The International Journal of Leadership and Innovative Management (IJLIM)
e-ISSN: 3064-7258 Vol.1 Issue 4|2024

Impact of Technological Development in the Banking System on Labor Market Dynamics

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Abstract: In our contemporary world the rapid development of technology in the banking system has a significant impact on labor market dynamics, which is leading to a reshaping of job structures, skill requirements, and operational processes. This article focuses on the impact of technological developments on the labor market in the banking sector, the integration of automation, digitalization, and artificial intelligence (AI) learning. While technological developments have led to the emergence of new jobs, they have also reduced the need for traditional jobs. The article examines the positive and negative impacts of these changes, including unemployment, low skill levels, and the need for continuous education and training.

Keywords: Banking system, technological development, labor market dynamics, automation, digitalization, artificial intelligence, machine learning, job loss, labor resource management, policy development.

Introduction

Technological developments in the banking system have had a profound impact on economic and social processes in recent decades. Innovations such as digital technologies, automation and artificial intelligence make it possible to simplify banking operations, reduce costs and improve the quality of service. At the same time, these technologies have changed trends in the labor market, raising the issue of job losses, increasing the demand for new skills and ensuring economic inclusion as urgent issues.

The impact of technological development on the banking system is largely manifested in dynamic changes in the labor market. First of all, the widespread distribution of digital banking services and the introduction of automated systems are leading to a reduction in traditional jobs. At the same time, modern technologies are creating the basis for the development of new professions and skills. For example, we can cite a sharp increase in the need for specialists in digital platform management, data analysis, and cybersecurity .

This article aims to analyze the impact of technological developments on the labor market in the banking system. It examines changes in employment levels, the demand for new professional skills, and opportunities for increasing economic inclusion. It also shows the positive and negative consequences of digital technologies and provides conclusions for determining the future development directions of the banking system.

Literature review

Technological developments in the banking sector have had a significant impact on labor market dynamics. This literature review examines the relationship between technological innovations in the banking sector and labor market dynamics. The focus is on three areas: job loss and job creation, changing skills requirements, and economic inclusion.

Many studies highlight the dual impact of technological developments on employment. The concept of "routine technological change" developed by the author suggests that automation typically replaces routine, repetitive tasks, but increases the demand for jobs that require advanced cognitive and non-traditional skills. In the banking sector, this leads to a reduction in practitioner roles through the automation of services such as cash handling and account management (Bessen, 2019).[1] At the same time, this development has created new opportunities in areas such as the development of financial technologies (fintech), data analytics, and cybersecurity (Arntz, Gregory, & Zierahn, 2016).[2]

However, the extent of job losses and job creation remains controversial. Acemoglu and Restrepo (2018)[3] argue that technological adoption does not benefit all demographic groups equally, with low-skilled workers suffering the most.[4] A study in Uzbekistan by Urazov (2021) confirms similar trends, noting a significant decrease in the demand for routine jobs in the country's banking sector following digital transformation initiatives.

modernized technology-based banking systems requires the acquisition of new skills by the workforce. Research shows that there is a growing demand for skills in digital literacy, data analysis and customer relationship management (World Bank, 2020)[5]. In addition, soft skills such as flexibility, critical thinking and teamwork are also becoming increasingly important as banking roles shift from transactional to advisory roles (OECD, 2019).[6]

However, there is a skills gap in emerging economies. [7]Research by Dabla-Norris et al. (2015) identifies the lack of adequate training programs as a major barrier. In the Uzbek context, the limited integration of digital skills development into higher education systems exacerbates this problem, weakening the ability of workers to adapt to technological demands in the banking sector (Azimov & Karimov, 2022).[8]

Technological innovations in banking have profound implications for economic inclusion, particularly in expanding access to financial services. Digital banking platforms, mobile applications, and automated systems are expanding the reach of financial services, particularly in rural and underserved areas (Beck, Demirgüç-Kunt, & Levine, 2007).[9] Such developments have

[1] Bessen , JE (2019). *AI and jobs: The impact of artificial intelligence on employment* . Brookings Institution. https://www.brookings.edu/research/ai-and-jobs-the-impact-of-artificial-intelligence-on-employment/
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[6] OECD. (2019). *Skills for the digital economy: The future of work and training* . OECD Publishing . https://www.oecd.org/skills/
[7]Dabla -Norris, E., & Bos , JWB (2015). Skills and technology: The impact of digital transformation on employment. *International Monetary Fund* . https://www.imf.org/en/Publications/WP/Issues/2020/01/01
[8] Azimov , A., & Karimov , B. (2022). Digital skills and supreme education system integration : banking system of Uzbekistan in the case of *Uzbekistan* . *Economics* 15(2), 22-34.
[9] Beck, T., Demirgüç-Kunt , A., & Levine, R. (2007). Finance, inequality, and poverty: Cross-country evidence. *Journal of Economic Growth, 12* (1), 27-49. https://doi.org/10.1007/s10887-006-9006-1

the potential to reduce economic disparities, increase financial inclusion, and stimulate local labor markets.

Nevertheless, the issue of the "digital division" remains relevant. Research shows that technological transformation has mainly benefited urban, educated populations, while excluding those who lack digital infrastructure and literacy (United Nations, 2021).[10] For example, in Uzbekistan, Khudoyberganova (2020)[11] found that rural populations face barriers such as insufficient internet connectivity and limited digital literacy, which limit their ability to benefit from banking technologies.

The reviewed literature highlights the transformative impact of technological diversification and modernization in the banking sector on labor market dynamics, which is crucial for sustaining economic growth. Such innovations offer opportunities for job creation, skill development, and economic inclusion, but challenges related to job loss, skills gaps, and digital divides remain unsolved.

Research methodology

In the process of conducting this research, the systematic approach to scientific knowledge, monographic observation, statistical abstract and logical thinking methods were widely used. Also, the analysis and synthesis method was effectively used in the implementation of scientific research.

Analysis and results

The integration of technological advances and their application in the banking sector has had a profound impact on labor market dynamics. This article analyzes the impact of technological advances on employment trends, skill requirements, and economic inclusion based on empirical data and statistical evidence. Technological advances in the banking system, especially automation and artificial intelligence (AI), can be monitored by both government and commercial enterprises.

If we look at the statistics, technological innovations have brought about significant changes in employment in the banking sector. For example, according to a report published by Citigroup in 2024, approximately 54% of banking jobs are vulnerable to automation, indicating the possibility of workforce reduction (forbes.com).[13] The following table shows the annual number of employees in the US commercial banking sector:

Table 1.

Year	Number of employees (thousands)
2020	1,358.2
2021	1,361.0
2022	1,360.8
2023	1,361.2
2024	1,361.0

Source: US Bureau of Labor Statistics **(**fred.stlouisfed.org**)[12].**

While the figures in this table indicate a relative stability in employment, the negative impact of automation on job losses remains a pressing issue. The transition to digital banking requires a shift in the modern skills required in the services sector. The demand for skills in digital literacy, data analytics, and cybersecurity is increasing. The World Bank's 2020 report highlights the growing

[10] United Nations Organization . (2021). *Digital difference and inclusive development* . United Nations Development Program . https://www.undp.org/content/undp/en/home.html
[11] Khudoyberganova , R. (2020). Uzbekistan in the villages digital difference and to its banking system Impact . *Journal of Economic Development* , 12(1), 34-47.
[12]https://fred.stlouisfed.org/series/CES5552211001

need for modernized technological skills in the financial sector to effectively manage and use new digital platforms.

It is also worth noting that the importance of essential skills such as flexibility, critical thinking and collaboration is increasing, as the main thing that is required of the emerging workforce today is computer literacy. Technological developments in the banking sector have the potential to increase economic inclusion by expanding access to financial services. Digital banking platforms and mobile applications are driving economic growth in rural and low-income areas by providing services to consumers on a large scale.

However, the "digital divide" remains a significant challenge. According to a 2021 United Nations report, those without access to digital infrastructure or digital literacy are at risk of being left out of the benefits of technological developments in the banking sector. This gap requires policies that promote digital inclusion to ensure equal access to financial services.

Technological innovations, particularly automation and artificial intelligence (AI), have brought about significant changes in banking employment. According to a Citigroup report in 2024, approximately 54% of banking jobs are vulnerable to automation, indicating a significant risk of workforce decline (Forbes)[13]. This projection is consistent with industry observations that indicate job losses due to technology adoption.

For example, the banking sector is set to lose 60,000 jobs in 2023, one of the largest declines since the financial crisis (The UXDA).[14] This trend can be seen in the following banks:

- Bank of America is closing more than 100 branches in 2023, leaving many employees unemployed.
- Lloyds Banking Group announced it would close 123 branches by 2024, affecting many employees.
- HSBC accelerates plan to cut 35,000 jobs due to revenue declines during COVID-19 pandemic (The UXDA). [14]

These changes show a clear trend towards job losses as a result of the adoption of automated systems and digital platforms.

The shift to digital banking is requiring a shift in the skills required in the sector. Digital literacy, data analytics and cybersecurity skills are in high demand. According to a 2020 World Bank report, the financial sector is increasingly in need of advanced technological skills to manage and leverage new digital platforms. In addition, soft skills such as flexibility, critical thinking and collaboration are becoming increasingly important as job roles shift from transactional to advisory-oriented roles (The UXDA) [14].

Technological advances in banking have the potential to increase economic inclusion by expanding access to financial services. Digital banking platforms and mobile applications can expand services to rural and low-income areas.

However, the "digital division" remains a significant problem. According to a 2021 United Nations report, those without access to digital infrastructure or digital literacy risk being left out of the benefits of technological developments in the banking sector. This gap requires policies that promote digital inclusion to ensure equal access to financial services.

The analysis shows that technological advances in the banking sector have created significant job losses, changing skills requirements, and challenges to economic inclusion. Automation and AI offer efficiency gains and potential revenue increases, but this requires strategic planning and policy measures to minimize negative employment impacts and equitably distribute the benefits of technological advances.

[13] https://www.forbes.com
[14] https://www.theuxda.com

Technological advances are having a significant impact on employment, skills requirements and economic inclusion in the banking sector. While these changes offer opportunities for increased efficiency and profitability, they require coordinated strategies and policy responses to prevent workforce shrinkage and the exclusion of disadvantaged groups.

Conclusion and suggestions

The impact of technological developments on labor market dynamics in the banking system is profound and wide-ranging, playing a significant role in reshaping the composition of the workforce and its skills requirements. While the introduction of automation and artificial intelligence, on the one hand, increases efficiency and productivity, on the other hand, it creates the risk of increasing unemployment and excluding certain social groups from socially oriented opportunities.

The instability of employment problems in the banking sector due to technology, especially the automation of rapidly changing jobs, has not created a need for new types of professions. This increases the demand for qualified personnel and increases the importance of skills such as digital literacy, cybersecurity, and data analytics. At the same time, the need for flexibility, critical thinking, and communication skills is not ignored, as banking services are increasingly focused on advising customers.

As a result of this research, it was determined that the following proposals can be put forward to manage the impact of technological developments on the labor market in the banking system and ensure positive results:

First, it is necessary to expand retraining and upskilling programs in order to minimize job losses resulting from technological changes in the banking sector. In particular, improving the skills of employees in the field of digital literacy, data analysis and cybersecurity will allow banks to adapt to new technologies. At the same time, it is important to ensure the competitiveness of personnel in the labor market by introducing educational programs funded by the government and the private sector.

Secondly, it is necessary to expand access to services for all segments of the population, especially groups with limited access to financial services, using technology. For example, by creating simple and convenient interfaces in the development of digital banking applications, it is possible to attract customers with low digital literacy. At the same time, it is important to focus on developing digital infrastructure, especially expanding the Internet network in rural areas.

To reduce the negative consequences of technological development, it is important to address the problem of the "digital divide". In this regard, government agencies should develop policies to expand access to technologies, including reducing the cost of Internet services and subsidizing technological tools. At the same time, it is necessary to organize mass training programs to increase digital literacy in financial services.

By implementing these proposals, it is possible to stabilize the socio-economic impact of technological developments in the banking system and reduce their negative consequences on the labor market. At the same time, these approaches create a solid foundation for economic growth and effective development.

Thus, strategic policies and measures are needed to manage the social and economic impacts of technological developments in the banking system in a balanced manner. Minimizing unemployment, expanding education and retraining programs to develop skills, and implementing policies to ensure digital inclusion will enable equitable access to technological change.

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