Proactive insider threat management to prevent leakage of confidential information in high-tech industries*

Hyun-Che Song, Hye-In Lee, and Il-Gu Lee

Sungshin Women's University, Seoul, Korea
{ssongzz, lhynee, iglee}@sungshin.ac.kr

Abstract

As insider threats are a major cause of security incidents, preventive measures at the hiring stage are essential. This paper proposes methods for managing insider threats during recruitment by assessing candidates' reliability and compliance through background checks and security awareness interviews. Additionally, collaboration with HRM (Human Resource Management) for security training can help prevent insider threats and protect core assets.

Keywords: Industry Security, Insider threats, Human Resources Management

1 Introduction

Between 2013 and 2018, South Korean SMEs (Small and Medium Enterprises) lost approximately 800 billion won due to insider-related technology leaks. Furthermore, a 2015 Vometric survey showed that 93% of IT (Information Technology) managers considered insider threats the most serious risk and detecting them is increasingly difficult [1]. Insiders have access to core technologies, making leaks particularly damaging [2]. Therefore, this paper aims to present strategies for preventing insider threats during the hiring process and to highlight the critical roles that HR departments can play in these efforts.

2 Management of Insider Threats in the Hiring Process

Managing insider threats is critical to safeguarding core technologies. Essential measures include conducting background checks and security interviews. Background checks verify candidates' history and reliability, while security interviews assess their understanding and commitment to data protection and confidentiality. These processes help identify suitable candidates aligned with a security-conscious culture.

2.1 Background Check

Background checks cover criminal records, credit history, and career verification. These help organizations evaluate candidates' reliability and mitigate potential insider threats early. Table 1 outlines background check types and the risk factors they reveal.

* Proceedings of the 8th International Conference on Mobile Internet Security (MobiSec'24), Article No. P-58, December 17-19, 2024, Sapporo, Japan.

Type of Background Checks	Risk Factors
Criminal Record.	Criminal record, illegal activities, intellectual property infringement, data breach, verification of cybercrime history.
Credit Investigations	Identifying potential insider threat due to financial issues and debt.
Career Verification	Verification of previous job performance and attitude, and the level of security awareness (compliance with security policies, data management practices, etc.).
Authenticity Verification	Verification of the applicant's reliability (education, certifications, achievements, etc.).

Table 1: Background Check Types and Risk Factors

2.2 Security Interview

Security interviews test candidates' understanding of security policies and willingness to comply. Some companies evaluate applicants' familiarity with security protocols, helping identify individuals who can implement the organization's policies. Table 2 lists sample questions and evaluation criteria for security awareness interviews.

Questions	Evaluation Criteria
What do you think is the most important principle in our organization's data security policy?	Understanding of Data Security Principles.
What precautions should be taken when handling confidential information?	Understanding of Confidential Information Security Guidelines.
What are the response procedures in the event of a security incident?	Understanding of Security Incident Response Procedures.
What appropriate measures should be taken when storing research data on an external USB drive?	Situational Awareness, Willingness for Security Practices
What should be done if a colleague accidentally leaves a confidential document printed on their desk?	Situational Coping Ability, Awareness of Security Importance
What appropriate measures should be taken when storing research data on an external USB drive?	Ethical Awareness, Attitude of Compliance with Security Rules

Table 2: Security Awareness Interview Questions and Evaluation Criteria

3 Insider Threats and the Role of HRM

HRM should lead background checks, security interviews, and security training during the hiring process. Incorporating research security training early on raises awareness of security policies. Through simulations and mandatory security sessions, HRM can ensure candidates are well-versed in security protocols, reducing insider risks [3].

4 Conclusion

HR is critical in preventing insider threats by thoroughly evaluating candidates' security awareness and compliance during the hiring process. Background checks and security interviews help select individuals capable of adhering to research security policies. Continuous training, practical exercises, and monitoring should follow after hiring to sustain high-security standards. Future research will focus on enhancing security strategies across all stages of the hiring process, including post-hire procedures.

Acknowledgement

This work is supported by the Ministry of Trade, Industry and Energy (MOTIE) under Training Industrial Security Specialist for High-Tech Industry (RS-2024-00415520) supervised by the Korea Institute for Advancement of Technology (KIAT), and the Ministry of Science and ICT (MSIT) under the ICAN (ICT Challenge and Advanced Network of HRD) program (No. IITP-2022-RS-2022-00156310) supervised by the Institute of Information & Communication Technology Planning & Evaluation (IITP).

Reference

[1] Vometric Data Security. (2015). 2015 VOMETRIC INSIDER THREAT REPORT.

[2] Kim, Yang-Hoon. (2014). A Study on the Correlation Between Core Technology Leakage and Security Levels: Focusing on Technology Leakage in Small and Medium-sized Enterprises. Korean Journal of Industrial Security, 4(1), 97-108.

[3] Kang, Hyun. (2024, May). The Relationship Between HR Department Activities for R&D Personnel and Organizational Trust in Industrial Security: The Mediating Effect of Formal Training. Journal of Humanities and Social Sciences Research, 32(2), 91-115