Information Security Risks, Vulnerabilities and Threats in IR 5.0

Rabiah Ahmad*

Information Security Forencis and Networking Research Group (InFoRsNET) Fakulti Teknologi Maklumat dan Komunikasi, Universiti Teknikal Malaysia, Melaka.

Abstract

Recent information technologies are able to facilitate the transformation of traditional administrative processes to services which can be performed online. The rapid growth of ICT is proved to be aligned with its application for the 4th Industry Revolution. Today, information security has become a vital entity to most organizations due to current trends in information transfer through a borderless and vulnerable world. The concern and interest in information security is mainly due to the fact that information security risk analysis (ISRA) is seen as a focal method not only to identify and prioritize information assets but also to identify and monitor the specific threats that an organization induces; especially the chances of these threats occurring and their impact on the respective businesses. Thus, a total of 18 years research in Information Security were conducted, and their findings were gathered and analysed meticulously. Most of the research were particularly focusing in exploring the various aspect of security threats and its countermeasure through empirical researches, tool development, systematic literature review and dynamic analysis impacted from theoretical knowledge development to its implementation growth in Organization. Our reviews suggested that risks analysis demand critical and deep research to make sure they are able to introduce effective security counter measure. Our research focused on critical information infrastructure such as Healthcare, Power System and Manufacturing. One of the study, we applied empirical study to categorize threats and calculate risks for Healthcare system. In addition to that we developed tool using Machine Learning to explore various type of risks categories using the same dataset. In other cases our research explored information requirements needed for SME based company in implementing risk analysis and comply with standard. With the same objectives i.e., to introduce effective security counter measure, we explored different methods for analyzing risks, vulnerabilities and threats using survival analysis. We further explored those parameters at critical sectors such as Oil& GAS and Manufacturing. For this, terms used are slightly different yet aim/intention/ motive almost similar. The research finding explored Cyber Terrorism and its impact to critical system. Our come concluded that Cyberterrorism required advanced technology for protection. The protection system should incorporated latest technology, expert, and systematic process. Our proposed safeguards for cyber terrorism activities comply with international standard ISO 27100. Complexity in performing risks analysis is due to various type of data i.e., either qualitative or quantitative or both. Most of risk analysis tools in the market only allow single type of data to be analysed. Therefore, in order to facilitate this issue we explored and introduced techniques that allow both type of data to be treated as one. As a conclusion from the 18 years research in Risks, Vulnerabilities and Threats Analysis in Information Security involved with various type of platform, software, hardware, middleware and Cyber Physical System. Those technologies rapidly growth and backbone for Industry Revolution 5.0.

Biography

I'm a driven Doctoral Researcher, a Global Health professional with expertise in Infectious diseases & Antimicrobial Stewardship. A Global Outreach Contributing Member of American Society for Microbiology (ASM) and a member of the African Society for Laboratory Medicine (ASLM). A diligent and innovative individual with over 7 years of a broad range of unique experiences both with university-based and clinical researchers. Specifically, my previous role as a research assistant working on an internationally-funded one-health based surveillance and in my current role on AMR enteric pathogens enabled me to hone my laboratory, analytical, and data management skills. I am increasingly developing advanced knowledge and transferable research skills. I am also skilled in biological and biochemical assay development, Epidemiology, Molecular biology, and gene expression profiling. Possess the cultural competence and the interpersonal skills to function effectively in a multi-cultural and multidisciplinary team. Specialties: Infectious Diseases, infection control, antimicrobial resistance, antimicrobial stewardship, and public health surveillance.

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