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RESEARCH ARTICLE

"Artificial Intelligence and its Impact on National Economic Security: Challenges and Opportunities"

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ABSTRACT

Artificial Intelligence (AI) is rapidly integrating into the global economy, bringing significant transformations to industries such as manufacturing, financial services, and digital business. While AI fosters economic growth and enhances business competitiveness, it also presents certain challenges that may negatively impact the economic security of nations. Key concerns include structural shifts in employment, risks to information security, and excessive reliance on technology. Although some scholars and researchers have studied AI in relation to business and economic growth, no prior research has specifically examined its impact on the economic security of nations. This highlights the uniqueness and significance of this study. This research analyzes real-world examples from across the globe and examines the challenges faced by Mongolia, offering well-founded policy recommendations to ensure economic security in the era of AI-driven transformation.

1. INTRODUCTION

Artificial Intelligence (AI) is a branch of science that aims to develop capabilities in computer systems similar to human intelligence. It encompasses technologies such as machine learning, natural language processing, image and speech recognition, and decision-making (Russell & Norvig, 2021). The term "Artificial Intelligence" was first coined and defined at the Dartmouth Conference in 1956, and it has undergone multiple stages of development since then (McCarthy et al., 2006).

Today, Artificial Intelligence is widely used to facilitate human activities and increase efficiency by combining abstract reasoning, automation, and data-driven decision-making. Deep learning algorithms and neural networks are now capable of processing large datasets and making decisions without human intervention, pushing AI capabilities to new heights (Goodfellow et al., 2016).

As the world enters the Fourth Industrial Revolution, AI is becoming a major driver of economic growth in many countries. According to a report by PwC (2018), AI has the potential to contribute $15.7 trillion to the global economy by 2030. However, the rapid development of AI is also raising certain challenges related to economic security, which is a matter of concern for both international and domestic researchers.

The purpose of this research is to analyze the positive and negative impacts of AI on the economic security of countries, identify the challenges faced by Mongolia, and propose policy recommendations for addressing these issues.

Research questions

- How is Artificial Intelligence affecting economic security?
- What are the global trends in the development of Artificial Intelligence?

- How should the use of Artificial Intelligence be regulated in Mongolia to ensure economic security?

This research was developed within the framework of these questions. It reveals that there is a lack of studies on the risks AI poses to economic security in countries, indicating that more attention should be given to this area by scholars and researchers in the future.

2. Global Trends in Artificial Intelligence

Artificial Intelligence is being used by major global companies and governments as a strategic tool to promote economic growth.

- **USA**: According to a report by PwC (2018), Amazon has used AI in logistics and warehouse operations to reduce distribution time by 25% and increase operational efficiency.
- **China**: Alibaba Group has successfully implemented an AI-based digital bank that can issue loans in just 3 seconds (Chen et al., 2019).
- **European Union**: The European Union has made significant investments in developing AI safety and ethical guidelines.

Future trends

- **Automation**: Industrial automation is expected to expand further as part of the Fourth Industrial Revolution.
- **Digital economy**: AI is laying the foundation for digital economies in finance, trade, and marketing.
- **Policy regulation**: There is a growing need to improve the regulation of AI to ensure safety.
- **AI system security**: One of the key challenges is ensuring the security of AI systems, as cyber-attacks could potentially cause AI operations to malfunction.

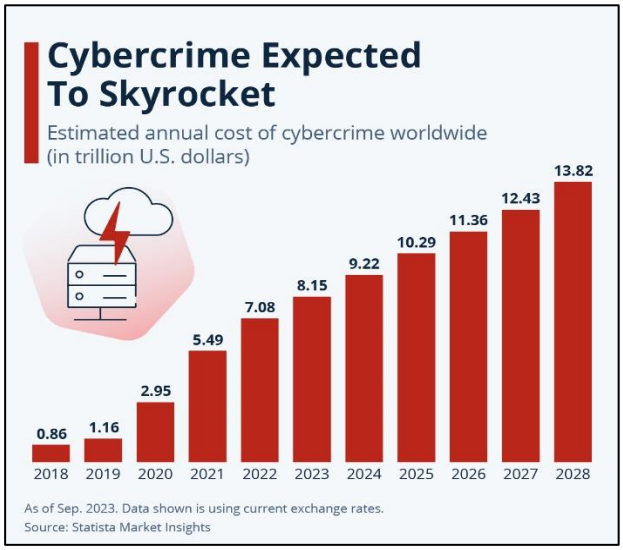

Figure 1: Estimated global economic losses from cyberattacks and future projections (in USD)

Source: Statista market research

(https://www.statista.com/chart/28878/expected-cost-of-cybercrime-until-2027/)

Mongolian context

AI is being integrated into sectors such as banking, telecommunications, and mining in Mongolia. For example:

- Khan Bank and Golomt Bank have begun using AI-based chatbots.
- Large mining companies have implemented automation to reduce human involvement in production processes.
- Mongolian engineers have developed AI-driven software such as Chimege, which enables voice recognition and is widely used for meeting note-taking and text-to-speech applications.

Main issues

- **Changes in employment structure**
- AI-driven automation poses risks of increasing unemployment in certain sectors. Several foreign research institutions have reported that AI could replace jobs in the following areas (Karangutkar, 2023):

1. **Production line workers**: Automation and robotics in manufacturing have made it possible for machines to perform repetitive tasks, reducing the need for human workers.
2. **Customer service operators**: AI-based chatbots and virtual assistants can now handle customer inquiries and resolve issues, replacing human customer service agents.
3. **Data entry clerks**: AI algorithms can quickly and accurately perform data processing tasks, which may eliminate the need for human data entry workers.
4. **Drivers**: Autonomous vehicles are reducing the demand for human drivers in transportation sectors like taxis and freight services.
5. **Editors and proofreaders**: AI systems that can write and edit text are impacting the job security of editors and journalists.
6. **Accountants and financial analysts**: AI-driven systems are capable of analyzing financial data, providing investment recommendations, and handling payroll, which may replace the need for accountants and financial analysts.
7. **Healthcare diagnosticians**: AI is increasingly able to analyze clinical data and diagnose medical conditions, potentially replacing some diagnostic roles.
8. **Human resources professionals**: AI systems automating recruitment and selection processes are reducing the demand for HR professionals.
9. **Sales representatives**: As online commerce and AI-driven recommendation systems advance, the need for traditional sales representatives is decreasing.
10. **Judges, lawyers, and legal assistants**: AI's ability to analyze legal documents and make decisions is presenting a risk to jobs in the legal field.

In Mongolia, the use of AI in the mining sector has led to reduced demand for manual labor, though no significant risks have emerged so far. AI-driven applications such as Chimege for voice recognition are being increasingly used, including in law enforcement since 2025.

Information security

- AI-based systems are at risk of cyberattacks.
- In recent years, the banking sector (e.g., mobile banking, online banking) has experienced an increase in cyberattacks, raising concerns about information security.

Technological dependency

Mongolia is heavily reliant on foreign sources for AI technology.

- Most of the software solutions used in Mongolia are purchased from foreign companies, which creates potential risks for information security.
- To ensure information security, legal regulations need to be improved to better address cybersecurity and cybercrime issues. (Nyamsuren, 2020).

Impact on economic security

Positive impacts

- Increased production efficiency.
- Improved business decision-making.
- Creation of new jobs and professions.

Negative impacts

- Reduction in employment.
- Increased risks to information security.
- Growing dependency on foreign technology.
- Increased unemployment.

3. Risk Prevention

1. **Improving human resources capacity**
- Increase AI-based training programs.
- Utilize AI to enhance productivity and ease labor burdens.

2. **Enhancing information security**
- Develop a national cybersecurity strategy that addresses AI-related risks and future trends.
- Improve the protection of AI systems.

3. **Reducing technological dependence**
- Invest in domestic startups.
- Support internal technological development through international cooperation.

4. **Policy regulation**
- Develop legal frameworks to ensure responsible use of AI.
- Create regulations to address the ethical challenges of AI.

4. CONCLUSION

While Artificial Intelligence offers significant opportunities to accelerate economic development, it also presents security challenges. Mongolia needs to develop AI-based economic policies and ensure information security to address these challenges. It is crucial for government, private sector, and academic institutions to collaborate to ensure the responsible use of AI, thereby ensuring economic security.

There is a lack of research on the impact of AI on economic security, highlighting the need for furtherattention from researchers.

Recommendations

- Implement AI-driven solutions gradually in Mongolia to enhance economic growth, GDP, and labor productivity while considering safety concerns.
- Develop a strategic cybersecurity policy based on the future trends of AI.
- Explore the criminal implications of AI-driven technologies in creating harmful software and cyberattacks, and amend criminal law to address these risks.

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