Published by :
https://www.ijert.org/
An International Peer-Reviewed Journal

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 14, Issue 10, NCREHAASTE - 2026

The Ethical and Legal Role of AI Enhancing Financial Security and Transparency

Himanshu Kumar
Student, Department of Management, MIT, Moradabad, India
Apoorv Agarwal
Student, Department of Management, MIT, Moradabad, India
Aditi Vishnoi
Assistant Professor, Department of Management, MIT, Moradabad, India

Abstract - AI enhances financial security through fraud detection, anti-money laundering, and risk management, but its deployment raises persistent ethical concerns around bias, transparency, accountability, and data privacy that existing legal frameworks have not yet systematically addressed. By enhancing security, transparency, efficiency, and decision-making, artificial intelligence (AI) has become a disruptive force in the financial industry. To identify fraudulent activity, evaluate credit risk, automate compliance, bolster cybersecurity, and enhance financial reporting, financial institutions around the world are depending more and more on AI-driven technologies like machine learning, deep learning, natural language processing, and predictive analytics. Significant ethical, legal, and regulatory issues pertaining to algorithmic bias, explainability, privacy, accountability, and governance have also been brought about by the quick uptake of AI.

Through a thorough analysis of previous research and current advancements in financial technology, this paper investigates how artificial intelligence might improve financial security and transparency. The study looks at AI applications in risk management, cybersecurity, fraud detection, anti-money laundering (AML), automated auditing, and regulatory compliance. It also analyzes how ethical AI promotes openness and confidence in financial decision-making. In order to guarantee appropriate AI implementation in financial services, the study also addresses new legislative frameworks, ethical issues, and governance structures.

The results show that AI greatly increases customer trust, reduces financial fraud, boosts operational efficiency, and facilitates real-time financial activity monitoring. Widespread use is still hampered by issues such as algorithmic prejudice, cybersecurity hazards, model interpretability, data privacy concerns, and regulatory ambiguity. The study concludes that building safe, open, and sustainable financial ecosystems requires striking the ideal balance between technological innovation and moral regulation. Developing explainable, equitable, and human-centred AI systems that adhere to changing international regulatory norms should be the main emphasis of future research.

Keywords—Artificial Intelligence, Financial Security, Financial Transparency, Blockchain, Ethical AI

I. INTRODUCTION

Over the past ten years, the global financial sector has experienced a significant digital revolution propelled by developments in blockchain technology, cloud computing, artificial

intelligence (AI), big data analytics, and financial technology (FinTech). Among these developments, artificial intelligence has emerged as one of the most significant technologies in the transformation of financial institutions, allowing firms to process enormous volumes of financial data, automate intricate decision-making procedures, identify fraudulent activity, and improve operational effectiveness. Ensuring financial security and transparency has become a top priority for governments, regulators, financial institutions, and consumers alike as financial markets become more linked and digital transactions continue to rise at an exponential rate.

The protection of financial systems, organizations, digital assets, and consumer data from fraud, cyberattacks, money laundering, identity theft, and financial crimes is referred to as financial security. The openness, accuracy, accountability, and traceability of financial transactions, reporting, and decision-making procedures, on the other hand, constitute financial transparency. Maintaining public confidence, guaranteeing regulatory compliance, encouraging market stability, and fostering sustainable economic growth all depend on these two factors working together.

Manual auditing, rule-based fraud detection systems, and recurring compliance monitoring were the mainstays of traditional financial security systems. These traditional methods, while useful in some situations, frequently fail to handle today's sophisticated financial crimes, quickly changing cyberthreats, and the enormous amount of real-time financial transactions. Digital banking, mobile payments, cryptocurrencies, online lending, and algorithmic trading have all become more complex, posing new problems that call for more sophisticated, flexible, and automated solutions.

By applying cutting-edge computing methods

(This work is licensed under a Creative Commons Attribution 4.0 International License.)

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 14, Issue 10, NCREHAASTE - 2026

including machine learning (ML), deep learning (DL), natural language processing (NLP), computer vision, and predictive analytics, artificial intelligence tackles these problems. Financial institutions can use these technologies to monitor regulatory compliance, identify suspicious transaction patterns, evaluate creditworthiness, forecast financial risks, automate customer interaction using intelligent chatbots, and improve investment decision-making. AI-powered systems are able to improve their performance and react quickly to new threats because they are always learning from past and present data.

Fraud detection is one of AI's most important contributions to financial security. Through identity theft, credit card fraud, insurance fraud, cybercrime, and money laundering, financial fraud results in annual losses of billions of dollars globally. Millions of transactions may be analyzed in a matter of seconds by AI algorithms, which are significantly more accurate than conventional rule-based systems at spotting irregularities that might point to fraudulent activity.

In a similar vein, AI improves cybersecurity by spotting malware, phishing scams, illegal access attempts, and network breaches before they have a chance to do serious harm.

Beyond security, AI has developed into a potent instrument for advancing financial operations' transparency. Financial organizations can analyze and defend AI-generated judgments thanks to ethical AI, especially in crucial domains like loan approvals, credit scoring, investment

advice, and insurance underwriting. Transparency increases regulatory supervision, lowers bias, lessens information asymmetry, and boosts consumer trust in AI-assisted financial services. In order to guaranty justice, accountability, and adherence to changing financial legislation, regulatory bodies across the globe are also promoting the use of transparent AI systems.

Despite these benefits, there are serious ethical and legal issues with incorporating AI into

financial institutions. AI models frequently function as "black boxes," making it challenging for regulators and users to comprehend the decision-making process. Biased training data can

also result in unfair insurance rates, discriminatory lending practices, or unequal financial possibilities for specific groups. Responsible AI implementation is further complicated by privacy issues, cybersecurity flaws, legal accountability, and the lack of internationally recognized AI governance frameworks.

An essential step in resolving these issues is the development of frameworks for ethical and responsible AI. Transparency, justice, accountability, human oversight, and data protection are

becoming more and more important in AI governance, according to governments, financial regulators, and international organizations. These programs seek to guaranty that AI systems respect moral values and public confidence in addition to providing technological efficiency.

This study reviews recent scholarly works, business practices, and legislative advancements in order to investigate how artificial intelligence might improve financial security and transparency. It examines the possibilities presented by AI technology while critically assessing their drawbacks, moral ramifications, and prospects for the future.

In addition to offering suggestions for attaining ethical, safe, and transparent AI adoption in the financial sector, the study aims to give a thorough understanding of how AI is changing contemporary financial systems.

II. LITERATURE REVIEW

AI Ethics and Law in Transparency and Financial Security

Through fraud detection, anti-money laundering (AML), and regulatory compliance, artificial intelligence (AI) improves financial security. However, its application presents serious moral and legal issues with regard to responsibility, transparency, bias, and data privacy (Nurhadhinah Nadiah Ridzuan). The body of research agrees that overnance structures that strike a balance between innovation and moral obligation are necessary to guaranty the reliability and equity of AI-driven financial systems ([2]).

AI Applications Enhancing Financial Security

AI-driven systems achieve accuracy rates above 95% and reduce false positives by up to 90%, far outperforming conventional rule-based fraud detection procedures. Real-time detection of

suspicious transactions and unusual behavioral patterns suggestive of fraudulent conduct is made possible by machine learning, deep learning, and natural language processing (Puneet

Chopra 2024). Additionally, AI reduces dependency on human processes and improves adherence to changing regulatory frameworks by automating Know Your Customer (KYC) and

AML compliance assessments.

AI-Powered Finance's Ethical Difficulties

Vulnerable communities are particularly affected by algorithmic bias in training data, which can sustain discrimination in credit score, loan approvals, and insurance pricing. Because

opaque AI models are black-box, it is difficult to understand the reasoning behind important financial decisions, which erodes accountability and confidence.

Because current legal frameworks were created for conventional financial operations and do not sufficiently address autonomous, self-learning AI systems, accountability gaps continue to exist. As AI systems use large amounts of personal data, concerns regarding consent, protection, and adherence to laws like the CCPA and GDPR emerge.

Legal Frameworks and Governance Gaps

The Fair Credit Reporting Act in the US and the GDPR in

(This work is licensed under a Creative Commons Attribution 4.0 International License.)

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 14, Issue 10, NCREHAASTE - 2026

Europe are two examples of current legislative frameworks that try to solve AI-related issues but frequently fail since AI capabilities surpass legal requirements. The U.S. Securities and Exchange Commission has released suggestions on the use of AI in market monitoring and investment advice services, while the proposed EU AI Act classifies AI systems according to risk level. Despite these

attempts, the laws and regulations governing AI in finance are not structured and standardized, which leaves regulatory limits ambiguous and makes it challenging to determine legal guilt

after disagreements develop.

TABLE I
COMPARISON OF AI APPLICATIONS ENHANCING FINANCIAL SECURITY

AI Contribution	Supporting Technology
Real-time anomaly detection, >95% accuracy	ML, deep learning, NLP
Automated suspicious transaction monitoring	Predictive analytics, anomaly detection
Immutable transaction traceability	AI-blockchain hybrid analytics
Real-time threat intelligence	AI-driven anomaly detection

III. RESEARCH GAP

Although previous studies have extensively examined AI applications in financial services, several important research gaps remain:

- Existing studies generally investigate individual applications such as fraud detection or credit scoring rather than providing an integrated view of financial security and transparency.
- There is insufficient evidence regarding how AI governance frameworks can balance innovation with ethical and regulatory requirements.
- Existing literature provides limited discussion on the interaction between cybersecurity, transparency, ethical AI, and financial governance within a single conceptual framework.

IV. RESEARCH OBJECTIVES

The primary objective of this study is to examine the role of Artificial Intelligence in enhancing financial security and transparency within modern financial institutions.

The specific objectives are:

1. To examine the application of AI in improving financial security and enhancing

financial transparency.

2. To identify ethical, legal and regulatory challenges associated with AI adaption in financial security and financial transparency.

V. DISCUSSION

Objective 1: To examine the application of AI in improving financial security and enhancing financial transparency.

Understanding how artificial intelligence (AI) is applied in the financial industry to safeguard financial data, identify fraudulent activity, control cyberthreats, and improve the transparency and dependability of financial information is the main goal of this project.

Protecting financial institutions, transactions, consumer data, and digital assets from risks like fraud, identity theft, cyberattacks, unauthorized transactions, and data breaches is known as financial security. By analyzing massive volumes of transaction data in real time and spotting odd trends, artificial intelligence (AI) can increase financial security. For instance, an AI-based system can identify a transaction as suspicious and initiate additional verification if a customer's account unexpectedly displays a transaction that deviates greatly from their typical

spending patterns.

Additionally, AI can help with risk assessment, cybersecurity, fraud detection, and ongoing monitoring. AI and machine-learning models can learn from past data and spot new or evolving patterns of suspicious activity, in contrast to older systems that might mostly rely on predetermined criteria.

Financial transparency is the subject of the objective's second section. Financial decisions, actions, and data must be accurate, traceable, comprehensible, and available to pertinent parties in order to be considered transparent. By automating financial reporting, evaluating big financial datasets, spotting irregularities, and facilitating improved audits and monitoring,

artificial intelligence (AI) can promote transparency. AI, for instance, can examine financial records and find odd differences that could be challenging to find by hand.

Thus, this goal is to investigate whether and how AI may lower financial risks, identify fraudulent activity, bolster cybersecurity, enhance monitoring, and raise the precision and dependability of financial data. It also takes into account the difficulties posed by AI, including the need for appropriate governance, algorithmic failures, data protection, and cybersecurity threats.

Objective 2: To identify ethical, legal and regulatory challenges associated with AI adoption in financial security and financial transparency.

Finding the ethical, legal, and regulatory problems that financial institutions can have while implementing AI for security, fraud detection, risk management, auditing, and financial transparency is the main goal of this purpose.

The application of AI in a fair and responsible manner resents ethical challenges. For instance, biased or insufficient training data may cause AI systems to make biased choices. This might have an impact on financial services decisions about consumer profiling, fraud detection, credit score, and loan acceptance. Data privacy, the absence of human control, and the issue of accountability when an AI system makes a detrimental judgment are further ethical problems.

Whether the application of AI conforms with current laws and legal standards is a legal challenge. AI systems must abide by relevant data protection, privacy, cybersecurity, consumer

protection, and financial laws since financial institutions

(This work is licensed under a Creative Commons Attribution 4.0 International License.)

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 14, Issue 10, NCREHAASTE - 2026

manage extremely sensitive customer and financial data. When an AI-driven decision results in financial loss or when sensitive data is handled poorly, there may also be legal challenges in assigning blame.

The problem of ensuring AI systems adhere to regulations set forth by financial regulators is referred to as a regulatory challenge. Regulators must make sure AI is applied in a way that upholds accountability, security, transparency, consumer protection, and financial stability. The fact that AI technology is evolving quickly but regulatory frameworks might take longer to adjust is a significant obstacle. Research Questions

RQ1: How does Artificial Intelligence improve financial security?

RQ2: What role does AI play in increasing financial transparency?

RQ3: What challenges affect the adoption of AI in financial institutions?

RQ4: How does Ethical AI contribute to trustworthy financial decision-making?

RQ5: What governance mechanisms are necessary for responsible AI implementation?

VI. SUGGESTIONS AND RECOMMENDATIONS

Continue to have human oversight of important financial decisions

When making important financial decisions, AI should complement human judgment rather than totally replace it. In areas like credit scoring, loan approval, insurance decisions, fraud

investigations, and investment-related services, human oversight should be preserved. When an AI system makes an odd or potentially dangerous decision, trained staff should be able to

examine it and make the necessary corrections. This can lessen the possible repercussions of algorithmic failures and increase accountability.

Enhance Data Quality and Diminish Algorithmic Prejudice

The quality, accuracy, relevance, and representativeness of the data used to train AI models should be routinely assessed by financial institutions. Unfair results in areas like credit evaluation, consumer profiling, loan acceptance, and insurance pricing can be caused by biased or low-quality training data. As a result, before and after adoption, companies should regularly perform model testing and bias evaluations. To lower the possibility of discriminating results, diverse and representative datasets should be employed whenever feasible.

Perform routine security and risk assessments for AI.

AI systems shouldn't be viewed as one-time applications.
Financial institutions should keep a close eye on their security and performance. Model accuracy, odd results, security flaws, bias,

data quality, compliance, and performance changes over time should all be assessed in routine

AI audits. Because AI models may come across novel forms of fraud and cyberthreats that were absent from their initial training data, ongoing monitoring is especially crucial.

Boost Data Security and Privacy

Strong data protection procedures should be put in place because AI-based financial systems handle a lot of sensitive financial and personal data. Financial institutions should make sure that customer data is adequately protected against unauthorized access, abuse, and breaches, and they should only gather the information necessary for legitimate purposes. It is important

to implement appropriate access controls, encryption, secure data storage, privacy rules, and frequent security evaluations. Additionally, companies should make sure that their AI systems

abide by all applicable financial and data protection laws.

Perform routine security and risk assessments for AI.

AI systems shouldn't be viewed as one-time applications.
Financial institutions should keep a close eye on their security and performance. Model accuracy, odd results, security flaws, bias,

data quality, compliance, and performance changes over time should all be assessed in routine AI audits. Because AI models may come across novel forms of fraud and cyberthreats that were

absent from their initial training data, ongoing monitoring is especially crucial.

Encourage cooperation between regulators and financial institutions

Regarding the advancement and application of AI technology, financial institutions should stay in constant contact with legislators and regulators. Continuous collaboration can help detect new dangers early on because AI capabilities are evolving quickly while regulatory frameworks may take longer to adapt. By offering precise guidelines on AI governance, consumer protection, data privacy, cybersecurity, and accountability, regulators may also promote responsible innovation.

Boost AI literacy and employee training

Employees who work with AI-based systems should receive frequent training from financial institutions. Workers should be aware of the potential biases, cybersecurity threats, data

protection regulations, AI's capabilities and limits, and the processes for evaluating AI- generated choices. Technical staff should not be the only ones receiving training; managers,

compliance staff, auditors, risk teams, and employees who interact with customers should also acquire enough AI literacy to use these systems appropriately.

Potential Research Topics

More empirical study should be done in the future to

(This work is licensed under a Creative Commons Attribution 4.0 International License.)

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 14, Issue 10, NCREHAASTE - 2026

assess the true effects of AI on financial security and transparency across various financial institutions and geographical areas. The efficacy of AI governance structures, the connection between AI and customer trust, algorithmic bias in financial decision-making, cybersecurity threats associated with AI, and the relationship between AI and blockchain can all be investigated further. Future research may also create integrated frameworks that link financial governance, cybersecurity, ethical AI, transparency, and regulatory compliance into a unified paradigm.

VII. CONCLUSION

Artificial Intelligence has emerged as an important technology for strengthening financial security and improving transparency within modern financial institutions. This study examined

the application of AI in areas such as fraud detection, anti-money laundering, cybersecurity,

risk management, automated auditing, regulatory compliance, and financial monitoring. The findings indicate that AI can process large volumes of financial data in real time, identify unusual patterns, detect potential fraudulent activities, and support institutions in responding to emerging financial and cyber risks. AI can therefore improve the efficiency and effectiveness of conventional financial security mechanisms.

The study also highlights the role of AI in enhancing financial transparency. AI-based systems can support financial reporting, auditing, data analysis, and continuous monitoring by identifying inconsistencies and unusual patterns in financial information. When implemented responsibly, these capabilities can improve the accuracy, traceability, and reliability of financial processes and contribute to greater confidence among customers, financial institutions, and regulators.

However, the benefits of AI cannot be achieved without addressing its ethical, legal, and regulatory challenges. Algorithmic bias, data privacy, cybersecurity risks, accountability, lack of human oversight, and regulatory uncertainty remain significant concerns. AI-driven financial decisions may affect important areas such as credit scoring, loan approval, fraud

detection, insurance, and investment services, making fairness and accountability particularly important. The study therefore demonstrates that technological efficiency alone is not sufficient

for responsible AI adoption in finance.

The research further suggests that effective AI governance is essential for creating a balance between innovation and responsibility. Financial institutions should adopt appropriate

governance mechanisms that promote transparency, fairness, accountability, data protection, human oversight, cybersecurity, and regulatory compliance.
Regulators and policymakers

should also continue developing flexible and coordinated frameworks that can respond to the rapidly changing capabilities of AI.

In conclusion, AI has significant potential to create safer, more efficient, and more transparent financial ecosystems, but its long-term success depends on how responsibly it is designed,

implemented, and governed. The future of AI in financial services should therefore focus not only on improving technological performance but also on protecting consumer interests, maintaining accountability, and building trust. A balanced approach that combines technological innovation with ethical principles, legal compliance, regulatory oversight, and effective governance can enable financial institutions to achieve the benefits of AI while minimizing its associated risks. This approach is essential for developing a secure, transparent,

trustworthy, and sustainable financial sector.

REFERENCES

[1] N. N. Ridzuan, M. Masri, M. Anshari, N. L. Fitriyani, and M. Syafrudin, “AI in the Financial Sector: The Line between Innovation, Regulation and Ethical Responsibility,” Inf., vol. 15, p. 432, 2024, doi: 10.3390/info15080432.

[2] N. S. Uzougbo, C. Ikegwu, and A. O. Adewusi, “Legal accountability and ethical considerations of AI in financial services,” GSC Advanced Research and Reviews, 2024, doi: 10.30574/gscarr.2024.19.2.0171.

[3] S. A. Mohammed, “Algorithmic Trust: Evaluating the Ethical and Regulatory Challenges of AI in Financial Services,” International Journal of Integrated Research and Practice, 2026, doi: 10.65579/31075037.0128.

[4] N. S. Uzougbo, C. Ikegwu, and A. O. Adewusi, “Legal accountability and ethical considerations of AI in financial services,” GSC Advanced Research and Reviews, 2024, doi: 10.30574/gscarr.2024.19.2.0171.

[5] J. C. Ogeawuchi, A. Sharma, B. I. Adekunle, A. A. Abayomi, and O. Onifade, “Ethical Frameworks for AI Deployment in Financial Decision-Making: Balancing Profitability and Social Responsibility,” International Journal of Scientific Research in Computer Science, Engineering and Information Technology, 2024, doi: 10.32628/cseit24102141.

[6] M. Hadjer and B. Fayza, “Reconstructing Financial Security in the Age of Artificial Intelligence: From Algorithmic Fraud Detection to the Institutionalization of Sustainable Digital Trust in a Hyperconnected Global Economy,” Science, Education and Innovations in the Context of Modern Problems, 2026, doi: 10.56334/sei/9.5.14.

[7] O. Dorothy, O. D. Iguodala, and A. Oyiborhoro, “AI-Powered Anti-Money Laundering (AML) and fraud detection—enhancing financial security through intelligent fraud detection,” World Journal of Advanced Research and Reviews, 2025, doi: 10.30574/wjarr.2025.26.2.0637.

[8] A. Adejumo, A. A. Paul, and C. Ogburie, “The Role of AI in preventing financial fraud and enhancing compliance,” GSC Advanced Research and Reviews, 2025, doi: 10.30574/gscarr.2025.22.3.0086.

[9] I. Arsyad, D. B. Kharisma, and J. Wiwoho, “Artificial intelligence and Islamic finance industry: problems and oversight,” International Journal of Law and Management, 2025, doi: 10.1108/ijlma-07-2024-0236.

[10] A. Adejumo, A. A. Paul, and C. Ogburie, “The Role of AI in preventing financial fraud and enhancing compliance,” GSC Advanced Research and Reviews, 2025, doi: 10.30574/gscarr.2025.22.3.0086.

[11] M. Aderemi and M. A. Adegbite, “The Intersection of AI, banking and fintech in seamless financial services,” World Journal of Advanced Research and Reviews, 2025, doi: 10.30574/wjarr.2025.25.3.0613.

[12] O. Odeyemi, C. C. Okoye, O. C. Ofodile, O. B. Adeoye, W. A. Addy, and A. O. Ajayi-Nifise, “Integrating AI with blockchain for enhanced financial services security,” Finance & Accounting Research Journal, vol. 6, no. 3, 2024, doi: 10.51594/farj.v6i3.855.

[13] I. Arsyad, D. B. Kharisma, and J. Wiwoho, “Artificial intelligence and Islamic finance industry: problems and oversight,” International Journal of Law and Management, 2025, doi: 10.1108/ijlma-07-2024-0236.

(This work is licensed under a Creative Commons Attribution 4.0 International License.)

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 14, Issue 10, NCREHAASTE - 2026

[14] P. Chopra, "Ethical Implications of AI in Financial Services: Bias, Transparency, and Accountability," International Journal of Scientific Research in Computer Science, Engineering and Information Technology, 2024, doi: 10.32628/cseit241051017.

[15] T. Bhatti, "Algorithmic Decision-Making and Human Autonomy in Finance: A Systematic Review of AI Ethics Research," Journal of Statistical Theory and Applications, vol. 25, 2026, doi: 10.1007/s44199-026-00175-w.

[16] S. A. Mohammed, "Algorithmic Trust: Evaluating the Ethical and Regulatory Challenges of AI in Financial Services," International Journal of Integrated Research and Practice, 2026, doi: 10.65579/31075037.0128.

[17] Y. Wang, "Ethical considerations of AI in financial decision," Computing and Artificial Intelligence, vol. 2, no. 1, 2024, doi: 10.59400/cai.v2i1.1290.

[18] Y. Wang, "Ethical considerations of AI in financial decision," Computing and Artificial Intelligence, vol. 2, no. 1, 2024, doi: 10.59400/cai.v2i1.1290.

[19] S. A. Mohammed, "Algorithmic Trust: Evaluating the Ethical and Regulatory Challenges of AI in Financial Services," International Journal of Integrated Research and Practice, 2026, doi: 10.65579/31075037.0128.

(This work is licensed under a Creative Commons Attribution 4.0 International License.)