

THE USE OF AI IN THE TRAINING ACTIVITIES OF POLISH BANKS – AN EMPLOYEE’S PERSPECTIVE

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Purpose: The aim of the study was to examine how bank employees of varying ages and lengths of service evaluate the AI-based training sessions in which they participated.

Design/methodology/approach: The empirical study employed an online survey technique. Statistical analysis of the results was conducted using JASP software, which was used to calculate mean values, standard deviation, Pearson’s linear correlation coefficient (r), and Yule’s contingency coefficient (ϕ). The practical study was supplemented with a literature review.

Findings: It was found that there is a strong positive linear relationship between the respondents’ age and length of service and their satisfaction with AI-based training, as well as their assessment of its effectiveness. With regard to gender, further in-depth research is recommended.

Research limitations/implications: The study was pilot in nature and covered only a portion of banks and a small number of employees; therefore, its findings should not be generalized to the entire sector. A broader and more in-depth examination of the issues discussed in the article is recommended.

Practical implications: Most publications and the studies presented in them focus on attitudes toward AI or on factors determining the level of digital competence. The results obtained can therefore be considered a complement to existing analyses.

Social implications: The study’s findings indicate the need for greater personalization of AI-supported employee training processes, taking into account their prior professional experience as well as the differing expectations of women and men. This will make it possible to create and sustain an organizational culture in banks that is based on employee empowerment and openness to innovation in human resource management.

Originality/value: The analysis aligns with the current body of research while also contributing new insights. Women more often perceived AI training as interesting and informative, yet they also more frequently indicated that it did not meet their expectations and did not enable them to effectively develop practical skills. This may suggest that women have higher expectations toward such training.

Keywords: artificial intelligence (AI), bank, employee, employee training, satisfaction.

Category of the paper: Research paper.

1. Introduction

The concept of artificial intelligence, or more precisely artificial intelligence systems, is understood in different ways and continues to evolve along with the development of various techniques and approaches based on machine learning, deep learning, or natural language processing (Soori et al., 2023; Olabiyi et al., 2025). For specific human-defined purposes, AI can generate outputs such as content, predictions, recommendations, or decisions that affect the environments with which it interacts. In the banking sector, its use is visible in three main areas (Dziedzic, 2022):

1. Relations with retail and corporate clients.
2. Relations with other banks and non-bank financial service providers.
3. Internal applications not related to regulated banking activities.

A significant portion of publications concerning its application focuses on the first two areas and issues related to cybersecurity (Gopalakrishnan, 2023; Simhadri, Polireddi, 2023; Ziółkowska et al., 2023). In this article, however, the focus will be on the last of these areas, specifically on activities related to the implementation of a human resources process element – employee training. Artificial intelligence enables the automation and robotization of processes carried out by banks (Ślęzak, 2024; Allassuli, 2025) during the identification of current training needs, planning and organizing, as well as conducting and evaluating the results associated with enhancing employee qualifications (Dziedzic, 2022; Bell et al., 2025; Nocoń et al., 2025). This practically eliminates the need for teams of people who were responsible for these processes prior to its introduction (Kozmiński et al., 2024; Cieślak-Wróblewska, 2024). It also provides wide opportunities for the individualization of training systems and programs. However, the question arises as to whether this indicates a higher level of satisfaction with participation in such training and a greater sense of its effectiveness compared with training delivered using traditional methods. In seeking an answer to this question, the practical objective of the study (Such, 1978) was defined as examining how employees' age, length of service, and gender influence their evaluation of AI-based training compared with traditional training methods. To achieve this objective, the following hypotheses were established (Bsoul-Kopowska, Sztumski, 2025):

- higher age and longer tenure in the bank are predictors of lower satisfaction with participation in AI-based training and lower assessments of its effectiveness,
- the female gender of the respondent is associated with lower evaluations of AI-supported training compared with traditional training.

2. Methods

To verify this hypothesis, a survey was conducted among employees of three out of the five WIG20 group banks: mBank (MBK), PKO Bank Polski (PKO), and PeKaO SA (PEO). Results were processed using statistical software supported by the University of Amsterdam – Jeffrey's Amazing Statistics Program (JASP). The survey was carried out electronically, and employees responded to 10 single-choice questions and 4 demographic questions concerning gender, age, education, and length of service in the bank. The substantive questions were constructed in such a way that the responses followed a five-point Likert scale, in which the value 1 corresponded to the highest ratings and the value 5 to the lowest. The questionnaire was created using Google Forms and then shared with bank employees via their intranet. The study involved employees who were sent a link to the questionnaire and who completed it voluntarily; therefore, the sample is random and not representative of the population. The survey was conducted from April 15 to April 28, 2025. The completed questionnaires were verified for accuracy and completeness. Of the 276 returned, 11 were rejected because they were not fully completed. Ultimately, the sample consisted of 267 respondents – 96 from MBK, 85 from PKO, and 86 from PEO.

For statistical processing, the collected data were first entered into an Excel spreadsheet and then imported into the JASP software. During the analysis, the standard deviation (σ) and Pearson's linear correlation coefficient (r) were calculated to examine the correlations between respondents' age and length of service and their answers. It was also examined whether a correlation existed between the expressed opinions and the respondents' gender. For this purpose, Yule's phi (ϕ) coefficient of contingency was used, which makes it possible to determine the significance of the observed relationship. The obtained results and their interpretation are presented in the following section of the article.

3. Results

The analysis of the survey results was preceded by a characterization of the participants, developed based on demographic information. Among the respondents, women constituted the majority – 161 in total, including 59 employed at MBK, 49 at PKO, and 53 at PEO. Men represented slightly less than 39.7% (106 individuals), with 37 from MBK, 36 from PKO, and 33 from PEO. Only two respondents had completed secondary education, while all others held higher education degrees. A total of 72 participants had completed a bachelor's program, and the remaining 193 held a master's degree. To describe the respondents in terms of age and length of service, the data concerning these two characteristics were aggregated. For the age

category, the following groups were distinguished: up to 30 years, 31-40 years, 41-50 years, and over 50 years. For length of service, the groups were: up to 5 years, 6-10 years, 11-15 years, 16-20 years, and more than 20 years of service. Based on the provided data, it was found that the average age of the respondents was 39.4 years ($\sigma = 7.22$). Based on the provided data, it was determined that the smallest group of respondents was those aged up to 30 – 9 people, including 3 employed at MBK, 2 at PKO, and 4 at PEO. The largest group consisted of respondents aged 31 to 40 – 150 individuals, with 64 at MBK, 41 at PKO, and 45 at PEO. There were significantly fewer respondents in the remaining two age groups. A total of 81 participants were aged 41-50: 22 employed at MBK, 31 at PKO, and 28 at PEO. The oldest group, those over 50, comprised 27 respondents – 7, 11, and 9 respectively. The final demographic characteristic used to describe the study participants was their length of service. The dominant group consisted of individuals working in the examined bank for 6 to 10 years – 144 respondents. The same number of participants – 43 – reported working at the bank for 11 to 15 years and for 16 to 20 years. The longest tenure, more than 20 years, was declared by 19 respondents, while the shortest, up to 5 years, by 18 respondents. The average work experience of the respondents was 10.88 years ($\sigma = 5.31$) (Table 1).

Table 1.
Demographic characteristics of the respondents

Characteristics		Bank			Σ (N = 267)
		MBK (n = 96)	PKO (n = 85)	PEO (n = 86)	
Sex	women	59	49	53	161
	men	37	36	33	106
Age (in years)	≤ 30	3	2	4	9
	31-40	64	41	45	150
	41-50	22	31	28	81
	>50	7	11	9	27
	\bar{x} (σ)	38.4 (6.73)	40.45 (7.5)	39.34 (7.44)	39.4 (7.22)
Education	secondary	0	1	1	2
	bachelor	24	27	21	72
	master	72	57	64	193
Work experience (in years)	≤ 5	6	3	9	18
	6-10	61	45	38	144
	11-15	12	17	14	43
	16-20	13	11	19	43
	>20	4	9	6	19
	\bar{x} (σ)	10.08 (4.93)	10.99 (5.1)	11.57 (5.89)	10.88 (5.31)

Note. \bar{x} – mean; σ – standard deviation.

Source: Author's own elaboration based on survey data.

The participants' demographic characteristics enabled further analysis of the results, in which the existence of a correlation between the respondents' age and their evaluation of the AI-based training they had attended was examined. The first part of the statistical analysis, based on comparing the respondents' opinions with their age and length of service in the bank, is presented in Table 2.

Table 2.

The relationship between age and work experience and the assessment of the effectiveness of AI-based training

Characteristics		Bank			Σ (N = 267)
		MBK (n = 96)	PKO (n = 85)	PEO (n = 86)	
Age (in years)	\bar{x}	28.57	28.57	28.69	28.61
	σ	8.17	7.78	8.39	8.11
	<i>r</i>	0.68	0.62	0.67	0.66
Work experience (in years)	\bar{x}	28.57	29.12	28.69	28.79
	σ	8.17	7.59	8.32	8.03
	<i>r</i>	0.67	0.57	0.67	0.64

Note. \bar{x} – mean; σ – standard deviation; *r* – Pearson's correlation coefficient.

Source: Author's own elaboration based on survey data.

The responses of the participants across all surveyed banks were very similar. Out of a possible 50 points indicating a completely negative evaluation of AI-based training, the respondents scored an average of 28.61 points ($\sigma = 8.11$). An identical average score was recorded for respondents working at mBank and PKO BP – 28.57 points ($\sigma = 8.17$ and 7.78, respectively) – while those employed at PeKaO SA scored an average of 28.69 points ($\sigma = 8.39$). The average value of the Pearson linear correlation coefficient ($r = 0.66$), as well as the correlation values for respondents from each bank exceeding 0.6, indicate the existence of a strong positive correlation between the respondents' age and their evaluation of AI-based training.

A slightly greater variation in the data used for statistical analysis was observed in the relationship between length of service in the bank and respondents' opinions. The highest ratings for AI-based training were given by employees of MBO – 28.57 points ($\sigma = 8.17$), followed by PEO – 28.69 ($\sigma = 8.32$), and the lowest by PKO – 29.12 ($\sigma = 7.59$), with an overall average of 28.79 points ($\sigma = 8.03$). The Pearson linear correlation coefficient values were as follows: MBO – 0.67, PKO – 0.57, and PEO – 0.67, with an average value of 0.64. This means that the average value, as well as those for respondents employed at mBank and PKO SA, indicate a strong positive linear correlation, while for participants employed at PKO BP, a moderate correlation was observed. The conducted statistical analysis, the results of which are presented in Table 2, made it possible to positively verify the first research hypothesis, which assumed that higher age and longer work experience in the bank are predictors of lower satisfaction with participation in AI-based training and lower evaluations of their effectiveness.

In turn, the examination of statistically significant relationships between the respondents' gender and their opinions on the effectiveness of AI-based training compared to training conducted using traditional tools and methods is presented in Table 3.

Table 3.

Values of ϕ , χ^2 , and their significance by gender for the evaluation of employee training involving AI in the surveyed banks

AI-based training compared to traditional training	Measure		
	ϕ	χ^2	p
<i>were more interesting</i>	0.262	37.681	0.000
<i>provided more information</i>	0.139	10.492	0.001
<i>allowed for better skill practice</i>	-0.098	5.397	0.021
were more effective	-0.045	0.942	0.333
were better tailored to the individual needs of the respondent	0.056	1.703	0.194
<i>provided more knowledge needed by the respondent for their work</i>	0.086	4.125	0.043
<i>did not meet the respondent's expectations</i>	0.209	24.046	0.000
did not change the way of working	-0.023	0.246	0.624
<i>were useful for the respondent</i>	-0.269	39.821	0.000
allowed passive participation in the training process	0.023	0.272	0.606
overall positive assessment of AI-based training compared to traditional training	0.129	13.053	0.141
overall negative assessment of AI-based training compared to traditional training	0.048	1,714	0,089

Source: Author's own elaboration based on survey data.

Based on the conducted statistical testing, a statistically significant positive relationship was found between gender (female) and the assessment of AI-based training compared to traditional training as being more interesting ($\phi = 0.263$; $p < 0.001$), providing more information ($\phi = 0.139$; $p = 0.001$), and delivering more job-related knowledge ($\phi = 0.086$; $p = 0.043$). It was also found that women significantly more often indicated that such training did not meet their expectations ($\phi = 0.209$; $p < 0.001$).

The reason for this evaluation may be that a statistically significant negative relationship was observed for their opinions regarding the possibility of better skill practice within AI-based training ($\phi = -0.098$; $p = 0.021$). Women also significantly less often believed that this type of training was more useful to them than traditional training ($\phi = -0.269$; $p < 0.001$).

In turn, no statistically significant relationship between gender and the assessment of AI-based training compared to traditional training was found for such aspects as greater effectiveness than traditional methods, better adaptation to respondents' needs, no change in work style, and allowing passive participation in the training process.

Overall, a statistically significant positive relationship was found between female gender and the overall positive assessment of AI-based training compared to traditional training ($\phi = 0.129$; $p < 0.141$), with no such relationship observed for negative evaluations. This means that the hypothesis assuming that female respondents would rate AI-based training lower than traditional training was not confirmed.

4. Discussion

A review of the literature indicates that in recent years AI has become a key element of the digital transformation and the development of both the Polish and global economy, including the banking sector (Iwanicz-Drozdowska et al., 2023; Klimontowicz, 2024; Ślęzak, 2024; Ledo, 2025). At the same time, the level of technological advancement of the Polish banking system allows it to be considered one of the leaders in the European Union (Król, 2023; Koźmiński et al., 2024), as Polish banks are increasingly investing in AI technologies in areas related to internal processes, while also placing emphasis on employee training and development (Artificial Intelligence..., 2024; Mika, 2025). The implementation of AI in banks is also significantly influenced by the EU Artificial Intelligence Regulation and the AI Act, which outline guidelines for the safe, ethical and rights-respecting deployment of this technology, taking into account the individuals affected by it (Wilczyńska-Baraniak, 2024).

As shown by existing literature on the perception of artificial intelligence technologies in the workplace, from the employees' perspective the implementation of AI in training activities brings both opportunities and challenges (Dwivedi et al., 2023; Russo et al., 2025; Bell et al., 2025). This conclusion is reflected in the findings of the study presented in the article. Similar to this study, other Polish and international sources also indicate age and length of service as factors differentiating attitudes toward AI-based solutions (Russo et al., 2025). In other recent publications on this topic (Gillespie et al., 2025), the authors state that older employees exhibit a noticeably lower level of trust in AI-based tools and are less likely to use such solutions in educational and professional contexts. Similar conclusions were presented in the Generation organization's report "Age-Proofing AI" (2024), which emphasizes that individuals over the age of 45 are less inclined to engage in learning processes that involve new technologies, including AI. These findings are consistent with the observations made in the analysis of the study described in the article. Although older and more experienced respondents constituted a relatively small proportion of the overall sample, a clear trend emerged: satisfaction with participation in AI-supported training and the perceived effectiveness of such training decreased as respondents' age and length of service increased. In both the study described and other sources, a relationship can also be observed between gender and the evaluation of AI-based training.

Research published by Armutat et al., (2024) shows that women generally display greater caution toward AI technologies and more often report lower levels of digital competence as well as less interest in technology-oriented training. Meanwhile, the authors of the OECD report "Algorithm and Eve: How AI Will Impact Women at Work" (2024) note that women in the workplace are often less exposed to the use of AI-based tools, which may influence their experiences and opinions in this area. The analysis presented in the article aligns with the existing body of national and international research while also contributing new insights.

Women, although more likely to consider AI training more interesting and informative, also more frequently indicated that it did not meet their expectations and did not enable them to effectively develop practical skills. This may suggest that women have higher expectations regarding the quality of content and the way such training is delivered, which differentiates their perspective from that of men. However, this remains only a hypothesis requiring further investigation, as the literature lacks studies that analyze the assessment of training quality and expectations toward such training with gender-related differences in mind. As indicated in the literature review presented in the article, most publications focus on attitudes toward technology or on factors determining levels of digital competence. The findings obtained may therefore be considered a valuable complement to existing analyses.

It should be emphasized, however, that both in the literature and in the study presented, a common conclusion emerges: demographic factors such as age, length of service, and gender significantly shape how modern forms of learning are perceived. Age and professional experience are associated with greater distance toward AI-based tools, while gender differences reveal a more complex picture, indicating that women are inclined to appreciate the cognitive value and attractiveness of such training, yet at the same time expect it to be more practical. This implies the need for greater personalization of AI-supported employee training processes, including broader consideration of workers' levels of professional experience and of the diverse expectations associated with gender.

Summary

To sum up, the use of AI in the training activities of Polish banks guarantees a range of benefits, such as personalized learning, process automation, and increased training effectiveness. However, from the employee's perspective, in order to fulfill its function, it must be individualized and supplemented with support, education, and trust-building toward new technologies.

Banking and AI experts agree that in the coming years we can expect further development of AI-based training tools, as well as virtual reality (VR) and augmented reality (AR), which when combined with artificial intelligence may revolutionize the way employees learn and develop their competencies. Yet this will not be possible without comprehensive support and education that will enable employees to fully leverage the potential of this technology. Only under such conditions will it be possible to make full use of AI's potential in building and developing the competencies of banking sector employees. Especially since, as indicated by the presented study, there is a clear need for greater personalization of AI-supported training processes. Employees expect their prior professional experience to be taken into account, as well as differences in expectations conditioned by gender. This will make it possible to build

and sustain over time an organizational culture based on a subject-oriented approach to employees and openness to innovation in human resource management.

It should also be emphasized that the changes taking place in human resource management, related to the improvement and training of employees in the Polish banking sector, will continue to pose challenges and bring new areas for research for many years to come. Therefore, the study results presented in the article serve merely as a starting point and an introduction to further analyses and inquiries. They also indicate the need for their continuation in the coming years based on a representative sample, allowing the results to be generalized to the entire population of banking sector employees in Poland.

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