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ARTIFICIAL INTELLIGENCE IN DIGITAL BANKING: NAVIGATING IMPLEMENTATION BARRIERS

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ABSTRACT:

This study explores the challenges faced by the banking sector in implementing Artificial Intelligence (AI) technologies, focusing on factors such as Malicious Uses of AI, AI Model Theft, Lack of Transparency, Adversarial Attacks, Digital Banking Applications, and Data Analysis. Through regression analysis, the study examines how these challenges influence the improvement of business data models within the banking industry. The data was collected from 733 respondents using convenience and judgement sampling methods. The results indicate that Lack of Transparency has the most significant positive effect on the improvement of business data models, suggesting that addressing transparency issues in AI systems is crucial for better AI integration in banking. Data Analysis and Adversarial Attacks also show significant, albeit smaller, positive relationships with business data models, emphasizing the importance of robust data systems and defence mechanisms against adversarial manipulations. Conversely, AI Model Theft and Malicious Uses of AI showed relatively weak and non-significant effects on business data models, though they are still recognized as important concerns. The findings highlight the critical role of transparency, data analysis, and security in AI adoption in the banking sector, offering valuable insights for practitioners and policymakers. The study concludes with practical recommendations to mitigate these challenges and enhance AI-driven business processes in banking.

KEYWORDS: *Transparency, Emphasizing, Improvement, Integration, Adoption.*

REFERENCES

- Adadi, A., & Berrada, M. (2018). Peeking inside the black-box: A survey on explainable AI (XAI). *IEEE Access, 6*, 52138-5216.
- Anderson, R. (2021). *Artificial intelligence in banking: Risk management and compliance*. Financial Markets Journal, 36(4), 215-23. https://doi.org/1.1016/j.fmj.2021.01.004
- Arora, P., Gupta, R., & Singh, D. (2020). Legal challenges in AI and intellectual property protection. *Journal of Intellectual Property Law*, 22(1), 25-47.

- Binns, R. (2018). *Fairness in machine learning: Lessons from political philosophy*. In Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (pp. 1-14). ACM.
- Binns, R., Callaghan, V., & Wood, C. (2021). Ethical AI in banking: Protecting against malicious uses of AI. *Journal of Financial Regulation and Compliance*, 29(3), 225-238.
- Binns, R., Liu, Z., & Joshi, M. (2021). Protecting AI from malicious use in banking: A cybersecurity approach. *Journal of Banking Technology, 29*(2), 113-128.
- Brown, G., & Grant, J. (2019). *AI and intellectual property theft in banking: Challenges and considerations*. Journal of Banking Technology, 33(2), 45-6.
- Brynjolfsson, E., & McAfee, A. (2017). *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*. W. W. Norton & Company.
- Bryson, J. J., Diamantis, M. E., & Grant, T. D. (2017). *Of, for, and by the people: The legal, ethical, and regulatory implications of autonomous driving*. *University of California Press*.
- Burrell, J. (2016). *How the machine 'thinks': Understanding opacity in machine learning algorithms*. Big Data & Society, 3(1), 1-19.
- Chen, X., Zhang, X., & Li, X. (2020). Data-driven AI models in banking: Enhancements in fraud detection and customer service. *International Journal of Bank Marketing, 38*(6), 1235-1256.
- Chesney, R., & Citron, D. K. (2019). *Deep fakes: A looming challenge for privacy, democracy, and national security*. *California Law Review*, 107(5), 1753-1819. https://doi.org/1.15779/Z38G37M76V
- Chui, M., & Manyika, J. (2020). *The potential for AI in banking and financial services*. McKinsey & Company. Retrieved from https://www.mckinsey.com/industries/financial-services/our-insights/the-potential-for-ai-in-banking-and-financial-services
- Dastin, J. (2018). *Amazon scraps secret AI recruiting tool that showed bias against women*. Reuters. https://www.reuters.com/article/us-amazon-com-jobs-automation-insight-idUSKCN1MK08G
- Dastin, J., Shin, L., & Gray, C. (2022). The protection of AI models in banking: Intellectual property challenges. *Banking Innovation Journal, 34*(3), 225-24.
- Dong, Z., Sun, L., & Xie, F. (2021). Defending digital banking from adversarial attacks: A security-focused AI approach. *Journal of Cybersecurity and Privacy*, 5(1), 33-5.
- Dwivedi, Y. K., Rana, N. P., Jeyaraj, A., & Clement, M. (2021). *Artificial intelligence in banking and financial services: A review of applications, benefits, and challenges*. Journal of Financial Services Marketing, 26(2), 97-111. https://doi.org/1.1057/s41264-021-00101-9
- Fuster, A., & Greenfield, P. (2019). *AI model theft: A significant risk for financial institutions*. Journal of Cybersecurity, 5(3), 53-67. https://doi.org/1.1093/cybersecurity/tyz030
- Ghosh, D., & Choudhury, A. (2020). *AI in digital banking: Challenges and opportunities*. Journal of Banking & Finance, 44(8), 1905-1922. https://doi.org/1.1016/j.jbankfin.202.02.006

- Gilpin, L. H., Bau, D., Yuan, B. Z., Zhao, L., & Loper, M. (2018). *Explaining explanations: An overview of interpretability of machine learning*. In Proceedings of the 2018 ICML Workshop on Human Interpretability in Machine Learning (pp. 1-9).
- Goodfellow, I. J., Shlens, J., & Szegedy, C. (2015). Explaining and harnessing adversarial examples. *Proceedings of the International Conference on Machine Learning*, 1-1.
- Goodfellow, I. J., Shlens, J., & Szegedy, C. (2015). *Explaining and harnessing adversarial examples*. In Proceedings of the International Conference on Machine Learning (ICML), 28(1), 1316-1324.
- Goodfellow, I., Shlens, J., & Szegedy, C. (2014). Explaining and harnessing adversarial examples. *International Conference on Machine Learning (ICML)*, 70, 1-9.
- Kshetri, N. (2020). *1 Artificial Intelligence in banking: Applications, challenges, and implications*. *Journal of Financial Technology*, 2(3), 45-63.
- LeCun, Y., Bengio, Y., & Hinton, G. (2015). *Deep learning*. Nature, 521(7553), 436-444. https://doi.org/1.1038/nature14539
- Lee, D. (2020). *Adversarial attacks on AI in banking systems: A study of risks and defenses*. AI & Ethics, 1(1), 23-34. https://doi.org/1.1007/s43681-020-00004-z
- Lipton, Z. C. (2018). The mythos of model interpretability. *Communications of the ACM*, 61(12), 36-43.
- Mansfield-Devine, S. (2020). AI-driven cybersecurity: New challenges for digital banking. *Network Security*, 2020(2), 12-19.
- Mehrabi, N., Morstatter, F., Saxena, N., Lerman, K., & Galstyan, A. (2019). *A survey on bias and fairness in machine learning*. ACM Computing Surveys (CSUR), 54(6), 1-35. https://doi.org/1.1145/3285029
- O'Neil, C. (2016). *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*. Crown Publishing Group.
- Papernot, N., McDaniel, P., & Goodfellow, I. J. (2016). *Transferability in machine learning: From phenomena to black-box attacks using adversarial samples*. In Proceedings of the 2016 IEEE European Symposium on Security and Privacy (pp. 1-16). IEEE.
- Papernot, N., McDaniel, P., & Goodfellow, I. J. (2017). *Practical black-box attacks against machine learning*. *Proceedings of the ACM on Computer and Communications Security*, 28(3), 1-17.
- Papernot, N., McDaniel, P., & Goodfellow, I. J. (2017). Towards deep learning security. *IEEE Transactions on Neural Networks and Learning Systems*, 28(4), 789-804.
- Patel, R. (2021). *The security risks of open-source AI in banking*. *Journal of Information Security*, 15(2), 100-11.
- Raji, I. D., & Buolamwini, J. (2019). *Actionable auditing: Investigating the impact of public policy on algorithmic fairness*. *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, 1-13.

- Raji, I. D., Buolamwini, J., & Gebru, T. (2020). Mitigating bias in AI models: Moving towards more transparent AI in banking. *AI & Ethics*, 2(2), 57-69.
- Zhang, Y., & Wu, X. (2021). *Data privacy and security concerns in AI-driven banking systems*. Journal of Financial Technology, 3(1), 19-29. https://doi.org/1.1016/j.jfintec.202.11.004