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THE FUTURE OF WORK IN BANKING 5.0: EXAMINING THE IMPACT OF AUTOMATION AND ARTIFICIAL INTELLIGENCE ON EMPLOYEES IN SERBIAN BANKS

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Abstract: *The paper investigates the perceived impact of automation and artificial intelligence (AI) on Serbia's banking workforce, with an emphasis on how demographic and job-related factors impact employees' perceptions of these technological advances. Between September and mid-November 2024, 947 employees from Serbian banks participated in the study, completing a questionnaire that assessed their perceptions about automation and AI. The Kruskal-Wallis H-test and Mann-Whitney U-test results showed that age and education had a statistically significant impact on perceptions, with younger employees and those with higher levels of education favoring automation and AI. Gender did not have significant impact on perceptions indicating that other factors are more important. Employees in managerial positions had a more positive perception toward automation and AI, viewing them as tools for operational efficiency and innovation, but non-managerial employees, particularly those in repetitive tasks, expressed concerns about job displacement. Employee perceptions were not significantly influenced by the length of time or number of banks worked at, indicating a move toward digital literacy and adaptability as essential characteristics for career success in the developing banking business. The findings imply that banks should tailor training and digital transformation activities to different demographic groups to increase employee engagement and reduce resistance to change. These insights are essential for developing successful AI integration strategies in the banking sector.*

Keywords*: Future of Work, Banking 5.0, Automation, Artificial Intelligence, Banking Sector*

JEL classification*: J24, O33, G21*

INTRODUCTION

Digital transformation has become crucial in contemporary business environment for increasing competitiveness, enhancing operational efficiency, and maintaining flexibility in response to changing customer demands and market trends (Jerković, Gavrić, & Ćurak Ljubas, 2024). Even while the banking sector has historically been successful in implementing technology, the changing financial services environment requires a more significant change (Omarini, 2024). Artificial intelligence, advanced data analytics, big data, distributed ledger technology, blockchain, biometrics, remote user verification, cloud computing, Web3, and the metaverse are just a few of the cutting-edge technologies currently being used in the financial industry (Nowakowski, 2024). The banking sector is one of many that is progressively integrating automation and artificial intelligence (Rodrigues, Ferreira, Teixeira, & Zopounidis, 2022), (Villar & Khan, 2021).

The ability of computer systems to acquire and use knowledge on their own, without human assistance, is known as artificial intelligence (AI). AI systems examine their environment, independently interpret data, make conclusions, and act accordingly. These systems improve their effectiveness over time by gaining lessons from the past (Kaya, 2019). AI includes a range of technologies that allow robots to simulate human cognitive processes, including language comprehension, learning, reasoning, problem-solving, and perception (Ghandour, 2021). AI in banking refers to the application of computers and other devices to mimic human intelligence, particularly in the areas of event analysis and decision-making. AI systems can do tasks like pattern recognition, data learning, and making well-informed decisions and predictions that have historically required human intelligence (Boustani, 2022). A new wave of change, known as Banking 5.0, has been brought about by these technologies. Banking 5.0 emphasizes the coexistence of AI-driven solutions alongside human employees to maximize customer experiences and operational efficiencies, in contrast to earlier banking revolutions that were primarily focused on the digitalization of traditional banking procedures (Mehdiabadi, et al., 2022). This transformation signifies a fundamental shift in the way banks operate, with significant implications for the roles, competencies, and career paths of employees. Employees have been significantly impacted by the continuous integration of automation and AI in the workplace. These shifts are influencing how employees view their workplace, their responsibilities, and their career prospects in terms of the knowledge and skills they will need (Xu, Xue, & Zhao, 2023), (Selimović, Pilav Velić, & Krndžija, 2021). However, there are ongoing debates that prove lack of clarity and evidence regarding the impact of AI on work: from the optimistic view there is an assessment that AI will impact positively meaningful higher-order human work tasks, while more pessimistic views suggest that AI will reduce and eventually eliminate human work (Frey & Osborne, 2017). That is why many authors suggest calls for further research needed (Parker & Grote, 2022), (Bankins & Formosa, 2023).

This study aims to explore how various factors, such as gender, age, education, job role, organizational function, and work experience, influence bank employees' perceptions of the impact of automation and AI on their careers. As these technologies continue to reshape the workplace, it is crucial to understand how different demographic and professional characteristics influence employees' perceptions toward

these changes. This research provides valuable insights into the broader implications of digital transformation for the workforce. By identifying the factors that contribute to positive or negative perceptions of automation and AI, organizations can implement tailored measures to mitigate potential negative effects, such as job insecurity or resistance to change, while maximizing the potential benefits of these technologies, including increased efficiency, innovation, and career advancement opportunities.

The paper is organized as follows. The literature review and hypotheses development section establish a strong foundation for understanding the concept of Banking 5.0, exploring the significant transformations driven by the implementation of AI in the banking sector. Following this, the research methodology section outlines the design of the study, including a brief description of the questionnaire, the sampling technique used, and the research procedure followed. The subsequent section presents the research results, which are then discussed in the context of the broader implications of automation and AI in banking. Finally, the conclusion summarizes the key findings, followed by a discussion of the implications of the research, its limitations, and suggestions for future research regarding the evolving landscape of Banking 5.0.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Banking 5.0 represents one of the turning points in the banking sector's progress, driven by the groundbreaking capabilities of automation, AI, and other emerging technologies. These developments are transforming the sector's professional landscape by providing new roles, requiring employees to learn new skills, and disrupting old career paths. As banks continue to integrate these technologies, it is essential to understand how employees perceive these changes and explore the new job market. Banking 5.0 can provide a future in which technology and human employees work together to generate more efficient, innovative, and customer-centric banking services through ongoing training, planned reskilling, and fostering collaboration between humans and machines (Francis & Manjaly, 2024). The shift to Banking 5.0 necessitates that bank employees have a hybrid skill set that blends technical knowledge with human-centered qualities (Mehdiabadi, et al., 2022). For example, while technical skills like data analysis, programming, and machine learning are increasingly important, soft skills like empathy, problem-solving, and communication remain essential for effective customer interaction and strategic decision-making (Nicoletti, 2021). It is evident that AI will transform employee roles, open new career options, and pose substantial challenges in terms of job displacement and skills gaps (Lukić Nikolić & Labus, 2024). To retain employees, organizations must create a clear plan and provide assistance for their professional growth in accordance with Banking 5.0 requirements; this being particularly important within so called Industry 5.0 initiative of the European Union that emphasizes the power of industry to achieve goals beyond jobs and growth, by fostering societal goals and becoming a resilient provider of prosperity (European_Union, 2024).

The impact of AI is also the subject of research at the market and industry level, too. The Global Future Council of the World Economic Forum, while observing continuously the global trends in human resources, published the White paper on AI impact in October 2024, that among other trends and impacts, identifies „the concept of value alignment as a critical area of focus in AI. This concept revolves around

making sure that the behaviors, decisions and outcomes of AI systems are in harmony with human values, ethical principles, societal norms and fundamental human rights " (World_Economic_Forum_Global_Future_Councils, 2024, p. 5). From the policy level of the EU and regulatory point of view, the concept of Future of Work comprises policy, strategy, projects and according to some industry trends and initiatives – paradigm shift. Among many aspects of Future of Work paradigm shift, this paper aims to contribute to two of them – reskilling and upskilling, together with human-machine collaboration, new disruptive technologies, automation and algorithmic management (European_Union, 2024).

Development of business and organizational processes, based on new technologies, products and instruments, require continuous professional development leading to the acquisition of professional qualifications which are standardized, recognized as formal evidence of such a learning process, measurable and portable within the national qualifications' framework (Sredojević, 2018). These trends may be also seen rather as an evolution than revolution, considering that Serbian banking through its historical development has been continuously dedicated to the innovative approaches, technological development, information systems and its organizational aspects in banks, which reflected efforts to modernize and innovate within the banking sector starting with early 1970's (Sredojević & Aleksić, 2024, p. 193). In relation to that, early technological development of banking sector of Serbia was supported also by the early stage of introducing training for banks employees, by establishment of the Committee for Scientific and Research Work, selecting topics and training personnel particularly for the information technology area, as evidenced in the Report on the work of the Association of Banks of Yugoslavia for 1969-1970 (Sredojević & Aleksić, 2024, p. 191). Serbian banks are undergoing a transformation in which automation and AI technologies are being integrated to streamline processes, improve client experiences, and increase operational efficiency. However, these shifts have significant implications for employees, from their job tasks and responsibilities to their perceptions of job security and career development (Lukić Nikolić, 2024a).

The hypotheses in this study aim to explore how various demographic and professional factors influence employees' perceptions of technological shifts. Table 1 shows the hypotheses and key variables used in this study.

The hypotheses provided in this study aim to investigate relationships and contribute to a more comprehensive knowledge of how various employee characteristics influence their responses to technological change. As automation and AI continue to revolutionize banking processes, Serbian banks' success will be determined by how much they spend in employee training, develop hybrid skill sets, and implement policies to mitigate the negative effects of technological disruption. Serbian banks can guarantee that their employees are well-prepared for success in the ever-changing landscape of Banking 5.0 by nurturing an innovative and continuous learning culture.

Table 1. Hypotheses and key variables used in the study

Hypotheses	Key variables	Possible effects
Hypothesis 1: The perceived impact of automation and AI on the banking workforce varies according to gender, age, and educational level.	Gender	Gender can shape perceptions of automation and AI, as it is influenced by varying roles, opportunities, and cultural factors. Women and men may view automation and AI differently, shaped by their unique experiences and societal expectations.
	Age	Younger, tech-savvy employees may see automation and AI as opportunities, while older employees might view them as threats to job security, often due to lower digital literacy and fewer opportunities for reskilling.
	Education	Higher education tends to correlate with greater adaptability to technology and more positive attitudes toward automation and AI. In contrast, employees with lower education levels may view automation and AI as a threat to their jobs, often due to limited access to training and skill development opportunities.
Hypothesis 2: The perceived impact of automation and AI on the banking workforce varies according to job role and organizational function.	Job role	Employees in non-managerial roles may view automation and AI as a direct threat to their jobs or income, while managers may see these technologies as tools for improving efficiency and advancing their careers.
	Organizational function	In banks, different functions have varying levels of exposure to automation and AI. Employees in back-office roles may feel a greater impact from these technologies, as they are more likely to face automation of tasks. In contrast, front-office and customer-facing employees may view automation and AI as tools to enhance customer experience.
Hypothesis 3: The perceived impact of automation and AI on the banking workforce varies according to the length of banking experience and the number of banks in which individuals have worked throughout their careers.	Length of banking experience	Experienced employees may be more resistant to change, viewing automation and AI as threats to their roles. In contrast, those with less experience may be more adaptable, seeing technological advancements as opportunities for growth and development.
	Number of banks worked	Employees with experience at multiple banks may have encountered varying levels of technological integration, shaping their views on automation and AI. Those who have worked at more progressive institutions may have a positive outlook on AI, while those with experience in less technologically advanced banks may feel more skeptical or cautious.

Source: Authors

RESEARCH METHODS

An empirical study was conducted using a questionnaire technique for data collection. The first part of the questionnaire consisted of profile questions aimed at assessing the respondents' main characteristics: gender, age, education, job role, organizational function, length of experience, and the number of banks in which they had worked during their careers. The second part of the questionnaire included eight statements designed to measure the "Perceived impact of automation and artificial intelligence on the banking workforce." Respondents rated their agreement with each statement on a seven-point Likert scale, ranging from 1 (completely disagree) to 7 (completely agree). The statements in the scale were developed based on an extensive literature review of the potential impacts of automation and AI on the workforce

(Brynjolfsson & McAfee, 2014), (Daugherty & Wilson, 2018), (West, 2018). These sources provide a strong theoretical and empirical foundation for assessing the perceived impact of automation and AI on the workforce. Relying on these studies, the measurement scale efficiently captures the complex nature of respondents' perspectives, resulting in a comprehensive instrument for assessing perceptions about automation and AI's impact on banking careers.

A pilot study was conducted with a small group of employees from Serbian banks to ensure the clarity of the questionnaire and the validity of the measurement scale. Based on minor stylistic adjustments suggested by the respondents, the questionnaire was refined and finalized. The revised version confirmed the measurement scale's high reliability, with Cronbach's alpha coefficient greater than 0.7. The questionnaire was administered anonymously and online via Google Forms, with an average completion time of 15 minutes. The Association of Serbian Banks b.a. distributed the online questionnaire to all banks operating in Serbia, kindly instructing that it be forwarded to all bank employees, including management. Between September and mid-November 2024, a total of 947 employees from various Serbian banks completed the questionnaire. Given that the banking sector in Serbia comprised 20 banks of varying sizes, with a total of 22,253 employees in September 2024 (National-Bank-of-Serbia, 2024), the methodology for this research was carefully structured to ensure comprehensive coverage. The goal was to achieve participation from every bank operating in Serbia and to involve employees from a wide range of departments and positions (minimum 50 responses per bank or potentially 1000 participants at the sector level). That is why the methodology was structured to: a) include responses from every bank and department within each bank; and b) ensure at least 10 different job roles were represented both vertically and horizontally within each sector. Following these guidelines, banks participated by distributing the questionnaire to all departments, covering various positions, with coordination from the Human Resources department. As a result, the response rate reached 94.7%, which is considered more than acceptable in social sciences.

The collected data was processed and analyzed using Microsoft® Excel® 2019 and the Statistical Software for Social Sciences, SPSS, version 21.0. The Kolmogorov-Smirnov test was used to determine the normality of the data distribution, as well as histograms, skewness, kurtosis, the normal probability curve, and the box plot. The results for the scale "Perceived impact of automation and artificial intelligence on the banking workforce", with a significance (Sig.) of 0.000, indicated that the assumption of normal data distribution was not met. As a result, non-parametric statistical techniques were used for statistical analysis within the measurement scales. The Mann-Whitney U-test was used to compare differences between two groups, while the Kruskal-Wallis H-test was used to compare differences among three or more groups with a 95% confidence interval. Levene's test for equality of variances was applied in all tests comparing differences between groups, meeting the assumption of variance homogeneity in all cases ($p > 0.05$).

RESEARCH RESULTS

In total, 947 Serbian bank employees participated in the study. Table 2 shows the key characteristics of the respondents. In terms of gender distribution, most re-

spondents (69.5%) were female, which is not surprising given that women account for most employees in Serbian banking sector. In terms of age distribution, the largest percentage of respondents were between the ages of 45 and 54 (37.6%), followed by those aged 35 to 44 (33.8%). As a result, employees aged 35 to 54 comprise a large percentage of the sample (71.5%). Most respondents (64.1%) have completed university (bachelor's and master's degrees).

Table 2. Key characteristics about the respondents

Answers		**N**	**%**
Gender	Male	289	30.5
	Female	658	69.5
Age	Up to 24 years	13	1.4
	From 25 to 34 years	153	16.2
	From 35 to 44 years	320	33.8
	From 45 to 54 years	357	37.6
	Above 54 years	104	11.0
Education	Secondary school	144	15.2
	College	151	15.9
	University (bachelor's and master's degree)	607	64.1
	University (doctoral degree)	45	4.8

Source: Authors

Table 3 shows the key characteristics of the respondents' work experiences and organizational functions. Most respondents worked in the banking sector for more than ten years (70.4%), but there were also respondents who worked for fewer than five years (18.4%), and between five and ten years (11.2%). So far, a large percentage of respondents (45.1%) have worked for one to three banks, with 30.2% working for just one bank. In terms of job role, most respondents were non-managerial employees (68.7%), with more than 30% holding management positions. In terms of organizational function, the largest percentage of respondents (39.2%) worked in the front office, followed by slightly less than one-third (31.5%) in the middle office, and the remaining 29.3% in the back office.

Table 3. Key characteristics of the respondent's work experience and position

Answers		**N**	**%**
Duration of employment at the bank	Less than 5 years	174	18.4
	From 5 to 10 years	106	11.2
	Above 10 years	667	70.4

The number of banks in a career	Only one bank	381	40.2
	From 1 to 3 banks	427	45.1
	From 3 to 5 banks	126	13.3
	More than 5 banks	13	1.4
Job role	Employees	651	68.7
	Managers	296	31.3
Organizational function	Back office	277	29.3
	Middle office	299	31.5
	Front office	371	39.2

Source: Authors

Table 4 shows the Cronbach's alpha coefficient for the measurement scale used in the study. The "Perceived Impact of Automation and Artificial Intelligence on the Banking Workforce" scale achieved a coefficient of 0.864, indicating that the scale was both valid and reliable, as the coefficient exceeded the threshold of 0.7 (Taber, 2018).

Table 4. Cronbach's alpha coefficient value

Scale	N	Cronbach's alpha coefficient
„Perceived impact of automation and artificial intelligence on the banking workforce"	8	0.864

Source: Authors

Table 5 shows the number of respondents (N), percentages (%), mean values (M), and standard deviations (SD) for each statement on the „Perceived impact of automation and artificial intelligence on the banking workforce" scale. The statement that technology (AI) has already become an integral part of the work in the banking sector received the highest mean value (5.10). The statement that automation of business processes and activities allows respondents to focus on more complex and creative tasks had the second highest mean value (4.84). According to the mean value, the statement that to keep the job in the banking sector, respondents will undoubtedly have to continue learning throughout their careers ranked third place (4.66).

More than 60% of respondents answered that technology (AI) has become an integral component of their jobs, allowing them to spend more time on complex and creative tasks. Similarly, nearly 60% of respondents answered that bank employees must continually update their knowledge and skills in order to keep their jobs. Of the total number of respondents, 55% answered they would need to upgrade their current knowledge and skills, while 45% answered they would need to acquire entirely new knowledge and skills to keep their job. Regarding the statement that robots, or AI systems, would become a fundamental component of the workplace in the future, 50.1% of respondents disagreed, 34.3% agreed, and 17.1% remained neutral. A considerable proportion of respondents (42.2%) answered that in the future, more and more professionals from technological and natural sciences will be employed at banks, but there were also respondents who disagreed (39%), or who remained neutral (18.8%).

Table 5. Descriptive statistics for the „Perceived impact of automation and artificial intelligence on the banking workforce "scale

Answers		N	%	M	SD
After assessing my work, it is evident that technology, particularly artificial intelligence, has already become an integral part of it.	Disagree	235	24.8	5.10	2.037
	Neutral	95	10.0		
	Agree	617	65.2		
The automation of business processes and activities allows me to focus on more complex and creative tasks.	Disagree	271	28.6	4.84	2.056
	Neutral	92	9.7		
	Agree	584	61.7		
Given the continuous development of technology, I am convinced that robots or artificial intelligence systems will one day be my colleagues.	Disagree	474	50.1	3.63	2.100
	Neutral	148	15.6		
	Agree	325	34.3		
To keep my job in the banking sector, I will undoubtedly need to acquire completely new knowledge and skills.	Disagree	363	38.3	4.02	1.978
	Neutral	162	17.1		
	Agree	422	44.6		
To keep my job in the banking sector, I will undoubtedly need to upgrade my current knowledge and skills.	Disagree	302	31.9	4.49	1.961
	Neutral	125	13.2		
	Agree	520	54.9		
To keep the job in the banking sector, I will undoubtedly have to continue learning throughout my career.	Disagree	260	27.5	4.66	1.916
	Neutral	124	13.1		
	Agree	563	59.4		
It is certain that banks will employ more professionals from the fields of technology and natural sciences.	Disagree	369	39.0	3.99	1.989
	Neutral	178	18.8		
	Agree	400	42.2		

Source: Authors

Table 6 shows the results of the Mann-Whitney U-test for the „Perceived impact of automation and artificial intelligence on the banking workforce" scale. The results did not identify a statistically significant difference in the perceived impact of automation and AI in the answers of male (Md=4.25, N=289) and female respondents (Md=4.13, N=658), U=88576.500, Z=-1.679, p=0.093. However, the results revealed a statistically significant difference in the perceived impact of automation and AI among respondents who were not in managerial position (Md=4.00, N=651) and those who were on managerial positions (Md=4.38, N=296), U=77509.000, Z=-4.831, p=0.000.

Table 6. Mann-Whitney U-test results for the „Perceived impact of automation and artificial intelligence on the banking workforce "scale

Answers		N	M	Md	U	z	p
Gender	Male	289	3.97	4.25	88576.500	-1.679	0.093
	Female	658	3.78	4.13			
Job role	Employee	651	3.70	4.00	77509.000	-4.831	0.000*
	Manager	296	4.15	4.38			

Source: Authors

Table 7 shows the results of the Kruskal-Wallis H-test. The results identified statistically significant difference in responses based on educational level, with $\chi2(df=3, N=947) =26.815$, $p=0.000$. Compared to other educational levels, respondents with a university degree (bachelor's and master's degrees) had the highest median score (Md=4.25) and mean value (M=4.02). Furthermore, according to the age of respondents, results revealed statistically significant difference, with $\chi2(df=4, N=947) =20.938$, $p=0.000$. Employees under 24 years had the highest median score (Md=5.25) and mean value (M=4.45), followed by those aged 25 to 34 years (Md=4.38, M=4.10). The results identified statistically significant differences among employees in terms of organizational function ($\chi2(df=2, N=947) =8.188$, $p=0.017$). Employees in the middle and back offices had the highest median scores (Md=4.25), while those in the front office had lower median and mean value. On the other hand, the results did not identify statistically significant difference among respondents based on their working experience in banks ($\chi2(df=2, N=947) =4.873$, $p=0.087$), or number of banks in which they have worked ($\chi2(df=3, N=947) =4.252$, $p=0.236$).

Table 7. Kruskal-Wallis H-test results for the „Perceived impact of automation and artificial intelligence on the banking workforce "scale

Answers		N	M	Md	χ2	df	p
Education	Secondary school	144	3.52	3.75	26.815	3	0.000*
	College	151	3.48	3.63			
	University (bachelor's and master's degrees)	607	4.02	4.25			
	University (doctoral degree)	45	3.65	3.63			
Age	Up to 24 years	13	4.45	5.25	20.938	4	0.000*
	From 25 to 34 years	153	4.10	4.38			
	From 35 to 44 years	320	3.90	4.13			
	From 45 to 54 years	357	3.81	4.25			
	Above 54 years	104	3.33	3.50			

The number of banks in a career	Only one bank	381	3.87	4.13	4.252	3	0.236
	From 1 to 3 banks	427	3.87	4.25			
	From 3 to 5 banks	126	3.74	4.00			
	More than 5 banks	13	3.33	3.13			
Duration of employment at the bank	Less than 5 years	174	4.03	4.25	4.873	2	0.087
	From 5 to 10 years	106	3.94	4.19			
	Above 10 years	667	3.78	4.13			
Organizational function	Back office	277	3.90	4.25	8.188	2	0.017*
	Middle office	299	4.00	4.25			
	Front office	371	3.67	4.00			

Source: Authors

DISCUSSION OF THE RESEARCH FINDINGS

Table 8 shows the summary results of hypotheses testing.

Table 8. Results of hypothesis testing

Hypothesis	p-values	Decision
H1: The perceived impact of automation and AI on the banking workforce varies according to gender, age, and educational level.	0.093 (gender) 0.000* (age) 0.000* (education)	Partially supported
H2: The perceived impact of automation and AI on the banking workforce varies according to job role and organizational function.	0.000* (job role) 0.017* (organizational function)	Supported
H3: The perceived impact of automation and AI on the banking workforce varies according to the length of banking experience and the number of banks in which individuals have worked throughout their careers.	0.087 (length of banking experience) 0.236 (number of banks in which respondents worked)	Not supported

Source: Authors

Based on the research findings, *Hypothesis 1* is partially supported. The findings revealed that respondents' perceptions of the influence of automation and AI on the banking workforce differed by age and educational level, not gender. Gender variations in technology adoption and acceptance have been examined in a variety of circumstances. While some studies suggest that women may have lower levels of confidence in their technological abilities (Christensen M. A., 2023), (Venkatesh, Morris, Davis, & Davis, 2003), others have found that gender does not always play a role in how employees perceive technological advancements (Susskind & Susskind, 2015). Research suggests that younger employees are more adaptable to technological changes, due to their familiarity with digital tools and education on developing technologies (Lukić Nikolić, 2024b). This finding is consistent with the Theory of Planned Behavior (Ajzen, 1991) and the Technology Acceptance Model (Davis, 1989), which indicate

that younger individuals, who are more familiar with digital tools and technologies, have more positive attitudes toward technology adoption (Zirar, Ali, & Islam, 2023), (Brynjolfsson & McAfee, 2014) although that there is a concern that having the ability to properly use technology and devices does not automatically protect them when using digital payments on their phones, purchase mobile credit, in-app purchase and so on (Sredojević & Ziakou, 2020). Older employees, on the other hand, may see automation and AI as risks to their job security, according to Disruptive Innovation Theory (Christensen C. M., 1997), which states that technology innovations frequently present larger challenges to individuals with established, traditional expertise. Older employees may be more reluctant to change because they feel less prepared to adapt to new technologies, especially if they have more years of experience in traditional banking roles (Bessen, 2019). Employee perceptions of automation and AI are also heavily influenced by their level of education. Higher education levels tend to correspond to a more optimistic perceptions on automation, since individuals with more formal education may have better access to resources to adapt to new technology (Lukić Nikolić, 2024b), (Chui, Manyika, & Miremadi, 2016). This finding is consistent with Human Capital Theory (Becker, 1994), which argues that individuals with more education are better able to adapt to and use new technology. Individuals with lower levels of education, on the other hand, might consider automation as a threat to job security because they are less likely to possess the skills needed to adapt to changing technological demands (Brynjolfsson & McAfee, 2014).

Based on the findings, *Hypothesis 2*, that the perceived impact of automation and AI on the banking workforce differs depending on the job role and organizational function, is completely supported. Managers are often more involved in strategic decision-making, and they may see automation and AI as instruments for improving operational efficiency, making better decisions, and driving organizational innovation. This is consistent with the Job Characteristics Model (Hackman & Oldham, 1976), which states that job design and level of involvement in decision-making processes influence how employees perceive changes in their work environment. Managers are more likely to perceive automation and AI positively, while non-managers may see these advances as disruptive (Lukić Nikolić, 2024b). Employees in non-management positions may be concerned about job displacement when technology replaces monotonous tasks (Autor, 2015). Other authors found that, while automation and AI may improve the work of managers, they may also raise concerns about job security among lower-level employees (Chui, Manyika, & Miremadi, 2016). This finding is consistent with Automation Anxiety Theory (Frey & Osborne, 2017), which proposes that employees in lower-level positions may be more vulnerable to job displacement due to automation. Employee perceptions of automation and AI are influenced by the organizational function in which they work. Employees in the back office or middle office may consider automation as an advantage if it reduces their workload and makes their activities more efficient, resulting in increased organizational productivity and decreased operating expenses. Employees who do repetitive tasks may perceive automation as a threat to their job security (Lukić Nikolić, 2024b), (Brynjolfsson & McAfee, 2014). Employees in customer-facing roles (for example, front office) who engage in complex human interactions may see automation as an opportunity to focus more on personal connections and service quality, which are more difficult to automate. These

employees may have a more positive perceptions about automation and AI, viewing them as tools that enhance their capacity to engage with consumers and offer value, rather than substitutes for their jobs.

Hypothesis 3 has been rejected since there were no statistically significant differences among respondents based on their length of banking experience or the number of banks in which they had worked over their careers. The banking sector has seen major structural and technological shifts in recent years (Bueno, Sigahi, Rampasso, Filho, & Anholon, 2024), (Sia, Weill, & Zhang, 2021). As a result, traditional metrics of experience, such as years of bank experience and number of banks, may have lost their significance. Research suggests that digital literacy, financial technology, and regulatory understanding may be more important than traditional experience criteria in determining performance outcomes and employee perceptions (Selimović, Pilav Velić, & Krndžija, 2021), (Brynjolfsson & McAfee, 2014). This could explain why respondents with diverse levels of expertise or who have worked at multiple banks have equivalent results regarding their perceptions of automation and AI. Furthermore, this finding may indicate a shift in how banking professionals are evaluated. While experience is still crucial, modern banks may be focusing more on other attributes such as emotional intelligence, flexibility to changing technologies, and customer-centric skills, which are less related to career length or number of banks worked at. The findings are consistent with the growing importance of Adaptability Theory (Pulakos, Arad, Donovan, & Plamondon, 2000) and Emotional Intelligence (Goleman, 2009) in the workplace, indicating that modern banks prioritize abilities that enable staff to overcome technological changes.

CONCLUSION

This study aimed to explore the perceived impact of automation and AI on the banking workforce, with a particular emphasis on how demographic factors (gender, age, and education) and job-related factors (job role, organizational function, and working experience) shape employees' perceptions on these technological advancements. The study, which included 947 employees from Serbian banks, found that age and education have a significant influence on how employees perceive the impact of automation and AI, with younger employees and those with higher levels of education viewing these technologies more favorably. Gender was not found to have a significant role in shaping perceptions, implying that in this case, other variables could prevail over gender differences in deciding how employees respond to technological advances. In terms of job role and organizational function, the findings showed that managerial employees have a more positive attitude toward automation and AI, perceiving them as tools for improving operational efficiency and creativity. Employees in non-managerial positions, particularly those performing repetitive activities, were more concerned about job displacement, illustrating the disparity between the possible benefits of automation for certain employees and the perceived threats to others. While experience and the number of banks worked for had no statistically significant impact on perceptions, the findings suggested a shift in the application of traditional experience criteria. The growing relevance of digital literacy, adaptability, and other contemporary competencies over traditional career experience indicates that the nature of expertise in the banking sector is evolving. This trend indicates an emerging scenar-

io in which technical skill, rather than length of tenure, is becoming the most important predictor of success in the face of technological changes.

This paper has both theoretical and practical implications. The findings have important implications for theories about technology adoption and workforce change. The confirmation that age and education have a significant influence on perceptions of automation and AI provides support to the Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB), implying that familiarity with technology and access to educational resources are important in shaping attitudes toward automation. Furthermore, the study sheds light on the changing nature of expertise in the workplace, underlining that traditional metrics of experiences such as years of industry experience—are becoming less important as digital literacy and adaptability gain popularity. This insight adds to current research on Human Capital and Digital Literacy theory, which argues that modern expertise is more directly related to technology proficiency than traditional experience measurements. By combining these ideas with evidence from the banking sector, this study provides a theoretical foundation for future research into the changing nature of expertise in other businesses undergoing digital revolutions.

From a practical standpoint, the findings have several important implications for the banking sector, particularly how banks manage the integration of automation and AI into their workforces. The fact that younger employees and those with higher levels of education tend to have more positive views of automation and AI suggests that banks may need to tailor their training programs and digital transformation initiatives to different demographic groups. Highlighting opportunities for skill development and career advancement through automation can help promote engagement and reduce resistance to change across all age groups. Targeted training initiatives focused on alleviating concerns about job displacement and enhancing digital skills may also increase older employees' willingness to adopt new technologies. Additionally, the study underscores the importance of job position in shaping perceptions, with managerial employees viewing automation and AI as tools for innovation and efficiency, while non-managerial employees may perceive them as threats to job security.

The study's limitations include a geographical concentration on banking employees in Serbia, which may limit the findings' applicability to other locations or sectors. Furthermore, cross-sectional design limits the ability to draw causal conclusions, as data was collected at a single point in time. Additionally, the study relies on self-reported data from the questionnaire, which may introduce biases such as social desirability or response bias, potentially affecting the accuracy of respondents' perceptions.

Future research could focus on longitudinal studies to examine how employees' perceptions of automation and AI evolve over time, particularly as they gain more experience with these technologies. Additionally, expanding the scope of the study could offer valuable insights into how perceptions of automation and AI differ across industries with varying levels of technological adoption. Finally, future research could explore the role of organizational culture and management practices in shaping employees' perceptions of automation and AI. This would offer a deeper understanding of the organizational factors that influence how these technologies are perceived and adopted by employees.

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