direct influence on work

readiness, while entrepreneurial literacy shows an indirect influence through career adaptability. Overall, the results of this study strengthen the perspective of Career Construction Theory that adaptability is a core competency for successful career transitions, and expand Human Capital Theory by showing that investment in multiliteracy not only improves technical knowledge and skills but also strengthens adaptive abilities that determine graduates' competitiveness.

While this study makes significant contributions, it has several limitations. First, it focused only on college students in general, so the results cannot be differentiated and generalized to a broader context. Therefore, future research should expand the scope of the study. Second, this study focused solely on multiliteracy, thus neglecting other important variables. Therefore, future research should include relevant variables that influence student work readiness, such as skills, experience, and so on.

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