Securing Higher Education Institutions in the Fourth Industrial Revolution: Developing a Cybersecurity Risk Management Framework in Malaysia*

WAN DAUD Wan Norhayate

BALLA Moussa Dioubate

ZAINOL Fakhrul Anwar

SALLEH Fauzilah
(Faculty of Business and Management, Universiti Sultan Zainal Abidin, MALAYSIA)

HILMI Mohd Faiz
(Pusat Pengajian Pendidikan Jarak Jauh, Universiti Sains Malaysia, MALAYSIA)

LEE Ooi Hai

Edustats Solutions, MALAYSIA

Correspondence should be addressed to: WAN DAUD Wan Norhayate; wnhayate@unisza.edu.my

Abstract

In the context of the fourth industrial revolution, higher education institutions offer a complex, compelling, and exciting opportunity to positively transform society. However, the use of cyber-attacks on various aspects of universities' operating systems has become a cause for concern. This is attributed to the emergence of new approaches, modified frameworks, and increasingly sophisticated information technology (IT) infrastructure, which may pose unknown risks. The objective of this research is to identify the current cyber security risk management framework employed by Malaysian higher learning institutions and examine its impact on university performance. Hence, the first goal is to identify the most recent frameworks for cybersecurity risk management suitable for higher education institutions aligned with Industry 4.0. The second objective involves proposing a comparative study plan that will facilitate the development of an appropriate cybersecurity risk management framework for higher education in Malaysia. To accomplish these objectives, a qualitative methodology was employed, utilizing in-depth interviews and focus group discussions. The research findings reveal a suitable cybersecurity risk management framework for higher education in Malaysia. Consequently, a new and relevant cybersecurity risk management framework based on Industry 4.0 has been formulated for higher education in Malaysia. This study serves as a valuable reference for stakeholders and policymakers involved in the development of a cybersecurity risk management framework specifically tailored to higher education in the country. Additionally, it enhances understanding and knowledge of the cybersecurity risk management framework. The future direction of this study involves proposing a
cybersecurity risk management framework based on an evaluation of the current frameworks utilized by Malaysian universities.

Keywords: Cybersecurity, Cybersecurity risk management framework, Industry 4.0, Higher Education Institutions