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Artificial Intelligence in Security: Driving Trust and Customer En-gagement on FX Trading Platforms

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Abstract

This study examines how artificial intelligence (AI)-powered security systems enhance customer trust and engagement in forex (FX) trading platforms, as well as the effectiveness of AI technologies in mitigating security threats on FX platforms, and explores the role of AI in ensuring regulatory compliance and transparency, thereby fostering a more secure trading environment. This study uses both qualitative and quantitative data. Empirically, this study focuses on users of trading platforms engaged in Foreign Exchange (FX) dealing in the Delhi NCR region. The study used a descriptive and exploratory research design and provided a target population of 250 respondents. A structured questionnaire was used as the main source of data to address the research questions. The data were analyzed using statistical tools, such as MS Excel and SPSS, using mean, S.D., correlation, regression, etc. The study showed a clear positive correlation between the level of incorporation of AI security systems and the level of customer en-gagement, with AI technologies accounting for an important share of the variation in security threat prevention. In addition, the study confirmed the role of AI in compliance and openness, which exhibited a moderately positive relationship between them.

Keywords

Artificial Intelligence, Customer Trust, Customer Engagement, Cyber Security, and Forex (FX) Trading Platforms.

1. Introduction

The fundamental principle of relationship marketing revolves around establishing and maintaining lasting connections with consumers to strengthen a company's competitive advantage (Leninkumar, 2017). This connection between customers and firms is influenced by various factors such as the quality of products or services, staff performance, brand reputation, and overall business image. **customer trust** is paramount in fostering meaningful engagement between customers and companies.

Trust forms the foundation of all relationships, without which they would either collapse or function inconsistently. It is defined as the degree of reliability that one party places in another within a specific transactional relationship. In marketing, trust is often associated with a customer's belief in a company's ability to deliver on commitments and promises (Nguyen et al., 2013). These beliefs are shaped by a firm's expertise, integrity, and altruism. A company's established reputation acts as a critical indicator of trust and can help restore it during crises. Additionally, corporate image has been shown to significantly influence trust in contexts such as financial services

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and e-commerce (Flavian et al., 2005).

Customer engagement refers to the process by which companies build ongoing relationships with their consumers through meaningful interactions at every point in the customer journey (Thakur, 2016). This engagement fosters long-term loyalty and enthusiasm among the customers. The integration of **artificial intelligence (AI)** offers transformative potential for enhancing customer engagement. AI enables customers to interact with businesses through intelligent systems (Hollebeek et al., 2014) and empowers marketers to optimize their marketing strategies (De Bruyn et al., 2020). AI-powered digital platforms attract and retain clients more effectively (Chawla & Goyal, 2021), particularly in today's competitive digital landscape. AI enhances organizational intelligence and improves overall performance (Xia & Gong, 2014).

With the growing trend in online shopping, businesses have leveraged AI to predict customer behavior, drive informed decisions, and even encourage impulse purchases (Duan et al., 2019). The adoption of AI technology gained significant momentum during the COVID-19 pandemic, reshaping digital marketing practices and enabling businesses to utilize big data for seamless AI integration.

The **foreign exchange (FX) market**, which underpins global trade in goods, services, and capital, exemplifies the importance of trust and security. As the world's largest financial market, FX trading involves a wide array of participants, including those from the financial and nonfinancial sectors (Dwivedi et al., 2021). The trading behaviors of these participants influence currency rates, which in turn affect nearly all international economic activities.

Over the past decades, financial mechanisms and digital technologies have emerged as key drivers of cognitive capitalism, enabling efficient exploitation of societal value (Kitirianglap, 2018). In particular, AI has revolutionized capital accumulation through its application in industrial processes, communication, and economic activities (Kumar et al., 2024).

AI-powered security systems have significantly enhanced trust and customer engagement in FX trading platforms. These systems employ advanced machine-learning algorithms to detect anomalies, verify users, and protect sensitive information in real time (Moşteanu, 2023). Enhanced security features, including detailed risk alerts and robust encryption methods foster customer satisfaction and loyalty. AI-based solutions ensure a secure trading environment and encourage greater participation and trust among users.

This study highlights the critical role of AI-enabled security in building trust and fostering engagement on FX trading platforms. In an era fraught with cyberthreats and fraudulent activities, AI-driven processes provide robust safeguards for data security, transaction protection, and user identification. AI strengthens customer loyalty by improving safety and satisfaction, making it a pivotal component for the sustainable development of trading platforms.

The remainder of this paper is structured as follows: Section 1 introduces the study. Section 2 presents a review of the relevant literature. Section 3 outlines the research objectives of this study. Section 4 discusses the research methodology. Section 5 provides the detailed empirical results. Section 6 presents our findings and discusses their implications. Finally, Section 7 concludes the paper with suggestions for future research. Finally, the references are included.

2. Review of Literature

2.1. Impact of AI-Powered Security Systems on Customer Trust and Engagement

Financial institutions are facing increasing demands for efficiency and enhanced client engagement, with artificial intelligence (AI) emerging as a crucial enabler of this transformation (Kasaraneni, 2022). Among notable AI applications, AI-powered chatbots have redefined client interactions by automating and improving communication processes. While these innovations provide opportunities for enhanced customer experiences, they have also sparked debates about their impact on trust, whether they strengthen or weaken it (Ahmed, 2024).

AI technology's ability to learn from historical customer data and preferences is a significant advantage, as it fosters personalized experiences and positively influences consumer-brand engagement (McLean et al., 2021). Automated and individualized communication helps customers address their unique needs while simultaneously enhancing service efficiency for companies (Hlee et al., 2023). Consumer brand engagement is influenced by cognitive, emotional, and behavioral dimensions during brand-related interactions, and the rise of automated customer-machine interactions introduces novel ways for marketers to connect with their audiences (Acikgoz et al., 2023). AI has transformed the banking industry by improving customer engagement and operational efficiency through tailored solutions (Kaluarachchi & Sedera, 2024).

2.2. Effectiveness of AI Technologies in Mitigating Security Threats

The increasing frequency and sophistication of digital security threats have raised significant concerns for individuals, businesses, and governments alike (Weng & Wu, 2024). To address these challenges, organizations are shifting from traditional mitigation methods to more advanced AI-driven approaches, including machine learning and predictive analytics (Kodete et al., 2024).

However, AI-based systems do not have such

vulnerabilities. They face risks throughout their lifecycle, from data collection and pre-processing to model training, inference, and deployment. These vulnerabilities include sensor manipulation, poisoning attacks during data preparation, and malicious intervention during training and inference (Hu et al., 2021). Furthermore, the integration of AI technologies into Operational Technology (OT) systems has heightened their exposure to cyber threats such as ransomware attacks and data breaches, posing risks to critical infrastructure and public safety (Chirra, 2020).

A 2020 study conducted by the Cybersecurity and Infrastructure Security Agency (CISA) reported a significant increase in cyberattacks targeting OT systems, underscoring the urgent need for specialized cybersecurity measures tailored to these environments (CISA, 2020).

2.3. AI's Role in Regulatory Compliance and Transparency

Transparency is a multifaceted concept that has gained renewed importance in the discourse surrounding AI (Larsson & Heintz, 2020). Despite its significance, transparency remains one of the most ambiguous and challenging aspects of AI systems (Kiseleva et al., 2022). To address this, the concept of trustworthy AI has been developed as a comprehensive framework aimed at ensuring responsible AI creation, deployment, and utilization (Wischmeyer, 2020).

This framework is based on three key pillars: statutory compliance, technical resilience and safety, and ethical considerations. It emphasizes requirements, such as accountability, transparency, fairness, societal well-being, and environmental sustainability (Díaz-Rodríguez et al., 2023). AI has the potential to revolutionize compliance and regulatory processes by automating routine tasks, enhancing data analytics, and enabling predictive modeling (Nimmagadda, 2021).

However, the opaque nature of AI systems has raised ethical concerns, particularly regarding their explainability and accountability. Ethical guidelines published by expert committees highlight the importance of transparency and openness in the design and deployment of AI systems (Balasubramaniam et al., 2023). The growing demand for trustworthy AI underscores the critical need for systems that are transparent and aligned with ethical principles.

2.4. Research Gap

While prior research has explored the advantages of AI in enhancing customer satisfaction and mitigating security threats, there has been limited focus on how and why AI-powered systems produce these effects within the specific context of FX trading platforms. Unlike general financial services and other self-service systems, FX platforms operate in a relatively high-risk environment that demands greater trust and security. Existing studies have addressed broader topics, such as AI-driven user communications, transparency, and ethics, but have overlooked the unique challenges and dynamics of FX platforms. Furthermore, the literature provides minimal insight into the relationship between AI-based security measures and customers' behavioral responses, leaving a critical gap in understanding the interplay between AI technologies, trust, and engagement in this specific setting.

2.5. Objectives of the Study

a) To analyze how AI-powered security systems enhance customer trust and engagement on FX trading platforms.
b) Evaluation of the effectiveness of AI technologies in mitigating security threats on FX platforms.
c) To investigate the role of AI in ensuring regulatory compliance and transparency and fostering a more secure trading environment.

3. Research Methodology

This study employs both qualitative and quantitative approaches to examine how AI security technologies enhance customer trust and engagement on foreign exchange (FX) trading platforms. It is empirical in nature and focuses on the users of FX trading platforms operating in the Delhi NCR region. **stratified random sampling method** is used to ensure a diverse and representative sample of 250 respondents.

This study adopted a **descriptive and exploratory research design**, utilizing a structured questionnaire as the primary tool for data collection. Secondary data were gathered from academic journals, articles, and books to complement primary data. The analysis was conducted using statistical tools such as MS Excel and SPSS, employing techniques such as mean, standard deviation, correlation, and regression to derive insights.

This comprehensive research approach ensures methodological rigor, enabling this study to provide valuable insights into the impact of AI-powered security systems on customer trust, engagement, and security in the FX trading platform context.

4. Results

This section provides a concise summary of the findings and the interpretation of the data. Demographic characteristics and objectives were used to categorize the outcomes. A table that illustrates the findings and clarifies them has been incorporated into the objectives.

Table 1: Demographic Profile of the Respondents

No.	Demographic Characterstics		N	%
1	Gender	Female	107	42.8
		Male	143	57.2
2	Age Group	Below 25 years	45	18.0
		25–34 years	53	21.2
		35–44 years	43	17.2
		45–54 years	60	24.0
		55 years and above	49	19.6
3	Educational Qualification	High School or Below	53	21.2
		Bachelor's Degree	49	19.6
		Master's Degree	83	33.2
		Professional/Doctorate Degree	65	26.0
4	Occupation	Student	53	21.2
		Self-employed	64	25.6
		Salaried Professional	66	26.4
		Retired	67	26.8
5	Monthly Income	Below Rs.20,000	54	21.6
		Rs.20,001–Rs.50,000	31	12.4
		Rs.50,001–Rs.1,00,000	48	19.2
		Rs.1,00,001–Rs.2,00,000	54	21.6
		Above Rs.2,00,000	63	25.2
	Platform Usage	Daily	46	18.4
		Monthly	41	16.4
		Never	44	17.6
		Rarely	66	26.4
		Weekly	53	21.2
6	Frequency			
7	Trading Experience	Beginner	96	38.4
		Intermeiate	69	27.6
		Expert	85	34.0

The demographic characteristics of the respondents are described in table 2. Age distribution according to sex showed a dominant male population of 57.2%. Age was also diverse, ranging from 18–68 years, with the majority of the participants being between 25–54 years (62.4%). Socio- demographic characteristics reveal that respondents were educated enough; 59.2% of the respondents possessed a bachelor's, master's, or a professional or doctorate degree. Employees are almost equally divided and are mostly salaried (26.4 %), followed by the retired class (26.8 %). The monthly income distribution was also irregular, with 46.8% of the respondents having a monthly income of more than 1 lac. As for frequency, the responses for the platform usage are split down the middle, with the majority of participants (26.4%) reporting 'rarely'. The frequency of trading experience is almost equal, professionals are 38.4% beginners are 34.0%, and intermediate 27.6%.

To examine how AI-powered security systems enhance customer trust and engagement on FX Trading platforms.

Table 2: Regression Analysis

Objective	Regression Weights	Beta Coefficient	R2	F	t-value	p-value	Objective Result
Obj. 1	AI-powered security systems > Customer trust and engagement	0.302842	0.091713	25.142	5.014227	0.000	Supported

The regression analysis in Table 3 reveals a direct relationship between the implementation of AI security systems and customer trust and engagement. Moderately positive is the share of AI security systems in trust and engagement; the beta coefficient equals 0.302842. In other words, based on the

obtained R^2 of 0.091713, the percentage of the customer-trust-and-engagement variability that can be attributed to AI security systems was 9.17%. The F-statistic was 25.142, and the t-value was 5.014227 to show the strength of the model as well as the significance of the predictor. The p-value, which is equal to 0.000, also indicates that the result is statistically significant. The findings of this study support this objective by indicating that AI-based security measures improve customers' trust and engagement in FX trading platforms.

To assess the effectiveness of AI technologies in mitigating security threats on FX platforms.

Table 3: Regression Analysis

Objective	Regression Weights	Beta Coefficient	R2	F	t-value	p-value	Objective Result
Obj. 1	AI-technologies > Security threats on FX platforms	.310	0.096	26.539	5.151629	0.000	Supported
Obj. 3	AI-technologies	16.1594	3.42790	.336	-1.565422	0.000	Supported
	Regulatory compliance and transparency	16.5777	3.89216				

There is a strong positive relationship between the results of the regression analysis concerning the effects of AI technologies and the ability to counter security threats to platforms that deal with FX. A beta coefficient of 0.310 indicates a moderate positive relationship between AI technologies and the ability to combat these threats. The R^2 value (0.096) indicated that AI technologies accounted for 9.6% of the variability in mitigating security threats. The F-statistic was calculated to be 26.539, and the t-statistic (5.151629) proved the efficiency of the model and the importance of the predictor. It is statistically significant at 0.000, affirming that AI technologies are crucial in mitigating security threats on FX platforms.

Explore the role of AI in ensuring regulatory compliance and transparency, thereby fostering a more secure trading environment.

Table 4: Paired T-test Analysis

Objective	Paired Variables	Mean	Standard Deviation	Correlation	t-value	p-value	Objective Result

The paired t-test analysis in Table 4 compares AI technologies, regulatory compliance, and transparency in fostering a more secure trading environment. The mean scores were high (16. 1594 for AI technologies, and 16. 5777 for regulatory compliance and transparency), which strongly correlates with the relationship between AI technologies, regulatory compliance, and transparency. A moderate positive correlation (0.336) indicates that AI technologies have a large impact on changes in regulation and transparency. The t-value of (-1.565422) also indicates that the test is very sensitive, and a p-value of 0.000 indicates that the relationship is statistically significant. All these results validate the objective that the adoption of AI technologies promotes improved regulatory compliance and market transparency in forex trading platforms for a more secure environment to operate.

5. Findings and Discussion

The findings underscored why security systems backed by AI are vital for boosting customers' trust and engagement in FX trading platforms. The study showed a clear positive correlation between the level of incorporation of AI security systems and the level of customer engagement, with AI technologies accounting for an important share of the variation in security threat prevention. Regression analysis supports their utility in lowering risk and building trust. In addition, the study confirmed the role of AI in compliance and openness, which exhibited a moderately positive relationship between them. In summary, the study proved that AI systems are instrumental in establishing a safe, trustworthy, and transparent trading space for all participants on the platform.

In the emerging field of AI service robots, Hlee et al. (2023) examined various functional and emotional factors that affect customer perceptions and behaviors in services. In contrast to the existing work, our study aimed to investigate the effects of security systems with artificial intelligence features and capabilities on customer trust, customer engagement, and regulatory constraints regarding FX trading. Every aspect of AI's

potential is touched upon in both, but serves as the highlight to limit the context and is still specialized in certain dimensions.

In the framework of compliance and regulatory reporting in banking, Nimmagadda (2021) addressed AI implementation in terms of automation, anomaly detection, and risk minimization. On the other hand, our study aimed to explore the effects of AI on customers' trust, engagement, and compliance with Foreign Exchange platforms. Both focus on the important roles of AI in the financial sector, but one looks more at application-level issues, and the other at technological-level issues.

Balasubramaniam et al. (2023) stressed the need for ethical guidelines, or the lack of opacity, as well as the explainability of AI systems at workplaces across industries. They presented realistic models for detailing the explainability of requirements. Our study examined how AI can be used to improve customer trust, security issues, and regulatory compliance on FX trading platforms. Common to both studies is the emphasis on the centrality of AI; however, the focus is on different applications and frameworks.

Kodete (2024) described ML approaches to promoting cybersecurity with a focus on efficiency, reactive detection, data processing, and recognition of patterns; however, there are issues, such as the quality of data and data bias. In contrast, our study examined the use of artificial intelligence in FX trading security systems that help increase customer confidence, control threats, and be in accordance with legislation. Both studies highlighted that security and trust are controlled by the AI/ML technology.

6. Conclusion

Focusing on this peculiarity of the problem, this study highlights the centrality of AI security systems in increasing customer confidence and involvement in trading in the FX segment. It shows a strong positive link between the use of AI technologies and customer trust enhancement, mainly through protection and risk management. Furthermore, AI systems show great promise in guaranteeing legal compliance, which further enhances platform credibility. Nonetheless, the findings of the study demonstrate that Artificial Intelligence plays a significant role in building a secure and trustworthy trading environment that is compulsory for the continuity of customer loyalty.

The implications of this study are as follows. This study presents practical recommendations for practitioners on how to integrate AI systems into their organizations' cybersecurity and compliance measures. Policymakers would especially understand from the results that more effort should be put into formulating strong policies and guidelines that support AI, while simultaneously integrating it while at the same time dealing with related issues.

Further research should analyze the time effect, compare the effectiveness of AI security systems in different countries, and examine other novel forms of AI, such as AI, to address the topic of explainability. Future studies should extend the lifespan of customer retention and satisfaction with the use of AI security systems, compare cross-region adoption, and examine newer forms of AI such as explainable AI.

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