

## **Cybercrime Awareness among Prospective Teachers in Relation to Institutional Management and Behavioural Pattern Types**

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### **Abstract**

The present investigation was conducted by using descriptive survey method to study the influence of institutional management and behavioural pattern types on the cybercrime awareness of prospective teachers. The sample comprised of 132 teacher trainees selected randomly from three different type of institutions based on their managements (government, government- aided and self- financing) from Chandigarh and Mohali. The Cybercrime Awareness Scale by Rajasekar (2011) was administered to assess the levels of cybercrime awareness among the prospective teachers. Teacher trainees were divided in two groups on the basis of personality types(A or B) determined by using Type A/B Behavioural Pattern Scale by Dhar and Jain(2001). The number of cases in each cell was made equal by excluding extra cases using randomization for fulfilling the assumption of ANOVA. Data were analysed by using two-way ANOVA and t-test. Significant main effects of institutional management and personality types were revealed on the dependent variable of cybercrime awareness of prospective teachers at .01 level. However no significant interaction effect of institutional management and personality types was reported. Tukey HSD was performed as post hoc test to make multiple comparisons as ANOVA result with respect to types of institutions based on management was found significant. Further, it was also found that majority of teacher trainees (22.73%) had moderate/average cybercrime awareness.

### **INTRODUCTION**

The use of internet has made our life very comfortable as we can pay our bills, shop or conduct work related meetings in the cosy confines of home. It has also revolutionized the field of education by taking teaching learning process out of boundaries of classrooms. Students can get information from relevant websites about any subject matter anywhere and anytime. According to a report by Internet and Marketing Association of India (IAMAI) and Kantar IMRB, the number of internet users in India will reach 500 million by June 2018 from 481 million in December 2017. Internet use is predominant amongst students and youngsters accounting for around 60% of all internet users in India. At the same time, Internet has posed enormous challenge of tackling cybercrimes which are increasing exponentially with the increase in the number of its users. Cybercrime is any crime where computer or mobile phone is used as a tool to perform unlawful acts. Computer can be used as tool or it may be targeted also. The Oxford reference Online defines 'cyber-crime' as crime committed over the Internet. The Encyclopedia Britannica defines 'cyber-crime' as any crime that is committed by means of special knowledge or expert use of computer technology. Therefore, Cyber-crime can be defined as any criminal offence in which information technology systems are used as means for the committing that crime. Jaishankar and Haider (2011) define Cybercrimes as "offences that are committed against individuals or groups of individuals with a criminal motive to intentionally harm the reputation of the victim or cause physical or mental harm to the

victim directly or indirectly, using modern telecommunication networks such as Internet (Chat rooms, emails, notice boards and groups) and mobile phones (SMS/MMS)". Cybercrime is a general term that takes into its ambit a wide variety of criminal offences and activities such as phishing, credit card frauds, bank robbery, illegal downloading, industrial espionage, child pornography, kidnapping children, via chat rooms, scams, cyber terrorism, creation or distribution of viruses, spam and so on.

The primary tool for such cybercrime prevention is undoubtedly education aimed at establishing greater awareness and knowledge regarding illegal Internet content and cybercrime among children and teenagers, as well as parents and educators (Bele, 2014). Lack of awareness about information security and cybercrime issues are the important factors facilitating cybercriminals. The soft targets of cyber crimes are the students generally children and teenagers as they are digital natives. Most of the times they become victims because of lack of awareness about cyber crimes and protection from them. The responsibility lies on the shoulders of teachers to make their students aware about :i) what is cybercrime? ii) Which cyber crimes occur in cyberspace? iii) Which protective measures can be taken to prevent cybercrimes?. Asefeh (2007) stated that youth can be made aware about cyber safety related issues with the proper guidance and coordination between the parents and teachers. Cybercrime awareness and prevention courses for teachers must be integral part of pre-service teacher training. Choi (2008) highlighted that university programs on cybercrime could improve future behavior of students and teachers towards cybercrime in terms of safety and security.

IT professionals can undertake stringent measures for providing cyber security such as installing firewalls, antivirus software, and regular updating of the operation system and antivirus software. But, till date no software has been made to protect the system from its weakest link – the human being. All the security breaches such as virus infections, identity theft and hacking are the direct cause of carelessness and lack of knowledge and action on the part of users (Chen et al., 2008). Human factors such as gender, age, knowledge and skills (experience) may assist in augmenting the levels of awareness among young people (Wang et al., 2008). The Behaviour Patterns of the human beings also differ as individuals with Type A personality are more conscious, systematic and organised while Type B persons are easy going, casual and not sensitive to acquire knowledge about things of no consequence to them. Institutional management type may also play a big role in the creation of an information-secure culture and making the students aware about cybercrimes and Information Security Issues. Hasan et al. (2015) in a study on young internet users provided empirical evidence to the top management of the higher level institutions on the needs to improve their policies and procedures to protect young generation and reducing the high risk of becoming a victim. Therefore, researcher felt the need to explore the influence of institutional management and behavioural pattern types on the Cybercrime Awareness of Prospective Teachers who will play a major role in disseminating awareness about cybercrime.

### **OBJECTIVES**

1. To find out the level of Cybercrime Awareness of Prospective Teachers.
2. To study the difference in the Cybercrime Awareness of Prospective Teachers of different Institutional Management types.

3. To study the difference between the Cybercrime Awareness of Prospective Teachers of Type A behavioural pattern and Type B behavioural pattern.

4. To study the interaction effect of institutional management and behavioural pattern types on the Cybercrime Awareness of Prospective Teachers.

### **HYPOTHESES**

**H<sub>01</sub>**. There is no significant difference in the Cybercrime Awareness of Prospective Teachers of different Institutional Management types.

**H<sub>02</sub>** There is no significant difference between the Cybercrime Awareness of Prospective teachers of Type A behavioural pattern and Type B behavioural pattern.

**H<sub>03</sub>** There is no significant interaction effect of Institutional Management and Behavioural pattern types on the Cybercrime Awareness of Prospective Teachers.

### **METHODOLOGY**

Descriptive survey method was used in this investigation to study:

- i) level of Cybercrime Awareness of Prospective Teachers
- ii) influence of institutional management and behavioural pattern types on the cybercrime awareness of prospective teachers

### **SAMPLE**

The sample for this study comprised of 132 pupil teachers(114 girls and 18 boys) studying in four teacher education institutions of Chandigarh and Mohali under three different types of managements(government, government- aided and self- financing). The sample was raised by random selection but number of respondents was selected equally for each of the three types of institutional managements.

### **TOOLS USED**

- i) Cybercrime Awareness Scale constructed and validated by Rajasekar (2011)
- ii) Type A/B Behavioural Pattern Scale constructed and validated by Dhar and Jain(2001)

### **PROCEDURE**

Firstly Cybercrime Awareness Scale by Rajasekar (2011) and Type A/B Behavioural Pattern Scale by Dhar and Jain (2001) were administered randomly to prospective teachers by taking care that at least 50teacher trainees studying in each type of institution (government, government- aided and self- financing)were selected. Out of 150 filled scales, only 136 were found usable for determining Cybercrime Awareness and personality type each. Then prospective teachers were divided in two groups on the basis of personality types(A or B) determined by using Type A/B Behavioural Pattern Scale by Dhar and Jain(2001).Out of 136 prospective teachers,70 had type A personality and 66 were found to have type B personality. The number of cases in each group was made equal (n=66) by excluding extra cases using randomization. Scales were scored and data were entered in database. Data were analysed by using SPSS 18.0 statistical software.

### **STATISTICAL TECHNIQUES**

Data were analysed by using univariate two-way ANOVA and t-test was used in case ANOVA results were found significant. Tukey HSD was performed as post hoc test to make multiple comparisons as ANOVA results with respect to type of institutions based on management were found significant.

### **RESULTS AND DISCUSSION**

#### **1.Level of Cybercrime Awareness among Prospective Teachers**

**Table 1. Cybercrime Awareness Level of Prospective Teachers**

s.no.	Scores Range	Number of Prospective teachers (N)	Percentage (%)	Grade	Level of Cybercrime Awareness
1	143&above	16	12.12	A	Excellent
2	133-142	22	16.67	B	High
3	123-132	24	18.18	C	Above average
4	108-122	30	22.73	D	Moderate/average
5	99-107	22	16.67	E	Below average
6	88-98	18	13.63	F	Low

From Table 1, it has been found that most of the prospective teachers (22.73%) have moderate /average level of cybercrime awareness and least number of teachers (12.12%) have excellent level of cybercrime awareness. There are 30.3% prospective teachers whose levels of cybercrime awareness are below average and low. Prospective teachers having high and above average levels of cybercrime awareness are 16.67% and 18.18% respectively. Bamatraf (2014) while assessing the Knowledge level about cybercrimes among young adults within the United Arab Emirates found that only 32% of the participants had a high or adequate level of knowledge while the rest had low to medium levels of knowledge.

These results find support in a studies conducted by Malhotra and Malhotra(2017) that most of the prospective teachers( 62%) have moderate /average level of cybercrime awareness and least number of teachers (3%) have excellent level of cybercrime awareness. Teacher trainees also differ significantly on the levels of cybercrime awareness on the basis of locality( Malhotra and Malhotra,2017 ; Josephine and Sudharson,2017).It was found in both the studies that urban Teacher trainees had significantly higher level of cybercrime awareness than those belonging to rural areas. Chandigarh and Mohali colleges being urban, teacher trainees of these institutions exhibit higher level of cybercrime awareness as 12.12%, 16.67% and 18.18% Prospective teachers have excellent high and above average levels of cybercrime awareness respectively.

## **2. Influence of institutional management and behavioural pattern types on the cybercrime awareness of prospective teachers**

**Table 2. Summary of two-way Analysis of Variance for the variables of institutional Management Types and Behavioural Pattern Types on the dependent variable of cybercrime awareness**

Source of Variation	df	sum of squares	Mean sum of square	F-ratio	Sig
Institutional Management Type(A)	2	2978.137	1489.06	5.480	.005 (p<.01)
Behavioural Pattern Type(B)	1	3392.728	3392.728	12.485	.001 (p<.01)

A*B	2	560.096	280.048	1.031	.360 (NS)
Total	131				

**2.1 Influence of institutional management types on the cybercrime awareness of prospective teachers**

As evident from Table 2, F-ratio for institutional Management Type is significant at .01 level. Hence, null hypothesis H<sub>01</sub> stating that “There is no significant difference in the Cybercrime Awareness of Prospective Teachers of different Institutional Management types” is rejected.

However, Tukey’s Honestly Significant Difference Test (Tukey-HSD) was used to find out that which groups have significant differences.

**Table 3 Summary of two-way Analysis of Variance for the variable of institutional Management Types on the dependent variable of cybcrcrime awareness**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4672.061	2	2336.030	7.891	.001
Within Groups	38190.273	129	296.049		
Total	42862.333	131			

**Table 4. Tukey HSD post-hoc test showing multiple comparisons between different institutional management types (Government, Government-aided, Self-Financing) on cybercrime awareness**

	(I) instt. Mgt.	(J) instt. mgt.	Mean Difference (I-J)	Sig.	
Tukey HSD	1.00 (Govt.)	2.00 dime nsion 3	8.04545	.076	
		3.00 nsion 3	14.54545*	.000	
		2.00 (Govt-aided)	1.00 dime nsion 3	-8.04545	.076
	2	3.00 (self-financing)	1.00 dime nsion 3	6.50000	.183
			2.00 nsion 3	-14.54545*	.000
		3.00 (self-financing)	1.00 dime nsion 3	-6.50000	.183

\* The mean difference is significant at the 0.05 level.

ANOVA test was performed before Tukey test. Results of ANOVA as shown in Table 3 are significant ( $F=7.891$  ;  $p>.01$ ).

Table 4 shows that mean difference on cybercrime awareness of prospective teachers studying in government and self- financing institutions is significant (.00) at 0.05 level. Further, the result also shows that prospective teachers studying in government institutions outperform those studying in self- financing institutions on the variable of cybercrime awareness. While mean differences between cybercrime awareness of prospective teachers studying in government and government- aided (sig. =.076) ; government- aided and self- financing institutions(sig.=.183) are not significant.

This difference may be due to reason that teacher trainees at self –financing institutions are not receiving type of education or training required for prevention of cyber crimes as their counter parts are receiving at the government institutions. This result may also be due to lack of awareness of teacher educators themselves at the self-financing teacher training institutions or due to general lack of knowledge or naivety on the part of prospective teachers in these institutions. Government institutions may have created information secure culture because of adherence to rules in these institutions.

**2.2 influence of behavioural pattern types on the cybercrime awareness of prospective teachers**

As evident from Table 2, F-ratio of 12.48 for behavioural pattern Types on cybercrime awareness of prospective teachers is significant at .01 level. Hence, null hypothesis  $H_{02}$  stating that “There is no significant difference between the Cybercrime Awareness of Prospective teachers of Type A behavioural pattern and Type B behavioural pattern” stands rejected. To find out the difference in the means of two groups (Type A and Type B behavioural pattern),t-test was performed. The results are shown in Table 4.

**Table 4. Mean, Standard Deviation and t-value between Type A and Type B Behavioural Pattern groups on the variable of Cybercrime Awareness**

Behavioral Pattern Types	N	Mean	Std. Deviation	t-value	df	Sig. (2-tailed)
A	66	127.015	17.138	4.164	130	.00
B	66	114.651	18.975			

Table 4 shows t-value of 4.16 for  $df=130$  is significant at .01level. Mean score of Type A behavioural pattern group (127.01)is significantly higher than mean score(114.65) of Type B behavioural pattern group on the cybercrime awareness of prospective teachers. Human factor is considered the most important for developing pro-cybercrime awareness behaviours in many studies((Chen et al., 2008;Wang et al., 2008 and Hasan et al. ,2015) . There is lack of direct studies on the influence of behavioural patterns on cybercrime awareness. However, This result can be explained on the basis of theoretical framework about the fundamental differences between Type A and Type B personality. People with Type A behavioural pattern are aggressive, sensitive, proactive ,ambitious, and Self-driven. They continuously strive for goals without paying much attention to efforts and accomplishments. They are more apprehensive and insecure. That’s why in their pursuit of getting knowledge about cybercrimes ,they will become more aware than Type B

persons who might think this education of no immediate importance to them. People with Type B behavioural pattern are relaxed; less stressed, and have a laid-back attitude. They lack initiative for engaging in promoting their knowledge and values about cybercrime issues as they think these issues of no direct advantage to them.

### **2.3 interaction effect of institutional management and behavioural pattern types on the Cybercrime Awareness of Prospective Teachers**

As evident from Table 2, F-ratio 1.03 for for institutional management types and behavioural pattern types on cybercrime awareness of prospective teachers is not significant. Hence, null hypothesis  $H_{03}$  stating that “There is no significant interaction effect of institutional management and behavioural pattern types on the Cybercrime Awareness of Prospective Teachers” is not rejected.

### **CONCLUSION**

This study concludes that types of management of teacher education institutions and behavioural patterns of prospective teachers have significant influence on their cybercrime awareness level. Hence ,there is an urgent need of undertaking policy measures by managements of teacher education institutions to increase the cybercrime awareness level of their pupil teachers by providing right type of education about cyber security issues and internet safety. This will result in changing behavior patterns of prospective teachers which will in turn bring a positive change in level of cybercrime awareness of their students when they enter teaching profession.

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