



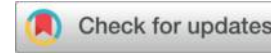
BRILL

ZEITGESCHICHTE  
ISSN / eISSN 0256-5250 / 2569-5304  
Publisher BRILL DEUTSCHLAND GMBH, VIENNA UNIV PRESS,  
ROBERT BOSCH BREITE 6, GOTTINGEN, GERMANY,  
Volume 25-Issue 1-(2025)  
<https://doi.org/10.5281/zenodo.17189801>  
**Leveraging AI and FinTech:**



## Driving Business Innovation in the Fourth Industrial Revolution

**Rowaida Al- Aqrabawi**



Al-Ahliyya Amman University. 19328, Amman, Jordan

[r.alaqrabawi@ammanu.edu.jo](mailto:r.alaqrabawi@ammanu.edu.jo)

**Ahmad Yousef Areiqat**

Professor, Department of Business Administration, Business School,

Al-Ahliyya Amman University. 19328, Amman, Jordan

[ahmadareiqat@ammanu.edu.jo](mailto:ahmadareiqat@ammanu.edu.jo)

### Abstract

The Fourth Industrial Revolution defines sectors and civilizations by means of digital, biological, and physical breakthroughs taken together to drastically change them. Two primary forces enabling this transformation are artificial intelligence (AI) and financial technology (FinTech). This study analyzes the symbiotic interaction between artificial intelligence and financial technology apart from their shared objective to boost corporate innovation. Blockchain technology and robo-advisors mirror FinTech's growth from back-end systems to their present level in digital payments. Stressing risk management, customer service, and fraud detection, studies highlight how artificial intelligence may improve financial services. Underdeveloped areas provide social change, financial inclusion, and small business empowerment via means of thorough case studies of M-Pesa, mobile technology, and artificial intelligence. The report also addresses how predictive analytics and artificial intelligence drive wealth management and how blockchain and artificial intelligence affect traditional banking. We handle among ethical issues data privacy, algorithmic bias, and regulatory compliance. Emphasizing the opportunities and implications for businesses facing the Fourth Industrial Revolution, this paper offers a comprehensive overview of the present scene and future potential of artificial intelligence and financial technology.

**Keywords:** Artificial Intelligence (AI), Financial Technology (FinTech), Fourth Industrial Revolution, Financial Inclusion, Business Innovation, Sustainable Cities and Communities.

## **Introduction**

Popularized by World Economic Forum founder and executive chairman Klaus Schwab, the Fourth Industrial Revolution marks a basic transformation in our way of life, employment, and interaction with one another. A spectrum of new technologies combining the physical, digital, and biological worlds is defining this revolution and influencing all sectors, businesses, and disciplines by means of their interaction. Of these technologies, Artificial Intelligence (AI) and Financial Technology (FinTech) stand out as main engines pushing corporate innovation and change (Schwab, 2016).

Artificial intelligence—which encompasses robotics, natural language processing, and machine learning—is revolutionizing how businesses function by allowing computers learn from data, spot trends, and make decisions with minimum human participation (Brynjolfsson & McAfee, 2014). FinTech is simultaneously challenging accepted financial services by leveraging technology to enhance financial procedures, increase customer experiences, and create new financial goods and services (Arner, Barberis, & Buckley, 2016).

Apart from some advancements, the confluence of artificial intelligence and finance marks a paradigm shift transforming corporate structures and competitive dynamics all throughout the financial industry. Artificial intelligence technology is one of the FinTech solutions meant to maximize operations, enhance decision-making, and offer mass customized customer experiences. Driving efficiency, creating new opportunities, and altering the financial services environment this mix is completing (KPMG, 2020).

This effort investigates jointly the symbiotic connection between artificial intelligence and financial technologies as well as their integration to inspire Fourth Industrial Revolution innovation. Examining the evolution of FinTech, the changing potential of artificial intelligence, and their combined impact on financial inclusion, traditional banking, and wealth management helps this paper try to provide a holistic picture of the current position and prospects. It also addresses the moral questions and conundrums related to the implementation of modern technologies.

Maintaining competitive advantage and advancing sustainable growth depend on companies negotiating this turning moment recognizing the opportunities and repercussions of FinTech and artificial intelligence. This paper aims to pinpoint these traits and provide suggestions on how businesses might apply these technologies to support Fourth Industrial Revolution commercial innovation.

## **The Evolution of FinTech**

### **Historical Context**

Combining technology with money, FinTech has changed dramatically within the previous few years. Originally referring to the back-end operations of financial institutions, it has lately extensive applicability covering digital payments, peer-to-peer lending, and blockchain technology (Arner et al., 2016).

### **Key Innovations**

1. **Digital Payments:** Offering speed and ease, mobile payment systems such as PayPal, Venmo, and Alipay have transformed the way transactions are done (Lee & Shin, 2018).
2. **Blockchain and Cryptocurrencies:** While cryptocurrencies like Bitcoin have brought fresh kinds of digital cash, blockchain technology guarantees safe and open transactions (Tapscott & Tapscott, 2016).
3. **Robo-Advisors:** Automated systems utilizing algorithms that offer financial advice help a larger audience to manage their investments (Chen & Guestrin, 2016).

### **Artificial Intelligence: The Game Changer**

#### **Definition and Scope**

Particularly computer systems, artificial intelligence is the emulation of human intelligence processes via technology. These mechanisms cover learning, reasoning, problem-solving, perception, and language understanding (Brynjolfsson & McAfee, 2014).

1. **Applications in Finance Fraud Detection:** Using transaction patterns, artificial intelligence systems spot and stop fraudulent activity (Muthukrishnan, 2016).
2. **Customer Service:** Chatbots based on artificial intelligence offer 24-hour customer service, therefore enhancing operational effectiveness and customer happiness by themselves (KPMG, 2020).
3. **Risk Management:** By means of a broad range of data sources, machine learning algorithms evaluate credit risk and support more correct and fast choices (Chen & Guestrin, 2016).

## Convergence of AI and FinTech

### Enhancing Financial Inclusion

Among its most important consequences are the ability of artificial intelligence and FinTech to boost financial inclusion. Especially in impoverished countries, FinTech companies might use mobile technology and artificial intelligence to provide financial services to underprivileged people.

#### Case Study: M-Pesa

Launched by Vodafone for Safaricom and Vodacom in 2007, M-Pesa is a mobile payment system among the most effective FinTech solutions promoting financial inclusion. M-Pesa first arrived in Kenya then spread to Tanzania, South Africa, India, and Romania among other nations (Arner et al., 2016).

Here's how M-Pesa has leveraged AI and mobile technology to revolutionize financial services and promote financial inclusion:

1. **Accessibility and Convenience:** M-Pesa works for a network of agents allowing cash withdrawals and deposits. This network is extensive and usually spans undeveloped rural areas under the influence of traditional banks. Since users of cell phones may perform financial transactions without a bank account, financial services are accessible to more people. By means of mobile phones for transactions, individuals enable their financial independence and reduce the challenges to financial inclusion (KPMG, 2020).
2. **Enhanced Security:** In financial transactions, security takes the front stage. M-Pesa improving transaction security using artificial intelligence. AI systems, for example, track transaction trends to find fraudulent behavior. Should suspect activity be found, the system can warn and stop possible fraud in real-time, therefore safeguarding user money. This strong security system helps consumers to develop confidence and motivates more individuals to utilize the service (Muthukrishnan, 2016).
3. **Economic Empowerment:** M-Pesa helps people and small companies by providing a venue for quick and safe financial transactions. Now that farmers, market vendors, small company owners, and market sellers can take payments using their cell phones, the need for cash is lessened and market efficiency is increased. In the areas M-Pesa works in, this has stimulated nearby companies. Features of online transactions enable businesses to streamline procedures and widen client base (Lee & Shin, 2018).
4. **Impact on Financial Inclusion:** M-Pesa definitely has transformed financial inclusion. Millions of Kenyans registered formally with the banks under the initiative. M-Pesa helped 2% of Kenyan homes—194,000—out of poverty based on studies conducted by the

Massachusetts Institute of Technology (MIT). This shows how far artificial intelligence has advanced FinTech, therefore encouraging the growth of society. Simplicity of M-Pesa has transformed Kenya's financial environment and inspired other sectors (Puschmann, 2017).

## **Conclusion of Case Study**

M-Pesa's success shows how transforming mobile technology and artificial intelligence combined with FinTech may propel financial inclusion. M-Pesa has enabled individuals and companies by offering freely available, safe, creative financial solutions, thereby fostering economic development and raising standard of living. Emphasizing the important part artificial intelligence plays in this process, this case study presents a model for how FinTech technology may be developed and applied to bring equal advantages in other domains.

## **Transforming Traditional Banking**

Traditional banking is undergoing a transformation driven by AI and FinTech. Banks are adopting these technologies to improve customer experience, reduce costs, and enhance security.

1. **AI in Customer Relationship Management (CRM):** Personalized banking experiences offered by artificial intelligence technology draw on consumer data. AI may, for instance, project consumer demand and provide tailored financial solutions (Brynjolfsson & McAfee, 2014).
2. **Blockchain for Secure Transactions:** Blockchain technology's transaction integrity and security help to lower fraud risk and hence increase financial system credibility (Tapscott & Tapscott, 2016).

## **The Future of Wealth Management**

AI is revolutionizing wealth management by providing data-driven insights and automating investment processes(Areiqat, eat al, 2024).

## **AI-Driven Investment Strategies**

1. **Algorithmic Trading:** AI algorithms analyze market data in real-time to execute trades at optimal times, maximizing returns and minimizing risks (Chen & Guestrin, 2016).
2. **Robo-Advisors:** Platforms like Betterment and Wealthfront use AI to provide personalized investment advice, making wealth management accessible to a broader audience (Lee & Shin, 2018).

## **Predictive Analytics**

Predictive capacity of artificial intelligence enables financial advisers to investigate industry trends and guide their investment decisions. By means of pattern recognition and past data analysis, artificial intelligence can offer a competitive edge in asset management by means of future market movement prediction (Muthukrishnan, 2016).

## **Ethical Considerations and Challenges**

While AI and FinTech offer numerous benefits, they also present ethical considerations and challenges that need to be addressed.

## **Data Privacy and Security**

The gathering and examination of enormous volumes of data begs privacy and security questions. Financial organizations have to make sure they follow rules on data protection and apply strong security policies to guard client data (Brynjolfsson & McAfee, 2014).

## **Bias and Fairness**

Artificial intelligence systems can unintentionally reinforce prejudices in past data. Open and honest artificial intelligence systems allow one ensure that every customer gets the suitable treatment (Puschmann, 2017).

## **Regulatory Compliance**

Sometimes the rapid advancement in artificial intelligence and financial technologies exceeds even legal frameworks. Dealing with businesses, governments, and regulatory agencies means that laws supporting innovation while protecting consumers must come out of this interaction (Arner et al., 2016).

## **Conclusion**

Combining artificial intelligence with finance in the Fourth Industrial Revolution is inspiring hitherto unheard-of corporate innovation. Redefining wealth management, reevaluating conventional banking, and boosting financial inclusion these technologies are changing the financial scene. Therefore, it is essential to pay ethical challenges and concerns related to their application great attention so that the advantages of artificial intelligence and FinTech are shared equally and sustainably. Combining artificial intelligence with banking in the Fourth Industrial Revolution is encouraging heretofore unheard-of economic innovation. These technologies are redefining wealth management, reevaluating traditional banking, and increasing financial inclusion, therefore transforming the financial scene. Still, if we are to properly and sustainably share the benefits of artificial intelligence and FinTech, ethical questions and challenges have to be taken into account. Negotiating this changing age, the interplay between technology and finance will definitely offer new opportunities for progress.

## References

- Areiqat, Ahmad Yousef, Alzeer, N and Al-Qaruty, Tamara Mahmoud Rasheed (2024). Embracing Disruption: The Intersection of FinTech, RegTech, and Artificial Intelligence. *Technical and Vocational Education and Training* Volume. 39, Pages 427 – 435. Doi: 10.1007/978-981-99-7798-7\_36 Springer
- Arner, D. W., Barberis, J., & Buckley, R. P. (2016). The Evolution of FinTech: A New Post-Crisis Paradigm? *Georgetown Journal of International Law*, 47(4), 1271-1319.
- Brynjolfsson, E., & McAfee, A. (2014). *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*. W. W. Norton & Company.
- Chen, T., & Guestrin, C. (2016). XGBoost: A Scalable Tree Boosting System. In *Proceedings of the 22nd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining* (pp. 785-794).
- KPMG. (2020). Pulse of Fintech H2 2020. Retrieved from KPMG website.
- Lee, I., & Shin, Y. J. (2018). Fintech: Ecosystem, business models, investment decisions, and challenges. *Business Horizons*, 61(1), 35-46.
- Muthukrishnan, S. (2016). Big Data Analytics: Applications and Challenges. In *Journal of Big Data* (Vol. 3, Issue 1, p. 15). Springer.
- Puschmann, T. (2017). Fintech. *Business & Information Systems Engineering*, 59(1), 69-76.
- Schwab, K. (2016). *The Fourth Industrial Revolution*. Crown Business.
- Suri, T., & Jack, W. (2016). The long-run poverty and gender impacts of mobile money. *Science*, 354(6317), 1288-1292.
- Tapscott, D., & Tapscott, A. (2016). *Blockchain Revolution: How the Technology Behind Bitcoin is Changing Money, Business, and the World*. Penguin.
- Zamil, A.M.A., Areiqat, A.Y., Dabaghia, M.N., Joudeh, J.M.M. (2024). Enrooting Artificial Intelligence Advantageously in Marketing. *Technical and Vocational Education and Training*, 2024, 38, pp. 495–506 DOI: 10.1007/978-981-99-6909-8\_43 Springer

