LEVEL OF CYBERCRIME AWARENESS AMONG DIPLOMA STUDENTS DURING THE PANDEMIC OF COVID-19

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ABSTRACT

In this era of Covid-19, the lack of awareness of cybercrime among students is one of the reasons the number of cybercrime is increasing compared to before. The purpose of this study was to identify the differences in the level of cybercrime awareness among diploma students according to gender and to identify the differences in the level of cybercrime awareness among diploma students by race. In this study, the researcher has selected quantitative research in the form of a survey and the study sample is 161 diploma students from Quest International University, Ipoh, and Perak. A stratified sampling method was used in this study and the instrument used was Cybercrime Awareness Questionnaire. Quantitative data of the study were analyzed based on independent t-test statistics and one-way ANOVA test between groups using Statistical Package for The Social Science (SPSS) software. The findings of the study show that the level of awareness of cybercrime among diploma students is low. This study found that there was no difference in the level of cybercrime awareness between male and female students; $t(159) = 0.961$, $K = 0.338$. There are differences in the level of cybercrime awareness among diploma students by race; $[F(2,158) = 3.115, K < 0.05]$. This study can provide knowledge about cybercrime to students and can increase awareness about cybercrime among students.

Keywords: Cybercrime, Level of Awareness, Covid-19, Diploma Students, Gender, Race

INTRODUCTION

A total of 185 countries were affected by this Covid-19 outbreak and more than 210,000 patients died as a result of this Covid-19 (Clerkin *et al.,* 2020). This epidemic not only damaged human health but brought various problems in this world and has changed the way of human life. One of the problems that faced during the Covid-19 era was the problem of cyberattacks. Kamal *et al.,* (2020) supported this statement.

In this era of Covid-19, the number of cybercrime is increasing. During the Covid-19 outbreak, the number of cybercrime increased 5 times (Eian, 2020). The NortonLifeLock Digital Transformation Report says 15% of Australians fall victim to cybercrime in the first months of the Covid-19 outbreak

(Australia IT Brief, 2020). In Malaysia, the number of cybercrimes during the Covid-19 pandemic increased to 53.8 % compared to 2019 (MyMetro, 2020). This shows evidence of an increase in cybercrime in Malaysia during the Covid-19 pandemic. According to Astroawani (2020), cybercrime cases are increasing in Malaysia as most people carry out work using online nowadays.

Young people especially university students are the most victims of cybercrime because they frequently use the internet. Malaysian Communications and Multimedia Commission (2015), reported that as many as 62.5% of internet users are university or college students. This proves that highly educated students use the internet more than primary school students and secondary school students. The main factor of university students becoming victims of cybercrime is the lack of awareness about cybercrime. Moallem (2018), found that university students are not aware of how to protect their data. The level of knowledge about cybercrime among university students is also lower (Slusky & Navid, 2012).

The studies of Ismailova *et al.,* (2019) and Pradeep and Arjun (2018), also stated that the level of cybercrime awareness is very low among university students. Lack of knowledge and low cybercrime awareness can increase the number of cybercrime among university students. Students aged between 18 to 23 years are the most victims of cybercrime. University students aged 18 to 23 are more vulnerable to cyber threats (Rezgui & Marks, 2008). This statement is also supported by the study of Sheng *et al.,* (2010). Students aged 18 to 23 have less cybercrime awareness (Hasan *et al.,* 2015). This is the reason most students aged 18 to 23 fall victim to cybercrime. Undergraduate and postgraduate students have more knowledge and more cybercrime awareness than diploma students (Hasan *et al.,* 2015). Thus, in this study, the researcher examined the level of cybercrime awareness among diploma students aged 18 to 23 years during the Covid-19 era.

PROBLEM STATEMENT

The Covid-19 pandemic is becoming a big issue at the moment and until now has not been able to address the issue. The number of cybercrime increased in every country during the Covid-19 pandemic. This statement is supported by Ahmad (2020), who says that the number of cybercrimes doubled during the Coronavirus outbreak period and caused huge losses globally. Cybercrime is an internet criminal activity that includes information theft, disturbing an individual's emotions and hacking online bank accounts (Mohd, Senadjki & Mat, 2016).

The number of cybercrime in Malaysia has been increasing since the Movement Control Order. The Malaysian Computer Emergency Response Team (MyCERT), reports showed an increase in the number of cybercrimes by 43% compared to the previous one (Tan et al., 2020). According to Nandhini and Sheeba (2015), adolescents are the main target of cybercrime. University students are a vulnerable group in cybercrime (Nowrin & Bawden, 2018). Most victims of cyberthreats are university students and hacking of personal information is a common occurrence among university students (Quisumbing, 2019).

Lack of awareness about the crime is one of the factors in the occurrence of cybercrime among university students. University students have less awareness of computer security and less knowledge of cyberthreats (Jones & Heinrichs, 2012). Hasan *et al.,* (2015), explained that diploma students have less awareness of cybercrime compared to undergraduate and postgraduate students. Therefore, researchers have studied the level of cybercrime awareness of diploma students during the Covid-19 pandemic.

OBJECTIVE OF STUDY

a) To know the level of cybercrime awareness among diploma students during the Covid-19 pandemic.
b) Identify differences in the level of cybercrime awareness among diploma students according to gender.
c) Identify the differences in the level of cybercrime awareness among diploma students according to race.

IMPORTANCE OF THE STUDY

This Study can provide knowledge about cybercrime to students and can increase cybercrime awareness among students. The study also helps students to see the differences in the level of cybercrime awareness among students based on gender and race. From this study, the Ministry of Education Malaysia can find out the level of cybercrime awareness among university students and can take steps to increase students' awareness about cybercrime. The Ministry of Communications and Multimedia, on the other hand, can further improve cybersecurity to prevent cybercrime.

THEORY OF PLANNED BEHAVIOUR

The Theory of Planned Behavior is associated with this study because this theory is used to find out ethical behaviour and the use and compliance of computer or internet security (Ifinedo, 2012). Self-control has no direct influence on the application of protection strategies but has a direct relationship with intent. Subject norms are less important for line protection. Self-control is influenced by self-efficacy and experience using the internet.

An individual needs to control himself from becoming a victim of cybercrime and have an attitude of being aware of cyberthreats. If an individual is more towards increasing awareness and knowledge about cybercrime, cybercrime can be reduced. Furnell, Gennatou and Dowland (2002) found that individuals are unsure of what they should do to improve their cybersecurity. Lack of awareness can make them victims of cybercrime. Therefore, cybercrime awareness is important to address the issue of cybercrime. Yao and Linz (2008) analyzed online safety behaviour using the Theory of Planned Behavior framework. Among them is the need for psychological privacy, fear of cybercrime, self-efficacy and experience using the internet. Four online behaviours were also analyzed namely identifying online forms as secure, not sharing personal information to third parties, knowing privacy policies and constantly clearing memory cache.

In conclusion, the Theory of Planned Behavior is suitable for use in studies related to cybercrime awareness. The theory also explains aspects that can increase awareness of cybercrime such as attitudes, self-control and intentions.

LITERATURE REVIEW

The study of Lallie et al., (2020) analyzed cybercrime during the Covid-19 pandemic. In addition, the study of Hawdon, Party and Dearden (2020) examined cybercrime in the American nation on Covid-19. Both of these studies only focus on why cybercrime occurred and cybercrime statistics during the Covid-19 pandemic era. Awareness of cybercrime is not emphasized in both of these studies.

Kashif, Javed and Pandey (2020) conducted a study related to cybercrime in Indonesia during the Covid-19 era. This study analyzes cybercrime but does not focus on cybercrime awareness. On the other hand, Tan et al., (2020), studied cybersecurity in Malaysia during the Covid-19 pandemic. This study also less focuses on cybercrime awareness. Valli et al. (2014), said that the knowledge of cybersecurity is lacking among university students. In the U.S. Pacific Northwest, students are unable to define the term cybercrime (Sarathchandra, Haltinner & Lichtenberg, 2016). In New Zealand, students are not familiar

with cybersecurity (Tirumala, Sarrafzadeh & Pang, 2016). A study conducted on Malaysian university students found that the students lack knowledge about cyberthreats (Kirwan, Fullwood, & Rooney, 2017). The studies of Ismailova *et al.,* (2019) and Pradeep and Arjun (2018) also stated that the level of cybercrime awareness is very low among university students. This indicates that many university students are at risk of cyberthreats and less knowledge about cybercrime.

Most studies focus on undergraduate students and there are fewer studies that focus on diploma students. Among them is a study conducted by Balogun in 2019. Balogun (2019), conducted a study on cybercrime awareness among first-year undergraduate students. The level of cybercrime awareness among undergraduate students can be seen in this study. In addition, Sreehari and Abinanth (2018), conducted a study on cybercrime awareness among students in Kochi, India. The findings of the study show that most students become victims of cybercrime due to internet use in high school. Thus, there is a lack of research on cybercrime among diploma students.

Elmi (2019), elaborates on the awareness of cybercrime among university students of Mogadishu, Somalia. This study focused on diploma students as well as undergraduate students. The findings of the study show that most university students become victims of cyber threats due to a lack of awareness about cybercrime. Hasan *et al.,* (2015), conducted a study on students' perceptions and awareness of cybercrime. The sample of this study is a diploma, bachelor and master students. Both of these studies have lack clarity on the awareness of diploma students about cybercrime and only explain the awareness of cybercrime among students in general. Therefore, in this study, the researcher focused on diploma students.

METHODOLOGY

In this study, the researcher has chosen the survey study in quantitative research. In this study, the sample consisted of 161 diploma students at Quest International University, Ipoh, and Perak. Researchers used a stratified sampling method in this study. This method is made by grouping diploma students according to their respective courses. After that, the researcher randomly selected a total of 23 diploma students from each course to be the sample in this study. The instrument used to measure the level of cybercrime awareness among diploma students is the Cybercrime Awareness Questionnaire. In this study, data analysis was done using Statistical Package for the Social Science (SPSS) Statistical Version 22 (Pallant, 2013). Descriptive analysis was used to obtain the level of awareness of cybercrime among students. Descriptive analysis is used in this study to provide an overview of the study data and the data presented is easy to understand as well as provide an explanation to the people who read this study. An Independent T-test was used to identify differences in the level of cybercrime awareness among diploma students according to gender. One-Way ANOVA between Subjects was used to identify differences in the level of cybercrime awareness among diploma students by race.

ANALYSIS OF DATA

The total number of diploma students who answered the questionnaire submitted was 161 people. The total number of male students who answered the questionnaire was 82 people, which is equivalent to 50.9%. There are 79 female students, equivalent to 49.1%. The findings showed that the number of male students who answered the questionnaire was higher than the number of female students.

The number of diploma students who are 19 years old is 15 people. A total of 77 students are 20-year-old. For the age of 21, the number of students is 51 people. 18 students are aged 22 years in this study. Thus, the group of students aged 20 years is the group with a large number among the respondents

of this study. According to the races of the students, the highest percentage was Chinese students, at 44.7%. The second-highest number of students is the Indians (36.6%), followed by 18.6% of Malay students.

The highest number which is 110 diploma students have a moderate level of computer knowledge. A total of 41 diploma students have a high level of computer knowledge. A total of 10 diploma students had a low level of computer knowledge. Overall, the level of cybercrime awareness among diploma students is low. A total of 64 diploma students had a low level of cybercrime awareness, with a mean value of 2.156 and a standard deviation of 0.570. Meanwhile, a total of 54 diploma students have a high level of cybercrime awareness, a mean value of 2.204 and a standard deviation of 0.562. A total of 43 diploma students were in the intermediate category with a mean value of 2.233 and a standard deviation of 0.427.

An independent sample t-test was conducted to identify differences in the level of cybercrime awareness among diploma students according to gender. Overall, the level of cybercrime awareness of female students is higher than that of male students. There was no difference in the level of cybercrime awareness between male students (m = 71.29, sd = 4.88) and female students (m = 72.00, sd = 4.43); t (159) = 0.961, p = 0.338. Therefore, this null hypothesis is accepted. A one-way ANOVA test was conducted to identify differences in the level of cybercrime awareness among diploma students by race. The findings show that there is a difference in the level of cybercrime awareness among diploma students by race [F (2,158) = 3.115, p <0.05]. Therefore, the null hypothesis is rejected.

DISCUSSION

The findings of this study show that the level of awareness of cybercrime among diploma students is low. A total of 64 out of 161 people had a low level of cybercrime awareness. This shows that the majority of students have less awareness about cybercrime. The findings of this study are in line with several previous studies. Among them is the study of Hasan *et al.,* (2015) who said diploma students have less awareness of cybercrime. The undergraduate and postgraduate students have more knowledge and more awareness about cybercrime than diploma students.

Moreover, Ahmed *et al.,* (2019) explained that the level of cybersecurity awareness among university students including diploma students is at a low level. As many as 53.8% of university students in Bangladesh are victims of cybercrime. Cybersecurity knowledge is lacking among university students including diploma students. University students in Malaysia are unaware of cyber threats and neglect cybersecurity (Muniandy, Muniandy & Samsudin, 2017). The study concluded that university students are less aware of cybersecurity especially about cyberthreats, virus software, passwords, phishing and online fraud.

The findings of this study are also in line with the study of Gabra *et al.,* (2020) who said university students have less basic cybersecurity knowledge and become cyber victims. The study also noted that university students were less likely to manage online account passwords and quickly disclose personal information online. This study concludes university students are less aware of cybercrime.

This study found that the level of cybercrime awareness among male students (M = 71.29, SE = 4.88) and female students (M = 72.00, SE = 4.43); t (159) = 0.961, p = 0.338. This indicates that there is no difference in the level of cybercrime awareness between male and female students. Male students and female students have similar levels of cybercrime awareness. The study of Abolarinwa, Tiamiyu and Eluwa (2015) supports the findings of this study. According to Abolarinwa, Tiamiyu and Eluwa (2015),

there is no difference in the level of cybercrime awareness between male students and also female students.

Several studies do not support the findings of this study. Among them is the study of Nzeakor, Nwokeoma and Ezeh (2020), who said that there is a difference in the level of awareness of cybercrime among male and female students. The number of female students who are unaware of cybercrime is high compared to male students. As many as 91% of male students have awareness of cybercrime and as many as 88% of female students have awareness of cybercrime. Moreover, Hasan *et al.,* (2015) explained that female students are more sensitive about cybercrime and have more knowledge of cybercrime than male students. Female students know more about cybersecurity and are less likely to fall victim to cybercrime. The study also says that there are differences in the level of cybercrime among students based on gender.

The findings of the study explain that there are differences in the level of awareness of cybercrime among diploma students according to race; [$F_{(2,158)} = 3.115$, $p < 0.05$]. The level of cybercrime awareness varies according to the race of the students. There is a lack of studies that explain the differences in the level of cybercrime awareness among students according to race. One of the studies that explain the differences in the level of cybercrime awareness among students according to race is a study by Choi, Choo and Sung (2016). A study by Choi, Choo and Sung (2016), explained that there is no significant difference in the level of cybercrime awareness according to the race of students. This study has findings that contradict the findings of the researchers.

Moreover, Donner (2016), says there is less difference in the level of cybercrime awareness among students based on the race of the students. The study conducted among students abroad and examined the whites, blacks, Spaniards and other races found in the country. The findings of the study showed that there was no difference in the level of cybercrime awareness among students according to race. There is a lack of studies examining the differences in the level of cybercrime awareness among students based on the race of the students. There are also fewer studies supporting the findings of the researchers in this study. The findings of other studies differ due to the location of the study and the study conducted before the Covid-19 pandemic.

CONCLUSION

The researcher has suggested some suggestions for the next researcher. Among the suggestions is that future researchers can use the broad scope of the study by focusing on other universities or colleges available in Malaysia. Future studies could also be conducted on cybercrime after the Covid-19 pandemic. Next, future researchers can also study the factors of students having a low level of cybercrime awareness and differences in the level of cybercrime awareness based on the age of students. Other researchers can also further increase the number of respondents to obtain stronger findings. In addition, researchers can also create modules to increase the level of awareness of cybercrime among students. This module can help students to know how to increase awareness and knowledge about cybercrime.

This study also has some limitation. There is this study could not be applied to adolescents who did not continue their studies because the sample of this study was from adolescents who continued their studies. Next, the study was conducted during the Covid-19 pandemic. Therefore, the findings of this study are less suitable for use in other studies after the Covid-19 pandemic.

In conclusion, this study can provide knowledge about cybercrime to students and can increase awareness about cybercrime among students. The study also helps students to see the differences in the level of awareness of students about cybercrime based on gender and also race.

REFERENCE

Abolarinwa, O. L., Tiamiyu, M. A., & Eluwa, S. E. (2015). Computer Ethics and Security Awareness Behaviour of Tertiary Institution Students in South-Western, Nigeria, 5(3), 260–265.

Ahmad, T. (2020). Corona Virus (COVID-19) Pandemic and Work from Home: Challenges of Cybercrimes and Cybersecurity. Available at SSRN 3568830.

Ahmed, N., Islam, M. R., Kulsum, U., Islam, M. R., Haque, M. E., & Rahman, M. S. (2019). Demographic Factors of Cybersecurity Awareness in Bangladesh. In 2019 5th International Conference on Advances in Electrical Engineering (ICAEE), 685-690.

Astro Awani (2020). Hampir 5,000 jenayah siber tahun ini. Access 20 November 2020 at https://www.astroawani.com/beritamalaysia/hampir-5000-jenayah-sibertahun--ini-senarai-kawalan-kendiri-untuk-anda-241964

Australia IT Brief (2020). Australian cybercrime on the rise during COVID lockdown. Access on 20 November 2020 di https://itbrief.com.au/story/australian-cyber-crime-on-the-rise-during-covid-lockdown

Balogun, O., Hinmikaiye, J., Adegbenle, A. A., Oyebode, A. A., Akinshola, J., & Nzenwata, U. J (2019). An Analysis of Cybercrime Awareness Amongst First-Year Students in Nigerian Private University.

Choi, K. S., Choo, K., & Sung, Y. E. (2016). Demographic variables and risk factors in computer-crime: an empirical assessment. Cluster Computing, 19(1), 369-377.

Clerkin, K. J., Fried, J. A., Raikhelkar, J., Sayer, G., Griffin, J. M., Masoumi, A.,& Schwartz, A. (2020). COVID-19 and cardiovascular disease. Circulation, 141(20), 1648-1655.

Donner, C. M. (2016). The gender gap and cybercrime: An examination of college students' online offending. Victims & Offenders, 11(4), 556-577.

Eian, I. C., Yong, L. K., Li, M. Y. X., Qi, Y. H., & Fatima, Z. (2020). Cyber Attacks in the Era of COVID-19 and Possible Solution Domains.

Elmi, A. H (2019). A Survey on Cyber Security awareness among university students in Mogadishu.

Furnell, S., Gennatou, M., & Dowland, P. (2002). A prototype tool for information security awareness and training. Logistics Information Management, 15(5/6), 352-357. https://doi.org/10.1108/09576050210447037

Gabra, A. A., Sirat, M. B., Hajar, S., & Dauda, I. B. (2020). Cyber Security Awareness Among University Students: A Case Study.

Hasan, M. S., Rahman, R. A., Abdillah, S. F. H. B. T., & Omar, N. (2015). Perception and awareness of young internet users towards cybercrime: Evidence from Malaysia. Journal of Social Sciences, 11(4), 395.

Hawdon, J., Parti, K., & Dearden, T. E. (2020). Cybercrime in America amid COVID-19: the Initial Results from a Natural Experiment. American Journal of Criminal Justice, 1-17.

Ifinedo, P. (2012). Understanding information systems security policy compliance: An integration of the theory of planned behaviour and the protection motivation theory. Computer & Security, 31(1), 83-95. https://doi.org/10.1016/j.cose.2011.10.007

Ismailova, R., Muhametjanova, G., Medeni, T.D., Medeni, I.T., Soylu, D. & Dossymbekuly, O.A. (2019). Cybercrime risk awareness rate among students in Central Asia: A comparative study in Kyrgyzstan and Kazakhstan. Information Security Journal: A Global Perspective, 28(4-5), 127-135

Jones, B. H., & Heinrichs, L. R. (2012). Do business students practice smartphone security?. Journal of Computer Information Systems, 53(2), 22-30.

Kamal, A. H. A., Yen, C. C. Y., Ping, M. H., & Zahra, F. (2020). Cybersecurity Issues and Challenges during Covid-19 Pandemic.\

Kashif, M., Javed, M. K., & Pandey, D. (2020). A Surge in Cyber-Crime during COVID-19. Indonesian Journal of Social and Environmental Issues(IJSEI), 1(2),48-52.

Kirwan, G. H., Fullwood, C., & Rooney, B. (2017). Risk Factors for Social Networking Site Scam Victimization Among Malaysian Students. 00(00), 1–6.https://doi.org/10.1089/cyber.2016.0714

Lallie, H. S., Shepherd, L. A., Nurse, J. R., Erola, A., Epiphaniou, G., Maple, C., & Bellekens, X. (2020). Cybersecurity in the age of COVID-19: a timeline and analysis of cyber-crime and cyber-attacks during the pandemic. arXiv preprint arXiv:2006.11929.

Malaysian Communications and Multimedia Commission. (2015), "Internet education: Research. International Journal of Management Science and Business Administration 2(7): 16-24.

Moallem, A. (2018, July). Cyber Security Awareness among College Students. In International Conference on Applied Human Factors and Ergonomics (pp. 79- 87). Springer, Cham.

Mohd, S., Senadjki, A., & Mat, S. R. (2016). Cybercrime Among Malaysian Youth. Malaysian Journal of Youth Studies.

Muniandy, L., Muniandy, B., & Samsudin, Z. (2017). Cybersecurity behaviour among higher education students in Malaysia. J. Inf. Assur. CyberSecurity, 1-13.

MyCERT (2020). MyCERT Incident Report 2020. Access on 25 November 2020 at https://www.mycert.org.my/portal/statistics-content?menu=b75e 037d-6ee3-4d11-8169-66677d694932&id=14791f5d-b2cf-4ec7a881d859c621 175c

MyMetro (2020).Jenayah siber, multimedia meningkat. Access on 25 November 2020 di https://www.hmetro.com.my/mutakhir/2020/04/567422/ jenayah-siber- multimedia-meningkat

Nandhini, B. S., & Sheeba, J. I. 2015. Online Social Network Bullying Detection Using Intelligence Techniques. Procedia Computer Science, 45, 485-492.

Nowrin, S., & Bawden, D. (2018). Information security behaviour of smartphone users: An empirical study on the students of University of Dhaka, Bangladesh. Information and Learning Science, 119(7/8), 444-455.

Nzeakor, O. F., Nwokeoma, B. N., & Ezeh, P. J. (2020). Pattern of Cybercrime Awareness in Imo State, Nigeria: An Empirical Assessment. International Journal of Cyber Criminology, 14(1), 283-299.

Pallant, J. (2013). SPSS Survival Manual - A Step by Step Guide to Data Analysis Using SPSS for Windows Fourth Edition. Buckingham Open University Press.

Pradeep, L.M.P., & Arjun, M. (2018). Cybercrime awareness among youth in Udupi District. Journal of Forensic Sciences and Criminal Investigation, 8(5), 1-4.

Quisumbing, L. A. (2019). Preemptive Evaluation through Information Security Awareness: Perception of Information Technology Students in a Philippine State University. International Journal of Applied Engineering Research, 14(4), 900-907.

Rezgui, Y., & Marks, A. (2008). Information security awareness in higher education: An exploratory study. Computers & Security, 27(7-8), 241-253.

Sarathchandra, D., Haltinner, K., & Lichtenberg, N. (2016). College Students'Cybersecurity Risk Perceptions, Awareness, and Practices. Proceedings-2016 Cybersecurity Symposium, CYBERSEC 2016, 68– 73.https://doi.org/10.1109/CYBERSEC.2016.018

Sheng, S., Holbrook, M., Kumaraguru, P., Cranor, L. F., & Downs, J. (2010, April). Who falls for phish? A demographic analysis of phishing susceptibility and effectiveness of interventions. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 373-382).

Slusky, L., & Partow-Navid, P. (2012). Students information security practices and awareness. Journal of Information Privacy and Security, 8(4), 3-26.

Sreehari, A., & Abinanth, K. (2018). A study of awareness of cybercrime among college students with special reference to Kochi. International Journal of Pure and Applied Mathematics, 119, 353-1360.

Tan, S. L., Vergara, R. G., Khan, N., & Khan, S. (2020). Cybersecurity and Privacy Impact on Older Persons Amid COVID-19: A Socio-Legal Study in Malaysia. Asian Journal of Research in Education and Social Sciences, 2(2), 72-76.

Tirumala, S. S., Sarrafzadeh, A., & Pang, P. (2016). A survey on internet usage and cybersecurity awareness in students. 2016 14th Annual Conference on Privacy, Security and Trust, PST 2016, 223–228. https://doi.org/10.1109/PST.2016.7906931

Valli, C., et al. (2014). "Small to medium enterprise cybersecurity awareness: an initial survey of Western Australian business."

Yao, M. Z . and Linz, D. G . (2008) Predicting self-protection of online privacy. CyberPsychology and Behaviour 11 (5): 615 – 617.