

**CYBERSECURITY AWARENESS AMONG YOUTH
IN BRUNEI DARUSSALAM**

BY

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**A dissertation submitted in fulfilment of the requirement for
Master of Protective Security Management**

**Kulliyyah of Information Communication Technology
International Islamic University Malaysia**

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ABSTRACT

Cybersecurity is vital in the modern era as more and more people, especially youth are using gadgets and the internet for many purposes such as working, learning, business, and entertainment, particularly during and post Covid-19 pandemic. Due to the cybersecurity cases involving youth, it shows that some youth does not know how to utilize cybersecurity to protect them from becoming victim of cybercriminals but also facing other cyber safety and security issues and challenges that are not considered as crimes. There are a lot of cases where children and youth become victims of cybercrimes due to their lack of awareness or knowledge about cybersecurity. For example, using similar passwords for all their social media accounts or using public Wi-Fi that is not password protected. This research aims determine the level of cybersecurity awareness among youth and proposes a module for cybersecurity awareness programs in Brunei Darussalam. This research used qualitative method and semi structured interview to obtain data. For the recruitment of participants, convenience and purposive sampling are used together. The outcome of the findings has led to the creation of four central themes: 1) Knowledge on cybersecurity 2) Behavior in cybersecurity 3) Security measures in protecting devices, information, and online activities and 4) Preferred method in delivering security knowledge and awareness. Based on our findings, the youth in Brunei Darussalam are actually aware of cybersecurity even though most do not have IT background. However, the youth still need to be reminded and update their cybersecurity knowledge. This is because technology evolves now and then, the same goes for threats. Therefore, it is recommended that Brunei government agencies, NGOs and private institutions must find a suitable and effective methods of delivering cybersecurity knowledge.

ملخص البحث

الأمن الإلكتروني أمر حيوي في العصر الحديث حيث يتزايد عدد الأشخاص، خاصة الشباب، الذين يستخدمون الأجهزة الإلكترونية والإنترنت لعدة أغراض، مثل العمل والدراسة والأعمال التجارية والتسلية، ولا سيما أثناء جائحة كورونا-19 وبعده. ولكن الشباب لا يعرف كيفية حماية أنفسهم من الجرائم الإلكترونية. وهناك الكثير من الحالات التي أصبح الشباب ضحايا للجرائم الإلكترونية بسبب قلة الوعي أو المعرفة بالأمن الإلكتروني. مثل استخدام كلمات المرور المماثلة لجميع حساباتهم في الوسائط الإجتماعية أو استخدام الشبكات اللاسلكية العامة التي لا تحمي كلمات المرور. يهدف هذا البحث إلى تحديد مستوى التوعية بالأمن الإلكتروني في أوساط الشباب واقتراح نموذج لبرامج التوعية بالأمن الإلكتروني في بروناي دار السلام. استخدم هذا البحث الأسلوب الكيفي والمقابلة شبه المنظمة للحصول على البيانات. لاختيار المشاركين، استُخدمت العينات الملائمة والهادفة معا. أدت حصيلة النتائج إلى إنشاء أربعة من المواضيع الرئيسية: (1) المعرفة المتعلقة بالأمن الإلكتروني (2) التعامل بالأمن الإلكتروني (3) التدابير الأمنية في حماية الأجهزة والمعلومات والأنشطة الإلكترونية (4) والأسلوب المفضل في تقديم المعارف والتوعية الأمنية. استنادا إلى النتائج، فالشباب في بروناي دار السلام في الحقيقة واعٍ بخصوص الأمن الإلكتروني على الرغم من أن معظمهم لا يعملون في مجال تكنولوجيا المعلومات. لكن، لا يزال الشباب بحاجة إلى تذكيرهم وتجديد معارفهم المتعلقة بالأمن الإلكتروني. وهذا لأن التكنولوجيا تتطور بين فينةٍ وأخرى والأمر نفسه ينطبق على المخاطر الإلكترونية. ولذلك، ينبغي على الوكالات الحكومية والمنظمات غير الحكومية والمؤسسات الخاصة في بروناي إيجاد طريقة مناسبة فعالة لتقديم المعرفة المتعلقة بالأمن الإلكتروني.

APPROVAL PAGE

I certify that I have supervised and read this study and that in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Master of Protective Security Management

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DECLARATION

I hereby declare that this dissertation is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

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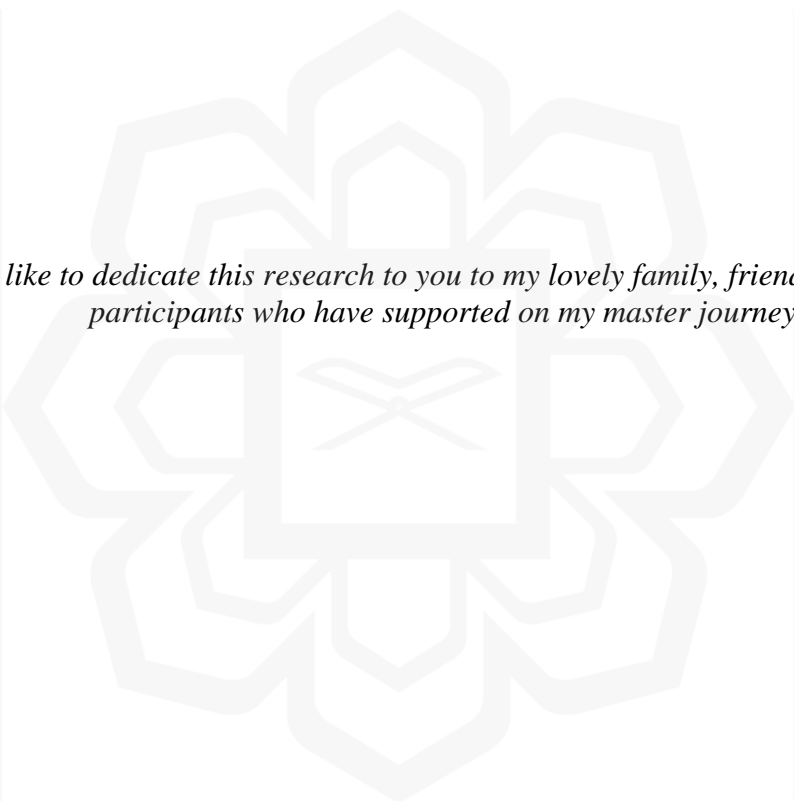
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I would like to dedicate this research to you to my lovely family, friends and research participants who have supported on my master journey.

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Alhamdulillah, after 2 semesters of doing my dissertation has come to an end. I'm very thankful to Allah S.W.T for easing my journey in completing my master's degree. There are many challenges I faced in completing my dissertation and one of it is infected by Covid19 which affect me awhile due to its post covid symptoms. I would like to give my gratitude and appreciation to people who have help me throughout my master's degree. May Allah reward all of you. I will be forever grateful

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Picture 1.1 Post made by BruCERT in Facebook

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LIST OF ABBREVIATIONS

ASEAN	Association of Southeast Asia Nation
BNM	Bank Negara Malaysia
BRUCERT	Brunei Computer Emergency Response Team
CSB	Cyber Security Brunei
IBTE	Institute of Brunei Technical Education
MTIC	Ministry of Transport and Info- communications
S.E.A	Southeast Asia
UTB	University Technology Brunei



CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND STUDY

In the modern world, most people use laptops, computers, and smartphones in their everyday lives for different purposes such as communication, work, and entertainment. It is because these gadgets help people to be more efficient in terms of organizing their work and save their time when working.

Based on a survey gathered by Johnson (2022), it was found that 32% of internet users worldwide are between the age of 25-34 years old, whereas 18% are between 18-24 years old. By adding both percentages, the youth represent the majority of internet users worldwide. In terms of social media, a statistic gathered in 2021 by a global software company that provides social media analytics for enterprises, brands and agencies called Khoros (2022) found out that 86% of the people around the world who use Facebook are between the age of 18-29 years old. It is similar to Instagram and Twitter but lower, 67% and 38% respectively.

According to Kemp (2022), 10.9% of Brunei's population is between 18-24 years old and 16% is between 25-34 years old. Furthermore, in February 2022, 99% of the Brunei population used social media (Statista,2022). This statistic clearly shows that youth are active in terms of using gadgets for social media and surfing the internet.

Despite all the benefits of using gadgets, unfortunately, it can also pose different types of risks to its users especially people dependent on them. In general, risks of cyber threats that the youth is experiencing all around the world include getting spammed, hacked, phished, ransomware, infected with malware, cyber bullying and clicking fake URLs which lead to giving out personal information to hackers (Finkelhor, 2011 & Lopez, 2016). Brunei is not an exception in this matter

as it is reported that cybercrime increased by 39% in 2018. Hence, it raises serious concerns for the country (Bakar, 2020).

Recently, Covid19 impacted almost every country worldwide, not only in terms of health but also economics and society. Furthermore, it also forced people to carry out their activities virtually or online at home namely doing their work, studying and conducting business in order to contain the widespread virus. Due to this, cybercriminals see this as an opportunity to exploit vulnerable people, including youth, especially those who lack basic cybersecurity knowledge. According to a Crime Survey, evidence in England and Wales, a total of 4.6 million fraud and computer misuse offences were reported at the end of March 2021, which is a 24% increase compared to in 2020 (White, 2021).

This research focused on cybersecurity awareness among youth in Brunei Darussalam. Every country has its definition and age range for 'youth'. In the case of Brunei Darussalam, this research adopted the definition of National Youth Policy of Brunei Darussalam that describes youth as young men or women from 15-40 years old. (Ministry of Culture, Youth and Sports of Brunei Darussalam, 2015).

It is a significant challenge to tackle cybersecurity issues among youth as relevant authorities might lack the resources required to provide adequate cybersecurity awareness programs (ENISA,2021; Eva N. & Basie S.V, 2020). Additionally, it needs to be reminded that this kind of program addresses the youth all over the country, not only in an organization.

By looking at the statistics of cybercrime cases that kept increasing, especially during the Covid19 pandemic, as well as referring to the high number of active users among the youth. This dissertation aims to conduct a study on the cyber security awareness among youth in Brunei Darussalam. So, it would be easier to understand problems faced by the youth and create proper module or programs on cybersecurity awareness.

1.2 PROBLEM STATEMENT

The people in Brunei Darussalam are active in using social media and it has been ranked as one of the highest users based on population (Kemp,2021; The Star, 2022). According to the article "Brunei world number two in Instagram usage", as

of January 2021, the Instagram users in Brunei are 70.5% of the population, making Brunei the second-highest Instagram user in the world. This statistic was obtained from the annual Digital Report by We Are Social and Hootsuite.

Besides that, Brunei was reported to rank 10th in terms of the number of Facebook users, with 89% or 310,000 of the total population. Furthermore, in terms of social media use, Brunei came second behind Qatar with 410000 or 94% of users in 2021. Also, social media users are 13 years old and above (Othman,2021). People use different applications on their smartphones for various reasons. However, using social media still takes half of the people's time when using smartphones. Additionally, the amount of time people spend online has increased as the average time spent on the internet is 7 hours per day on all types of devices (Othman,2021). In Brunei Darussalam, the number of internet users is 417500 as of January 2021 with an increase of 1.1% or 4488 users from 2020 (Kemp, 2021). This statistic shows that Brunei has a high internet penetration rate which means almost all people in Brunei Darussalam have access to the internet. Among the people, 10.9% are between 18-24 years old and 16% are 25-34 years old (Kemp,2022).

This study focuses on youth because they are the future generation that would shape Brunei Darussalam in terms of social, political, and economical. Furthermore, Brunei government has introduced the Digital Economy Master plan 2025, whose mission is "To drive and enhance Brunei Darussalam's socio-economic growth through Digital Transformation" (Othman, 2020). Therefore, they need to be equipped with sufficient knowledge about cybersecurity to protect themselves while moving towards achieving this mission. Their skills also need to be constantly updated to keep up with the fast-evolving technology. The most important task is to become an agent who spreads awareness to others.

A Cybercrime report in 2017 by the Criminal Investigation Department of the Royal Brunei Police Force stated that the number of cybercrime victims has increased from 190 in 2016 to 207 in 2017. Out of 207 victims, 123 or 59% of their age between 18-35 years old. These statistics show that Brunei's youth are more susceptible to cyberattacks (Chuchu & Gafur, 2018). Additionally, Hj Mas Zuraime Hj Abdul Hamid, a BRUCERT chief, stated that BRUCERT, an agency that handles cybersecurity threats, has reported 2,976 cyberattacks in 2018 compared to 2,143 cases in 2017 (Bakar, 2020).

Furthermore, Pehin Suyoi bin Haji Osman, the former Minister of Education, stated that the rapid development of social media might raise serious challenges, especially for those who abuse social media that can harm a person or organization (Chuchu & Gafur, 2018). There is a lack of studies in Brunei Darussalam that touch on the issue of cybersecurity awareness in children, youth, or the elderly. If this trend continues, it would be tough to handle these issues as the primary root causes are not adequately identified.

There is a concern on whether users, especially the youth between 20-34 years old in Brunei Darussalam, have proper awareness or enough knowledge in cybersecurity to protect themselves from cyberattacks. Thus, this research attempts to study the current state of cybersecurity awareness among youth aged 20-34, mainly by getting their comment and feedback on suitable methods to deliver cybersecurity knowledge among their age population and propose a cybersecurity module based on the research findings.

1.3 AIM OF STUDY

This research investigates the current state of cybersecurity awareness among youth in Brunei Darussalam. Additionally, the nature of cyber threats constantly changes from time to time as technology advances and evolves. Knowing the current state of Brunei youth cybersecurity knowledge and awareness is essential; the issue can be addressed with suitable solutions.

At the current moment, current preventive measures are still insufficient to protect users from cybercriminals by looking at statistics of cyber victims mentioned above. Therefore, knowledge and awareness of cybercrimes should be enhanced to lessen the number of victims.

1.4 RESEARCH OBJECTIVES

The study aims to achieve the following objectives:

1. To explain the current cybersecurity awareness among youth in Brunei Darussalam.
2. To propose a module for cybersecurity awareness program for youth in Brunei Darussalam.

1.5 RESEARCH QUESTIONS

1. What is the current state of cybersecurity awareness among the youth in Brunei Darussalam?
2. How cybersecurity awareness program should be design for youth in Brunei Darussalam?

1.6 RESEARCH CONTRIBUTIONS

This study provides a significant impact on identifying the current level of cybersecurity awareness among youth aged 20-34 years old in Brunei. It also helps propose a suitable module for cybersecurity awareness programs among youth aged 20-34. The youth can share the knowledge obtained from the cybersecurity awareness program with their family and friends to help reduce the number of cybercrime cases.

Since youth are active in using social media and the internet, it is crucial to have sufficient knowledge in cybersecurity. This ensures that youth between 20-34 years old can be protected.

In addition, the topic of cybersecurity awareness is less explored in Brunei Darussalam. This research can assist in initiating or even continuing to expand studies related to cybercrimes. It is also to understand why cybercrimes are rising in Brunei and to provide possible solutions in encountering them. Other than that, it can also help to know how to counter cybercrime and create exciting and creative ways to improve awareness of cybersecurity among the youth 20-34 years old.

1.7 DEFINITIONS OF TERMS

Youth

The National Youth Policy of Brunei Darussalam determine that Youth is young men and women that age between 15 – 40 years old. Nonetheless, as for youth leader, there is no age limit (Ministry of Culture, Youth and Sports of Brunei Darussalam, 2015)

Cybercrimes

Refers to activity which is unauthorised that target computer network that may causes damages. Many cybercrimes that are being committed by cybercriminals

aim to make financial gains which can be executed by an individual or group. Certain cybercriminals that have enough resources and expertise use advanced techniques with exceptionally technical skills compared to other cybercriminals (Kaspersky, 2021)

Cyberattack

It refers to an attack usually via cyberspace that targeted individual or organization. The aim is either to steal or corrupt the information or attempt to take control of software or hardware.

Cybercriminals

Refer to an individual or organization that commit illegal action by using technology with the intention to infiltrate, sabotage, monetary gains or stealing information on digital or network platform.

Social media

It is an online platform where users can share their ideas, information, knowledge, and contents with other people.

1.8 THESIS ORGANISATION

This dissertation is divided into five chapters:

Chapter 1 includes the discussion on the introduction and background of the research. It also discussed the problem statement regarding cybersecurity awareness among the youth aged between 20-34 years old. The issue of increasing internet and gadgets users but lack of cybersecurity awareness among youth is highlighted. Additionally, some research objectives and questions are designed to solve this issue. The contributions of this research are also highlighted in this chapter.

Chapter 2 the literature reviewed in this chapter discussed the definition and the standard type of cybercrime faced by youth at the current moment. Also, the awareness of youth concerning cybersecurity in the Southeast Asia region to know the current state of youth level of understanding. In this chapter, the effectiveness of cybersecurity awareness programs is also being discussed, where it includes what elements are needed to make a successful cybersecurity awareness program.

Lastly, the researcher conducted a preliminary survey to obtain an initial understanding of cybersecurity awareness among youth in Brunei Darussalam.

Chapter 3 discusses the research method that has been used for the study. In addition, this chapter includes the research ethics process of selecting participants, the data collection approach, and the data analysis procedure.

Chapter 4 presents and explains the result that were obtained from interviews. The analyzed data are divided into several theme and sub theme by using thematic analysis.

Chapter 5 discusses the answers to research questions derived from the data analysis of the interview. Furthermore, this chapter also describes the contributions made by conducting the study in terms of theory and practice. It also includes the limitations, recommendations, suggestions for future research and conclusion.

1.9 CHAPTER SUMMARY

In this chapter, the background of the study is presented and discussed. It provides an explanation regarding the cybersecurity awareness among youth in Brunei Darussalam. Furthermore, the problem statement is also being discussed. This study aims to measure or assess the youth knowledge on cybersecurity in Brunei Darussalam between the ages of 20-34 years old. Furthermore, research questions and objectives are also being mentioned in this chapter to help understand the problem discussed above. Next, the significance of the study explains how it will close the gap in improving the cybersecurity awareness of youth aged 20-34 in Brunei Darussalam. Lastly, the definition of key terms was briefly discussed.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter aims to review previous research papers on cybersecurity awareness among youth and other related topics or issues. The chapter started with a brief definition of cybersecurity. Next, it then discusses on the level of cybersecurity awareness among youth in Southeast Asia countries by looking at the previous research conducted on this topic. The main reason why Southeast Asia countries is selected due their geographical location and the similar culture shared between countries. Lastly, cybersecurity practices in Brunei Darussalam and other countries.

2.1.1 Cybersecurity

It is important to identify and understand the term cybersecurity. There are several research that has been conducted in an attempt to define cybersecurity. Hansen and Nissenbaum (2009) mentioned that in the 1990s, cybersecurity is describe as lack of security in computer networks. Furthermore, the terms cybersecurity has evolved for the past few years and different countries have its own definition of cybersecurity (Graff,2013). This research will adopt the concept of cybersecurity by Shamsi (2014), based on research done by him, it can be defined that cybersecurity is the protection of online end users and the security measures that need to be done to ensures confidentiality, integrity, and availability of an asset.

2.2 CYBERSECURITY AWARENESS AMONG YOUTH IN SOUTHEAST ASIA (S.E.A)

It is undeniable that worldwide internet usage has been growing each year as more and more people use the internet. According to Johnson (2022), the most prominent