IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 12, May 2025
Impact Factor: 7.67

The Efficacy of Multifactor Authentication in Mitigating Digital Fraud in Contemporary Cyber Environments

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Abstract: *Digital fraud poses a particularly serious risk to the commercial, governmental, and financial sectors. With the growth of digital ecosystems, sophisticated cyberattacks are becoming more frequent. The importance of Multifactor Authentication (MFA) as a first line of defence in modern cybersecurity systems is examined in this paper. Even in situations when credentials are compromised, MFA dramatically lowers the likelihood of unwanted access by requiring two or more verification factors—knowledge, possession, and inherence. This study shows that MFA implementation can result in a significant drop in fraud instances by closely analysing actual data, case studies, and security models; some businesses estimate a reduction of more than 60% after adoption. The study highlights the benefits and drawbacks of various MFA techniques, including biometrics, token-based systems, and app-generated one-time passwords. Additionally covered are significant problems including user resistance, implementation expenses, and new threat vectors like SIM swapping and biometric spoofing. As potential future improvements to MFA, emerging trends like passwordless access models supported by AI and cryptographic approaches and adaptive authentication are examined. According to the findings, MFA must be integrated as a fundamental component of secure digital infrastructure rather than just as an add-on, given the growing regulatory requirements and user expectations for privacy and trust..*

Keywords: Multifactor Authentication (MFA), Cybersecurity, Digital fraud, Biometrics, Adaptive authentication

DOI: 10.48175/IJARSCT-27825