

Modern Information Security Management and Digital Technologies: A Comprehensive Approach to Data Protection

Authors : Mahshid Arabi

Abstract : With the rapid expansion of digital technologies and the internet, information security has become a critical priority for organizations and individuals. The widespread use of digital tools such as smartphones and internet networks facilitates the storage of vast amounts of data, but simultaneously, vulnerabilities and security threats have significantly increased. The aim of this study is to examine and analyze modern methods of information security management and to develop a comprehensive model to counteract threats and information misuse. This study employs a mixed-methods approach, including both qualitative and quantitative analyses. Initially, a systematic review of previous articles and research in the field of information security was conducted. Then, using the Delphi method, interviews with 30 information security experts were conducted to gather their insights on security challenges and solutions. Based on the results of these interviews, a comprehensive model for information security management was developed. The proposed model includes advanced encryption techniques, machine learning-based intrusion detection systems, and network security protocols. AES and RSA encryption algorithms were used for data protection, and machine learning models such as Random Forest and Neural Networks were utilized for intrusion detection. Statistical analyses were performed using SPSS software. To evaluate the effectiveness of the proposed model, T-Test and ANOVA statistical tests were employed, and results were measured using accuracy, sensitivity, and specificity indicators of the models. Additionally, multiple regression analysis was conducted to examine the impact of various variables on information security. The findings of this study indicate that the comprehensive proposed model reduced cyber-attacks by an average of 85%. Statistical analysis showed that the combined use of encryption techniques and intrusion detection systems significantly improves information security. Based on the obtained results, it is recommended that organizations continuously update their information security systems and use a combination of multiple security methods to protect their data. Additionally, educating employees and raising public awareness about information security can serve as an effective tool in reducing security risks. This research demonstrates that effective and up-to-date information security management requires a comprehensive and coordinated approach, including the development and implementation of advanced techniques and continuous training of human resources.

Keywords : data protection, digital technologies, information security, modern management

Conference Title : ICCSPS 2025 : International Conference on Computer Science, Programming and Security

Conference Location : Toronto, Canada

Conference Dates : February 11-12, 2025