

## MEASUREMENT OF INFORMATION SECURITY AWARENESS AMONG FACEBOOK USERS IN INDONESIA

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### Abstract

Based on statistics, it is known that Facebook is the primary social media used by the people in the world. Indonesia has the third largest number of Facebook users after the US and India. It turns out that the high number of the users in Indonesia is aligned with many cases occurring on Facebook. The reason is that Facebook doesn't provide enough safety information which creates a lack of awareness from its users in entering personal information such as email, phone number, address etc. This study aims to find out more about information security on Facebook by analyzing information security awareness among its users based on their demographics (gender, age, educational background, income). The result of each category is then described. It can be concluded that there are relationships between awareness and each demographic category, therefore, there are differences between awareness and demographic category.

**Keywords:** Security Awareness, Demography, Facebook, Sosial Networking

### 1. Introduction

As we know, in today's era of globalization, the Internet has become the lifestyle of the world, especially social media which is a necessity to communicate and share information with each other no matter the distance and time. Various types of social media with their respective advantages have spread all over the world. According to data published in Statista on January 2015, Facebook is a popular social networking site with the number of users in the world around 1.3 billion people. Whatsapp, a chat application, is ranked 4<sup>th</sup> with 600 million users. Instagram with 300 million users is ranked 10<sup>th</sup> followed by Twitter with 284 million active users and LINE is ranked 14<sup>th</sup> with 170 million users.

(Maulana, 2015) In Indonesia the number of Internet users, according to the research released by the Association of Indonesian Internet Service Provider (APJII) in 2014, has now reached 88.1 million. These users increase by 16.2 million compared to the data from in 2013. Looking at the domicile of the user, 78.5% of 88.1 million Internet users in Indonesia live in the western part of Indonesia. Nearly 63 million people in Indonesia access Facebook using a mobile phone at least once every month in this year (eMarketer, 2015). In 2014, a security solution provider, Trend Micro, revealed fraudulent uses on Facebook, such as Facebook Color Changer, Who Viewed Your Facebook Profile (an application viewing user's profile), clicking videos with an interesting title, and porn videos (KomputerInfo, 2014). Here are a few some cases of abuse on Facebook:

Table 1 : Table Case of Facebook

No.	Time	Event	Source
1.	2013/06/07	Data wiretapping by the NSA: New York.	Knight (2013)
2.	2010/02/04	Scam on behalf of Coca-Cola and Sony.	Wahyu (2010)
3.	2015/09/13	A fraud committed by foreigners.	Friastuti (2015)

One factor assumed to be the trigger for these cases is the low level of awareness among internet users in using this medium. Social media is a means for its users to easily meet, interact, and share information with other users (Dhull & Bhardwaj, 2014). Because of this simplicity, many users attach their personal data such as name, gender, photo, phone number, etc.

## 2. Research Problem

According to Mishna, Saini and Solomon (2009), when a site is increasingly recognized, the site will become a potential element for youth with high risk and damaging habit. This theory explains why social media, especially Facebook, has a big risk because of a lack of awareness of its users as described in the introduction. One factor raising this dangerous potential is the ignorance of information security when exploring and accessing social networking sites. So, the purposes of this study are (1) to measure the level of information security awareness among Facebook user in Indonesia based on gender group and its relationship, (2) to measure the level of information security awareness among Facebook user in Indonesia based on age group and its relationship, (3) to measure the level of security awareness Facebook users in Indonesia based on educational background group and its relationship, and (4) to measure the level of information on security awareness among Facebook users in Indonesia based on income group and its relationship.

## 3. Review of The Relevant Literatur

### *Information Security*

According to Sarno and Iffano, Ershad (2009, p. 35) Security guard Information is information from all possible threats in an attempt to ensure or guarantee business continuity, reduce business risk, and maximize or accelerate return on investment and business opportunities.

### *Security Awareness*

Whitman and Mattord (2011) Security awareness (SA) is a control or rule designed to reduce the incidences of violations of information security, as a result of negligence or the actions that have been planned. According to Iskandar et al. (2012) Security awareness (SA) consists of four indicators, namely basic awareness (basic knowledge about user activity on the site), technical awareness (user's setting to manage his personal account), advocacy (the effort to educate people in the vicinity), and responsiveness (response of incident).

### *Demography*

According to Kotler and Keller (2008), Market segmentation is dividing a market into groups of buyers with desires, characteristics, or different behavior. One form of market segmentation is a demographic that is divided into age, gender, income, while Iskandar et al. (2012) use only two indicators of demographic, namely gender and educational background.

## 4. Methodology

There were 12 questions administered, focusing on information on security awareness through Facebook user perspective. The data was collected and processed using statistical analysis. Descriptive Cross Tabulation method was used for data analysis and SPSS v22.0. These questions were taken from the Journal of Alexander et al. (2012). Respondents came from various gender, age, educational background, and income. The researchers analyzed the security awareness with the following questions:

Table 2: Survey question for Facebook Awareness

Variabel	Question
<b>Basic_1</b>	Aware of pretenders and are very vigilant (in adding them as your friend)
<b>Basic_2</b>	Share or post your personal information such as your phone numbers, home/work address in your profile
<b>Basic_3</b>	Do you think before posting your photos (to avoid it from being exploited).
<b>Basic_5</b>	Add people as friends to your site only if you know them
<b>Basic_6</b>	Meet someone whom you have first 'met' on social networking site.
<b>Technical_1</b>	Use privacy settings of the social networking site.
<b>Technical_2</b>	Install monitoring software to monitor online activities.
<b>Technical_3</b>	Enable privacy settings to restrict who can post and access information on your family or friends websites.
<b>Advocacy_1</b>	Educate them on what information should be kept private and not shared.
<b>Advocacy_2</b>	Tell them to inform you if someone asks or talks about sensitive issues that makes them uncomfortable.
<b>Advocacy_3</b>	Tell them that information posted online cannot be taken back
<b>Responsiveness_1</b>	Respond to harassing or threatening comments posted on your profile.

Source : Iskandar et al. (2012)

The same study was also conducted by Iskandar et al. (2012) about the awareness of social networking users which also researched the awareness of each demographic. For that reason, the researchers would like to use the same question in the present study. But after validation, there are 2 items not valid, which are Basic\_4 and Responsiveness\_2, so in this study, the research just used 12 questions.

## 5. Data Analysis and Discussion

### Respondent Characteristics

This study took a random sample of 400 respondents distributed in Indonesia on December 2015. These are the characteristic respondents who use Facebook at a minimum of once a month.

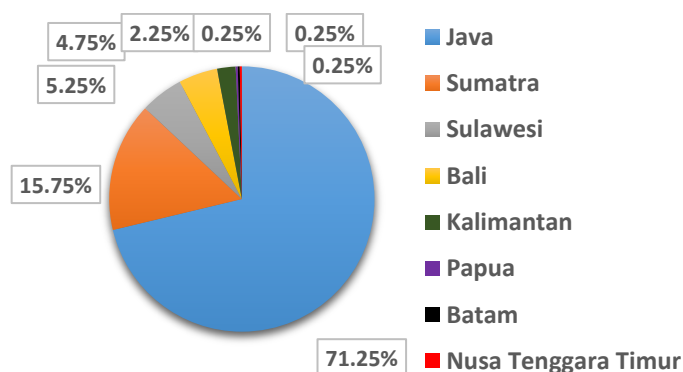


Fig.1 : Responden Composition Based on Origin

Fig. 1 displays that most respondents came from the island of Java at 71.25%

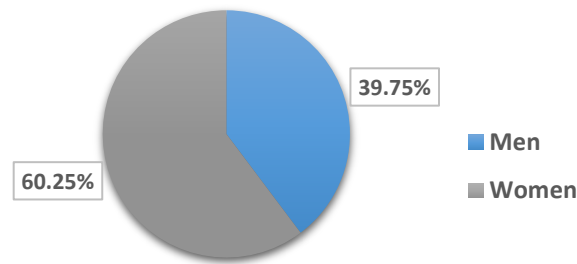


Fig.2 : Responden Composition Based on Gender

Based on Fig. 2, that most of the respondents by gender are female, amounting to 60.25%

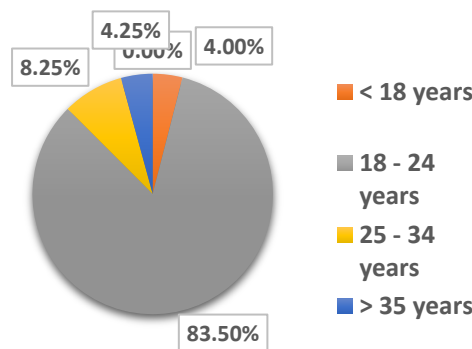


Fig.3 : Responden Composition Based on Age

Fig. 3 illustrates that most of the respondents are Facebook users aged 18-24 years

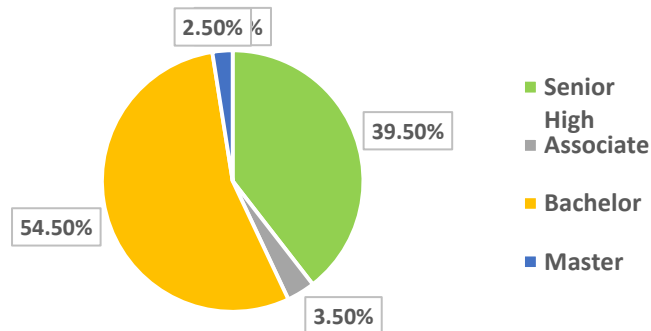


Fig.4 : Responden Composition Based on Academic Background

Figure. 3 illustrates that most of the respondents are Facebook users from Bachelor 54.5%

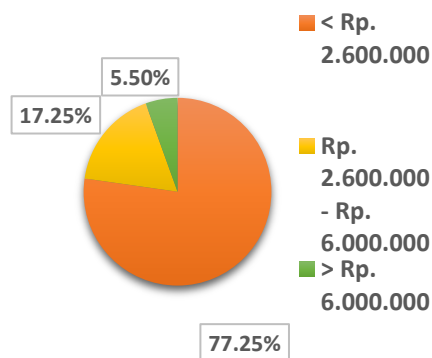


Fig. 5 : Responden Composition Based on Income

From fig.5, it is shown that most of the respondents are users who have an income <Rp 2.600.000

### User's Security Awareness Based on Gender

Table 2 : Result of Crosstab basen on Gender

	Men (%)		Women (%)	
	Yes	No	Yes	No
<b>Average of Basic</b>	75.48	24.52	86.56	13.44
<b>Average of Technical</b>	64.97	35.03	60.73	39.27
<b>Average of Advocacy</b>	51.33	48.67	54.23	49.10
<b>Average of Responsiveness</b>	50.9	49.1	50.2	49.8
<b>Total Average</b>	<b>60.67</b>	<b>39.33</b>	<b>62.93</b>	<b>37.90</b>

Source : SPSS v22.0 data that has been processed

From table 2, it is shown that women (62.93%) have a higher awareness than men (60.67%). Women are more aware than men because men tend to focus on the environment that helps them achieve particular goals. Menalso often read product information, while women may relate to product more on a personal level. Therefore, women pay more attention to their products (Facebook) in order to reduce the risk that occurs due to a lack of awareness of information security(Kotler&Keller, 2007).

### User's Security Awareness Based on Age

Table 3displays that from total average,Facebook users aged<18 years (61.27%) have the highest awareness than other users 18-24 years (62.6%), 25-34 years (54%), and the lowest are those aged>35 years (54.9%). This can be proven because the desire and ability of consumers (Facebook users) change in line with age(Kotler&Keller, 2007).

For basic and technical indicators, Facebook users 25-34 years of agehave more awareness than others with the amount of 84.7% and 68.6%. Advocacy indicator is dominated by Facebook users aged<18 years (68.77%) and responsiveness is dominated by Facebook users aged 18-24 years (55.1%).

Table 3:Result of Cross Tab Based on Age

	<b>&lt; 18 Years (%)</b>		<b>18 – 24 Years (%)</b>		<b>25-34 Years (%)</b>		<b>&gt;35 Years (%)</b>	
	Yes	No	Yes	No	Yes	No	Yes	No
<b>Average of Basic</b>	82.5	17.5	81.72	18.28	84.76	15.16	84.68	15.32
<b>Average of Technical</b>	56.30	43.80	62.37	37.63	68.67	31.33	56.87	43.13
<b>Average of Advocacy</b>	68.77	31.27	51.30	48.70	38.37	61.63	54.90	45.10
<b>Average of Responsiveness</b>	37.5	62.5	55.1	44.9	24.2	75.8	23.5	76.5
<b>Total Average</b>	<b>61,27</b>	<b>38,77</b>	<b>62,62</b>	<b>37,38</b>	<b>54,00</b>	<b>45,98</b>	<b>54,99</b>	<b>45,01</b>

Source : SPSS v22.0 data that has been processed

According to the results obtained, Facebook users aged <18 years have highest awareness because young people 7-19 years old are consumers of the teenage market. People 16-29 years are called as a new generation in which accessing to information and exploring the internet is common, and some of them are smart shoppers (Facebook users)(Sangadji&Sopiah, 2013).

### User's Security Awareness Based on Academic Background

Table 4 : Result of Cross Tab Based on Academic Background

	<b>Senior High (%)</b>		<b>Associate (%)</b>		<b>Bachelor(%)</b>		<b>Master (%)</b>	
	Yes	No	Yes	No	Yes	No	Yes	No
<b>Average of Basic</b>	83.30	16.70	64.28	35.72	82.20	16.88	88.00	12.00
<b>Average of Technical</b>	60.53	39.47	64.30	35.70	63.17	36.83	73.33	26.67
<b>Average of Advocacy</b>	53.37	46.63	52.37	47.63	48.20	51.80	76.67	23.33
<b>Average of Responsiveness</b>	54.4	45.6	50.0	50.0	38.1	61.9	50.0	50.0
<b>Total Average</b>	<b>62,90</b>	<b>37,10</b>	<b>57,74</b>	<b>42,26</b>	<b>57,92</b>	<b>41,85</b>	<b>72,00</b>	<b>28,00</b>

Source : SPSS v22.0 data that has been processed

Table 4 illustrates that Facebook users with master's degrees have a better awareness than others (72.00%) in line with basic indicator (88.0%) and technical indicator(73.3%). For responsiveness indicator, the highest average is high school diploma users (54.4%). From the results, the higher the educational background, the more Facebook users gain security awareness. It is clear that Facebook users with master's degrees have the highest awareness and high school students have the lowest awareness. This is supported by the statement (Setiadi, 2003) that highly educated people gain enough information and are open to new ideas.

### User's Security Awareness Based on Income

Table 5 explains that Facebook users who have income >Rp. 6,000,000 have the highest awareness (65.82%) compared to users who have income <Rp. 2,600,000 or Rp. 2,600,000 - Rp. 6,000,000. For the basic indicator, users with income of Rp. 2,600,000 - Rp. 6,000,000 have the highest awareness with the amount of 84.075%. For the technical indicators, users with income >Rp. 6,000,000 have the highest average at 69.70%. Users with income >Rp. 6,000,000 are also the highest in the average of advocacy indicator. And responsiveness of 52.8% belongs to users with income <Rp. 2,600,000.

Table 5 : Result of Cross Tab Based On Income

	<Rp. 2.600.000 (%)		Rp. 2.600.000 - Rp. 6.000.000 (%)		>Rp. 6.000.000 (%)	
	Yes	No	Yes	No	Yes	No
<b>Average of Basic</b>	82.26	17.74	84.075	15.925	78.4	21.6
<b>Average of Technical</b>	60.93	39.07	66.67	33.33	69.70	30.30
<b>Average of Advocacy</b>	49.23	50.47	55.07	44.93	65.17	34.83
<b>Average of Responsiveness</b>	52.8	47.2	40.6	59.4	50	50
<b>Total Average</b>	<b>61,31</b>	<b>38,62</b>	<b>61,60</b>	<b>38,40</b>	<b>65,82</b>	<b>34,18</b>

Source : SPSS v22.0 data that has been processed

Based on the results of the study, Facebook users with income (> Rp. 6000,000) have high levels of information security awareness, while users with income <Rp. 2,600,000 have the lowest information security awareness.

### Relationship between Awareness and Demography

Table 6: Result of Chi Square Based on Demography

Item	Gender	Age	Education Background	Income
Basic_1	√	×	×	×
Basic_2	√	×	×	×
Basic_3	×	×	√	×
Basic_5	√	×	×	×
Basic_6	√	×	×	×
Technical_1	×	×	×	×
Technical_2	√	×	×	√
Technical_3	×	√	×	×
Advocacy_1	×	×	×	√
Advocacy_2	×	×	√	×
Advocacy_3	×	√	×	×

**Responsiveness\_1**

×

√

×

×

Source : SPSS v22.0 data that has been processed

Based on the table above, there are relationships between awareness and gender, therefore, there are differences in security awareness among men and women in terms of adding friends, sharing information, restricting friends, meeting new people, and software installation. This is because men and women have the orientation of the different attitudes and behavior (Kotler & Keller, 2007). There are also relationships between awareness and age or there are differences among users between the ages of <18 years, 18-24 years, 25-34 years and > 35 years in terms of activating the privacy settings, reminding people nearby, and responding to threats because people buy goods and services according to their needs in life. Therefore, their taste in buying things is also associated with age (Kotler & Keller, 2007).

Based on educational background, there are relationships between awareness and educational background, therefore, there are differences in security awareness among users with high school diploma, associate's, bachelor's, and master's degree in terms of not sharing personal information and reporting people closest to them since social networking users who have higher education are more aware of information security (Whitman & Mattord, 2011). Education does not only affect to the ability to earn a better income but also affects the attitudes and behaviors in daily life (Tarigan, 2006). There are also relationships between awareness and income or there are differences in security awareness among Facebook users with income <Rp. 2,600,000, Rp. 2,600,000 - Rp. 6,000,000, and >Rp. 6,000,000 in the case of installing monitoring software and educating people closest to them since people with higher income have a lot of resources which relate to their self-orientation and are important to them (Setiadi, 2003).

## CONCLUSION

The main purpose of this paper is to measure security awareness of Facebook users. The security awareness is divided into four categories, namely: basic, technical, advocacy, and responsiveness indicators. This study is investigated based on the demographics of Facebook users, namely: gender, age, educational background, and income. Based on gender difference, women have higher levels of information security awareness than men in terms of adding friends, sharing information, restricting friends, meeting new people, and software installation. From the group of age, users <18 years have higher information security awareness than the other age categories in terms of limiting access to information, reminding people closest to them, and responding to threats. Based on educational background, Facebook users with master's degrees have the highest awareness compared to the other educational backgrounds in terms of sharing information and reporting people closest to them. Then, from the income group, Facebook users who earn highest income (> Rp. 6,000,000) have a level of information security awareness which is higher than the others in terms of installing the software and educating people closest.



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