Data Article

Cybercrime Awareness among Saudi Nationals: Dataset

Abdulaziz Alzubaidi*

Faculty of Computing College, Umm Alqura University, Qunfudah 28821, Saudi Arabia

A R T I C L E   I N F O

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A B S T R A C T

The supplementary dataset presented in this paper was used to measure the level of cybersecurity awareness of cybercrime in Saudi Arabia, presented in detail in [1]. The data were collected during the period of August to October of 2019. The dissemination process took place via an online questionnaire. The survey has four main parts: Personal and skill information (10 questions), Cybersecurity Activities (7 questions), Cybercrime Consciousness (8 questions), and Case Reports (6 questions). Two protocols were employed to recruit participants: subject must be of Saudi nationality and older than 18 years old. A combination of purposive and snowball techniques was utilized to collect respondents via university emails from 27 Saudi universities and WhatsApp messages to people meeting the requirements, gathering a total of 1230 responses. The data can be used to inform responsible authorities in Saudi Arabia about their roles in solving anticipated problems, as well as raising the awareness through programs, training, and short courses.

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* Corresponding author. Tel.: +9-665-003-38897.
E-mail address: aazubaidi@uqu.edu.sa

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Specification Table

| Subject | Computer Science, Cryptography and Cybersecurity |
|--------------------------|-----------------------------------------------|
| Specific subject area   | Cybersecurity, Cybercrime, Malware Attack     |
| Type of data            | Tables                                        |
| How data were acquired  | Data was collected using an online survey platform (Google forms). The questionnaire is provided as a supplementary file. |
| Data format             | Raw, Analyzed, Filtered                       |
| Parameters for data collection | The survey data was obtained from 1230 respondents of Saudi nationality with different backgrounds and levels of education within the period of August through October 2019. Only Saudi nationals older than 18 years old could participate in the survey. |
| Description of data collection | The data was collected through an online questionnaire, distributed to Saudi people using a combination of purposive and snowball techniques to recruit the respondents via University emails and WhatsApp. |
| Data source location    | Region: 13 regions Country: Saudi Arabia      |
| Related research article | Dataset is uploaded on Mendeley Repository Name: DOI: 10.17632/fbs9mgmh4y.3 Authors' names: Abdulaziz Alzubaidi Title: Measuring the Level of Cyber-Security Awareness for Cybercrime in Saudi Arabia Journal: Heliyon DOI: 10.1016/j.heliyon.2021.e06016 |

Value of the Data

- The data are important since they evaluate the level of awareness of Saudis based on aspects not covered in previous studies, such as using participants of different backgrounds, regions and expertise in utilizing technology.
- The data can be useful for Saudi authorities such as the National Cybersecurity authority as well as researchers who are interested in the cybersecurity field.
- The data can be valuable for authorities and researchers who aim to measure and promote the awareness level of cybersecurity.
- The data can be utilized for educational purposes in terms of short courses and training.

Data Description

The questionnaire recruited 1230 Saudi nationals with different backgrounds and relies on knowledge and attitude aspects. The collected data were gathered between August and October of 2019. The survey is divided into four main groups of variables, which are listed below.

1. Personal and skill information, with 10 questions; gender, age, education level, major, administrative region, how often they access the Internet, level of digital skill, which devices they regularly use, what type of connectivity service they use in daily accessing the Internet, and finally the purpose for accessing the Internet. Tables 1, and 2 are represented this part.
2. Cybersecurity Activities, which aims to assess current Information technology knowledge based on 7 main questions (one main question has 11 sub-questions) using a five-point Likert scale (from 1-5: Never - Always), which outline in Table 3.
3. Cybercrime Conscience, to measure what subjects believe and their opinion, based on 8 main questions (one main question has 6 sub-questions) using a five-point Likert scale (from 1-5: Strongly disagree to Strongly agree), and two questions used a four-point Likert scale (from 1-4: Do not know to Always). The answer of these questions are illustrated in Tables 4, 5, and 6.
4. Case Reports, which aimed to evaluate subjects’ reactions when they faced a cybercrime incident, with 7 questions, as listed in Tables 7 and 8.
Table 1
Sociodemographic characteristics of the participants (n = 1230)

| Variable        | Description                                   | # of frequency | Percentage % |
|-----------------|-----------------------------------------------|----------------|--------------|
| Gender          | Respondent gender                             |                |              |
|                 | Male                                          | 494            | 40.2         |
|                 | Female                                        | 717            | 58.3         |
|                 | Not answered                                   | 19             | 1.5          |
| Age             | Respondent Age                                |                |              |
|                 | 18-29                                         | 650            | 52.8         |
|                 | 30-39                                         | 318            | 25.9         |
|                 | 40-49                                         | 185            | 15.0         |
|                 | ≥ 49                                          | 59             | 4.8          |
|                 | Not answered                                   | 18             | 1.5          |
| Education Level | Respondent education level                    |                |              |
|                 | Completed high school                         | 152            | 12.4         |
|                 | Undergraduate                                 | 851            | 69.2         |
|                 | Postgraduate                                  | 192            | 15.6         |
|                 | Completed middle school                       | 3              | 0.2          |
|                 | Not answered                                   | 32             | 2.6          |
| Major           | Respondent major                              |                |              |
|                 | Engineering                                   | 79             | 6.42         |
|                 | Public health                                 | 92             | 7.48         |
|                 | Computer science                              | 290            | 23.58        |
|                 | Education                                     | 233            | 18.94        |
|                 | Languages                                     | 88             | 7.15         |
|                 | Business administration                       | 59             | 4.80         |
|                 | Social science                                | 55             | 4.47         |
|                 | Not answered                                   | 92             | 7.48         |
|                 | Others                                        | 242            | 19.67        |
| Administrative regions | Respondent region                        |                |              |
|                 | Riyadh                                        | 110            | 8.9          |
|                 | Western Providence                            | 754            | 61.3         |
|                 | Madina                                        | 56             | 4.6          |
|                 | Qassim                                        | 22             | 1.8          |
|                 | Eastern Providence (including Jazan, Najran,  | 62             | 5.04         |
|                 | Baha, and Asir)                               |                |              |
|                 | Southern Providence (including Hail, Northern  | 33             | 2.7          |
|                 | Board, Tabuk, and Jouf)                       |                |              |
|                 | Not answered                                   | 100            | 8.13         |

Table 2
Sociodemographic characteristics of the participants (n = 1230): Continued

| Variable       | Description                                                                 | # of frequency | Percentage % |
|----------------|----------------------------------------------------------------------------|----------------|--------------|
| FreUsingInternet | How often do you use the Internet and Internet-related services?         |                |              |
|                 | Frequently throughout the day                                             | 1095           | 89.02        |
|                 | Once or twice a day                                                        | 112            | 9.11         |
|                 | Less frequently once a week or month                                       | 10             | 0.81         |
|                 | Not answered                                                               | 13             | 1.06         |
| RegDevUsg       | digital devices do you use regularly? Tick all that apply                 |                |              |
|                 | Smartphone                                                                  | 494            | 40.2         |
|                 | Laptop, Smartphone                                                         | 294            | 23.9         |
|                 | Laptop, Smartphone, Tablet                                                 | 92             | 7.5          |
|                 | Desktop, Laptop, Smartphone                                                | 88             | 7.2          |
|                 | Desktop, Laptop, Smartphone, Tablet                                         | 82             | 6.7          |
|                 | Laptop                                                                      | 50             | 4.1          |

(continued on next page)
### Table 2 (continued)

| Variable | Description                                           | # of frequency | Percentage % |
|----------|-------------------------------------------------------|----------------|--------------|
|          | Desktop, Smartphone                                   | 44             | 3.6          |
|          | Smartphone, Tablet                                   | 27             | 2.2          |
|          | Desktop                                              | 13             | 1.1          |
|          | Not answered                                         | 13             | 1.1          |
|          | Tablet                                               | 12             | 0.98         |
|          | Desktop, Smartphone, Tablet                          | 11             | 0.89         |
|          | Laptop, Tablet                                       | 5              | 0.41         |
|          | Desktop, Laptop                                      | 1              | 0.081        |
|          | Desktop, Laptop, Smartphone, Tablet, SmartWatch      | 1              | 0.081        |
|          | Desktop, Laptop, Smartphone, Tablet, AppleTV         | 1              | 0.0813       |
|          | Desktop, Laptop, Smartphone, Tablet, SmartWatch, AppleTV | 1              | 0.0813       |
|          | Laptop, Smartphone, SmartWatch                        | 1              | 0.0813       |
|          | Laptop, Smartphone, SmartWatch, AppleTV              | 1              | 0.0813       |
|          | Laptop, Smartphone, SmartWatch, AppleTV              | 1              | 0.0813       |
|          | Laptop, Smartphone, SmartWatch, AppleTV              | 1              | 0.0813       |
|          | Laptop, Smartphone, SmartWatch, AppleTV              | 1              | 0.0813       |
|          | Laptop, Smartphone, SmartWatch, AppleTV              | 1              | 0.0813       |
|          | Laptop, Smartphone, SmartWatch, AppleTV              | 1              | 0.0813       |

**DiGDevSkil**  
*Digital devices skills level*

| Level    | # of frequency | Percentage % |
|----------|----------------|--------------|
| Beginner | 291            | 23.7         |
| Intermediate | 766        | 62.3         |
| Advance  | 153            | 12.4         |
| Not answered | 20         | 1.6          |

### Table 3

**Assessing the IT knowledge of the participant (n = 1230)**

| Variable    | Description                                                                 | # of frequency | Percentage % |
|-------------|-----------------------------------------------------------------------------|----------------|--------------|
| **OSDevice**| **What operating systems do you use on your desktop/laptop? Tick all that apply**                                |                |              |
| Windows 10 |                                                                            | 553            | 44.96        |
| Windows 7  |                                                                            | 174            | 14.15        |
| I do not know |                                                        | 163            | 13.25        |
| Windows 8  |                                                                            | 81             | 6.59         |
| mac OS     |                                                                            | 72             | 5.85         |
| Windows 10, mac OS |                                        | 36             | 2.93         |
| Windows 10, Windows 7 |                                | 25             | 2.03         |
| Not answered |                                                        | 9              | 0.73         |
| Others     |                                                                            | 117            | 9.51         |
| **OSSmartDev**| **What operating systems do you use on your Smartphone/tablet? Tick all that apply**                                 |                |              |
| iOS        |                                                                            | 646            | 52.5         |
| Android    |                                                                            | 352            | 28.62        |
| iOS, Android |                                                   | 61             | 4.96         |
| I do not know |                                                        | 57             | 4.63         |
| iOS, Windows |                                                          | 37             | 3.01         |
| Windows    |                                                                            | 29             | 2.36         |
| iOS, Android, Windows |                                           | 22             | 1.79         |
| Android, Windows |                                             | 14             | 1.14         |
| Other answers |                                                  | 12             | 0.96         |

### Table 4

**Evaluating the current awareness of the participants regarding cybercrimes (Online resources)(n = 1230)**

| Question                                                                 | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|--------------------------------------------------------------------------|----------------|-------|---------|----------|------------------|
| 1) I think one should avoid disclosing personal information online      | 797            | 64.8  | 248     | 20.1     | 81               | 6.6             | 59 | 4.8 | 45 | 3.7 |
| 2) I feel that the risk of becoming a victim of cyber crime has increased in the past year. | 525            | 42.7  | 411     | 33.4     | 261              | 21.2            | 28 | 2.3 | 5  | 0.4 |

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Table 4 (continued)

| Question                                                                 | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|--------------------------------------------------------------------------|----------------|-------|---------|----------|-------------------|
|                                                                            | Fre %          | Fre % | Fre %   | Fre %    | Fre %             |
| 3) I am concerned that my online personal information is not secure enough| 384 31.22      | 492   | 40      | 211      | 17.15            |
|                                                                            |                |       |         |          |           9.67     |
|                                                                            |                |       |         |          | 24      1.95      |
| 4) I feel that I am well-protected against cyber crime.                   | 133 10.8       | 331   | 26.9    | 444      | 36.1             |
|                                                                            |                |       |         |          | 246    20         |
|                                                                            |                |       |         |          | 76      6.2       |
| 5) I am willing to accept increased Internet surveillance from the        | 640 52.03      | 348   | 28.29   | 158      | 12.85            |
| government if it can enhance Internet security                           |                |       |         |          | 51     4.15       |
|                                                                            |                |       |         |          | 33      2.68      |
| 6) I believe that the laws in effect are effective in managing the       | 321 26.1       | 440   | 35.8    | 334      | 27.2             |
| cyber crime problem                                                       |                |       |         |          | 110    8.9        |
|                                                                            |                |       |         |          | 25      2.0        |
| 7) I feel informed about the threat of cyber crime.                      | 250 20.33      | 438   | 35.61   | 372      | 30.24            |
|                                                                            |                |       |         |          | 137    11.14      |
|                                                                            |                |       |         |          | 33      2.68      |

Table 5
Evaluating the current awareness of the participants regarding cybercrimes (Online resources)(n = 1230)

| Question                                                                 | Always | Sometimes | Never | Do not know |
|--------------------------------------------------------------------------|--------|-----------|-------|-------------|
|                                                                            | Fre %  | Fre %     | Fre % | Fre %       |
| 1) I am concerned about identity theft (somebody stealing your personal  | 821    | 66.75     | 188   | 15.0        |
| data and impersonating you, e.g. tweeting under your name).             |        |           |       |             |
|                                                                            | 154    | 12.52     | 67    | 5.45        |
| 2) I am not concerned about accidentally encountering child pornography  | 438    | 35.61     | 294   | 23.90       |
| online.                                                                  |        |           |       |             |
|                                                                            | 236    | 19.19     | 262   | 21.30       |
| 3) I am concerned about receiving phishing emails (e.g. asking for      | 804    | 65.37     | 221   | 17.97       |
| money, personal information or bank account details.                    |        |           |       |             |
|                                                                            | 140    | 11.38     | 65    | 5.28        |
| 4) I am concerned about not being able to access online services (e.g.   | 746    | 60.65     | 243   | 19.76       |
| banking services) because of cyber attacks.                              |        |           |       |             |
|                                                                            | 160    | 13.01     | 81    | 6.59        |
| 5) I am concerned about accidentally encountering material that         | 770    | 62.60     | 277   | 22.52       |
| promotes hatred or religious extremism.                                  |        |           |       |             |
|                                                                            | 125    | 10.16     | 58    | 4.72        |
| 6) Online extortion (a demand for money to avert or stop extortion, or   | 671    | 54.5      | 305   | 24.8        |
| to avert scandal)                                                       |        |           |       |             |
|                                                                            | 150    | 12.2      | 104   | 8.4         |

Table 6
Evaluating the current awareness regarding cybercrimes of the participants (Online resources)(n = 1230)

| Variable | Description                                                                 | # of frequency | Percentage % |
|----------|-----------------------------------------------------------------------------|----------------|--------------|
| FcyberFut| What do you feel about the threat of cyber crimes in the future?             |                |              |
|          | They will become a more serious issue in the future                         | 790            | 64.23        |
|          | The threat will vanish eventually                                           | 222            | 18.05        |
|          | No significant change                                                       | 124            | 10.08        |
|          | I do not know                                                               | 94             | 7.64         |

(continued on next page)
Table 6 (continued)

| Variable   | Description                                                                 | # of frequency | Percentage % |
|------------|-----------------------------------------------------------------------------|----------------|--------------|
| RoleGov    | **What do you think the role of the government should be in combating cyber crimes? Tick all that apply** |                |              |
|            | Have stricter laws and punishments for cyber crimes                          | 484            | 39.35        |
|            | Make people aware of cyber crime                                             | 182            | 14.80        |
|            | Monitor organisations misusing consumer information                          | 62             | 5.04         |
|            | Work towards providing a global cyber security framework                      | 266            | 21.63        |
|            | No role                                                                      | 82             | 6.67         |
|            | I do not know                                                                | 154            | 12.52        |

Table 7
Examining whether the participants had been a victim of a cyber-attack or not (n = 1230)

| Variable   | Description                                                                 | Frequency #   | Percentage % |
|------------|-----------------------------------------------------------------------------|---------------|--------------|
| CyberVict  | **Have you been a victim of cyber crime? (E.g. lost data or email account, device infected with virus or spyware, stole your picture/s or digital device/s).** |                |              |
|            | Yes                                                                         | 267           | 21.7         |
|            | No                                                                          | 963           | 78.3         |
| CyberVictYes| **A. For participants, who had been a victim of cyber crime (267), and said Yes, did you report the crime?** |                |              |
|            | Yes                                                                         | 78            | 29.2         |
|            | No                                                                          | 189           | 70.8         |
| CyberVictRep| **For participant who reported the crime (n = 78), to whom did you report or contact? Tick all that apply** |                |              |
|            | Saudi eGovernment Portal                                                     | 23            | 39.66        |
|            | Police                                                                      | 15            | 19.23        |
|            | Committee for the Promotion of Virtue and the Prevention of Vice             | 8             | 10.26        |
|            | Saudi CERT                                                                  | 7             | 8.97         |
|            | Saudi eGovernment Portal, Police                                            | 3             | 3.85         |
|            | No one                                                                      | 3             | 3.85         |
|            | Saudi CERT, Police                                                          | 1             | 1.28         |
|            | Saudi eGovernment Portal, Committee for the Promotion of Virtue and the Prevention of Vice | 1            | 1.28         |
|            | Others (such as friends, bank, family, specialist)                           | 17            | 21.79        |

Table 8
Examining whether the participants had been a victim of a cyber-attack or not (n = 1230) (continued)

| Variable   | Description                                                                 | Frequency # | Percentage % |
|------------|-----------------------------------------------------------------------------|-------------|--------------|
| CyberNoVictWR| **B. For participants, who had not been a victim of cyber crime, If he/she becomes a victim of cyber crime would you like to report it?** |             |              |
|            | Yes, I would                                                                | 913         | 74.2         |
|            | No, I would not                                                              | 317         | 25.8         |
Table 8 (continued)

| Variable            | Description                                                                 | Frequency # | Percentage % |
|---------------------|-----------------------------------------------------------------------------|-------------|--------------|
| CyberNoVictRH       | **For participants who said Yes (913), To whom would you report or contact?** |             |              |
|                     | Don’t know but will ask friends for advice                                  | 280         | 30.67        |
|                     | Saudi eGovernment Portal                                                     | 134         | 14.68        |
|                     | Saudi CERT                                                                   | 103         | 11.28        |
|                     | Saudi eGovernment Portal, Saudi CERT                                         | 87          | 9.53         |
|                     | Police                                                                      | 62          | 6.79         |
|                     | Saudi eGovernment Portal, Saudi CERT, Police                                 | 42          | 4.60         |
|                     | Saudi eGovernment Portal, Saudi CERT, Police, Committee                      | 24          | 2.63         |
|                     | for the Promotion of Virtue and the Prevention of Vice                      |             |              |
|                     | Saudi eGovernment Portal, Don’t know but will ask friends for advice         | 22          | 2.41         |
|                     | Police, Don’t know but will ask friends for advice                          | 20          | 2.19         |
|                     | Saudi eGovernment Portal, Police                                            | 15          | 1.64         |
|                     | Other answers (27 answers with frequency less than 15)                      | 124         | 13.58        |
| CyberNoVictRes      | **For participants who said No (317), What is/are the reason/s?**           |             |              |
|                     | Tick all that apply                                                         |             |              |
|                     | Not sure                                                                    | 77          | 24.29        |
|                     | I do not know who to write report about cyber crime                          | 67          | 21.13        |
|                     | I do not know what the crime means                                          | 44          | 13.88        |
|                     | I am not sure what the impact on me will be                                 | 41          | 12.93        |
|                     | I will fix the problem by myself                                            | 25          | 7.89         |
|                     | I do not know how to describe or write reports about cyber crime             | 13          | 4.10         |
|                     | I think that there will no value of reporting                               | 11          | 3.47         |
|                     | Rest answers (24 answers with less than 10 frequencies selected)            | 39          | 12.30        |

Experimental Design, Materials and Methods

The survey relies on an online questionnaire to examine the level of cybersecurity awareness of cybercrime in Saudi Arabia. The dataset was composed of 1230 participants, with data collected between August and October 2019. The questionnaire was created in Google forms, and adopted two protocols: participants older than 18 years old and of Saudi nationality, and who had their own Google account to submit their responses one time only. In order to meet with the aforementioned protocols, we utilized two methods to collect responses. The first method relied on creating an email list of faculty members from more than 20 public and private universities inside Saudi Arabia, asking them to participate in our questionnaire and forward the link to their students. The second method was based on employing the WhatsApp application to encourage individuals to participate our study, and to forward the link to their friends, family members and fellow college students who met with the predefined protocols. Each participant was asked if he/she would agree or disagree to enroll in our questionnaire. By the end of October 2019, the questionnaire was locked to further responses, with a total of 1,230 responses saved locally.

Since current studies such as [2] concentrate on specific groups, recruited insufficient number of subjects and the Internet users increased 10 million users since 2016, therefore, the paper [1] motivated from these aspects, and employed the Technology Acceptance Model (TAM) [3] to measure the level of awareness in Saudi Arabia using a questionnaire that developed by [2] and [4]. The final version of questionnaire is written in both the Arabic and English languages. It was also evaluated by six expert pilot users in terms of 1 (not relevant), 2 (somewhat relevant), 3 (quite relevant) and 4 (highly relevant). The overall of Content Validity Index (CVI) was 0.83. We then examined the reliability of the survey utilizing Cronbach’s Alpha, with overall coefficient of 0.863.
The questionnaire is divided into four parts, which are: personal and skill information, Cyber-security Activities, Cybercrime Consciousness and Case Reporting. We reported results in terms of frequency and percentage for all parts using R studio. Also, correlation coefficients were employed to calculate the relation about the activities that constitute cybercrimes, and it was concluded that there is a relation between online extortion and identity theft, with coefficient of 0.6. Further analyses were performed using Statistical Package for Social Sciences (SPSS) and utilized Regression Analysis to assess the effect of the vectors on Cyber Security Practices. For each question, we initially provided a summary for the model, then utilized ANOVA and computation of correlation Coefficients to validate the significance of gender and digital skill level. For example, for the question asking about creating a password that contains personal information, we defined a predictor (constant) for digital skill level and gender; the value of R is 0.130 and R Square is 0.017, Adjusted R Square is 0.015 and the Stand Error (Std. Error) of the Estimate is 1.41353. Then, we performed the regression analysis.

**Ethics Statement**

Ethical approval was obtained from the Vice Presidency for Postgraduate Studies and Scientific Research, Umm Alqura University, Saudi Arabia, with reference number (400-1144-520). Respondents’ participation was totally consensual, anonymous, and voluntary.

**Supplementary materials**

Supplementary material associated with this article can be found in the online version, V3, doi: 10.17632/fbs9mgmh4y.3

**Declaration of Competing Interest**

The research project did not receive financial support from any institutions. The author declares that he has no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

**CRediT authorship contribution statement**

**Abdulaziz Alzubaidi:** Conceptualization, Methodology, Software, Data curation, Writing - original draft, Writing - review & editing, Supervision, Investigation, Visualization.

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**References**

[1] A. Alzubaidi, Measuring the level of cyber-security awareness for cybercrime in saudi arabia, Heliyon 7 (1) (2021) e06016.

[2] F. Alotaibi, S. Furnell, I. Stengel, M. Papadaki, A survey of cyber-security awareness in saudi arabia, in: 2016 11th International Conference for Internet Technology and Secured Transactions (ICITST), IEEE, 2016, pp. 154–158.

[3] F.D. Davis, Perceived usefulness, perceived ease of use, and user acceptance of information technology, MIS quarterly (1989) 319–340.

[4] F.F.G. Alotaibi, Evaluation and enhancement of public cyber security awareness, University of Plymouth, 2019 Ph.D. thesis.