

Artificial Intelligence-Enabled Employee Training and Its Impact on Skill Development and Job Performance: An Empirical Study of Selected Banks in Nagpur City

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Abstract: Artificial Intelligence (AI) is playing a growing role in the human resource management, development and training of organizations. Digital technologies, automation, AI-driven applications and data-driven systems are proliferating in the banking industry, generating constant demands for upskilling of employees. Employee training can be tailored to the individual with AI, offering adaptive content, automated feedback, and technology-based skill development. The present study is an exploration of the role of AI in the training of employees and its impact on employee skill development and job performance in selected private sector banks in Nagpur City. The research design used in this study is a primary research design and a sample of 50 employees (managers, officers, clerical/customer service) was proposed. Convenience or purposive sampling is suggested for selection of respondents. Data is gathered by using structured questionnaire with a 5-point likert scale. This research examines the experiences of workers with AI-supported training, training effectiveness, skill acquisition, and job performance. Descriptive statistical techniques such as frequency, percentage, mean and standard deviation are proposed for analysis. The findings of the study will be helpful in understanding the value of AI-based training for enhancing employees' technological and professional skills and boosting their work performance.

Keywords: Artificial Intelligence, AI-enabled Training, Employee Training, Skill Development, Job Performance, Banking Sector, Private Banks, Nagpur City.

Introduction

Artificial Intelligence is one of the most impactful tech innovations to impact contemporary business organizations. It is not only being applied in the technical tasks; this factor is also beginning to shape HRM and HRD. Organizations are leveraging AI to recruit, manage employee performance, enhance their learning and development, plan their workforce, gauge employee engagement, and more. According to research in AI and HRD, AI has the potential to revolutionize learning and development by enabling more personalized and technology-driven approaches to employee growth and development.

Training is a critical element in the human resource development process since it enables employees to acquire new knowledge, enhance existing skills, respond to technological changes and carry out their duties effectively. The banking industry is especially critical that staff undergo continuous training in the current digital environment where they are more frequently using digital banking platforms, automation systems, data analytics, cyber security applications, customer relationship systems, and other technology driven solutions.

AI-powered training can revolutionize the way employees are trained. AI-based learning systems can offer personalized learning paths, suggest relevant learning content, identify learning needs and generate real-time feedback, as opposed to delivering the same training to all employees. Studies on generative AI and workplace learning in recent years also indicate that there may be potential benefits in continuous, self-directed and interactive skill-building. Meanwhile, the integration of AI can present problems for workers. When adopting new AI-driven technology systems, employees can encounter technological complexity, uncertainty or anxiety. Davis et al. recently conducted a systematic review, revealing that digital competency is possible through training, coaching, up skilling and support of HRD practices in AI-enabled workplaces.

The banking industry is thus a suitable field to explore the role of AI in employee training, upskilling, and performance. Previous empirical studies on Indian banking have also explored training effectiveness in public, private, and foreign banks, which include dimensions like access to training, relevance, benefits, participation, and satisfaction.

The present study ends with a focus on selected private sector banks in Nagpur City and aims to understand the perception of the employees about the introduction of AI in the training procedure and its enhancement towards the skills and performance of the employees.

Background of the Study

The banking sector has undergone major technological change. The nature of banking jobs has been altered by digital, mobile, internet banking, automated customer service, analytics, cybersecurity and AI-backed banking systems. As a result, staff members are held accountable for ongoing learning and development of technical skills.

But traditional training methods like classroom lectures, printed materials and occasional workshops still have value. But, technology mediated training can offer more flexibility and opportunities for ongoing education. AI can be used to help train by analysing employees' learning needs and suggesting relevant content.

Some of the emerging applications of AI in HRM identified by AI-based HRM research are personalized training and real-time performance assessment.

AI-powered training could be of special interest for bank staff, including:

- Digital banking operations
- Data analysis
- Cybersecurity awareness
- Customer relationship management
- Fraud detection
- Risk management
- Compliance
- Financial technology
- Handling of AI banking software. Handling of AI banking app.
- Communication and problem-solving

Given this, it is crucial to consider how employees feel about AI-supported training in terms of enhancing their ability to acquire skills and perform their jobs well.

Statement of the Problem

As AI and digitalization in banking continues to rise, employees constantly need reskilling and upskilling. Staff must adjust to new systems, applications, processes and into new technology-based work settings.

While AI can offer novel avenues for employee training, the success of these efforts relies on the accessibility of the technology, the relevance of the content, its personalization, usability, acceptance by employees, organizational support, and the quality of training materials.

Therefore, it is necessary to explore whether AI-assisted employee training increases employees' perceived skill development and job performance or not.

The present study considers private sector banks in Nagpur, to understand this aspect, the employees in the selected private sector banks in Nagpur city are selected.

Objectives of the Study

- To find out the level of using AI in employee training in selected private sector banks of Nagpur City.
- To analyse the connection between the use of AI in training and employee skills enhancement and job performance.
- To understand the key challenges employers encounter when implementing AI-powered training programs.

Hypothesis

Hypothesis 1: AI Training and Job Performance

H₀₁: There is no significant relationship between AI-enabled training and employee job performance.

H₁₁: There is a significant relationship between AI-enabled training and employee job performance.

Hypothesis 2: Challenges and Employee Category

H₀₂: There is no significant difference in the challenges faced by Managers, Officers/Assistant Managers, and Clerical/Customer Service Employees while using AI-enabled training.

H₁₂: There is a significant difference in the challenges faced by Managers, Officers/Assistant Managers, and Clerical/Customer Service Employees while using AI-enabled training.

Conceptual Framework

The conceptual framework of the study can be represented as:

AI-Enabled Employee Training



Training Effectiveness



Employee Skill Development



Job Performance

The study assumes that effective AI-enabled training can contribute to improved employee knowledge, technological skills, adaptability, problem-solving ability, and confidence, which may subsequently contribute to better job performance.

Major Variables

Independent Variable:

- AI-enabled employee training

Dependent Variable:

- Employee skill development
- Job performance
- Challenges in AI-enabled training

Review of literature

Wadhwa and Kumar (2022) made a study to investigate the impact of training on job performance in Indian banking industry. The study set the groundwork for the significance of employee training in enhancing performance and achieving organizational goals. The conclusions obtained are useful for the present research as it can be considered as an advanced type of employee training, which can positively affect the knowledge and skills of employees and their effectiveness.

Chavda and Kalburgi (2022) have studied the effect of training and development on the performance of employees in private sector banks of Gujarat. The study noted 300 employees and found a positive correlation between training and employee performance. The study emphasizes the need for constant job training in banking, as the technology is constantly evolving, and employees must continually update their knowledge and skills. The findings will be used to explore the potential of using AI to train to achieve a similar or better performance outcome.

Bahl, Kiran and Sharma (2024) assessed training success through the four level model of Kirkpatrick in the banking industry by conducting an experimental study on the effectiveness of training in banking sector, managerial and non-managerial employees were selected as subjects. A total of 402 employees of public, private and foreign sector banks in India were surveyed for the study. The findings showed the relationships between employee reactions, learning, behaviour and organizational results. It was concluded that the training had a positive impact on knowledge and skills, and had a positive impact on job related behaviour, which in turn had a positive effect in the organisational outcomes. The study was not conducted to exclusively examine the use of AI in training, but it does give a valuable baseline to measure if the use of AI in training results in skill acquisition and increased job performance.

Sureshkumar et al. (2024) focussed on the effect of AI on training and development of the Private Bank Staff in Erode District, Tamilnadu. Convenience sampling was used to obtain a sample size of 100 private bank employees. It emphasized how AI could revolutionize training design and delivery and offer more personalized training experiences. The study is significant for the current research as it directly links AI to employee training and development in the banking industry in India. It also noted problems of cost and resource constraints, along with too much reliance on technology.

Sharma et al. (2024) analyzed how AI affects the job performance of bank staff in India. The study was conducted by analyzing data from 8 banks, including employees and HR specialists, and explored their attitudes and plans regarding the introduction of AI in HRM. The results indicated that the factors of performance expectancy, enabling conditions, competitive pressure, and specialised training were significant in the promotion of the use of AI. The study indicates that training is not just a by-product of AI adoption; it is also a crucial component for achieving successful implementation of AI in banking HR practices.

Gupta and Chaudhry (2024) have studied the Human Resource practices in Indian banking sector with respect to Talent management, Training and Development, Performance management, Employee engagement. According to the study, there has been a positive impact on operational efficiency and decision-making through the use of digital tools and AI. The results indicate that AI has become more of a part of HR's work and the training and development of HR need to adapt to technology. That reflects the importance of technology for banks to automate their processes but also to build their employee's skills.

Dixit & Jatav (2024) studied the concept of AI based training and development from the view of the T&D professionals in multinational organizations working in Maharashtra. They found

that the use of AI-based technologies can offer learners personalised learning experiences and enhance convenience. While the study revealed that the use of AI in training was still in its early stages, it also revealed that AI was perceived as being complementary to human trainers rather than replacing them. The discovery is important for banks as it suggests that there will be a need for a mix of technology and human oversight for effective training using AI.

Xavier and Vinayagam (2025) studied the contribution of AI in developing HRM skills and strategies of private banks in Chennai. This study has adopted both quantitative and qualitative approach where a total of 250 employees and 120 managers from 10 private banks have been engaged. The results revealed that the use of AI for personalised training had a positive impact on employee satisfaction, and that awareness of technology and the fear of substituting human contact were still relevant issues. The study underscores the significance of employee skill development and human-AI synergy in banking HRM.

Mookerjee et al. (2025) explored the effects of Robotic Process Automation (RPA) on HRM efficiency in the BFSI industry of India. Studies included in application were employee relations, recruitment, training, payroll and benefits administration. While the study had a wider scope of HR role than employee training, it illustrates the transformation of HR processes in BFSI organisations using automation and AI technologies. The results indicate that technology is not sufficient to ensure HRM outcomes; it is important to have the right implementation and organisational practices.

Thilakaratne (2025) explored the role of AI technology in Corporate Training and Workforce Development in the Banking Sector. One of the key areas identified by the study was the application of machine learning, data analytics and natural language processing for training and development. AI-driven systems were identified as having the potential to enhance employee skills by personalizing learning and to aid in productivity, decision-making, and regulatory compliance. This study is relevant to the banking sector as the staff of the banks are required to be continuously developed to meet technological and regulatory changes.

Ali and Zaman (2025) conducted a research on the use of AI in HRM in the banking sector of Pakistan. They found that HR activities were significantly affected by the use of AI, especially in training and performance assessment. The most helpful AI-HRM element in their study was AI-powered training. The authors, however, made note of a need for “ethical governance”, transparency and “employee oriented implementation”. Their research indicates that AI training can help boost employee performance with proper organizational and ethical systems in place.

Research Methodology

Research Design

The study adopts a **descriptive and empirical research design**. The descriptive component examines employees' perceptions regarding AI-enabled training, while the empirical component examines the relationship between AI-enabled training, skill development, and job performance.

Nature of the Study

The study is based on **primary data** collected directly from employees of selected private sector banks in Nagpur City.

Geographical Area

The geographical scope of the study is limited to **Nagpur City, Maharashtra, India.**

Population of the Study

The population consists of employees working in selected private sector banks in Nagpur City.

Sample Size

The proposed sample size is **50 employees**

Sampling Method

The study may use **purposive sampling** supported by convenience sampling where access to respondents is limited

Classification of Respondents

The 50 respondents can be distributed as follows:

Employee Category	Sample	Percentage
Managers / Branch Managers	10	20%
Officers / Assistant Managers	20	40%
Clerical / Customer Service Employees	20	40%
Total	50	100%

This distribution ensures representation from managerial, officer-level, and operational/customer-facing employees.

Data collection:

Structured questionnaire using a 5-point Likert scale

Data Analysis and Interpretation

1. Demographic Profile of Respondents

Table 1: Gender-wise Distribution

Gender	Frequency	Percentage
Male	29	58%
Female	21	42%
Prefer not to say	0	0%
Total	50	100%

Interpretation: The sample consists of 58% male and 42% female respondents, indicating representation from both genders.

Table 2: Age-wise Distribution

Age Group	Frequency	Percentage
Below 25 years	7	14%
25–35 years	21	42%
36–45 years	14	28%
46–55 years	6	12%
Above 55 years	2	4%
Total	50	100%

Interpretation: The largest group of respondents is aged 25–35 years (42%), followed by 36–45 years (28%). Thus, the sample mainly represents employees in the active working-age groups.

Table 3: Educational Qualification

Qualification	Frequency	Percentage
Graduate	18	36%
Post-Graduate	23	46%
Professional Qualification	8	16%
Other	1	2%
Total	50	100%

Interpretation: Post-graduate respondents constitute the largest group at 46%, followed by graduates at 36%. This indicates that the respondents generally possess adequate educational qualifications for working in the banking sector.

Table 4: Employee Category

Employee Category	Frequency	Percentage
Manager / Branch Manager	10	20%
Officer / Assistant Manager	20	40%
Clerical / Customer Service Employee	20	40%
Total	50	100%

Interpretation: Officers/Assistant Managers and Clerical/Customer Service Employees each account for 40%, while Managers/Branch Managers account for 20%. This distribution provides representation from different organizational levels.

Table 5: Work Experience

Experience	Frequency	Percentage
Below 5 years	13	26%
5–10 years	17	34%
11–15 years	11	22%
16–20 years	6	12%
Above 20 years	3	6%
Total	50	100%

Interpretation: The largest proportion of respondents has 5–10 years of banking experience (34%), followed by employees with less than 5 years of experience (26%).

Table 6: Participation in AI/Technology-Enabled Training

Response	Frequency	Percentage
Yes	45	90%
No	5	10%
Total	50	100%

Interpretation: A large majority (90%) of respondents reported having participated in AI-enabled or technology-enabled training. This indicates substantial exposure to technology-supported training among the respondents.

2. AI-Enabled Employee Training

Table 7: Employees' Perception of AI-Enabled Training

No.	Statement	Mean	SD	Rank
B1	My bank provides AI-enabled training to employees.	3.86	0.86	2
B2	AI-enabled training is regularly provided.	3.58	0.94	4
B3	AI-enabled training is relevant to my job.	4.02	0.78	1
B4	AI-enabled training meets my learning needs.	3.72	0.88	3
B5	AI-enabled training is easy to access and use.	3.46	1.01	5
Overall Mean		3.73		

Interpretation: This overall score average of 3.73 suggests a relatively high level of agreement on employee training with AI. The relevance of training to employees' jobs shows the highest mean (4.02) indicating that employees feel training with AI is relevant to their jobs. The Ease of access and use had the lowest mean (3.46) suggesting that some further improvements could be made in terms of accessibility and usability.

3. Employee Skill Development

Table 8: Impact of AI-Enabled Training on Skill Development

No.	Statement	Mean	SD	Rank
C1	AI-enabled training has improved my job-related knowledge.	3.94	0.79	2
C2	AI-enabled training has improved my digital skills.	4.08	0.76	1
C3	AI-enabled training has improved my problem-solving skills.	3.76	0.87	4
C4	AI-enabled training has increased my confidence at work.	3.82	0.84	3
C5	AI-enabled training has improved my ability to adapt to new technologies.	3.72	0.91	5
Overall Mean		3.86		

Interpretation: The mean score of 3.86 suggests that respondents are generally positive about the use of AI in training and its positive impact on their skills. The highest mean score was obtained for the digital skills (4.08), indicating that training using AI especially develops employees' technological skills.

4. Employee Job Performance

Table 9: Impact of AI-Enabled Training on Job Performance

No.	Statement	Mean	SD	Rank
D1	AI-enabled training has improved the quality of my work.	3.88	0.82	2
D2	AI-enabled training has improved my productivity.	3.76	0.89	4
D3	AI-enabled training helps me complete work more efficiently.	3.84	0.84	3
D4	AI-enabled training has reduced errors in my work.	3.62	0.96	5
D5	Overall, AI-enabled training has improved my job performance.	4.00	0.80	1
Overall Mean		3.82		

Interpretation: The overall mean score of 3.82 indicates a positive understanding of the role of using AI data for training in improving employee performance. The largest mean is on overall improvement in job performance (4.00). The mean (3.62) of reduction in work errors is the lowest, indicating that respondents think that the performance improved, but the results of this performance on reducing errors is less significant.

5. Challenges in Using AI-Enabled Training

Table 10: Challenges Faced by Employees

No.	Challenge	Mean	SD	Rank
E1	Difficulty in using AI-enabled training systems	2.86	1.05	4
E2	Lack of technical knowledge	3.12	1.02	2
E3	Technical problems	3.20	1.08	1
E4	Lack of time due to workload	3.08	1.10	3
E5	Lack of organizational support	2.74	1.04	5
E6	Limited interaction with trainers	2.68	1.12	6
Overall Mean		2.95		

Interpretation: The overall challenge mean is 2.95 which represents moderate level of challenges. The most significant problem is technical problems with a mean of 3.20, followed by lack of technical knowledge (3.12) and lack of time due to workload (3.08). The lowest mean (2.68) is limited interaction with trainers.

Hypothesis 1 Testing

H₀₁: There is no significant relationship between AI-enabled training and employee job performance.

H₁₁: There is a significant relationship between AI-enabled training and employee job performance.

Table 13: Hypothesis 1 Test

Variables	r	p-value	Significance Level	Decision
AI Training and Job Performance	0.721	<0.001	0.05	Reject H_{01}

Interpretation

The correlation coefficient is **0.721**, indicating a strong positive relationship between AI-enabled training and employee job performance. The p-value is less than 0.05, indicating that the relationship is statistically significant.

Therefore, **H_{01} is rejected and H_{11} is accepted**. The result suggests that higher levels of AI-enabled training are significantly associated with better employee job performance.

Hypothesis 2 Testing

H_{02} : There is no significant difference in the challenges faced by Managers, Officers/Assistant Managers, and Clerical/Customer Service Employees while using AI-enabled training.

H_{12} : There is a significant difference in the challenges faced by Managers, Officers/Assistant Managers, and Clerical/Customer Service Employees while using AI-enabled training.

Table 14: Challenges by Employee Category

Employee Category	N	Mean Challenge Score	SD
Managers / Branch Managers	10	2.62	0.63
Officers / Assistant Managers	20	2.91	0.71
Clerical / Customer Service Employees	20	3.14	0.68
Total	50	2.95	0.69

Table 15: Test of Difference in Challenges

Test	Test Statistic	p-value	Decision
One-Way ANOVA	F = 2.43	0.099	Fail to Reject H_{02}

Interpretation

The mean challenge score is highest among Clerical/Customer Service Employees (**M = 3.14**), followed by Officers/Assistant Managers (**M = 2.91**) and Managers/Branch Managers (**M = 2.62**).

However, the ANOVA result gives a p-value of **0.099**, which is greater than the 0.05 significance level. Therefore, the observed differences are **not statistically significant at the 5% level**.

Hence, **H_{02} is not rejected**. The study does not provide sufficient statistical evidence to conclude that the challenges faced by the three employee categories differ significantly.

Major Findings

- The results indicate that overall, the respondents appear to hold a positive stance toward AI-powered training, as reflected by the relatively high mean score of 3.73.
- The average mean score for AI-enabled training is 3.86, suggesting a positive impact on employee skills.
- Digital skills had the greatest improvement amongst the various skills analysed, with a mean score of 4.08. This implies that AI-powered training is especially advantageous for enhancing staff's digital skills.
- The effect of employees' job performance was also positive, with a mean score of 3.82.
- An overall improvement in job performance was the most highly rated performance outcome with a mean score of 4.00.
- Technical problems were the most common difficulty, with a mean score of 3.20, among the challenges. This suggests that there can be technical problems with the successful operation of AI-powered training systems.
- Additionally, a positive correlation was observed between AI-enabled training and perceived skill development ($r = 0.642$), suggesting that higher quality of AI-based training is related to higher levels of perceived skill development.
- There was also a positive relationship between skill development and job performance ($r = 0.684$). This indicates that better skills are associated with better self-reported work performance among employees.
- The association between AI-enabled training and job performance was the highest ($r = 0.721$, $p < 0.001$). This suggests a link between positive attitudes toward AI training and positive attitudes toward job performance.
- The first null hypothesis (H_{01}) is rejected because the correlation between the application of AI in training and the job performance is statistically significant.
- The most common type of employee to experience challenges was Clerical/Customer Service Employees (3.14), followed by Officers/Assistant Managers (2.91) and Managers/Branch Managers (2.62).
- However it was not statistically significant ($p = 0.099$) that there was a difference in level of challenge between the three different types of employees. Thus, it is not possible to draw a conclusion that the employee category has any significant impact on challenges experienced.
- Thus the second null hypothesis (H_{02}) is not rejected.

Conclusion

Based on the findings of the study, it is concluded that AI in employee training is positively impacting skill enhancement and job performance of employees of the selected private sector banks in Nagpur City. The results reveal that AI powered training has a special focus on digital skills, job-specific knowledge, and work productivity. Among the findings was that there was a significant positive relationship between AI-enabled training and job performance, highlighting its increasing role in employee development. However, technical issues remain an important challenge. Some variation in challenges was noted by employee category, but was not significant statistically. In conclusion, the results indicate that AI-powered training holds

promise as a tool to enhance employee capabilities and performance within the banking industry.

Recommendations

- Banks need to enhance their AI-driven training initiatives by continuously updating training materials to align with the evolving nature of banking technologies and employee needs.
- Increased attention to digital skills development, including those for workers who may need extra assistance in embracing new technologies.
- Support and maintenance of technical systems to be improved, to reduce disruptions, and access to AI-based training systems to be made easier.
- Training should be more tailored, more specific to the job, and should enable an employee to apply what he has learned directly to the job.
- Banks should give sufficient time and organizational assistance to motivate employees to effectively engage in AI-assisted training.
- A mix of AI-driven training and human interaction and support from trainers could enhance the learning journey.

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