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Risk Assessment Quantification for Bring Your Own Device Based on Practical Viewpoints

Teruo Endo [*], Shigeaki Tanimoto [†], Motoi Iwashita [†],
Toru Kobayashi [‡], Hiroyuki Sato [§], Atsushi Kanai [**]

Abstract

In recent years, the companies which introduce Bring Your Own Device (BYOD) which utilizes a personal smart phone and tablet for business are increasing in number. However, there are risks, such as information leakage of business information, an employee's personal information, etc., for the private terminal utilization instead of business use. These risks were exhaustively identified in our previous study, but based on qualitative assessment results. In order to make risk countermeasures more realistic, further quantitative evaluation is needed. Therefore, in this paper, we have added new cost risk factors for BYOD from a practical viewpoint to the risk analysis results of previous study. Furthermore, based on the results, a quantitative evaluation was conducted to verify its effectiveness. For the evaluation, the risk factor values were estimated using a risk calculation formula used in the field of information security management systems (ISMS). Thus, the combined effect of the BYOD risk measures proposed in the previous study and the cost risk measures added in this study clarified that it was possible to reduce the risk by about 56%. The results of this quantitative risk assessment are expected to help make the future use of BYOD safer and secure for companies.

Keywords: BYOD, Risk Assessment, Risk Breakdown Structure, Risk Matrix, Risk Value

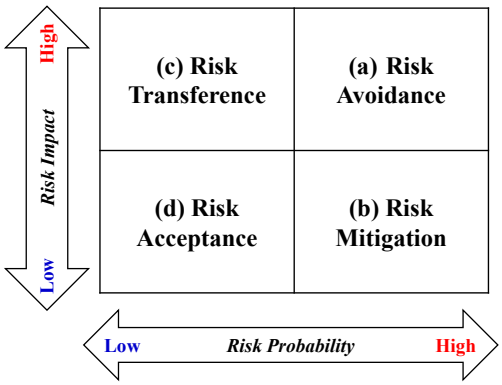
1 Introduction

In recent years, the technology of personal mobile devices has advanced rapidly, especially smart phones. Smartphones can now be used not only for phone calls and e-mails, but also for installing applications and adding and deploying functions according to one's preferences. In other words, it has the functions of both a personal computer and a mobile phone. With the rapid proliferation of smartphones, more and more companies are introducing Bring Your Own Device (BYOD), which allows individuals to use their own smartphones for business purposes [1]. In

[*] Osaka Shoin Women's University, Osaka, Japan
[†] Chiba Institute of Technology, Chiba, Japan
[‡] Nagasaki University, Nagasaki, Japan
[§] The University of Tokyo, Tokyo, Japan
[**] Hosei University, Tokyo, Japan

[10] - [11]. In this paper, we use a risk matrix method suitable for desk review to predict new security issues such as information leak protection in the use of BYOD in companies.

As shown in Fig. 2 (1), the risk matrix method classifies the risks into four categories: Risk Avoidance, Risk Mitigation, Risk Acceptance and Risk Transference, depending on the Risk Probability and the Risk Impact. Furthermore, based on this risk matrix method, a risk analysis is conducted using the template in Fig. 2 (2). The results of the analysis using this template for the 31 risk factors extracted in Table 1 are shown in Table 2.



(a) Risk Avoidance: A risk is avoided, and alternatives are shown.

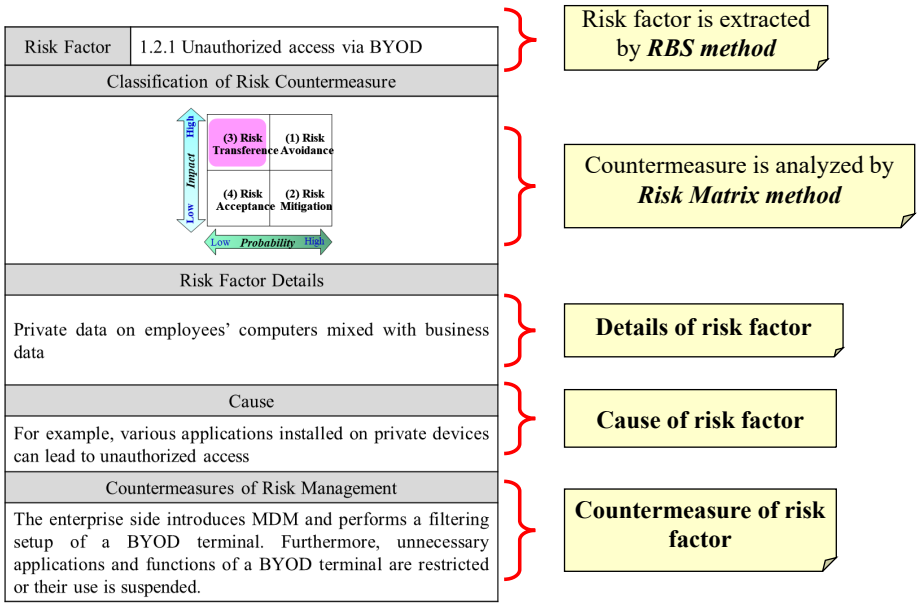
(b) Risk Mitigation: Decrease the risk to an acceptable level.

(c) Risk Transference: Transfer a risk to a 3rd party.

(d) Risk Acceptance: Accept a risk unconditionally.

Risks are classified in accordance with the risk impact and risk probability. Countermeasures corresponding to each are as follows.

(1) Risk Matrix: 2-dimensional analysis



(2) Template of Risk Analysis

Figure 2: Risk matrix method and analysis template