A STUDY ON CYBER SECURITY AWARENESS AND DIGITAL COMPETENCE OF PROSPECTIVE TEACHERS IN SELECTED NORTHERN DISTRICTS OF TAMIL NADU

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ABSTRACT

Cyber security is a group of concepts related to security, tools, guarantees, guidelines, policies and practices which are used to effectively protect the users, assets and cyber atmosphere and it also includes the various features of dependability, ease of use, uprightness, maintainability, trust, resilience, accountability safety and credibility. The findings reveal that significant difference is prevailed amid profile of prospective teachers and their cyber security awareness. The cyber security awareness is having significant, positive and substantial relation with digital competence of prospective teachers. Therefore, prospective teachers should know different cyber threats and crimes to improve their awareness on cyber security. Prospective teachers must get and improve their knowledge on cyber attacks and vulnerabilities for strengthening their awareness on cyber security from experts. Prospective teachers should exchange information and knowledge on cyber security among them in order to increase their awareness on cyber security. Prospective teachers must educate themselves by attending webinars on cyber security awareness and improve their awareness on it.

Key Words: Cyber Security Awareness, Digital Competence, Prospective Teachers

1. INTRODUCTION.

Cyber security is the procedure which consists of various methods for protecting fundamental software, techniques and methods, damage of information, unauthorized access, viral infection, devices and persons (Quayyum et al 2021). Meanwhile, improving cyber security is the one amid essential and fundamental controls which also comprises of various sub controls and protective operations (Conteh and Schmick, 2016). Cyber security is a group of concepts related to security, tools, guarantees, guidelines, policies and practices which are used to effectively protect the users, assets and cyber atmosphere (Miranda, 2018) and it also includes the various features of dependability, ease of use, uprightness, maintainability, trust, resilience, accountability safety and credibility (Mohammed and Bamasoud, 2022).

In the present day digital and Internet era, cyber security is one of the most serious issues for Internet users and awareness among public including students community on cyber security is very limited and the focus is rapidly growing in recent periods on creating and increasing

awareness on cyber security, threats and attacks among them and majority of college students are not well aware of cyber security and it is highly imperative to promote awareness on it among college students especially prospective teachers since they are intensively using different digital platforms and Internet tools for their learning and teaching activities and also improving their digital competence. Hence, it is necessary to study cyber security awareness and digital competence of prospective teachers.

2. LITERATURE REVIEW

Alrobaian (2023) found that trainees had low level of awareness on cyber security and major portion of them had used e-mails and very small portion of them had experienced that their computer was infected by virus and they had also faced the problems of hackling, phishing, privacy, and poor management of passwords and the level of awareness on cyber security was differing among their profile.

Raju et al (2022) conceded that university students had fair level of awareness on cyber security and they had higher degree of awareness on cyber attack and it was varying among their profile. Besides, sharing the passwords with others, access to unknown websites and not protecting personal information were the main issues related to their awareness on cyber security.

Alharbi and Tassaddiq (2021) revealed that students studying in university had poor degree of awareness on cyber security and they were also aware of phishing, use of security tools, safety and social networking and they had significant and positive influence on their awareness level on cyber security.

Garba et al (2020) indicated that the awareness on cyber security among students of university was satisfactory and they were having higher degree of awareness on trust and privacy and majority of them had poor awareness on phishing, management of password and authentication and it was differing among profile of university students.

Potgieter (2019) showed that most of students studying in university had fair level of awareness on cyber security and near to half(47%) of them were aware of self assessment in online platforms and meager portion of them were updating their awareness on cyber security.

Chhibber and Thapar (2018)found that half of(50%) college students had well aware of cyber crime and majority of them were also aware of anti virus software, safety of online information, privacy, protection through passwords and risk of using public wi-fi and the level of awareness on cyber security was differing among their profile significantly.

Chandarman and Niekerk (2017) concluded that students studying in private colleges were poorly aware of anti virus software and phishing and they were vulnerable to cyber attack and crimes and level of awareness on cyber security was also varying among them.

Al-Janabi and Al-Shourbaji (2016) revealed that awareness on cyber security among under graduate students was poor and they were only aware of anti virus software and using e-mails only and they did not aware of cyber attacks and crimes and it was differing among them according to their profile.

Rahim et al(2015) indicated that college students has moderate degree of awareness on cyber security and it was varying across their personal profile and disciplines and they were not well aware of cyber attacks and crimes and they had poor awareness on phishing and bullying.

3. OBJECTIVES OF THE STUDY

1. To study difference amid cyber security awareness among prospective teachers and their gender, subject group and type of college.

2. To examine difference amid cyber security awareness among prospective teachers and their locality of college, medium of study and monthly family income.

3. To analyze relation amid cyber security awareness and digital competence of prospective teachers.

4. HYPOTHESES OF THE STUDY

1. There is no difference amid cyber security awareness among prospective teachers and their gender, subject group and type of college.

2. There is no significant difference amid cyber security awareness among prospective teachers and their locality of college, medium of study and monthly family income.

3. There is no significant relation amid cyber security awareness and digital competence of prospective teachers.

5. RESEARCH METHODOLOGY

The Chennai, Kancheepuram and Tiruvallur districts in Tamil Nadu state are chosen for carrying out the current study. Prospective teachers are selected by employing random sampling method and data are gathered from 975 prospective teachers by using structured questionnaire. Percentage analysis is used to study profile of prospective teachers. t-test and ANOVA tests are applied to scrutinize difference amid profile of prospective teachers and their cyber security awareness. Correlation analysis is used to study relation amid cyber security awareness and digital competence of prospective teachers.

6. RESULTS

6.1. PROFILE OF PROSPECTIVE TEACHERS

The profile of prospective teachers is shown in Table-1.

Table-1. Profile of Prospective Teachers

Profile	Frequency	%
Gender		
Male	409	41.95
Female	566	58.05
Subject Group		
Arts	277	28.41
Science	698	71.59
Type of College		
Government	98	10.05
Government Aided	326	33,44
Private	551	56.51

Locality of College		
Urban	537	55.08
Rural	438	44.92
Medium of Study		
Tamil	371	38.05
English	604	61.95
Monthly Family Income		
Less than Rs.30,000	265	27.18
Rs.30,001 – Rs.40,000	356	36.51
Rs.40,001 – Rs.50,000	221	22.67
More than Rs.50,000	133	13.64

The results show that 58.05% of prospective teachers are females, whilst, 41.95% of them are males, 71.59% of them are belonging to science group, whilst, 28.41% of them are belonging to arts group and 56.51% of them are studying in private colleges, whilst, 10.05% of them are studying in Government college.

The results also indicate that 55.08% of them are studying in colleges located in urban area, whist, 44.92% of them are studying in colleges located in rural area, 61.95% of them are studying in English medium, whilst, 38.05% of them are studying in Tamil medium and 36.51% of them are having family income of Rs.30,001 – Rs.40,000, whilst, 13.64% of them are having family income of more than Rs.50,000 per month.

6.2. PROFILE OF PROSPECTIVE TEACHERS AND CYBER SECURITY AWARENESS

The difference amid profile of prospective teachers and their cyber security awareness is shown as below.

6.2.1. Gender and Cyber Security Awareness

The difference amid gender of prospective teachers and their cyber security awareness is shown in Table-2.

Table-2. Gender and Cyber Security Awareness

Gender	N	Mean	SD	t-value	Level of Significance
Male	409	114.37	9.85	4.140	0.01
Female	566	118.54	18.56		

Female prospective teachers (Mean=118.54) are having higher degree of cyber security awareness than male prospective teachers (Mean=114.37). The t- value of 4.140 demonstrates that significant difference is found amid gender of prospective teachers and their cyber security awareness.

6.2.2. Subject Group and Cyber Security Awareness

The difference amid subject group of prospective teachers and their cyber security awareness is shown in Table-3.

Table-3. Subject Group and Cyber Security Awareness

Subject Group	N	Mean	SD	t-value	Level of Significance
Arts	277	112.62	10.41	5.136	0.01
Science	698	118.44	17.01		

Prospective teachers in science group (Mean=118.44) are having higher degree of cyber security awareness than prospective teachers in arts group (Mean=112.62).The t- value of 5.136 demonstrates that significant difference is found amid subject group of prospective teachers and their cyber security awareness.

6.2.3. Type of College and Cyber Security Awareness

The difference amid type of college of prospective teachers and their cyber security awareness is shown in Table-4.

Table-4. Type of College and Cyber Security Awareness

Type of College	N	Mean	SD	F-value	Level of Significance
Government	98	117.80	14.66	10.221	0.01
Government Aided	326	119.71	18.35		
Private	551	114.87	13.69		

Prospective teachers studying in Government aided colleges (Mean=119.71) are having higher degree of cyber security awareness than Government (Mean=117.80) and private colleges (Mean=114.87). The F-value of 10.221 demonstrates that significant difference is found amid type of college of prospective teachers and their cyber security awareness.

6.2.4. Locality of College and Cyber Security Awareness

The difference amid locality of college of prospective teachers and their cyber security awareness is shown in Table-5.

Table-5. Locality of College and Cyber Security Awareness

Locality of College	N	Mean	SD	t-value	Level of Significance
Urban	537	112.00	10.31	11.235	0.01
Rural	438	122.65	18.77		

Prospective teachers studying in rural colleges (Mean=122.65) are having higher degree of cyber security awareness than prospective teachers studying in urban colleges (Mean=112.00). The t-value of 11.235 demonstrates that significant difference is found amid locality of college of prospective teachers and their cyber security awareness.

6.2.5. Medium of Study and Cyber Security Awareness

The difference amid medium of study of prospective teachers and their cyber security awareness is shown in Table-6.

Table-6. Medium of Study and Cyber Security Awareness

Medium of Study	N	Mean	SD	t-value	Level of Significance
Tamil	371	115.26	11.99	2.396	0.05
English	604	117.73	17.46		

Prospective teachers studying in English medium (Mean=117.73) are having higher degree of cyber security awareness than prospective teachers studying in Tamil medium (Mean=115.26). The t-value of 2.396 demonstrates that significant difference is found amid medium of study of prospective teachers and their cyber security awareness.

6.2.6. Monthly Family Income and Cyber Security Awareness

The difference amid monthly family income of prospective teachers and their cyber security awareness is shown in Table-7.

Table-7. Monthly Family Income and Cyber Security Awareness

Monthly Family Income	N	Mean	SD	F-value	Level of Significance
Less than Rs.30,000	265	122.54	12.03	44.661	0.01
Rs.30,001 – Rs.40,000	356	119.40	20.53		
Rs.40,001 – Rs.50,000	221	108.78	8.42		
More than Rs.50,000	133	111.63	6.78		

Prospective teachers having monthly family income of less than Rs.30,000(Mean=122.54) are having higher degree of cyber security awareness than Rs.30,001 – Rs.40,000(Mean=119.40), more than Rs.50,000(Mean=111.63) and Rs.40,001 – Rs.50,000(Mean=108.78). The F-value of 44.661 demonstrates that significant difference is found amid monthly family income of prospective teachers and their cyber security awareness.

6.3. RELATION AMID CYBER SECURITY AWARENESS AND DIGITAL COMPETENCE OF PROSPECTIVE TEACHERS

The relation amid cyber security awareness and digital competence of prospective teachers was studied by employing correlation analysis and the result is shown in Table-8.

Table-8. Cyber Security Awareness and Digital Competence of Prospective Teachers

Particulars	Correlation Coefficient
Cyber Security Awareness and Digital Competence of Prospective Teachers	0.463[**]

[**] Significance in 1% level

The coefficient of correlation amid cyber security awareness and digital competence of prospective teachers is 0.463 and it clarifies that they have significant, positive and substantial relation among them.

7. CONCLUSION

The outcomes of this study reveal that significant difference is prevailed amid profile of prospective teachers and their cyber security awareness. The cyber security awareness is having significant, positive and substantial relation with digital competence of prospective teachers. Therefore, prospective teachers should know different cyber threats and crimes to improve their awareness on cyber security. Prospective teachers must get and improve their knowledge on cyber attacks and vulnerabilities for strengthening their awareness on cyber security from experts. Prospective teachers should exchange information and knowledge on cyber security among them in order to increase their awareness on cyber security. Prospective teachers must educate themselves by attending webinars on cyber security awareness and improve their awareness on it.

REFERENCES:

Adamu A. Garba, Maheyzah Md. Siraj, Siti Hajar Othman, & Musa, M.A.(2020). A study on cyber security awareness among students in Yobe state university, Nigeria: A quantitative approach. *International Journal on Emerging Technologies*, 11(5), 41-49.

Chandarman, R., & Van Niekerk, B. (2017). Students' cybersecurity awareness at a private tertiary educational institution. *The African Journal of Information and Communication*, 20, 133-155.

Conteh, N.Y., & Schmick, P.J. (2016). Cybersecurity:risks, vulnerabilities and countermeasures to prevent social engineering attacks. International Journal of Advanced Computer Research, 6(23), 31-38.

Maram Mohammed, & Doaa M. Bamasoud.(2022). The impact of enhancing awareness of cybersecurity on universities students: A survey paper. *Journal of Theoretical and Applied Information Technology*, 100(15), 4756-4766.

Miranda, M.J.A.(2018). Enhancing cyber security awareness training : A comprehensive phishing exercise approach. *Cybersecurity*, 14(2), 5-10.

Pieter Potgieter.(2019). The awareness behaviour of students on cyber security awareness by using social media platforms: A case study at central university of technology. *Kalpa Publications in Computing*, 12(1), 272-280.

Quayyum, F., Cruzes, D. S., & Jaccheri, L.(2021). Cyber security awareness for children: A systematic literature review. *International Journal of Child0Computer Interaction*, 30 100343-100352.

Rahim, N. H. A., Hamid, S., Kiah, L. M., Shamshirband, S., & Furnell, S. (2015). A systematic review of approaches to assessing cybersecurity awareness. *Kybernetes*, 44(4), 606-622.

Rajeswari Raju, Nur Hidayah Abd Rahman, & Atif Ahmad.(2022). Cyber security awareness in using digital platforms among students in a higher learning institution. *Asian Journal of University Education*, 18(3), 756-766.

Rakhee Chhibber, & Radhika Thapar.(2018). A survey on cyber security awareness among college going students in Delhi. *Vivekananda Journal of Research*, 7(1), 1-9.

Samaher Al-Janabi, & Ibrahim Al-Shourbaji.(2016). A study of cyber security awareness in educational environment in the Middle East. *Journal of Information & Knowledge Management*, 15(1),1-32.

Shouq Alrobaian, Saif Alshahrani, & Adulaziz Almaleh.(2023). Cyber security awareness assessment among trainees of the technical and vocational training corporation. *Big Data and Cognitive Computing*, 7(73),1-22.

Talal Alharbi, & Asifa Tassaddiq.(2021). Assessment of cybersecurity Awareness among students of Majmaah University. *Big Data and Cognitive Computing*, 5(23),1-15.