EVALUATION OF INFORMATION SECURITY RISKS OF E-LEARNING SYSTEMS: A CASE STUDY ON UUM LEARNING ZONE

A project submitted to the Graduate School of Information Technology

College of Arts and Sciences

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In partial fulfillment of the requirement for the degree of

Master of Science in Information Technology

by

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ABSTRAK

Projek ini dijalankan dengan bertujuan untuk mengenal pasti keselamatan yang berisiko dalam Sistem ‘*E-Learning*’ di UUM ‘*Learning Zone*’ dengan menggunakan kaedah ‘*OCTAVE Allegro*’. Dengan itu, para kakitangan di Pusat Komputer dari Universiti Utara Malaysia(UUM) telah menjadi golongan yang penting dalam proses pengumpulan data untuk projek ini. Semua keselamatan berisiko yang berkaitan dengan Sistem ‘*E-Learning*’ akan diramalkan dan dikelaskan berdasarkan kaedah ‘*OCTAVE Allegro*’. Sebenarnya, kaedah tersebut mengutamakan maklumat aset dalam konteks dengan cara-cara maklumat digunakan, tempat maklumat disimpan, diangkut dan diproses dan juga akibat daripada maklumat didedahkan dengan pelbagai ancaman, serangan dan gangguan. Selain itu, projek ini juga menunjukkan kesemua lapan langkah dalam empat peringkat dengan terperinci dalam kaedah ‘*OCTAVE Allegro*’. Tambahan pula, penerangan berlanjutan yang berhubungan dengan kaedah ‘*OTAVE Allegro*’ turut serta dalam laporan ini. Selain itu, dapatan dari projek ini seperti kemungkinan ancaman yang berlaku pada masa depan dijangka akan memberi manfaat kepada pihak pengurusan di Pusat Komputer, UUM supaya mempunyai pemikiran yang mendalam terhadap keselamatan maklumat yang berisiko di ‘*UUM Learning Zone*’.

ABSTRACT

This project is conducted with the purpose of identifying security risks associated with E-Learning Systems in UUM Learning Zone by using OCTAVE Allegro. To narrow down the scope of the project, Computer Centre staffs from Universiti Utara Malaysia (UUM) are targeted. The information security risks of E-Learning Systems will be predicted and classified based on OCTAVE Allegro approach by focusing primarily on information assets in the context of how they are used, where they are stored, transported and processed and how they are exposed to threats, vulnerabilities and disruptions as a result. This project will show the OCTAVE Allegro approach which consists of eight steps that are organized into four phases. Detail descriptions of the OCTAVE Allegro methodology applied is also included in the report. The findings of the project such as highlighting the possible security risks are expected to provide UUM's Computer Centre management an in-depth view on the information security risks in UUM Learning Zone.

Keywords: *OCTAVE Allegro, Learning Zone, Universiti Utara Malaysia (UUM), Information Security Risk Management*

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LIST OF ABBREVIATIONS

ALE	Annual Loss Expectancy
CCTA	Central Computer & Telecommunications Agency
CERT/CC	CERT Coordination Centre
CMS	Course Management System
CORA	Cost-Of-Risk Analysis System
CRAMM	CCTA Risk Analysis & Management Method
ICT	Information and Communication Technology
ISM	Information Security Management
IST	Information Security Technologies
IT	Information Technology
LMS	Learning Management System
OCTAVE	Operationally Critical Threat, Asset & Vulnerability Evaluation
SCORM	Sharable Content Object Reference Model
SOL	Single Occurrence Losses
UK	United Kingdom
UML	Unified Modeling Language
UUM	Universiti Utara Malaysia
VLE	Virtual Learning Environment

CHAPTER 1

INTRODUCTION

This chapter starts with discussing the background of the study by quoting some facts obtained from the journals and local newspapers. It is followed by the problem statement, the objectives of the study and the significance of the study. The scope and the limitation of the study are also included in this chapter.

1.1 Background

In this new millennium, the global society is living in the electronic environment and age where surrounded with various of electronic transactions such as, e-learning, e-banking, e-commerce and e-mail. These transactions have become very prominent and significant.

Information security risk in E-Learning system is a topic that has become increasingly significant in the new era especially at schools, colleges, universities and other learning institutions. An information security risk is defined as any possible threats that use vulnerability in the system of an organization to cause disruption to the organizational routines and processes in some or the other form. The threats are able to lead to a loss of any form to an individual or an organization. For example, such losses can be included loss of privacy, identity theft, financial loss, negative impact on customer relations, loss or damage of confidential data or information, or a loss in profitability.

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