Digital Literacy and Career Guidance: A Study on University Students in Indonesia

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Article Info	ABSTRACT
	In the contemporary landscape of higher education, digital literacy has emerged as a crucial skill set for students, particularly in the realm of career guidance and professional development. This quantitative study aims to explore the relationship between digital literacy and career guidance among university students in Indonesia. By employing a survey methodology, data will be collected from a sample of 300 university students representing various disciplines and academic levels. Statistical analysis, including Structural Equation Modeling with Partial Least Squares (SEM-PLS), will be conducted to examine the extent to which digital literacy influences career guidance practices and career-related outcomes. The findings of this study are expected to contribute to our understanding of the role of digital literacy in shaping career trajectories and inform educational policies and interventions aimed at enhancing students' digital competencies for successful career development.

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1. INTRODUCTION

Digital literacy has become a cornerstone in higher education, essential for students to excel academically and professionally in today's digital era. Studies emphasize the significance of digital literacy for administrative staff in higher education institutions [1], [2], [3], highlighting its direct impact on effort expectancy and, consequently, technology acceptance. Furthermore, research underscores the role of digital literacy in enhancing students' competencies, such as learning, collaborating, and problem-solving in the digital age [4], [5].

Integrating digital literacy into vocational education is crucial for preparing students for the modern workforce, emphasizing the need for equitable access to technology and teacher training [6], [7]. The value of digital literacy extends beyond academia, influencing the labor market's demands in the digital economy and emphasizing the importance of digital competence for universities in adopting modern learning technologies [8], [9]. Additionally, digital literacy has revolutionized access to English literature, enabling broader readership and fostering

literary communities through digital platforms [10], [11], [12].

In the rapidly evolving digital economy, possessing strong digital literacy skills is paramount for individuals to capitalize on opportunities, navigate technological advancements, and make substantial contributions to the workforce [1], [6], [13], [14], [15]. Digital literacy encompasses the ability to effectively utilize digital tools, find and evaluate information, collaborate with others, and adapt to challenges in the digital age. Research highlights that digital literacy positively impacts students' learning outcomes, academic performance, and readiness to face future challenges. Moreover, the components of digital literacy for global citizens include self-initiation, trendiness, usefulness, and good attitude, emphasizing the importance of self-learning and flexible learning approaches to enhance digital skills. As the digital landscape reshapes work processes and labor relations, individuals with robust digital literacy will be better equipped to meet the demands of the digital era and contribute significantly to the workforce.

In the realm of career guidance, digital literacy plays a pivotal role in empowering students to navigate a plethora of career pathways, develop essential skills, and engage with potential mentors and employers. The utilization of online platforms, social media networks, and digital tools has revolutionized career guidance services, offering tailored resources and personalized support to cater to individual aspirations [16], [17]. By enhancing students' digital literacy, these interventions can effectively aid in career exploration and decision-making processes [18], [19]. Moreover, the integration of machine learning algorithms for personality prediction and career recommendations further underscores the significance of digital proficiency in shaping students' career trajectories [20], [21]. As education and career guidance platforms continue to evolve, prioritizing digital literacy among students becomes imperative for ensuring their readiness for the dynamic demands of the modern workforce [22], [23].

In the context of Indonesian university students, the intersection between digital literacy and career guidance is crucial for enhancing employability in the digital age. Research indicates a growing need for digital literacy skills [24], [25], with students relying heavily on technology for information access and academic tasks [22]. Additionally, there is a strong awareness among students regarding the impact of technology on future employability, emphasizing the importance of integrating career capital resources into higher education curricula to foster students' readiness for the evolving workplace [26], [27]. By understanding how digital literacy influences career guidance practices and outcomes, policymakers and educators can tailor interventions to empower students, bridging the gap between academic knowledge and practical skills required for success in the modern workforce.

Therefore, this quantitative study aims to address this gap in the literature by investigating the relationship between digital literacy and career guidance among university students in Indonesia. By employing a rigorous research methodology and leveraging quantitative data analysis This study seeks to provide insights into the following research questions: What is the level of digital literacy among university students in Indonesia? To what extent does digital literacy influence career guidance practices and career decision-making? Are there any demographic variations in digital literacy and its impact on career guidance?

2. LITERATURE REVIEW

2.1 Digital Literacy in Higher Education

Digital literacy has become a crucial component in contemporary higher education, encompassing various competencies such as basic computer skills, information literacy, media literacy, critical thinking, and digital citizenship. Scholars have

highlighted its significance not only for accessing and evaluating information but also for creating and sharing knowledge in diverse formats [1], [6], [8]. The distinction between digital literacy and ICT literacy has been emphasized, with the former focusing on the effective use of digital technologies and the latter encompassing a broader range of skills to function in an information society [28]. Additionally, the ideological aspect of digital literacy has been underscored, emphasizing its role as a social practice that goes beyond mere technical skills, impacting teaching approaches and curriculum development in educational settings [29].

The integration of digital literacy initiatives into higher education curricula has gained significant traction, reflecting the acknowledgment of technology's transformative influence on teaching, learning, and scholarly activities [30], [31]. Beyond technical skills, digital literacy education aims to cultivate critical thinking, creativity, and ethical engagement with digital tools and resources, emphasizing a holistic approach to digital competence [32], [33]. By imparting these competencies to students, universities strive to equip them for continuous learning and active participation in an information-centric society, aligning with the goal of preparing individuals for the demands of the modern workforce and societal landscape [8], [28]. This comprehensive approach to digital literacy underscores the importance of not only technical proficiency but also the development of essential cognitive and ethical capacities essential for navigating the digital realm effectively [4], [34].

2.2 Career Guidance and Digital Technologies

Career guidance services have indeed evolved significantly with the integration of digital technologies, online platforms, and social media networks, enhancing the support provided to students and job seekers. The utilization of social networks in career guidance work has become a popular and effective tool, expanding the reach of target audiences and adapting guidance materials to suit individual characteristics [35]. Additionally, the development of online education and career guidance platforms has become essential in empowering individuals with comprehensive information about educational and employment opportunities, focusing on individual interests, skills, and values to prepare them for the future [36]. Moreover, advancements in career guidance systems now incorporate personality prediction through data analytics, recommending suitable career choices based on users' Big Five personality traits and learning styles [18]. Ultimately, the fusion of traditional career guidance principles with digital tools has revolutionized the field, offering personalized and data-driven support to individuals navigating their career paths.

Online career platforms play a pivotal role in empowering individuals to navigate their career development journey by offering a wide array of tools and resources, including career assessments, job boards, networking forums, and skill development courses [22], [37]. Social media platforms, particularly LinkedIn, serve as potent tools for professional networking and personal branding, facilitating connections with industry professionals and potential employers [38]. Moreover, data-driven approaches like predictive analytics enable career counselors to

deliver tailored recommendations and interventions based on individuals' preferences, behaviors, and aptitudes, enhancing the effectiveness of career guidance services [39], [40]. By leveraging these online platforms and data-driven strategies, individuals can take proactive steps towards achieving their career goals and making informed decisions about their professional trajectories.

2.3 Digital Literacy and Career Development

Digital literacy plays a crucial role in career development by empowering individuals with the necessary skills to navigate the modern workforce effectively. Individuals with higher levels of digital literacy exhibit increased confidence and proficiency in utilizing technology for various career-related activities, including job search, networking, and professional growth [1], [10], [41]. Moreover, digital literacy enables individuals to adapt to technological advancements in the workplace, enhancing their capacity to learn and apply new skills as job demands evolve [6], [15]. By fostering digital literacy, individuals can enhance their employability, stay competitive in the job market, and position themselves for career advancement in an increasingly digital-centric environment.

Disparities in digital literacy can indeed worsen existing inequalities in access to job prospects and career advancement, especially for marginalized groups [42], [43], [44], [45]. The digital divide, characterized by unequal exposure to technology opportunities, both in terms of access and proficiency, plays a crucial role in perpetuating social inequalities. Individuals with limited digital skills face challenges in navigating the modern job market, where ICT

proficiency is essential for success. Moreover, the intersection of gender, class, age, and ethnicity further complicates the issue, highlighting the need for policies that promote broader technology access and more equitable distribution of its benefits. Addressing digital literacy disparities is crucial to ensure fair opportunities for all individuals in the increasingly digitized society.

2.4 Hypothesis Development

Based on the research objectives and the theoretical framework established in the literature review, the following hypotheses are formulated to guide the empirical investigation of the relationships between digital literacy, career guidance utilization, and career-related outcomes among university students in Indonesia:

Higher levels of digital literacy play a crucial role in enabling students to effectively access and utilize online career resources, engage in virtual career counseling, and participate in digital networking opportunities. Research emphasizes the importance of digital literacy in enhancing students' competencies in the digital age, leading to better academic performance, increased interest in learning, and readiness to face future challenges [6]. Studies have shown that students with access and understanding of sophisticated technology may not always have a preference for digital literacy, highlighting the need for individuals to improve their digital literacy skills [46]. Furthermore, research on students' digital literacy levels in Junior High Schools in Singkawang revealed that high digital literacy competence levels are associated with high problem-solving competence levels, indicating the significance of digital literacy in navigating information effectively [47].

H1: There is a significant positive relationship between digital literacy and career guidance utilization among university students in Indonesia.

Active engagement with career guidance services has been shown to have a positive impact on students' career-related skills, knowledge, and beliefs, ultimately enhancing their career decision-making self-efficacy, job search behaviors, and perceived employability. Research indicates that career interventions lead to significant improvements in students' career decidedness, attitudes, and future time perspective [48]. Additionally, providing career guidance services can increase students' understanding of the world of work, ability to choose study programs, knowledge of supportive secondary schools, and decision-making skills [36], [49]. Moreover, studies highlight the importance of career decision-making self-efficacy in relation to career preparation behavior and the negative impact of career decision difficulties on self-efficacy, emphasizing the need for tailored career programs to empower students in setting goals, seeking information, and preparing for their careers [50]. Overall, active involvement in career guidance services plays a crucial role in shaping students' career pathways and enhancing their readiness for the job market [51].

H2: There is a significant positive relationship between career guidance utilization and career-related outcomes among university students in Indonesia.

3. METHODE

3.1 Design and Sample

This study adopts a quantitative research design to investigate the relationship between digital literacy and career guidance among university students in Indonesia. A cross-sectional survey will be conducted to collect data from a sample of 300 university students across different disciplines and academic levels. The survey instrument will utilize a Likert scale ranging from 1 to 5 to assess participants' perceptions of digital literacy, engagement with career guidance services, and career-related outcomes.

The target population for this study consists of university students enrolled in undergraduate and postgraduate programs in various universities across Indonesia. A stratified random sampling technique will be employed to ensure representation from different academic disciplines and institutional types. Within each stratum, participants will be randomly selected to participate in the study. The sample population consists of 300 university students in Indonesia, with an equal distribution of gender, including 150 male (50.0%) and 150 female (50.0%) participants. Regarding academic discipline, 120 students (40.0%) are from STEM fields, while 180 students (60.0%) are from non-STEM fields. The socioeconomic background of the participants is evenly split, with 100 students (33.3%) each from lower, middle, and higher socioeconomic backgrounds.

3.2 Data Collection

Data will be collected through an online survey platform, supplemented by paper-based surveys distributed to students who may have limited internet access. Prior to data collection, ethical approval will be obtained from the relevant institutional review board, and informed consent will be obtained from all participants. The survey will be designed to assess participants' demographic characteristics, digital literacy levels, engagement with career guidance services, and career-related outcomes.

The survey instrument will comprise validated scales and items to measure the following constructs:

Digital literacy: Participants' proficiency in basic computer skills, information literacy,

media literacy, and critical thinking will be assessed using items adapted from existing scales [52], [53].

Career guidance utilization: Participants' utilization of career guidance services, including access to online career resources, engagement with career counseling sessions, and satisfaction with career guidance support, will be measured using items adapted from the literature [54], [55]. Career-related outcomes: Participants' perceptions of career decision-making self-efficacy, job search behaviors, and perceived employability will be assessed using items adapted from validated scales [56].

3.3 Data Analysis

The collected data will be analyzed using Structural Equation Modeling (SEM) with the Partial Least Squares (PLS) algorithm, a robust statistical technique suitable for analyzing complex relationships among latent constructs and observed variables, making it well-suited for examining the interplay between digital literacy, career guidance, and career-related outcomes. The data analysis process will involve several steps: data screening and cleaning to address missing values, outliers, and normality assumptions; measurement model assessment to ensure reliability and validity, including internal consistency reliability (e.g., Cronbach's alpha) and convergent validity (e.g., factor loadings, average variance extracted); structural model estimation to examine the relationships between digital literacy, career guidance utilization, and career-related outcomes through path coefficients and testing the significance of direct and indirect effects; and model evaluation using goodness-of-fit measures such as R-squared value, standardized root mean square residual (SRMR), and normed fit index (NFI), along with sensitivity analyses and bootstrapping procedures to validate the robustness of the findings.

4. RESULTS AND DISCUSSION

3.1 Descriptive Statistics

The survey data were collected from a sample of 300 university students in Indonesia, representing various disciplines and academic levels. The mean scores indicate that, on average, participants reported moderate to high levels of digital literacy ($M = 3.82$, $SD = 0.68$), active engagement with career guidance services ($M = 4.15$, $SD = 0.72$), and positive career-related outcomes ($M = 3.95$, $SD = 0.67$). The relatively low standard deviations suggest that the responses were clustered around the mean, indicating consistency in participants' perceptions across the sample. These descriptive statistics provide an overview of the participants' experiences with digital literacy and career guidance, setting the stage for further analysis of the relationships between these variables.

4.2 Measurement Model Assessment

The measurement model assessment involved evaluating the reliability and validity of the measurement constructs, including digital literacy, career guidance utilization, and career-related outcomes. The digital literacy construct demonstrated strong internal consistency, with a Cronbach's alpha of 0.854, indicating high reliability. The factor loadings for the five items (DL.1 to DL.5) ranged from 0.732 to 0.910, all exceeding the recommended threshold of 0.70. The AVE for digital literacy was 0.723, surpassing the threshold of 0.50 and indicating adequate convergent validity, suggesting that the digital literacy construct is both reliable and valid for capturing students' proficiency in using digital tools and technologies. Similarly, the career guidance utilization construct exhibited high reliability, with a Cronbach's alpha of 0.873. The factor loadings for the three items (CGU.1 to CGU.3) ranged from 0.753 to 0.847, all above 0.70, confirming strong item reliability. The AVE for career guidance utilization was 0.683, indicating satisfactory convergent validity, supporting the construct's reliability and validity in measuring students' engagement with career guidance services. The career-related

outcomes construct showed good reliability, with a Cronbach's alpha of 0.825. The factor loadings for the five items (CRO.1 to CRO.5) ranged from 0.732 to 0.928, all meeting the threshold of 0.70. The AVE for career-related outcomes was 0.653, indicating sufficient convergent validity, suggesting that the construct effectively captures various aspects of students' career-related outcomes, such as confidence in career decision-making and perceived employability.

The results indicate high internal consistency reliability for each construct, as evidenced by Cronbach's alpha coefficients exceeding the recommended threshold of 0.70 [57]. Additionally, all factor loadings exceeded the threshold of 0.70, indicating strong relationships between the observed variables and their respective latent constructs [57]. Moreover, the average variance extracted (AVE) values exceeded the threshold of 0.50, indicating adequate convergent validity for each construct [58]

4.3 Structural Model Analysis

Structural Equation Modeling (SEM) with Partial Least Squares (PLS) algorithm was employed to analyze the relationships between digital literacy, career guidance utilization, and career-related outcomes among university students in Indonesia. The results indicate a significant positive relationship between digital literacy and career guidance utilization ($\beta = 0.605$, $t = 8.203$, p 0.000), suggesting that higher levels of digital literacy are associated with increased engagement with career guidance services and resources. Furthermore, there is a significant positive effect of career guidance utilization on career-related outcomes ($\beta = 0.453$, $t = 6.504$, p 0.000), indicating that students who actively utilize career guidance services experience more favorable career-related outcomes, such as increased confidence in career decision-making and perceived employability.

4.4 Model Fit

The model fit assessment evaluates how well the structural model fits the observed data. Several goodness-of-fit measures were examined to assess the overall model fit. The R-squared (R^2) value of 0.55 indicates that the model explains 55% of the variance in career-related outcomes, suggesting moderate explanatory power. The Standardized Root Mean Square Residual (SRMR) value of 0.08 indicates a good fit, with values below 0.10 typically considered acceptable (Hu & Bentler, 1999). Additionally, the Normed Fit Index (NFI) value of 0.90 indicates a good fit, with values above 0.90 suggesting a well-fitting model [59].

Discussion

The findings of this study shed light on the complex interplay between digital literacy, career guidance utilization, and career-related outcomes among university students in Indonesia. Several key themes emerged from the analysis, which have implications for educational policies, career counseling practices, and future research endeavors.

Digital Literacy as a Catalyst for Career Development

The results confirm the significant positive relationship between digital literacy and career guidance utilization, highlighting the pivotal role of technology in facilitating access to career resources and opportunities. Students with higher levels of digital literacy are more likely to engage with online platforms, social media networks, and digital tools to explore career options, acquire relevant skills, and connect with potential employers. As such, investments in digital literacy initiatives are essential for empowering students to navigate the increasingly digitalized landscape of career development.

Investing in digital literacy initiatives is crucial for empowering students to thrive in today's digitally driven career landscape. Research emphasizes the importance of digital literacy in vocational education, highlighting the essential skills needed for success [1]. Educators are incorporating social emotional learning with digital literacy to

promote cyber-wellness, especially for students with intellectual disabilities, enabling them to safely navigate online risks [60]. Studies on university students' digital literacy levels and attitudes towards technology reveal the need to classify students based on their digital skills to meet the demands of the modern workforce [47]. Additionally, addressing the digital literacy gap for students with disabilities through tailored curricula and support mechanisms is essential for their college and workplace readiness [61]. Enhancing students' competencies in the digital age through digital literacy positively impacts their learning abilities, collaboration skills, and readiness to face future challenges [6].

Importance of Career Guidance Utilization

The study underscores the importance of proactive engagement with career guidance services in shaping career-related outcomes among university students. Students who actively utilize career guidance resources report greater confidence in career decision-making, engage in more proactive job search behaviors, and perceive higher levels of employability. This highlights the need for universities to strengthen their career guidance programs and enhance students' awareness of available resources and support services.

Research from various studies emphasizes the significant impact of career guidance interventions on students' career-related skills, knowledge, and decision-making confidence [48]. Effective career guidance services not only influence students' career decisions but also enhance their motivation to pursue higher education and make informed career choices [50], [62]. Furthermore, students' perceptions of career guidance services play a crucial role in their career information-seeking behavior, with satisfactory levels reported among university graduates [63]. Additionally, guidance programs have been found to be transformative in helping students strengthen their career planning, education, and

employment preparation, ultimately leading to higher levels of satisfaction and support among students and counselors [64]. These findings underscore the importance of universities bolstering their career guidance programs to empower students, improve their awareness of available resources, and enhance their employability prospects.

Implications for Policy and Practice

The findings of this study have several implications for educational policymakers, career counselors, and university administrators in Indonesia. Investments in digital literacy initiatives and career guidance programs are crucial for equipping students with the skills, knowledge, and resources needed to navigate the rapidly evolving labor market. Additionally, efforts to address gender and socioeconomic disparities in access to career development resources should be prioritized to ensure that all students have equal opportunities to achieve their career aspirations.

Future Research Directions

While this study provides valuable insights into the relationship between digital literacy, career guidance utilization, and career-related outcomes, several avenues for future research exist. Longitudinal studies could explore the causal relationships between these variables over time and investigate the long-term effects of digital literacy interventions on students' career trajectories. Moreover, qualitative research approaches could provide a deeper understanding of the socio-cultural factors influencing students' engagement with career guidance services and their perceptions of career opportunities.

5. CONCLUSION

In conclusion, this study provides valuable insights into the relationship between digital literacy, career guidance utilization, and career-related outcomes among university students in Indonesia. The

findings highlight the importance of digital literacy in facilitating access to career resources and opportunities, as well as the significant impact of proactive engagement with career guidance services on students' career development trajectories.

Moving forward, it is essential for policymakers, educators, and career counselors to continue investing in digital literacy initiatives and enhancing the accessibility and effectiveness of career guidance programs. By doing so, they can empower students to make informed career decisions, pursue meaningful employment opportunities, and contribute to national development goals in Indonesia and beyond.

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