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Artificial Intelligence Competencies Perceived as Important for Office Technology and Management Graduates in Contemporary Workplaces

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Abstract
Artificial intelligence (AI) is increasingly reshaping workplace tasks, including activities traditionally performed by Office Technology and Management (OTM) personnel. This study examined the AI competencies that office workers in contemporary workplaces in Makurdi, Benue State, perceive as important for OTM graduates and identified areas in which new employees may require additional preparation. A descriptive survey design was adopted. Data were collected from 100 office workers drawn from administrative/office management, human resources, finance/accounting, customer service, operations, ICT/technology, and management/supervisory functions. A structured questionnaire measured the perceived importance of eleven AI-related competencies and respondents' views of the adequacy of AI preparation among new employees. Data were analysed using frequencies, percentages, means, standard deviations, and ranking. The overall mean importance rating was 4.30 on a five-point scale. Evaluation and verification of AI-generated information recorded the highest mean (4.47), followed by responsible and ethical AI use (4.45), effective use of generative AI (4.42), and data privacy and confidentiality (4.40). Sixty-six percent of respondents indicated some degree of inadequacy in the AI preparation of new employees, while the most frequently identified areas for additional preparation were AI-output evaluation, responsible AI use, generative AI application, and privacy/confidentiality. The study contributes an occupational perspective to AI literacy discussions by locating AI competence within routine OTM functions, professional judgement, information handling, and responsible workplace use. The findings should, however, be interpreted within the limits of a perception-based descriptive survey of 100 respondents in Makurdi and should not be generalized to all OTM graduates or workplaces.

Keywords: artificial intelligence, AI literacy, office technology and management, workplace competencies, curriculum development

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Introduction

The growing use of artificial intelligence (AI) in workplaces is altering how information is produced, processed, communicated, stored and evaluated. The significance of this development for office work is not simply that particular tasks can now be automated. AI-assisted systems are increasingly being used to draft and revise documents, summarise information, retrieve and organise content, support routine analysis, respond to customers and assist employees in completing knowledge-intensive tasks. Evidence from workplace studies shows that generative AI can improve productivity in some tasks, although its effects vary according to the nature of the work and the level of human involvement required (Brynjolfsson et al., 2023; Noy & Zhang, 2023). At the broader labour-market level, the OECD (2023) similarly observes that AI is changing the composition of tasks and the skills required to perform them, rather than simply producing a straightforward replacement of workers by machines. These developments make the question of what workers should know and be able to do with AI increasingly important.

The implications are particularly relevant to Office Technology and Management (OTM), a programme designed around office administration, communication, information handling, records management, organisational support and the effective use of office technologies. Much of the traditional OTM skill base remains relevant in contemporary organisations, but the environment in which those skills are applied is changing. Digital information may now be generated or transformed through AI-assisted systems, while administrative employees may be expected to work alongside tools that can produce text, analyse data, retrieve information or assist with routine decisions. Oyinloye et al. (2021) and Mshelia and Orheruata (2023) demonstrate the continuing importance of office and digital competencies to OTM employability in modern work settings. More recently, Ademiluyi et al. (2025) have drawn attention to the prospects and challenges of incorporating AI into OTM pedagogy. Taken together, this literature suggests that AI should be considered within the occupational context in which OTM graduates are expected to work, rather than treated as an isolated technological subject.

The issue, however, extends beyond the ability to operate particular AI applications. AI literacy has been conceptualised as a multidimensional capacity involving knowledge of AI, understanding its capabilities and limitations, interacting with AI systems appropriately, evaluating their outputs and making responsible decisions about their use (Long & Magerko, 2020; Ng et al., 2021). Subsequent work has further shown that AI literacy is difficult to reduce to a single technical skill because it includes cognitive, practical and ethical dimensions (Carolus et al., 2023; Pinski & Benlian, 2024). This distinction matters for OTM because administrative work frequently involves information that requires accuracy, confidentiality, contextual judgement and professional accountability. An employee may therefore know how to obtain an AI-generated response without necessarily knowing whether the response is accurate, suitable for the task, ethically acceptable or safe to use. NIST (2023, 2024) similarly places emphasis on issues such as validity, reliability, privacy, bias, accountability and human oversight in the responsible use of AI. The educational challenge is consequently not merely to increase students' exposure to AI tools, but to develop an occupationally relevant form of AI literacy.

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The emerging literature nevertheless reveals an important limitation. Much of the scholarship on AI literacy has concentrated on defining competencies, developing measurement scales, examining students' knowledge, or discussing broad implications for education and work (Hornberger et al., 2023; Laupichler et al., 2022; Lintner, 2024). Workplace studies have also examined AI adoption, productivity and changing task structures (Bick et al., 2024; Brynjolfsson et al., 2023; Eloundou et al., 2024). These studies provide a strong basis for understanding the changing skill environment, but they do not by themselves establish which AI-related competencies workers in OTM-relevant office functions consider most important when graduates enter employment. The Nigerian OTM literature has likewise concentrated more strongly on office, digital and pedagogical competencies than on empirically examining the perceived importance of specific AI competencies among practising office workers (Ademiluyi et al., 2025; Mshelia & Orheruata, 2023). The present study addresses this narrower occupational question by examining the perceptions of office workers in corporate workplaces in Makurdi, Benue State.

The study is also situated within a broader concern about curriculum responsiveness. UNESCO's AI Competency Framework for Students identifies competencies relating to a human-centred mindset, ethics of AI, AI techniques and applications, and AI system design, with progression from understanding to application and creation (Miao et al., 2024). For OTM education, the full range of these dimensions is not necessarily required to the same extent. OTM graduates are not primarily being prepared to design AI systems; rather, they are likely to encounter AI as users, collaborators and professional decision-makers within administrative environments. The curriculum question therefore concerns the level and type of AI literacy that is occupationally relevant. The present study responds to that issue by examining eleven areas: basic AI concepts and capabilities; effective generative AI use; prompt formulation and interaction; AI-assisted document preparation and communication; AI-supported information search; AI-supported data analysis; evaluation and verification of AI-generated information; data privacy and confidentiality; responsible and ethical use; recognition of AI errors, limitations and bias; and adaptability to emerging AI tools. The study does not claim that these dimensions constitute a universally established occupational standard. Rather, it provides evidence of how practising office workers perceive their importance and where they believe new employees may require further preparation.

The empirical problem, therefore, is one of alignment between OTM preparation and the changing expectations surrounding office work. If AI is becoming part of routine information and communication processes, OTM education needs evidence about the competencies that are considered important in actual workplace settings. Such evidence can help distinguish between competencies that are technically attractive and those that are professionally consequential. In particular, it can clarify whether workplace expectations are concentrated on AI operation alone or extend to verification, ethics, confidentiality, critical judgement and continuing adaptation. The study consequently contributes to the discussion on OTM curriculum relevance by bringing workplace perceptions into an area of research that has often been addressed through general AI-literacy frameworks or broad educational recommendations.

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Objectives

The general objective of the study was to examine the AI competencies perceived as important for Office Technology and Management graduates in contemporary workplaces in Makurdi, Benue State. Specifically, the study sought to:

1. identify the AI competencies that office workers perceive as important for OTM graduates in contemporary workplaces;
2. determine the level of importance attached to the identified AI competencies by office workers;
3. examine office workers' perceptions of the adequacy of AI preparation among new employees; and
4. identify the areas of AI use in which new employees are perceived to require additional preparation.

Research Questions

The study was guided by the following research questions:

1. What AI competencies are perceived by office workers as important for OTM graduates in contemporary workplaces?
2. What level of importance do office workers attach to the identified AI competencies?
3. How adequately prepared are new employees perceived to be for AI-related workplace tasks?
4. In which areas of AI use are new employees perceived to require additional preparation?

Literature Review

Artificial intelligence has moved from being primarily associated with specialised computing environments to becoming increasingly relevant to ordinary organisational work. Its workplace significance lies partly in its ability to support tasks that involve language, information retrieval, classification, summarisation, pattern recognition and routine knowledge work. Noy and Zhang (2023), for example, found productivity gains from generative AI in experimental writing tasks, while Brynjolfsson et al. (2023) reported productivity improvements among customer-support workers using a generative AI system, although the distribution of benefits was not uniform. Eloundou et al. (2024) similarly demonstrate the broad exposure of occupational tasks to large language model capabilities. These findings should not be interpreted as evidence that AI uniformly replaces human workers. Rather, they point to a changing division of labour in which some activities can be assisted by AI while human workers remain responsible for defining tasks, judging outputs and applying contextual knowledge. For OTM graduates, this distinction is important because office work is heavily dependent on communication, information processing and administrative judgement. The relevance of AI competency therefore lies in effective interaction with these systems within professional work, not in technological sophistication for its own sake.

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The concept of AI literacy provides a useful basis for understanding this changing role. Long and Magerko (2020) conceptualise AI literacy through competencies that include understanding AI, recognising its limitations, interacting with AI systems and evaluating their outputs. Ng et al. (2021) similarly frame AI literacy as involving knowledge, use, evaluation and ethical considerations, while Carolus et al. (2023) demonstrate through the MAILS framework that AI literacy contains multiple dimensions rather than one undifferentiated ability. More recent reviews also show variation in how AI literacy is defined and measured, raising concerns about the frequent use of self-reported competence as a substitute for demonstrated ability (Almatrafi et al., 2024; Lintner, 2024). This literature is particularly relevant to the present study because the questionnaire measures respondents' perceptions of the importance of competencies, not respondents' actual performance on AI-related tasks. The distinction is retained throughout this study. A high importance rating indicates that a competency is considered valuable in workplace preparation; it does not demonstrate that respondents themselves possess the competency or that the competency has been objectively established as a universal occupational requirement.

Generative AI has introduced another dimension to the discussion because the interaction between the worker and the AI system is itself becoming a workplace skill. Prompt formulation, task specification, revision of AI-generated material and the evaluation of responses require users to combine technical familiarity with knowledge of the work context. Pinski and Benlian (2023, 2024) argue that AI literacy should be understood in relation to human capability rather than technology use alone, while Annapureddy et al. (2025) identify a range of competencies associated with generative AI literacy. At the same time, the usefulness of generated content cannot be separated from the ability to scrutinise it. AI systems may produce outputs that are fluent and plausible but inaccurate, incomplete, biased or inappropriate for a particular context. Larson et al. (2024) therefore emphasise the continuing importance of critical thinking in environments in which generative AI is readily available. This creates a direct connection with OTM functions, where an AI-generated letter, report, summary, record, response or piece of information may have to meet organisational, professional and confidentiality requirements before it can be used.

The ethical and risk dimensions of AI provide a further reason for treating AI competence as more than operational proficiency. Administrative employees routinely handle organisational records, personal information, correspondence and other forms of sensitive material. The use of AI therefore introduces questions concerning privacy, confidentiality, bias, accountability and appropriate human oversight. NIST's AI Risk Management Framework identifies trustworthy and responsible AI practices around characteristics such as validity and reliability, safety, security and resilience, accountability and transparency, explainability and interpretability, and privacy (NIST, 2023). Its generative AI profile further identifies risks associated with generated content, information integrity, privacy and the need for appropriate human oversight (NIST, 2024). UNESCO (2023) likewise emphasises responsible use, human agency and the need for safeguards when generative AI is used in education and research. These perspectives extend the workplace competency discussion beyond the ability to produce an AI-assisted output. They suggest that an occupationally prepared employee should be able to determine when AI use is appropriate, protect information, recognise limitations, question unreliable outputs and retain professional responsibility for the final product.

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For the present study, Long and Magerko's (2020) AI literacy framework provides the principal conceptual foundation because its emphasis on understanding, application, interaction and evaluation corresponds closely with the demands of routine OTM work. The broader literature on AI literacy, responsible AI and workplace change was used to contextualise and refine this occupational interpretation. The questionnaire consequently treated basic AI concepts as the foundational knowledge component; generative AI use, prompt formulation, document preparation, information search and data analysis as application and interaction competencies; evaluation and verification of AI-generated information and recognition of errors, limitations and bias as evaluative competencies; and privacy, confidentiality and ethical use as responsible-use competencies. Adaptability to emerging AI tools was included to capture the continuing development of workplace technologies. This synthesis differs from approaches that treat every AI competency as equally relevant across occupations. It recognises that OTM graduates are primarily users and professional participants in AI-supported office environments rather than AI developers. The literature thus supports an occupationally differentiated understanding of AI literacy in which the ability to use AI effectively is accompanied by the ability to evaluate, safeguard and take responsibility for what the technology produces.

Methodology

The study adopted a descriptive survey design. The design was considered appropriate because the purpose was to obtain and summarise the perceptions of office workers regarding the importance of AI-related competencies for OTM graduates and the adequacy of AI preparation among new employees at a particular point in time. The study was conducted in Makurdi, the capital of Benue State, Nigeria. The choice of Makurdi provided an accessible urban workplace setting in which OTM-related office functions could be examined across different organisational roles. The respondents comprised 100 office workers operating in corporate workplaces and representing administrative/office management, human resources, finance/accounting, customer service, operations, ICT/technology, and management/supervisory functions. Their work experience ranged from less than three years to more than ten years, thereby providing views from employees at different stages of workplace exposure. The final sample consisted of 23 respondents with less than three years of experience, 29 with three to five years, 30 with six to ten years, and 18 with more than ten years. In terms of functional area, respondents were distributed across administration/office management (29%), human resources (13%), finance/accounting (11%), customer service (14%), operations (15%), ICT/technology (8%), and management/supervision (10%).

Data were collected using a structured questionnaire developed from the literature on AI literacy, responsible AI use, workplace digital competencies and OTM education. The instrument contained three sections. Section A obtained respondents' background information, particularly work experience and functional area. Section B contained eleven AI competency statements rated on a five-point scale ranging from 1, "Not Important," to 5, "Extremely Important." The competency areas covered basic AI concepts and capabilities, effective generative AI use, prompt formulation and effective interaction with AI systems, AI-assisted document preparation and communication, AI-supported information search, AI-supported data analysis, evaluation and verification of AI-generated information, data privacy and confidentiality, responsible and ethical AI use, recognition

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of AI errors, limitations and bias, and adaptability to emerging AI tools. Section C examined respondents' perceptions of the adequacy of AI preparation among new employees and the areas in which additional preparation was considered necessary. The items were developed to reflect the occupational interpretation of AI literacy established in the literature rather than to measure respondents' actual proficiency with AI systems. Thus, the instrument was designed as a perception measure of workplace importance and preparation needs. The questionnaire was administered to the 100 respondents, and all 100 completed instruments were returned, representing a 100% return rate.

The data were analysed using frequencies, percentages, mean scores, standard deviations and ranking. Means were used to establish the relative importance attached to the identified AI competencies, while frequencies and percentages were used to describe respondents' views concerning the adequacy of AI preparation and areas requiring additional preparation. A mean closer to 5 indicated stronger perceived importance, whereas a mean closer to 1 indicated lower perceived importance. The results were interpreted descriptively and subsequently discussed in relation to the established literature and conceptual framework. No inferential relationship was claimed from the descriptive findings; in particular, the study did not treat the pattern of mean ratings as a statistical correlation or causal relationship. This distinction is important because the study was designed to describe workplace perceptions rather than estimate causal effects or establish universally applicable occupational standards.

Results and Discussion

Results

The results are presented in relation to the four research questions. The analysis focuses on respondents' perceptions of the importance of AI competencies for OTM graduates and their perceptions of the adequacy of AI preparation among new employees. The findings are descriptive and are therefore interpreted in terms of the observed frequencies, percentages, mean ratings and standard deviations.

Research Question One:

What AI competencies are perceived by office workers as important for OTM graduates in contemporary workplaces?

Eleven AI-related competencies were examined. These covered foundational AI understanding, practical application, human–AI interaction, evaluation of AI outputs, responsible use and adaptability. The findings are presented in Table 1.

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Table 1
Perceived Importance of AI Competencies for OTM Graduates

AI competency	Mean	SD	Rank
Evaluating and verifying AI-generated information	4.47	0.67	1
Responsible and ethical use of AI	4.45	0.68	2
Effective use of generative AI tools	4.42	0.71	3
Data privacy and confidentiality when using AI	4.40	0.73	4
Understanding basic AI concepts and capabilities	4.34	0.75	5
AI-assisted document preparation and communication	4.31	0.76	6
Prompt formulation and effective interaction with AI	4.28	0.79	7
Recognising AI errors, limitations and bias	4.26	0.81	8
AI-supported information search and research	4.18	0.83	9
AI-supported data analysis	4.13	0.85	10
Ability to learn and adapt to new AI tools	4.11	0.86	11
Grand Mean	**4.30**		

The findings in Table 1 indicate that all eleven competencies received high perceived-importance ratings. The grand mean of 4.30 suggests a generally strong level of importance attached to AI-related preparation for OTM graduates. The ranking, however, reveals a meaningful distinction among the competencies. Respondents placed the greatest importance on evaluating and verifying AI-generated information (M = 4.47), followed by responsible and ethical use of AI (M = 4.45), effective use of generative AI tools (M = 4.42), and data privacy and confidentiality (M = 4.40). At the lower end of the ranking were AI-supported information search and research (M = 4.18), AI-supported data analysis (M = 4.13), and the ability to learn and adapt to new AI tools (M = 4.11). Although these competencies ranked lower relative to the others, their means remained within the generally high range. The findings therefore do not identify an area that respondents considered unimportant; rather, they show a hierarchy within an overall pattern of strong perceived importance.

The prominence of output evaluation is particularly significant. Respondents did not place the greatest value simply on the ability to access AI systems or generate content through them. Instead, they rated the ability to evaluate and verify what AI produces above every other competency. This finding gives the workplace interpretation of AI literacy a distinctly professional character. In an OTM environment, the usefulness of an AI-generated letter, report, summary or information search result depends on whether the employee can determine its accuracy, relevance and

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suitability before it is used. The result therefore places professional judgement at the centre of AI-supported office work.

The second-ranked competency, responsible and ethical use of AI, reinforces this interpretation. A high rating in this area indicates that respondents attach considerable importance to how AI is used, not merely whether it is used. This is consistent with the multidimensional treatment of AI literacy by Long and Magerko (2020) and Ng et al. (2021), in which ethical awareness and critical engagement are integral to competent AI use. It is also compatible with the risk-oriented approach of NIST (2023, 2024), which places questions of reliability, accountability, privacy, security and human oversight alongside technical capability. The present finding extends that discussion into an OTM setting where employees may be required to make routine but consequential decisions concerning organisational information.

The third-ranked competency, effective use of generative AI tools (M = 4.42), shows that respondents recognise the practical value of generative AI in office work. This is consistent with workplace research showing that generative AI can improve performance on some communication-intensive and knowledge tasks (Brynjolfsson et al., 2023; Noy & Zhang, 2023). The significance of the present result, however, lies in its position relative to the top two competencies. Respondents rated effective use highly, but rated evaluation and responsible use even more highly. The pattern therefore suggests that practical use is valued within a broader framework of judgement and responsibility.

Data privacy and confidentiality also received a very high rating (M = 4.40). This is particularly important for OTM because office employees routinely work with correspondence, personnel records, financial information, customer details and other forms of organisational information. The high rating indicates that respondents perceive AI-related productivity gains as inseparable from information protection. The result is consistent with the emphasis on privacy and responsible AI use in contemporary risk and governance frameworks (NIST, 2023, 2024).

The remaining competencies also recorded substantial levels of perceived importance. Basic AI concepts and capabilities ranked fifth (M = 4.34), suggesting that respondents value some foundational understanding before practical AI use. AI-assisted document preparation and communication (M = 4.31) was also highly rated, which is understandable given the centrality of document production and workplace communication to OTM functions. Prompt formulation (M = 4.28) ranked below output evaluation, ethical use and privacy, an ordering that is informative. It implies that respondents may regard the ability to formulate instructions for AI as useful, but not sufficient in itself. The ability to obtain an output is less professionally consequential than the ability to determine whether the resulting output can be trusted and used.

Recognition of errors, limitations and bias (M = 4.26) further strengthens the critical dimension of the findings. AI literacy in this context is not equivalent to confidence in technology. It involves awareness that an AI system can produce incomplete, misleading or biased responses and that human scrutiny remains necessary. AI-supported information search (M = 4.18) and AI-supported data analysis (M = 4.13) were also considered important, although their lower relative positions may reflect the fact that the extent to which these functions are used differs across office roles. The lowest-rated competency, adaptability to new AI tools (M = 4.11), nevertheless remained highly rated. The difference between adaptability and the more highly ranked competencies should

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therefore be interpreted as a difference in relative emphasis rather than evidence of low demand for adaptability.

Research Question Two:
What level of importance do office workers attach to the identified AI competencies?

The overall mean of 4.30 demonstrates that respondents attached a high level of importance to AI competencies across the eleven areas studied. The results are therefore notable not because there is a sharp division between important and unimportant competencies, but because nearly the entire competency set attracted consistently strong ratings.

At the same time, the relatively high means across all eleven items raise an interpretive consideration. The results may indicate strong convergence among respondents concerning the relevance of AI to office work, but the compressed range of ratings also suggests a possible ceiling effect. The difference between the highest mean of 4.47 and the lowest mean of 4.11 is relatively modest. It would therefore be inappropriate to interpret the ranking as demonstrating that one competency is essential while another is dispensable. The more defensible interpretation is that respondents broadly value the complete set, with particular emphasis on evaluation, ethical use, generative AI application and privacy. This distinction strengthens the study because it avoids converting a generally positive pattern of perceptions into an artificial hierarchy of absolute workplace requirements.

The standard deviations, which range from 0.67 to 0.86, indicate some variation in respondents' ratings, but not enough to overturn the general pattern of high perceived importance. The finding therefore supports an occupational conception of AI literacy in which foundational knowledge, practical use, critical evaluation and responsible conduct are mutually reinforcing rather than competing alternatives.

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Research Question Three:
How adequately prepared are new employees for AI-related workplace tasks?

Respondents' perceptions of the adequacy of AI preparation among new employees are presented in Table 2.

Table 2
Perceived Adequacy of AI Preparation Among New Employees

Level of preparation	Frequency	Percentage (%)
Very adequately	9	9.0
Adequately	25	25.0
To some extent	42	42.0
Inadequately	20	20.0
Very inadequately	4	4.0
Total	**100**	**100.0**

Only 9.0% of respondents considered new employees to be very adequately prepared for AI-related workplace tasks, while 25.0% considered them adequately prepared. A further 42.0% selected "to some extent," while 20.0% and 4.0% rated preparation as inadequate and very inadequate, respectively. Thus, 34.0% of respondents expressed a clearly positive assessment of preparation, whereas 24.0% expressed a clearly negative assessment. The largest single response category was "to some extent," selected by 42.0% of respondents. Taken together, 66.0% of respondents therefore indicated that new employees were not fully prepared, either because their preparation was only partial or because it was explicitly inadequate.

This finding should be interpreted carefully. It does not establish that OTM graduates or newly recruited workers actually lack AI competence through objective performance testing. It shows that a substantial proportion of office workers perceive preparation among new employees as incomplete. This perception is important because it points to a workplace expectation that formal education may not yet be providing sufficient preparation for AI-supported tasks. It also complements the high importance ratings reported in Table 1. The combination of high perceived importance and predominantly partial assessments of preparation suggests a need to examine how AI-related competencies are developed before and during entry into employment.

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Research Question Four:
In which areas of AI use are new employees perceived to require additional preparation?

Table 3
Areas in Which New Employees Are Perceived to Require Additional AI Preparation

Area of additional preparation	Frequency	Percentage (%)
Evaluating AI-generated information	60	60.0
Ethical/responsible AI use	54	54.0
Effective use of generative AI	50	50.0
Data privacy/confidentiality	47	47.0
Prompt formulation	43	43.0
Recognising AI errors and bias	41	41.0
AI-assisted document preparation	35	35.0
AI-supported information search	29	29.0
AI-supported data analysis	27	27.0

Note: *Percentages exceed 100% in aggregate because respondents could identify more than one area.*

The results show that evaluating AI-generated information was the most frequently identified area requiring additional preparation, selected by 60.0% of respondents. Ethical and responsible AI use followed at 54.0%, while effective use of generative AI was identified by 50.0%. Data privacy and confidentiality was selected by 47.0%, followed by prompt formulation at 43.0% and recognition of AI errors and bias at 41.0%. The less frequently selected areas were AI-assisted document preparation (35.0%), AI-supported information search (29.0%), and AI-supported data analysis (27.0%).

The pattern closely parallels the ranking obtained in the importance ratings. Evaluation of AI-generated information was both the highest-rated competency overall and the most frequently identified training need. Responsible and ethical AI use, generative AI, and privacy likewise appeared prominently in both sets of results. This convergence provides a stronger empirical basis for curriculum discussion than either measure would provide independently. It does not establish an objective occupational standard, but it does indicate that the areas which respondents value most highly are also among those in which they perceive the greatest need for further preparation.

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The comparatively lower frequency associated with AI-supported data analysis should also be interpreted cautiously. Only 27.0% of respondents identified it as an area needing additional preparation, but the competency itself received a mean importance rating of 4.13. The two findings are not contradictory. A competency may be regarded as important while being perceived as a more specialised training need for certain office functions. The same consideration applies to information search. The results therefore suggest that the breadth of AI preparation required in OTM should be complemented by differentiated application according to workplace role.

One notable issue is that adaptability to emerging AI tools appeared in the importance-rating scale but was not included in the multiple-response list of areas requiring additional preparation. Consequently, no valid percentage can be reported for perceived additional training in adaptability from the existing data. The discussion should therefore avoid implying that respondents rated adaptability as either a high or low training need in Table 3. Its evidence is limited to the 4.11 mean importance rating reported in Table 1.

Discussion of Findings

The first major finding of the study is that office workers attach considerable importance to a broad set of AI competencies for OTM graduates, with a grand mean of 4.30. This supports the general position in contemporary AI-literacy scholarship that competent AI use involves more than basic technical familiarity. Long and Magerko (2020) conceptualise AI literacy as encompassing understanding, use, evaluation and other forms of informed engagement, while Ng et al. (2021) place knowledge, application, evaluation and ethics within the concept. The present results are consistent with those frameworks but add an occupational emphasis: the competencies perceived as most important by office workers are those that enable employees to use AI while retaining responsibility for the quality, suitability and safety of the resulting work.

The prominence of evaluation and verification is especially noteworthy. It suggests that respondents distinguish between generating information and being professionally accountable for information. This distinction becomes increasingly important in workplaces in which AI can produce plausible language quickly. Noy and Zhang (2023) and Brynjolfsson et al. (2023) provide evidence that generative AI can improve productivity in selected tasks, but productivity gains do not remove the need for human judgement. The present study qualifies the productivity argument by indicating that, from the perspective of office workers, the educational value of generative AI is inseparable from the ability to examine its output critically. Thus, AI should not be conceptualised in OTM education simply as a faster means of preparing documents or finding information. It should be introduced as a support technology whose products remain subject to professional review.

The finding also supports, but at the same time sharpens, the human-centred orientation found in contemporary AI competency frameworks. Miao et al. (2024) frame student AI competencies around human-centred values, ethics, AI techniques and applications, and system design. For OTM, the present results suggest that the first three dimensions have a much more immediate occupational relevance than AI system design. The OTM graduate is more likely to use, review and manage AI-supported outputs than to build an AI model. The curriculum implication is therefore not to replicate computing or engineering programmes, but to develop a level of AI

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literacy appropriate to office administration, information management and organisational communication.

The high rating for responsible and ethical AI use is similarly significant. Rather than treating ethical considerations as an additional topic to be addressed after students have mastered AI tools, the results support the view that responsibility should be integrated into ordinary AI-supported work. This is compatible with NIST (2023, 2024), which treats accountability, privacy, reliability, security and human oversight as dimensions of responsible AI use. It also accords with Ng et al. (2021), who identify ethical issues as a component of AI literacy rather than an external concern. In the context of OTM, this means that students should encounter ethical decision-making while learning how to search for information, prepare documents, communicate with users, analyse data and handle records with AI assistance.

The high rating given to data privacy and confidentiality is particularly relevant to the OTM occupational environment. The finding does more than establish that respondents are aware of privacy concerns; it places information protection among the four most highly rated competencies. This is consistent with the nature of office work, which frequently involves information whose unauthorised disclosure or inappropriate processing can have organisational consequences. The result therefore suggests that AI-related information governance should be connected directly to records management, office procedures and professional conduct rather than taught as an abstract discussion of technology risk.

The result concerning effective generative AI use also deserves a balanced interpretation. Its high rating is consistent with evidence that generative AI can improve productivity in communication-intensive work (Brynjolfsson et al., 2023; Noy & Zhang, 2023). However, the present study does not establish that the adoption of generative AI will necessarily improve productivity in all OTM functions. The data establish only that respondents perceive effective use as important. This distinction is important because workplace relevance varies across job roles. The lower percentage selecting AI-supported data analysis as an additional training need, for example, may reflect different patterns of AI use across functional areas. Such variation cannot be directly tested with the available descriptive data, but it is a reasonable consideration in interpreting the results.

The ranking of prompt formulation below output evaluation also contributes to the interpretation of AI literacy. It indicates that respondents appear to place greater emphasis on what an employee does with an AI output than on the mechanics of generating that output. This is consistent with the argument by Pinski and Benlian (2024) that AI literacy should be understood as a broader human competency rather than the ability to operate technology. It also resonates with Annapureddy et al. (2025), who treat generative AI literacy as a collection of competencies rather than a single prompting skill. For OTM education, prompt formulation should therefore be taught as one component of task understanding and human–AI interaction, not as an end in itself.

The rating for recognition of AI errors, limitations and bias further strengthens the argument for critical judgement. AI literacy requires users to understand that an apparently convincing response can still be defective. The importance assigned to this competency by respondents is therefore consistent with the risk-management emphasis of NIST (2023, 2024). It also supports the argument made by Larson et al. (2024) that the spread of generative AI increases rather than eliminates the need for critical thinking. In an OTM context, this may mean checking names, dates, facts, figures,

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references, organisational details and the appropriateness of generated language before information is communicated or stored.

The relatively lower position of adaptability to emerging AI tools requires a cautious interpretation. The original analysis suggested that respondents might be placing greater emphasis on immediate safe use of AI than on longer-term adaptability. The data do not establish this explanation, however, and it should therefore not be presented as a finding. What can be established is that adaptability, while ranked last, still recorded a mean of 4.11. Thus, respondents did not reject adaptability; they simply rated the other ten competencies somewhat more highly. The result may indicate that respondents see adaptability as an important continuing capability, but the study does not provide sufficient evidence to determine why it received the lowest relative score.

The second major empirical finding concerns preparation of new employees. Sixty-six percent of respondents perceived some degree of inadequacy in the AI preparation of new employees, while only 34.0% rated preparation as adequate or very adequate. This finding is important because it moves the discussion from abstract workplace transformation to the perceived transition between education and employment. It does not demonstrate a measurable competency deficit among OTM graduates, since no performance assessment was undertaken. Nevertheless, it signals a workplace perception that some new employees enter employment without a level of AI preparation that respondents consider complete.

This result has implications for the relationship between AI literacy and employability. Bick et al. (2024), Eloundou et al. (2024) and the OECD (2023) all point to changes in tasks and skills associated with AI adoption. The present study adds an occupational perspective by suggesting that, in the OTM-related office environment, the issue is not merely whether AI is present but whether employees are adequately prepared to use it responsibly. The problem is therefore one of educational readiness as well as technological availability.

The additional-training results provide further direction. The highest training need was evaluation of AI-generated information (60.0%), followed by ethical/responsible AI use (54.0%), generative AI (50.0%), privacy/confidentiality (47.0%), prompting (43.0%) and recognition of errors and bias (41.0%). The convergence between the importance and training-need results is particularly useful because it identifies a coherent cluster around critical and responsible use. The implication is not that OTM curriculum should focus exclusively on these areas, but that these areas may warrant greater attention when deciding where instructional emphasis should begin.

Curriculum Implications

The findings support a curriculum approach in which AI is embedded within existing OTM competencies rather than treated solely as a detached technology topic. This is an interpretation of the empirical findings in relation to the literature, not a statistical calculation from the questionnaire. The curriculum implications can be organised as follows.

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Table 4
Evidence-Based Curriculum Implications for AI-Related OTM Competencies

Competency area	Evidence from the study	Curriculum implication	Suggested practical assessment
AI-output evaluation and verification	Highest mean (4.47); highest additional-training need (60%)	Emphasise verification, fact checking, comparison of sources and human review of generated content	Students identify and correct errors in AI-generated office documents
Ethical and responsible AI use	Second-highest mean (4.45); 54% identified additional need	Integrate ethics, accountability, appropriate use and professional responsibility across OTM courses	Case-based decisions on appropriate and inappropriate workplace AI use
Generative AI application	Mean 4.42; 50% identified additional need	Teach practical use for drafting, summarising, editing and routine information tasks alongside human review	Production and revision of AI-assisted office documents
Privacy and confidentiality	Mean 4.40; 47% identified additional need	Connect AI use with records management, confidentiality and information-security practices	Students assess whether workplace information is appropriate for AI processing
Basic AI concepts	Mean 4.34	Provide sufficient conceptual knowledge to understand AI capabilities, limitations and appropriate applications	Short applied tasks requiring students to match workplace tasks with appropriate AI use

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AI-assisted document work	Mean 4.31	Incorporate AI into document preparation, editing and workplace communication	Prepare, critique and professionally revise an AI-assisted document
Prompt formulation and interaction	Mean 4.28; 43% identified additional need	Teach context-specific task formulation and iterative interaction with AI	Students develop, test and refine prompts for a defined administrative task
Errors, limitations and bias	Mean 4.26; 41% identified additional need	Strengthen critical assessment of AI-generated information	Students identify inaccuracies, omissions or bias in generated outputs
Information search and research	Mean 4.18	Use AI-assisted search with source evaluation and verification	Research task requiring comparison of AI results with authoritative sources
Data analysis	Mean 4.13; 27% identified additional need	Introduce AI-supported analysis according to OTM-related data tasks and roles	Interpret and critique an AI-assisted analysis of office data
Adaptability to emerging AI tools	Mean 4.11	Encourage continuous learning and transfer of AI knowledge across new tools	Students complete a task with an unfamiliar AI application and explain their process

The matrix indicates a curriculum architecture that moves from understanding to application, evaluation and responsible use. This is compatible with the broader AI-literacy literature while retaining the occupational identity of OTM. A student should not simply demonstrate that a tool can produce a document. The student should be able to formulate the task, use the tool appropriately, examine the output, identify problems, protect sensitive information and produce a professionally acceptable final result.

Such an approach also has implications for assessment. Where AI can generate a first draft, an assessment based exclusively on the production of that first draft may provide limited evidence of the student's professional competence. Greater emphasis can be placed on the student's ability to judge, revise, verify, document and justify the use of AI. This does not make conventional office competencies obsolete. Rather, it changes the context in which they are exercised. Typing,

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document preparation, communication, information handling and administrative procedures remain relevant, but students increasingly need to demonstrate these skills alongside responsible interaction with AI systems.

The findings therefore support integration across existing OTM subject areas. AI-assisted document production can be incorporated into word processing and business communication; privacy and ethical use can be addressed within records management and office practice; AI-supported research can be connected to information management; basic analysis can be incorporated into data-related courses; and critical evaluation can be practised across these activities. Such integration is preferable to treating AI literacy as a single isolated topic because the competencies identified by respondents are inherently connected to existing OTM functions.

Conclusion and Recommendations

Conclusion

This study examined the AI competencies that office workers in contemporary workplaces in Makurdi, Benue State, perceive as important for OTM graduates. The findings indicate a broad and consistent recognition of the importance of AI-related preparation. All eleven competencies examined received high mean ratings, with an overall mean of 4.30. The highest-rated areas were evaluation and verification of AI-generated information, responsible and ethical AI use, effective use of generative AI, and data privacy and confidentiality. Other competencies, including basic AI understanding, AI-assisted document preparation, prompt formulation, recognition of errors and bias, information search, data analysis and adaptability to emerging tools, were also considered important.

The findings further indicate a perceived weakness in the preparation of new employees. While 34.0% of respondents regarded new employees as adequately or very adequately prepared, 66.0% indicated some degree of inadequacy, with 42.0% selecting “to some extent” and 24.0% selecting either “inadequately” or “very inadequately.” The most frequently identified areas for additional preparation were evaluation of AI-generated information, responsible and ethical use, effective generative AI application, privacy and confidentiality, prompt formulation, and recognition of AI errors and bias.

Taken together, the results suggest that the workplace relevance of AI competency in OTM is not primarily about becoming an AI developer or acquiring advanced programming knowledge. The stronger emphasis is on becoming capable of working with AI in ways that preserve accuracy, confidentiality, professional judgement and accountability. This position is consistent with the wider AI-literacy literature, but the present study gives it an occupational interpretation grounded in office work.

The principal contribution of the study is therefore the identification of a workplace-perception perspective on AI literacy for OTM. The findings point towards a model in which AI competence develops through a progression from basic understanding to practical application, evaluation of outputs and responsible human–AI collaboration. This provides a useful basis for curriculum discussion, particularly as OTM education seeks to remain responsive to changing office technologies.

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The findings should nevertheless be interpreted within the limits of the study. The research was based on a descriptive survey of 100 office workers in Makurdi, and the central measures were perceptions of importance and preparation rather than direct assessments of AI performance. The study therefore does not establish an objective occupational competency standard, nor does it demonstrate the actual AI competence of OTM graduates. The findings should not be generalized automatically to all OTM graduates, employers or workplaces in Nigeria. Future studies could extend the evidence through larger samples across multiple locations, direct performance-based assessments, and comparisons among different workplace functions and levels of experience.

Recommendations

Based on the findings, the following recommendations are made.

1. **OTM departments should embed occupational AI literacy across the curriculum.** AI-related competencies should be incorporated into existing OTM courses rather than treated exclusively as a stand-alone technology topic. The immediate emphasis should be on understanding AI capabilities and limitations, using AI for relevant office tasks, evaluating outputs and retaining professional responsibility for final decisions.

2. **Curriculum developers and OTM educators should give priority to evaluation, ethics, privacy and responsible use.** Because evaluation of AI-generated information was the highest-rated competency and the most frequently identified training need, students should receive repeated practical exposure to fact checking, output verification and error detection. Ethical use, privacy, confidentiality and accountability should be taught alongside the practical use of AI rather than as separate theoretical issues.

3. **OTM institutions should provide practical generative AI training within authentic office tasks.** Students should practise using generative AI for document preparation, editing, summarisation, communication and information-related activities that reflect actual administrative work. Assessment should require students to revise, verify and justify AI-assisted outputs rather than simply generate them.

4. **Curriculum bodies and institutions should introduce continuous review of AI-related OTM competencies.** Because AI applications and workplace practices are evolving, curriculum review should be periodic rather than dependent on infrequent major revisions. Feedback from employers, practising office workers and OTM educators should be used to determine whether existing AI-related learning outcomes remain relevant.

5. **Employers and OTM institutions should strengthen transition-to-work preparation.** The finding that 66.0% of respondents perceived some degree of inadequacy in new employees' AI preparation suggests value in closer interaction between workplace organisations and OTM programmes. Employers can contribute workplace scenarios, practical expectations and internship opportunities, while institutions can use this feedback to refine students' preparation before graduation.

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Overall, the appropriate educational response is not to make OTM students specialists in AI development, but to prepare them to work confidently, critically and responsibly in offices where AI is increasingly part of everyday information and communication processes.

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