Factors Associated with Cybercrime Awareness Among University Students in Egerton University, Njoro Campus, Nakuru County, Kenya

Douglas R. Mwiraria, Kibet Ngetich, and Panuel Mwaeke

ABSTRACT

Currently, the level of reliance of ICT among university students across the globe is unprecedented. Students are heavy internet users because they perform the majority of their daily communications and school related activities on the internet. As a result the students are highly exposed to cybercrime victimization. Therefore, it’s important to determine issues surrounding their level of awareness of cybercrime. This study sought to examine the factors associated with students’ level of awareness of cybercrime at Egerton University, Njoro Campus, Nakuru County, Kenya. In order to achieve this, three specific research objectives were addressed; to determine the association between gender and cybercrime awareness among university students, to examine the association between age and cybercrime awareness among university students and to find out the relationship between the level of study and cybercrime awareness among university students. The study was based on the theory of technology enabled crime, policing and security. The study adopted cross sectional design and stratified random sampling technique to select respondents from the study population. The unit of analysis for this study was students at Egerton University. Questionnaire was used as a primary data collection instrument and was administered on the web. The collected data was analyzed using inferential and deceptive statistics. The study found no association between gender and the level of cybercrime awareness but it found a significant association between age of students and the level of cybercrime awareness. In addition, there was a significant association between students’ level of study and cybercrime awareness. The study has provided information necessary for the design and implementation of cybercrime awareness activities, thus helping in the implementation of Kenya’s National Cybersecurity strategy.

Keywords: Awareness, Crime, Cybercrime, Cybercrime Awareness, Cyber Criminology, University Students

I. INTRODUCTION

Cybercrime victimization is a serious concern the world over. This concern is largely worsened by the increase and high penetration of the use of the internet and computerized devices such as mobile phones, tablets, laptops etc. across the globe; computer assisted communication is the current norm (Ndubueze, 2017; Wall, 2010; Rich, 2010). As a result internet users and the users of information technology in generally are exceedingly afflicted by the incidents of cybercrime victimization. There are various factors that can be connected to cybercrime victimization but lack of awareness of the risks of using the internet and information technology among the users is one of the leading factors (Nzeakor, 2016; Nzeakor et al., 2020).

Various studies has come up in support of the fact that cybercrime awareness is one of the defenses against cybercrime victimization (Siponen & Oinas-Kukkonen, 2007). Other studies have argued that human beings are the weakest link in as far as the commission of cybercrimes is concerned (Aurigemma et al., 2012). On the same note, Joinson et al. (2010) note that there has been a mismatch between the advancements in information technology and the users’ abilities to protect and guard themselves against cybercrime victimization. Cybercrime awareness enables the users of information technology to know what to do in order to protect themselves against cybercrime threats (Amenkwa et al., 2014). This implies that lack of cybercrime awareness can inversely lead to cybercrime victimization.
On the same note, a number of studies have focused on examination of factors associated with cybercrime awareness especially among university students. For instance, Singh (2013) did not find any significant association between gender and the level of cybercrime awareness. Same results were reported by Lowell (2019) and Bamatraf (2014) who found no relationship between level of cybercrime knowledge and the university students’ gender. However, Hasan et al. (2015) reported a significant association between cybercrime awareness and the gender of university students in Malaysia where female students were more aware of cybercrimes than their male counterparts.

Other studies have focused on other demographic factors such as level of study, age and the year of studies. For instance, Nzeakor et al. (2020) and Ogutcu and Aydin (2015) found a positive correlation between cybercrime awareness and the level of study. On the same note, Nwoke et al. (2021) found a negative correlation between the level of cybercrime awareness and the level of study. On the other hand, Hasan et al. (2015) found a positive correlation between cybercrime awareness and age. It is evident that there is no consensus among the cyber-criminology scholars on the factors associated with the cybercrime awareness and the current study therefore sought to determine the association between demographic factors and cybercrime awareness among university students.

II. METHODOLOGY

A. Research Design

The study adopted a cross sectional design. The design was preferred because it is useful when the researcher is interested in variation, which can be established if more than one case is examined (Bryman, 2012). The data was collected by the use of structured web questionnaire. The questionnaire was preferred for collecting data because it has the advantage of obtaining standard responses to items in the questionnaire, making it possible to compare between sets of data (Orodho, 2003).

B. Population and Inclusion Criteria

The population of this study was drawn from students in Egerton University, Njoro campus, Nakuru County, Kenya. The study population comprise of 18,323 students from the nine faculties of Egerton University (Egerton University admissions office, 2020). The table for determining the sample size in social science research as outlined by Krejcie and Morgan (1970) in Sekaran (2010) was used to determine the sample size that was involved in the study. There were 18,323 students at Egerton University Njoro Campus and therefore a sample of 378 respondents were selected to participate in the study.

C. Sampling Procedure

Stratified random sampling was used to select participants from the study population. The nine faculties constituted the strata from which the respondents were further randomly selected to give them equal chance of participating in the survey. Faculties were stratified further in terms of the level of study to ensure adequate representation of undergraduate and masters students. The level of study was stratified further in terms of gender to ensure adequate representation of male and female university students. Therefore, for each faculty the researcher had two lists i.e. one detailing all undergraduate students and one detailing all masters students. To calculate a proportionate stratification, a formula outlined by Singh (2007) was used where sample size (n) was multiplied by proportion of units in each stratum and the total divided by study population (N). Participants from the two lists of undergraduate and masters students in each faculty were selected randomly by the use of Microsoft excel.

D. Data Collection and Analysis

The data was collected by the use of structured web questionnaire. The questionnaires were administered on the web where the survey web link were sent to the respondents through SMS or through their electronic mail. The respondents were requested to click the URL that was sent to them which then redirected them to the webpage containing the questionnaire. The respondents were requested to fill the online questionnaires and click submit button upon successfully completing filling them. The submitted data were transferred directly into a data management software ready for analysis. Online questionnaire were preferred because it’s cost effective, convenient and require little supervision. Warwick and Lininger (1975) note that researchers should settle on instruments which provide utmost accuracy, generalizability and explanatory power with low cost, rapid speed and a minimum of management demands with high administrative convenience. Data was analyzed using descriptive and inferential statistics. Descriptive statistics included means, standard deviations, median, and frequency distributions. Inferential statistics included Pearson Correlations.
E. Ethical Considerations

The researcher sought approval to conduct his study from the Ethics Review Committee of Egerton University. The researcher also sought a research permit from NACOSTI to legitimize the study. Before the commencement of data collection, researcher obtained informed consent by providing participants with background information about the study, and researcher’s contacts details. Participants were provided with a radio button for every statement of informed consent to encourage participants to read information provided to them about the study. Participants were not able to progress through the informed consent without responding to essential statements relating to informed consent. Birnbaum (2004) notes that radio button method is widely recognised as an acceptable method of gaining consent in Internet Mediated Research (IMR).

III. RESULTS AND DISCUSSIONS

The findings of this study are presented along three objectives; the association between gender and cybercrime awareness among university students, the association between age and cybercrime awareness among university students and the relationship between the level of study and cybercrime awareness among university students.

A. Response Rate

The sample size of the study was 378 and therefore 378 online questionnaires were distributed to the selected respondents. Out of the 378 questionnaires distributed, 311 questionnaires were returned comprising of 82.3% of the total distributed online questionnaires. A response rate of 82.3% was deemed reliable and acceptable as recommended by Kothari (2010). The high response rate achieved in this study is attributed to the efforts by the researcher to send constant reminders to the respondents urging them to participate in the online survey. The reminders were made through email, telephone calls and Short Text messages.

B. Gender of University Students

The study obtained information on gender of respondents. The gender distribution of the respondents was important because there is a likelihood of gender difference in terms of the level of awareness of cybercrime and the level of prevalence of cybercrime victimization among male and female students. The study found that 57.2% of the respondents were male while 42.8% of the respondents were female as shown in Table I below.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>178</td>
<td>57.2%</td>
</tr>
<tr>
<td>Female</td>
<td>133</td>
<td>42.8%</td>
</tr>
<tr>
<td>Total</td>
<td>311</td>
<td>100%</td>
</tr>
</tbody>
</table>

As shown in Table I above, there is a fair distribution of male and female students in the institution. It also points out the need for designing multifaceted cybercrime prevention strategies that caters for both male and female university students.

C. Age of University Students

Age was also considered important in the study because the younger respondents maybe more gullible and hence more likely to fall prey to cybercrimes. It was found that the age of the respondents ranged from 18 to 26 years and older as shown in Table II.

<table>
<thead>
<tr>
<th>Age in Years</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-21 years</td>
<td>123</td>
<td>39.55</td>
</tr>
<tr>
<td>22-25 years</td>
<td>163</td>
<td>52.41</td>
</tr>
<tr>
<td>26 years and older</td>
<td>25</td>
<td>8.04</td>
</tr>
<tr>
<td>Total</td>
<td>311</td>
<td>100%</td>
</tr>
</tbody>
</table>

The findings shows that the majority (52.41%) of the respondents fell into the age bracket of 22-25 years. They were followed by the age bracket of 18 to 21 years who constituted 39.55% of the respondents. The respondents aged 26 years and older constituted 8.04%. The age distribution shows an ideal example of a university students’ population where the students are highly likely to have minimal age differences between them.
D. Level of Study

The study sought to determine the respondents’ levels of study. Students from various levels of the study were bound to have different levels of cybercrime awareness. The results are shown in Table III.

<table>
<thead>
<tr>
<th>Current Level of Education</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diploma</td>
<td>14</td>
<td>4.50</td>
</tr>
<tr>
<td>Bachelors</td>
<td>288</td>
<td>92.60</td>
</tr>
<tr>
<td>Masters</td>
<td>9</td>
<td>2.90</td>
</tr>
<tr>
<td>Total</td>
<td>311</td>
<td>100.00</td>
</tr>
</tbody>
</table>

The findings indicate that the majority (92.60%) of the respondents were pursuing bachelor’s degree. On the other hand, diploma and masters levels of study consisted 4.5% and 2.9% of the respondents respectively. The study sought to establish the differences in the levels of cybercrime awareness and victimization across the three levels of study.

E. The Association Between Gender and Cybercrime Awareness

An independent t-test was conducted to compare the level of cybercrime awareness between male and female students at Egerton University. On average, male students (M=2.94, SD=0.81) had a higher level of cybercrime awareness than their female counterparts (M=2.90, SD=0.82). However, the results of an independent t-test showed that this difference was not statistically significant t (309) = .04, p = .963. The assumption of homogeneity of variances was tested and satisfied via Levene’s F test, F(309) = .05, p = .819. Additionally, the male and female distributions were sufficiently normal for the purpose of conducting a t-test (i.e. skew <2.0 and kurtosis <9.0).

The findings of this study were in tandem with the findings by both Singh (2013) and Bamatraf (2014) who found no significant relationships between gender and the levels of cybercrime awareness. The study was also in agreement with findings by Abolatinwa et al. (2015) and Subramanium (2017) in their studies about cybersecurity awareness. They both found no significant association between the level of awareness and gender. The study was further in agreement with the findings by Lowell (2019) on the context of awareness of information security. He found no association between the level of information security awareness and gender. However, Hasan et al. (2015) reported a significant difference in the levels of cybercrime awareness between male and female respondents.

F. The Association Between Age and Cybercrime Awareness

The study sought to establish the relationship between age and level of cybercrime awareness among university students. This was done by the use of Pearson Correlation and the results are presented in Table IV.

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Awareness of Cybercrime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td>0.638**</td>
</tr>
<tr>
<td>Age of students</td>
<td>Sig. (1-tailed) 0.000</td>
</tr>
<tr>
<td>N</td>
<td>311</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (1-tailed).

Table IV shows that there was a moderate significant positive relationship between the age of respondents and the level awareness of cybercrime (r=0.638, p<.01). Based on the data, the study concluded that there was a moderate association between age and the level of cybercrime awareness among university students at Egerton University. The levels of cybercrime awareness increased with an increase in the age of students. The findings suggest that, cybercrime awareness campaigns should focus on students belonging to younger age groups most likely the freshmen and the sophomores. The findings were in agreement with the findings by Hasan et al. (2015). They found a significant relationship between age and awareness where increase in age resulted to an increase in cybercrime awareness.

G. The Association Between Level of Study and Cybercrime Awareness

The study sought to establish the relationship between the level of study and the level of cybercrime awareness. The Pearson Correlation was used to establish if there was a significant relationship between cybercrime awareness and the level of study of students at Egerton University. The results are shown in Table V.
Table V shows that there was a weak significant positive relationship between the combined elements of cybercrime awareness and the level of study (r=0.307, p<0.01). Therefore, the study concluded that there was a weak significant relationship between the level of study and the level of cybercrime awareness among university students at Egerton University. Students at higher levels of study were more aware of cybercrime than their counterparts in lower levels. This observation could be attributed to the differences in the levels of exposure between students within different levels of study. For instance, students at masters level are definitely more exposed than bachelors and diploma students. Similarly, students at bachelors level are likely to be more exposed and informed than diploma students.

The study was in agreement with the findings by Hasan et al. (2015) who found a relationship between level of study and cybercrime awareness. They reported that students at higher levels of studies were more aware of cybercrimes than their counterparts in lower levels of study. The study was also in agreement with Nzeakor et al. (2020) and Ogutcu and Aydin (2015) who found a positive correlation between the level of study and participants’ level of cybercrime awareness. However, the results contradicts that of Nwoke et al. (2021) who found that the education level and cybercrime awareness are negatively correlated. They argue that lowly educated participants were more likely to experience cybercrimes and hence more aware of the same than their highly educated counterparts.

IV. CONCLUSION

The findings of the study revealed that there was no significant difference in the level of cybercrime awareness between male and female students. Hence there was no association between gender and cybercrime awareness. On the other hand there was a moderate significant positive association between the age of students and their levels of cybercrime awareness. The level of cybercrime awareness significantly increased with an increase of the age of the students. However the results of the study revealed that there was a weak significant positive relationship between the students’ educational level and their levels of cybercrime awareness. Students in higher levels of education were significantly more aware of cybercrime than their counterparts in lower levels of education.

V. RECOMMENDATIONS

The universities should come up with mechanisms for raising cybercrime awareness among the students. It can do so by organizing conferences and seminars and inviting cyber-security experts to give talks on the matters pertaining cybercrime. The university can also invite legal experts to inform students on matters pertaining cybercrime laws and cybercrime reporting. In addition, the university can raise awareness by creating a common unit for all the students in order to teach them about cybercrime. Such unit can include things like causes of cybercrime, effects of cybercrime and cybercrime laws.

The Universities should come up with a taskforce to raise cybercrime awareness. A taskforce to inform and educate university students on what cybercrime is, its effects, and how it can be prevented. To inform them on the issues and behaviours that exposes them to a motivated offenders or behaviours that makes them suitable targets of cybercrime victimization. This will increase the capabilities of students to guard themselves against cybercrime victimization.

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CONFLICT OF INTEREST

Authors declare that they do not have any conflict of interest.

REFERENCES


