

Work Readiness of Agricultural Vocational High School Graduates Based on Digital Career Guidance Service Management

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ABSTRACT

Work readiness among agricultural vocational high school graduates has become an important issue because graduates' transition into the labor market is increasingly influenced by technical competence, digital literacy, vocational identity, and the quality of career guidance services. This study aims to synthesize empirical evidence on the work readiness of agricultural vocational high school graduates based on digital career guidance service management and to formulate a conceptual direction for strengthening more measurable vocational career services. A systematic literature review design was employed using the PRISMA guideline. Articles were identified through the Scopus database using the keywords employability, vocational, education, career, guidance, digital, and graduates. From 687 initial articles, the screening process based on publication year, document type, language, open access status, abstract eligibility, topic relevance, primary data, and DOI validity resulted in 13 included articles. In the agricultural context, career services need to be adjusted to sectoral characteristics, economic prospects, industry needs, and local employment opportunities. This study concludes that digital career guidance service management should be developed as an integrated ecosystem that connects work readiness assessment, psychological strengthening, e-portfolios, agricultural industry partnerships, and job matching to strengthen graduates' transition into employment.

INTRODUCTION

Vocational education has increasingly been positioned as a strategic pathway for preparing an adaptive, productive workforce that can respond to changes in labor market structures. Over the last decade, TVET research has shifted from a technical skill orientation toward a more complex relationship between skill development, economic transformation, work inclusion, and career sustainability (McGrath & Yamada, 2023). However, graduate readiness has not always been aligned with industrial needs because limited facilities, weak industry connections, and the low capacity of training systems to identify changes in occupational competencies are still evident (Bano et al., 2022). In the digital context, workplace skill demands have also changed because employers increasingly require digital literacy, technology-mediated communication, and data-based problem-solving skills (Tee et al., 2024; Sutiman et al., 2022). Therefore, vocational graduates' work readiness needs to be positioned as a cross-competency issue that connects technical, digital, psychological, and career-related skills.

Current research mapping shows that vocational work readiness studies are distributed across four main streams, namely work-based learning, career guidance, digital transformation, and school-to-work transition. In vocational education, career guidance has not been fully understood collectively by teachers and school managers, causing its implementation to become stagnant when it is not supported by strong leadership and institutional dialogue (Magee et al., 2022). From the perspective of digitalization, teachers' digital competence has been shown to be related to technology acceptance, indicating that the quality of vocational services and learning is influenced by educators' readiness to use digital tools (Antonietti et al., 2022). Career guidance systems also require strategic development through leadership, cooperation, professionalization, service provision, and impact evaluation (Kettunen et al., 2025). Meanwhile, work-based learning has been found to support students' transition readiness when perceived employability and adequate faculty supervision are provided (Okolie, 2022). This research map confirms that work readiness cannot be explained through a single intervention but must be understood through connected service governance.

The knowledge gap becomes more specific when attention is directed toward agricultural vocational high school graduates. Studies on agricultural science students show that career readiness is influenced by career advice-seeking behavior, relevant experience, networking, employability skill development, and personal growth (Parrella et al., 2023). In another context, agricultural students still require more systematic career preparation support because advice sources, skill perceptions, and work orientations do not always lead to strong transition readiness (Ghimire et al., 2021). From the industrial perspective, agricultural graduates face the demands of the Fourth Industrial Revolution, which emphasizes digital skills, technological adaptation, communication, and readiness for changing work conditions (Seti et al., 2025). In addition, employability attributes must be understood contextually because employer expectations may differ across regions, sectors, and job characteristics

(Tran et al., 2024). Thus, the main gap lies in the limited integration of agricultural work readiness, digital career guidance, and school service management within a single conceptual synthesis.

Based on this gap, this study is directed toward synthesizing empirical evidence on the work readiness of agricultural vocational high school graduates based on digital career guidance service management. The research question addressed in this study is how current research findings explain the relationship among vocational work readiness, digital career services, employability competencies, and the needs of the agricultural sector. This question is important because work transition readiness is influenced by openness, self-efficacy, career adaptability, and perceived employability developed during learning experiences and the transition to employment (Elom et al., 2024; Fu et al., 2023; Lee et al., 2025). The contribution of this study lies in the development of a conceptual basis for preliminary studies, research gap mapping, and a more focused selection of research themes relevant to agricultural vocational high schools. Accordingly, this study is expected to strengthen the scientific foundation for developing digital career guidance services that are contextual, measurable, and relevant to agricultural industry needs.

LITERATURE REVIEW

Work Readiness in Vocational Education

Work readiness is generally defined as the extent to which graduates possess the competencies, attitudes, knowledge, and personal attributes necessary to successfully transition into employment. Contemporary vocational education research emphasizes that work readiness extends beyond technical competence and includes employability skills, adaptability, communication, problem-solving, and professional behavior. The changing nature of work and technological advancement have increased the importance of multidimensional readiness that combines occupational expertise with transferable skills and lifelong learning capacity (McGrath & Yamada, 2023). Therefore, vocational education institutions are expected to prepare graduates who can respond effectively to dynamic labor market demands.

Digital Employability Skills and Career Readiness

Digital transformation has significantly altered employer expectations regarding workforce competencies. In addition to technical vocational skills, employers increasingly require digital literacy, online communication abilities, digital collaboration, information management, and technology-based problem-solving skills. Research demonstrates that digital employability skills contribute positively to graduates' workforce readiness and career adaptability, particularly in technology-driven work environments (Tee et al., 2024; Kholifah et al., 2025b). Consequently, digital competence has become an essential component of employability and career success among vocational graduates.

Career Guidance Service Management

Career guidance services play a strategic role in supporting students' career planning, occupational exploration, and transition from education to employment. Effective career guidance extends beyond providing career information and includes counseling, career assessment, decision-making

support, mentoring, and labor market orientation. Recent studies suggest that career guidance systems should be developed through collaboration, professionalization, leadership support, and continuous evaluation to maximize their impact on student outcomes (Kettunen et al., 2025). The emergence of digital technologies has further expanded opportunities for delivering career guidance through online counseling platforms, career information systems, e-portfolios, and digital assessment tools.

Digital Career Guidance and School-to-Work Transition

Digital career guidance refers to the use of technology-based platforms and services to facilitate career development, career decision-making, and employment preparation. Online counseling, digital career assessments, e-portfolios, artificial intelligence-based job matching, and labor market information systems have demonstrated potential to improve career decision quality and employment outcomes (Pordelan & Hosseinian, 2021; Farell et al., 2024). These technologies enable more personalized, accessible, and data-driven career services that support students throughout the school-to-work transition process.

Agricultural Vocational Education and Employability Challenges

Agricultural vocational education presents unique employability challenges because career opportunities are influenced by sectoral characteristics, technological changes, rural development conditions, and labor market dynamics. Agricultural graduates are expected to possess not only technical agricultural competencies but also communication skills, digital literacy, industry awareness, adaptability, and entrepreneurial capabilities. Previous studies indicate that career readiness among agricultural students is influenced by career advice-seeking behavior, work experience, networking, employability skills, and perceptions of employment opportunities within the agricultural sector (Ghimire et al., 2021; Parrella et al., 2023). Furthermore, the emergence of Agriculture 4.0 requires graduates to develop digital competencies and technological adaptability to remain competitive in modern agricultural industries (Seti et al., 2025).

Relationship Between Work Readiness, Digital Career Guidance, and Agricultural Employability

Existing literature suggests that work readiness is shaped by interactions among vocational learning experiences, psychological factors, employability skills, and career support systems. Digital career guidance provides mechanisms for assessing readiness, strengthening self-efficacy, documenting competencies, and connecting graduates with employment opportunities. At the same time, agricultural vocational education requires contextualized career services that consider industry characteristics, local labor markets, and sector-specific competency demands. Despite growing research on employability and vocational education, limited studies have synthesized evidence regarding how digital career guidance service management can strengthen the work readiness of agricultural vocational high school graduates.

This gap provides the foundation for the present study and highlights the need for an integrated framework that connects assessment, counseling,

competency portfolios, industry partnerships, and employment matching systems.

METHOD

This study employed a systematic literature review design with a screening flow based on the PRISMA principle. Articles were identified through the Scopus database using the keyword combination employability AND vocational AND education AND career AND guidance AND digital AND graduates. The initial search produced 687 articles. After the publication year limit of 2021–2026 was applied, the number of articles was reduced to 605. The next screening was conducted by limiting the document type to journal articles, leaving 359 articles. The English-language filter resulted in 347 articles, and the All Open Access filter then produced 255 articles for abstract assessment.

Further selection was conducted by assessing the suitability of titles and abstracts with the focus on the work readiness of agricultural vocational high school graduates based on digital career guidance service management. The inclusion criteria covered articles published between 2021 and 2026, written in English, openly accessible, having an active DOI, and discussing vocational education, TVET, employability, work readiness, career choice, career services, digital career instruments, graduates, students, or the transition from education to employment. Articles with primary data using quantitative, qualitative, mixed-method, experimental, quasi-experimental, development, or empirical modeling designs were prioritized because they were considered stronger in explaining the relationship between career services and work readiness.

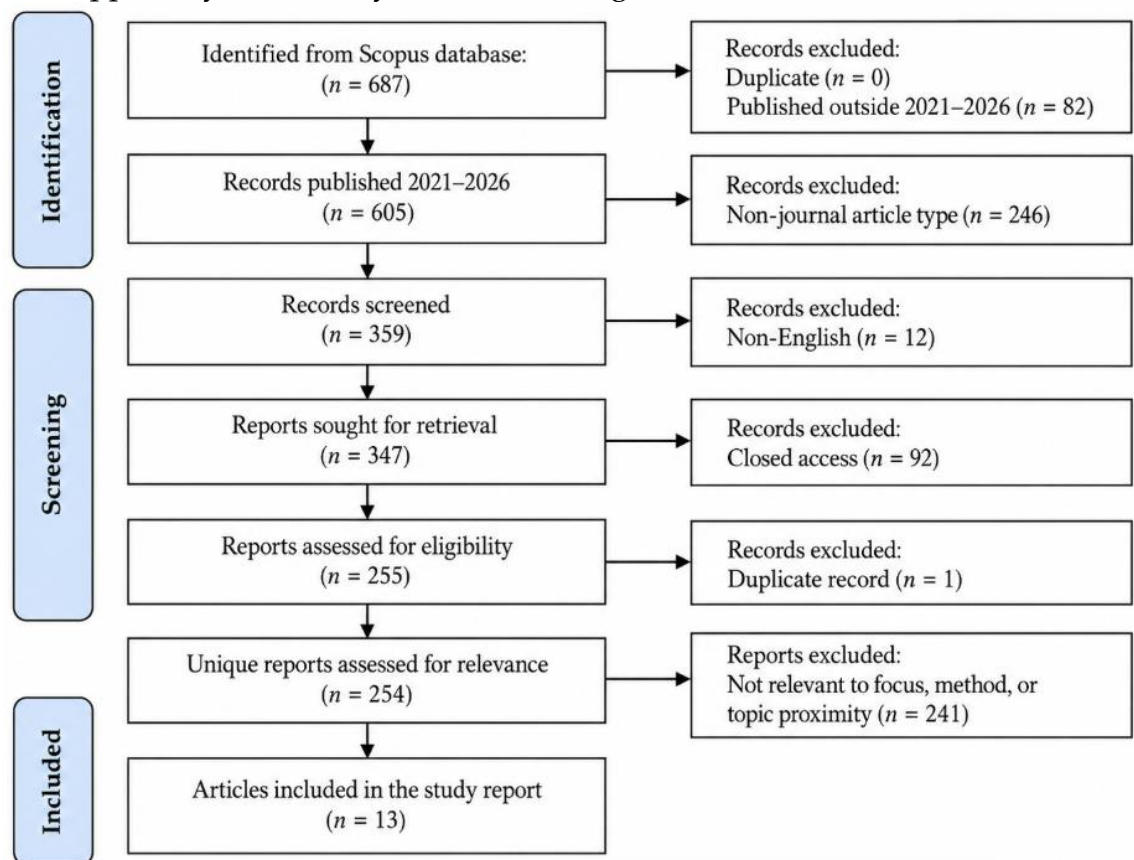
The exclusion criteria included articles that did not discuss vocational education or career issues, were not related to work readiness, had no digital relevance, focused on non-educational populations without implications for graduate careers, had no connection to the transition from education to employment, were duplicates, or were not relevant to the direction of agricultural vocational high schools. At the eligibility stage, one DOI duplicate was removed, leaving 254 unique articles to be reviewed. Of these, 241 articles were excluded because they did not meet the substantive criteria, methodological requirements, or topical proximity. The final stage resulted in 13 articles included in the synthesis.

At the identification stage, 687 articles were found in Scopus. During the initial screening stage, 82 articles were excluded because they were outside the 2021–2026 publication range, leaving 605 articles. Furthermore, 246 articles were excluded because they were not journal articles, leaving 359 articles. A total of 12 articles were excluded because they were not written in English, leaving 347 articles. Then, 92 articles were excluded because they were not included in the All Open Access category, leaving 255 articles. After one DOI duplication was removed, 254 unique articles were assessed for eligibility. A total of 241 articles were excluded because they did not match the focus of the review, and 13 articles were retained as the final synthesis sources.

PRISMA Flowchart

The following section presents the article selection flow based on the PRISMA guidelines, from the identification stage in the Scopus database to the

final inclusion of articles that met the eligibility criteria for further analysis in this study. This flow outlines the number of records at each stage and the reasons for exclusion applied systematically, as shown in Figure 1.



RESULTS

The final selection results showed that 13 articles met the inclusion criteria and had the strongest relevance to the themes of agricultural vocational high school graduates' work readiness, digital career guidance service management, employability, TVET, and the transition from education to employment. The included articles covered diverse research designs, including quasi-experimental studies, experiments, quantitative surveys, PLS-SEM, mixed-method studies, focus group discussions, the Nominal Group Technique, Bayesian modeling, instrument analysis, and e-portfolio design. This diversity of designs strengthens the synthesis because work readiness is understood not only as an individual outcome but also as the result of interactions among vocational learning, psychological support, digital technology, and industry needs.

Table 1. Results of the Article Review

No	Authors	Conclusion
1	Darni et al. (2024)	A mobile measurement system supports a more accurate, efficient, and relevant evaluation of work readiness in relation to Industry 4.0 workforce needs.
2	Kamri et al. (2025)	TVET career pathways are influenced by internal assets, external support, local workforce needs, and digital assets as employability enhancers.
3	Pordelan and Hosseinian (2021)	Online career counseling improves career decision-making, especially when students' hardiness and psychological capital are considered in the service process.
4	Xiao and Li (2026)	The BEN-EM model improves the prediction of employment tendency, major matching, career choice coverage, and the effectiveness of vocational decision support.
5	Pianda et al. (2025)	Internship experience improves employability through 21st-century competencies, with a stronger effect among students with high psychological capital.
6	Chaurasia et al. (2025)	Agricultural graduates' career choices are influenced by personal characteristics, academic achievement, physical environment, social factors, economic conditions, and employment prospects.
7	Al Idrus et al. (2024)	A web-based e-portfolio clarifies evidence of graduate competence, supports skill representation, and strengthens the connection between graduates and industry needs.
8	Wyss and Cletzer (2023)	Agricultural career readiness requires writing ability, reporting skills, design technology literacy, broad industry knowledge, and socio-political competence.
9	Kholifah et al. (2025a)	Digital competence and psychological well-being strengthen self-efficacy. Self-efficacy supports career choice, although its mediating effect remains relatively low.
10	Suyitno et al. (2025)	Work-based learning affects employability through vocational identity. Self-efficacy strengthens the relationship between work-based learning and employability skills.
11	Inderanata and Sukardi (2023)	Integrated vocational guidance through demonstration improves work knowledge, attitudes, and skills more effectively than conventional explanatory methods.
12	Farell et al. (2024)	Intelligent job matching effectively aligns vocational high school students' competencies with industry

No	Authors	Conclusion
		needs and increases the transition ratio toward job interviews.
13	Kholifah et al. (2025b)	Vocational high school graduates' work readiness is strongly predicted by digital employability skills, particularly through communication, collaboration, creativity, and digital production.

DISCUSSION

Vocational graduates' work readiness should not be understood merely as mastery of technical competence but as the ability to connect knowledge, work attitudes, digital skills, and career decisions. Quasi-experimental evidence shows that vocational guidance combined with practical demonstration is more effective than verbal explanation alone because students acquire procedural experience, work attitudes, and understanding of work rules simultaneously (Inderanata & Sukardi, 2023). Mobile-based work readiness measurement also indicates that digital diagnosis can sharpen the interpretation of students' readiness patterns in relation to Industry 4.0 demands (Darni et al., 2024). Among graduates, digital employability skills have been shown to strongly predict workforce readiness, particularly when digital communication and collaboration are positioned as key mediators (Kholifah et al., 2025b). These findings demonstrate that the theme of vocational high school graduates' work readiness based on digital career guidance services is important because it provides a strong preliminary basis for formulating a more focused research direction. Accordingly, work readiness needs to be treated as an integrated outcome produced through digital measurement, vocational practice, collaborative learning, and continuous industry feedback.

Digital career guidance service management is relevant because vocational students' career decisions are often limited by information that is static, insufficiently personalized, and not always directly connected to industry needs. Online career counseling interventions have been proven to improve career decision-making, especially when students' psychological capital and hardiness are considered in the service process (Pordelan & Hosseinian, 2021). E-portfolio design provides a space for representing graduates' competencies through learning evidence, portfolio records, and web-based navigation guidelines that can be accessed and interpreted by industry (Al Idrus et al., 2024). At the system level, Bayesian modeling and intelligent job matching show the potential use of multidimensional data to predict employment tendencies, major suitability, and job recommendations (Xiao & Li, 2026; Farell et al., 2024). These findings emphasize that the main gap lies in the need to integrate career services that are not only informative but also diagnostic, adaptive, and evidence-based. Therefore, digital career services become stronger when positioned as an ecosystem of assessment, counseling, portfolio development, and interconnected, measurable job matching.

The agricultural context requires special emphasis because graduates' career preferences are shaped not only by personal interests but also by the

learning environment, workplace quality, job security, and economic prospects. Among plant and animal science technical and vocational graduates, five determinants were found to influence career choice, namely personal characteristics, academic achievement, physical environment, social factors, and economic conditions (Chaurasia et al., 2025). Findings from agricultural communication practitioners further indicate that agricultural career readiness requires writing ability, reporting skills, design technology literacy, broad industry knowledge, and political sensitivity within the agricultural sector (Wyss & Cletzer, 2023). Meanwhile, TVET asset mapping emphasizes the importance of internal assets, external support, and digital assets in shaping career pathways (Kamri et al., 2025). Evidence from the included articles clarifies that the selected research theme has an adequate foundation because the agricultural sector requires career services that are more contextual than general vocational career services. Thus, career services in agricultural vocational high schools need to combine interest orientation, agricultural industry literacy, digital asset mapping, and contextual interpretation of local employment opportunities.

A work readiness gap also emerges because vocational learning experiences are not always translated into students' ability to present, prove, and communicate their competencies in the labor market. Internship experience improves vocational students' employability through 21st-century competencies, and its influence becomes stronger when students' psychological capital is high (Pianda et al., 2025). However, work-based learning does not always have a direct effect on employability. Its influence becomes more meaningful when students' vocational identity and self-efficacy are strongly formed (Suyitno et al., 2025). Among Indonesian vocational education students, digital competence and psychological well-being strengthen self-efficacy, and self-efficacy then supports career choice, although the mediating effect remains relatively low (Kholifah et al., 2025a). These findings show that work experience needs to be connected with career reflection, evidence of competence, and self-understanding. Therefore, career guidance management should design psychopedagogical interventions that strengthen self-confidence, vocational identity, work experience, and students' transition readiness in a sustainable manner.

Overall, the work readiness of agricultural vocational high school graduates based on digital career guidance should be developed through three layers of service management. The first layer is readiness and digital skill assessment, which enables variations in student competence to be identified more quickly and accurately (Darni et al., 2024; Kholifah et al., 2025b). The second layer is integrated learning and guidance that connects practice, demonstration, and career decision-making so that students can understand work standards concretely (Inderanata & Sukardi, 2023). The third layer is data-based work transition through job matching and the interpretation of agricultural career choice factors so that graduates are not directed generally but are guided according to their competencies, interests, and sectoral opportunities (Farell et al., 2024; Chaurasia et al., 2025). Thus, the included articles have addressed the conceptual gap showing that this theme is suitable as the basis for preliminary studies and research title selection.

The most appropriate service model is one that integrates digital assessment, psychological strengthening, competency portfolios, agricultural industry partnerships, and placement follow-up.

CONCLUSION

The synthesis results show that the work readiness of agricultural vocational high school graduates should be managed as a multidimensional outcome that integrates technical competence, digital literacy, career orientation, self-efficacy, vocational identity, and real work experience. Evidence from the included articles confirms that digital career guidance services should not be limited to the provision of employment information. Instead, such services need to be developed as an integrated system that includes work readiness assessment, online counseling, e-portfolios, student asset mapping, prediction of major suitability, and data-based job matching.

In the context of agricultural vocational high schools, these services need to be adjusted to the characteristics of the agricultural sector, which are influenced by economic prospects, workplace quality, industry knowledge, communication skills, and digital technology development. Therefore, the most suitable digital career guidance service management model is a model that connects schools, students, agricultural industries, and career information systems within a continuous service flow. As a practical implication, schools need to provide digital work readiness assessment, competency portfolio development, self-efficacy strengthening, work-based learning, and job matching mechanisms so that graduates' transition into employment can be more focused, measurable, and aligned with industry needs.

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