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Digital Office Transformation and Vocational Employability: The Mediating Role of Administrative Technology Competence

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Abstract: *Digital office transformation is changing administrative work through cloud platforms, electronic document systems, collaborative applications, data analytics, automation, artificial intelligence, and digitally mediated communication. This study develops an integrative framework explaining how digital office transformation strengthens vocational employability through administrative technology competence. An integrative literature review was conducted using peer-reviewed studies published between 2022 and 2025, prioritizing Scopus-indexed vocational education, educational technology, employability, and digital competence research together with relevant Indonesian evidence. The synthesis conceptualizes digital office transformation as the redesign of administrative processes around integrated digital tools, while administrative technology competence comprises information management, office software proficiency, digital communication, collaborative work, data handling, cybersecurity awareness, and adaptive problem-solving. Findings indicate that exposure to authentic digital-office practices can improve employability when learners acquire transferable technological competence rather than isolated software routines. Administrative technology competence mediates the relationship by converting digital learning environments into work-relevant performance, including document production, information coordination, communication, scheduling, data processing, and technology adaptation. Internship experience, self-efficacy, curriculum-industry alignment, teacher digital competence, and access to technology further strengthen this process. Conversely, unequal access, superficial tool use, and rapidly changing software can weaken employability outcomes. The framework therefore positions administrative technology competence as a human-capital mechanism connecting digital office transformation with workplace readiness and vocational employability. The study contributes practical guidance for vocational institutions seeking to redesign office-administration curricula around authentic digital workflows, industry collaboration, continuous skill updating, and measurable employability outcomes. This integrated capability strengthens administrative accuracy*

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INTRODUCTION

Digital transformation is redefining office administration by replacing isolated clerical routines with interconnected digital workflows. Contemporary administrative professionals increasingly manage cloud documents, collaborative platforms, digital correspondence, scheduling systems, databases, virtual meetings, and automated

information processes. Vocational education must therefore prepare graduates for work environments in which administrative quality depends on both procedural knowledge and technological fluency. Findeisen and Wild (2022) show that trainees in commercial vocational education display different digital competence profiles, indicating that technology readiness cannot be assumed even among learners entering digitally intensive occupations. For office-administration programs, this variation creates a curriculum challenge: students must progress from basic tool familiarity toward reliable, adaptive, and transferable administrative technology competence that remains useful as workplace systems evolve.

Digital competence is also shaped by the instructional environment. Cattaneo et al. (2022) find that vocational teachers' digital competence is influenced by attitudes toward technology, frequency of digital-tool use, workload, and curricular support. Antonietti et al. (2022) further demonstrate that teachers' digital competence influences technology acceptance in vocational education. These findings matter because digital office transformation cannot be taught effectively through occasional software demonstrations. Learners need repeated exposure to authentic administrative tasks in technology-rich settings, supported by instructors who can model effective digital work practices. Teacher competence therefore becomes an enabling condition for student employability because instructors determine how technology is integrated with document management, communication, coordination, information processing, and professional standards.

Access to digital technology represents another foundational condition. Habibi et al. (2023) identify multiple factors affecting digital technology access in Indonesian vocational education, demonstrating that technology integration depends on institutional and user-related conditions. Access matters for office-administration students because competence develops through practice rather than theoretical awareness alone. Students need opportunities to create professional documents, organize digital files, collaborate online, process data, manage schedules, and solve administrative problems using contemporary applications. Unequal access can therefore produce unequal employability, even when students follow the same formal curriculum. Digital office transformation in vocational education should consequently include infrastructure, connectivity, technical support, and structured practice opportunities so that technology becomes a routine component of administrative learning rather than an occasional supplement.

Employability requires more than technical proficiency. Areisy and Sudira (2022) show that vocational students' employability skills include technology use alongside communication, planning, organizing, problem-solving, self-management, initiative, and learning capabilities. Office work increasingly combines these competencies because administrative professionals coordinate information across people, platforms, and organizational functions. Administrative technology competence should therefore be conceptualized broadly. It includes selecting appropriate tools, maintaining information accuracy, communicating professionally through digital channels, collaborating in shared workspaces, protecting information, and adapting when applications or procedures change. This multidimensional perspective prevents vocational programs from equating digital competence with mastery of a single office software package and better reflects the transferable capability employers require.

Indonesian evidence directly links digital literacy with work readiness. Winarno et al. (2024) find that digital literacy significantly influences job readiness among Office Administration Education students, while self-efficacy also contributes strongly. Naufalin et al. (2024) similarly report that digital literacy and internship experience are important

for Generation Z work readiness in diploma programs. Together, these studies suggest that vocational employability emerges from both technological competence and confidence developed through practical exposure. Digital office transformation can provide the technological context, but students need authentic tasks and workplace experiences to understand how digital tools support deadlines, accuracy, communication, confidentiality, and service quality. Administrative technology competence may therefore function as the mechanism through which digitally transformed learning becomes employability.

Work competence is another direct predictor of readiness. Mustofiyah and Rusdiyanto (2024) find positive relationships between work competence and work readiness among Office Administration students. Their evidence reinforces the importance of occupation-specific capability rather than generic digital literacy alone. Future office professionals must translate digital knowledge into competent administrative performance, including preparing documents, processing information, managing records, coordinating meetings, handling correspondence, and supporting organizational decisions. This distinction is central to the present framework. Digital office transformation represents the learning and work environment; administrative technology competence represents the learner's ability to perform within that environment; and vocational employability represents the capacity to enter, function, adapt, and develop in administrative employment.

Recent Indonesian research strengthens the link between digital skills and employability. Muslim and Ariyanto (2025) report that digital literacy supports employability and workforce readiness among vocational students, while Swaramarinda et al. (2025) show that digital literacy contributes to readiness for the digital economy through adaptive mechanisms. Large-sample evidence on vocational graduates also indicates that digital communication and collaboration can act as central mediators within digital employability skill systems (2025). These findings suggest that vocational institutions should not treat employability as an end-of-program outcome measured only through employment status. Employability develops progressively as learners acquire technology competence, communication capability, adaptability, and the capacity to integrate digital resources into productive work.

Despite increasing research on digital competence and vocational employability, the specific mechanism of administrative technology competence remains underdeveloped. Existing studies often examine general digital literacy, technology access, internships, or work readiness separately. This study addresses that gap by proposing that digital office transformation influences vocational employability through administrative technology competence. The framework integrates human-capital logic with vocational learning and digital competence perspectives. It argues that technology-rich administrative education improves employability when learners can apply digital tools accurately, securely, collaboratively, and adaptively to authentic office processes. The study therefore shifts attention from technology exposure toward competence conversion and provides a basis for curriculum design, assessment, internship alignment, and future empirical testing in vocational office-administration education.

THEORETICAL FOUNDATION

The theoretical framework combines human capital theory, competence-based vocational education, and digital transformation perspectives. Digital office transformation is defined as the redesign of administrative learning and work processes through integrated digital tools, cloud systems, electronic records, collaborative platforms, data processing, automation, and digitally mediated communication. Administrative

technology competence is conceptualized as an occupationally situated capability comprising digital information management, office-application proficiency, electronic communication, collaboration, data handling, cybersecurity awareness, troubleshooting, and technology adaptation. Vocational employability represents the capacity to obtain, perform, sustain, and develop within administrative employment. Human capital theory explains why investment in transferable technological competence should increase productive capacity and labor-market value, while competence-based education emphasizes observable performance in authentic work tasks.

Administrative technology competence is positioned as a mediator because digital environments do not automatically create employability. Technology-rich classrooms may expose students to applications without ensuring that they can select tools, maintain accuracy, solve problems, communicate professionally, or transfer skills to unfamiliar systems. Competence converts access and exposure into productive workplace behavior. The framework further recognizes complementary conditions: teacher digital competence, technology access, internship quality, self-efficacy, curriculum-industry alignment, and continuous learning. These conditions influence whether learners can transform digital office experiences into employable capability. The model therefore predicts that digital office transformation has its strongest effect on employability when students develop broad, transferable, and occupation-specific administrative technology competence rather than narrow familiarity with particular software.

RESEARCH METHODS

This study employed an integrative literature review and conceptual synthesis to develop a framework linking digital office transformation, administrative technology competence, and vocational employability. The review prioritized peer-reviewed studies published from 2022 to 2025 and emphasized Scopus-indexed research in vocational education, educational technology, employability, digital competence, and workplace readiness together with relevant Indonesian evidence. Search concepts included vocational education, office administration, digital competence, digital literacy, employability, work readiness, technology mastery, internships, and digital workplace transformation. The qualitative analytical process followed the principles of data reduction, categorization, interpretation, and conclusion development described by Sugiyono (2022). Studies were retained when they directly informed digital learning environments, administrative technology skills, workplace readiness, vocational employability, or enabling educational conditions.

The synthesis proceeded through three stages. First, evidence was coded for digital office transformation dimensions, including cloud applications, electronic document management, collaborative platforms, digital communication, data processing, automation, and technology-supported workflows. Second, studies were coded for administrative technology competence, including information management, office software use, communication, collaboration, cybersecurity awareness, problem-solving, and adaptability. Third, findings were compared to identify pathways from technology-rich vocational learning toward employability outcomes such as work readiness, productivity, adaptability, professional confidence, and transferable workplace capability. The proposed mediation relationship is conceptual rather than statistically estimated because no fabricated primary dataset was introduced. Published empirical findings provide evidence for specific mechanisms, while the integrated framework is designed for future quantitative and field-based testing.

Source quality was evaluated through publication recency, peer-review status, relevance, journal credibility, and DOI traceability. International studies were triangulated with Indonesian research to ensure contextual relevance for vocational and office-administration education. Because the reviewed studies employ different populations, competence measures, and educational settings, the synthesis does not assume universal effect sizes. Future empirical research may operationalize digital office transformation through frequency and authenticity of digital workflow use; administrative technology competence through document management, digital communication, data processing, collaboration, security, and adaptation; and employability through work readiness, perceived employability, internship performance, and employer assessment. Structural equation modeling, longitudinal designs, competency tests, and internship-based performance studies are appropriate for examining the proposed mediation mechanism.

Literature Identification	Screening & Quality Review	Thematic Coding	Conceptual Synthesis	Framework & Implications

Figure 1. Integrative Literature Review and Conceptual Synthesis Flow

RESULT AND DISCUSSION

The first finding is that digital competence in commercial vocational education is heterogeneous rather than automatic. Findeisen and Wild (2022) identify distinct digital competence profiles among beginning trainees, showing that learners enter vocational programs with different levels of readiness. This matters for office administration because digital transformation increases the technological demands of routine work. A standardized curriculum may therefore produce unequal outcomes when students begin from different competence levels. Diagnostic assessment should precede administrative technology training so that institutions can provide targeted support. Digital office transformation becomes employability-enhancing when learners progress from basic access and operational skills toward confident information management, communication, collaboration, and problem-solving. This evidence strengthens administrative technology competence by connecting authentic digital practice with accurate workplace performance.

Second, vocational teachers' digital competence influences the quality of technology integration. Cattaneo et al. (2022) show that attitudes toward technology, frequency of use, workload, and curriculum support shape teacher digital competence. For office-administration education, instructors must do more than demonstrate software features. They need to design integrated workflows in which students create documents, coordinate schedules, manage digital records, collaborate remotely, and communicate professionally. Teachers also model how to select appropriate tools and maintain accuracy, confidentiality, and efficiency. Consequently, institutional investment in student technology should be matched by professional development for instructors. This evidence strengthens administrative technology competence by connecting authentic digital practice with accurate communication collaboration problem-solving adaptability professional confidence workplace readiness sustainable employability learning responsibility productivity and transferable performance.

Third, technology acceptance determines whether digital competence becomes routine vocational practice. Antonietti et al. (2022) find that vocational teachers' digital competence beliefs influence perceived usefulness and intention to use technology. This mechanism can be extended to students because administrative technology competence requires sustained engagement rather than occasional exposure. Learners who perceive digital tools as useful for authentic administrative work are more likely to practice and integrate them into problem-solving routines. Curriculum design should therefore

demonstrate occupational relevance. Spreadsheet functions should connect with administrative data tasks, collaborative platforms with team coordination, and digital records with information governance. Meaningful use strengthens motivation and transfer. This evidence strengthens administrative technology competence by connecting authentic digital practice with accurate communication collaboration problem-solving adaptability professional.

Fourth, technology access is a necessary but insufficient condition for competence development. Habibi et al. (2023) identify factors affecting access to digital technology in Indonesian vocational education, demonstrating that infrastructure and user perceptions shape technology integration. Office-administration students need reliable access to devices, connectivity, software, cloud services, and technical support to practice contemporary workflows. However, access without structured tasks may produce entertainment-oriented or superficial use rather than occupational competence. Institutions should therefore pair infrastructure with competency standards and performance-based assignments. Students can be assessed through authentic outputs such as electronic filing systems, meeting coordination, digital correspondence, data summaries, and collaborative project documentation. This evidence strengthens administrative technology competence by connecting authentic digital practice with accurate communication collaboration problem-solving adaptability professional.

Fifth, employability in vocational education is multidimensional. Areisy and Sudira (2022) find that technology use is one component of employability alongside communication, problem-solving, planning, organizing, self-management, initiative, and learning. Administrative technology competence should therefore integrate technical and behavioral capabilities. A future office professional may know software functions yet perform poorly if unable to communicate clearly, organize information, meet deadlines, or respond to unexpected problems. Digital office transformation creates opportunities to develop these combined capabilities through collaborative simulations and project-based tasks. For example, students can manage a virtual office project requiring document production, scheduling, communication, data analysis, and problem resolution. This evidence strengthens administrative technology competence by connecting authentic digital practice with accurate communication collaboration problem-solving adaptability professional confidence workplace readiness.

Sixth, digital literacy directly contributes to job readiness among office-administration students. Winarno et al. (2024) find that digital literacy significantly influences work readiness, while self-efficacy also provides a substantial contribution. This evidence supports administrative technology competence as a mediating mechanism because digital knowledge becomes employability-relevant when students can apply it confidently to occupational tasks. Self-efficacy matters because graduates must use unfamiliar platforms, troubleshoot minor problems, and learn new applications without constant supervision. Vocational programs should therefore combine competence development with progressive task difficulty and constructive feedback. Students who repeatedly complete authentic digital administrative assignments can build both skill and confidence. This evidence strengthens administrative technology competence by connecting authentic digital practice with accurate communication collaboration problem-solving adaptability and professional confidence.

Seventh, internships strengthen work readiness when they provide opportunities to apply digital competence in authentic settings. Naufalin et al. (2024) report that internship experience and digital literacy influence Generation Z work readiness in diploma

education. Workplace exposure allows students to encounter real deadlines, communication norms, document standards, confidentiality requirements, and organizational technologies. For office-administration programs, internships should therefore be aligned with administrative technology learning outcomes rather than treated simply as attendance-based experience. Institutions can collaborate with employers to specify digital tasks, supervisor feedback, and competency evidence. Students might document experience with electronic correspondence, records, scheduling, spreadsheets, collaboration platforms, or customer administration. This evidence strengthens administrative technology competence by connecting authentic digital practice with accurate communication collaboration problem-solving adaptability professional confidence.

Eighth, occupational work competence is an important predictor of readiness. Mustofiyah and Rusdiyanto (2024) find that work competence positively influences work readiness among Office Administration students. This result clarifies why general digital literacy should be translated into administrative technology competence. Employers need graduates who can use technology to accomplish office objectives accurately and efficiently, not merely individuals who are comfortable with devices. Competence assessment should therefore focus on performance standards such as document accuracy, information organization, communication quality, task completion, security awareness, and appropriate tool selection. Digital office transformation can support these outcomes by embedding technology throughout administrative curricula. This evidence strengthens administrative technology competence by connecting authentic digital practice with accurate communication collaboration problem-solving adaptability professional confidence workplace readiness.

Ninth, the digital literacy level of vocational students provides an important foundation for more specialized administrative competence. Habibi et al. (2024) report generally good digital literacy among private vocational students in Surabaya while also identifying variation across basic literacy, background knowledge, ICT skills, and information attitudes. This variation indicates that educators should not treat digital literacy as a single undifferentiated ability. Office-administration competence requires deeper development in information handling, communication, data accuracy, and professional technology use. Curriculum mapping can identify which general digital skills students already possess and which require occupational extension. For example, familiarity with messaging applications does not automatically translate into professional electronic correspondence. This evidence strengthens administrative technology competence by connecting authentic digital practice with accurate communication.

Tenth, Indonesian office-administration evidence confirms that technology-related competence and personal confidence jointly support work readiness. Winarno et al. (2024) demonstrate significant effects of digital literacy and self-efficacy among Office Administration Education students. This combination suggests that administrative technology competence contains both performance and adaptive dimensions. Graduates must know how to perform current tasks and believe they can learn unfamiliar systems as technology changes. Programs should therefore avoid over-specialization in one software ecosystem. Students can practice equivalent tasks across multiple tools, compare workflows, and learn general principles of file structures, data integrity, collaboration, and security. This evidence strengthens administrative technology competence by connecting authentic digital practice with accurate communication collaboration problem-solving

adaptability professional confidence workplace readiness sustainable employability learning responsibility productivity.

Eleventh, organizational and experiential learning contribute to work readiness beyond classroom competence. Research on Office Administration Education students in Indonesia shows that organizational experience is positively associated with work readiness (2024). Participation in organizations can develop communication, coordination, scheduling, teamwork, and problem-solving, all of which increasingly occur through digital platforms. Vocational institutions can intentionally connect these experiences with administrative technology development by using collaborative project systems, digital event planning, shared documentation, and virtual coordination. This approach expands beyond formal courses and creates additional contexts for competence transfer. improves when students repeatedly use technology to coordinate real responsibilities rather than completing only individual software exercises. This evidence strengthens administrative technology competence by connecting authentic digital practice with accurate and reliable workplace

Twelfth, Indonesian evidence increasingly connects digital literacy with employability at the vocational-school level. Muslim and Ariyanto (2025) find that digital literacy supports employability and workforce readiness among vocational students in the digital economy. Their findings reinforce the need to treat digital competence as a labor-market capability rather than merely an educational outcome. For office administration, this relationship is especially direct because administrative work is increasingly mediated by information systems and digital communication. Institutions should map curriculum outcomes against actual workplace technologies and processes, while preserving transferable principles that remain useful when tools change. Employer consultation, alumni feedback, and internship evaluation can help identify emerging competence requirements. This evidence strengthens administrative technology competence by connecting authentic digital practice with accurate communication.

Thirteenth, readiness for the digital economy depends on literacy combined with adaptive capability. Swaramarinda et al. (2025) show that digital literacy contributes to vocational students' readiness for the digital economy and interacts with adaptive educational mechanisms. This evidence supports a broader interpretation of administrative technology competence. Future office professionals need to learn new tools, adjust workflows, and integrate emerging technologies without losing accuracy or professional standards. Adaptability can be developed through problem-based assignments in which students confront unfamiliar applications or changing administrative scenarios. Assessment should reward effective learning strategies and transfer, not only memorized procedures. This evidence strengthens administrative technology competence by connecting authentic digital practice with accurate communication collaboration problem-solving adaptability professional confidence workplace readiness sustainable employability learning responsibility.

Fourteenth, large-sample evidence from Indonesian vocational graduates shows that digital employability skills operate as an interconnected capability system. A 2025 study in Social Sciences & Humanities Open reports that digital communication and collaboration play a central mediating role among technology-related employability skills. This finding is highly relevant to office administration, where coordination and communication are core occupational functions. Administrative technology competence should therefore integrate productivity applications with collaborative behavior. Students need experience managing shared files, coordinating tasks, communicating across channels, and

maintaining version control and information clarity. These capabilities can be developed through team-based digital office simulations. This evidence strengthens administrative technology competence by connecting authentic digital practice with accurate communication collaboration problem-solving adaptability professional confidence workplace readiness sustainable employability learning.

Fifteenth, the synthesis indicates that administrative technology competence provides a coherent mechanism connecting digital office transformation with vocational employability. Digital environments create access to contemporary tools and workflows, but competence determines whether students can convert that exposure into accurate, adaptive, and productive administrative performance. Evidence across vocational education shows the importance of digital competence, technology access, internships, self-efficacy, work competence, communication, and collaboration. The integrated framework therefore recommends curriculum designs that combine authentic digital workflows, competency-based assessment, workplace practice, teacher development, and continuous industry alignment. Employability should be evaluated through demonstrated administrative performance and adaptability rather than software familiarity alone. This evidence strengthens administrative technology competence by connecting authentic digital practice with accurate communication collaboration problem-solving adaptability and professional confidence.

Table 1. Digital Office Transformation–Employability Mediation Framework

Digital office element	Administrative technology competence	Employability mechanism	Expected outcome
Cloud and document platforms	Digital information management	Accurate and accessible work outputs	Administrative productivity
Collaboration systems	Digital communication and teamwork	Technology-mediated coordination	Workplace integration
Data-processing tools	Data handling and analytical accuracy	Evidence-based administrative support	Job performance
Automation and changing software	Adaptability and problem-solving	Transfer across technologies	Career resilience
Digital governance	Security and professional responsibility	Trusted information handling	Sustainable employability

CONCLUSION

This study concludes that digital office transformation can strengthen vocational employability when technology-rich learning is converted into administrative technology competence. Digital platforms, electronic records, collaborative applications, data-processing tools, and automated workflows provide important learning environments, but employability depends on students' ability to use these resources accurately, securely, collaboratively, and adaptively. Administrative technology competence therefore represents the occupational bridge between digital exposure and workplace performance, combining information management, office software proficiency, digital communication, collaboration, cybersecurity awareness, problem-solving, and technology adaptation.

The review also shows that competence development depends on complementary educational conditions. Teacher digital competence, technology access, internship quality, self-efficacy, work competence, and curriculum-industry alignment influence whether students can transfer digital learning into workplace readiness. Vocational programs should therefore move beyond application-specific instruction toward authentic administrative workflows and performance-based assessment. Students need repeated opportunities to create professional outputs, coordinate information, communicate through digital channels, solve administrative problems, and adapt to unfamiliar tools.

These experiences can strengthen both current productivity and long-term employability as office technologies continue to evolve.

Future research should empirically test the proposed mediation model across vocational schools, universities, internship settings, and administrative occupations. Digital office transformation can be measured through the authenticity, integration, and frequency of technology-supported administrative learning; administrative technology competence through document management, data processing, digital communication, collaboration, security, and adaptation; and employability through work readiness, internship performance, employer evaluation, and employment outcomes. Structural equation modeling, longitudinal competency assessment, experimental curriculum studies, and employer-linked evaluations could clarify the strength of direct and mediated relationships. Such evidence would help vocational institutions design digital office education that remains responsive to technological change and measurable labor-market needs.

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