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An Information Security Awareness Investigation of E-commerce Users: A Case Study of Traveloka

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ABSTRACT

Traveloka is an e-commerce site in Indonesia that provides airline, train, bus, shuttle, activity& recreation ticketing and hotel booking services.Traveloka is one of 4 Unicorn Startups in Indonesia and is the most widely used travel application today. This reputation has resulted in trust and a very large number of users. However, it does not guarantee that Traveloka is free from information security threats such as phishing, which can endanger consumers because criminals on the internet will always have new ways to commit crimes.This study aims at measuring the level of information security awareness of Traveloka e-commerce users based on demographics (gender, age, educational background, income level, and expense level).The indicators of awareness used include basic, technical, advocacy, and responsiveness.Data were analyzed using methods of cross-tabulation and chi-square to reveal the proportions and differences in the level of awareness of Traveloka users towards information security based on demographic categories.The researchers finally found that several items of information security awareness of Traveloka e-commerce users are influenced by the demographic indicators. However, some others, such as changing passwords or PINs every three months (basic) and making sure all email attachments are scanned (technical) need to be improved because they have a lower level of awareness.

Key words: E-commerce, Information Security Awareness, Demography, Traveloka.

1. INTRODUCTION

Information and communication technology has changed the way people deal with daily activities and business.The business sector has been penetrated by the role of information and communication technology for several years [1]. Information Technology (IT) gives potential for industries, it can increase profitability and consumer satisfaction [2]. Based on data published by the Indonesian Internet Service Providers Association (APJII) in 2017, it was found that as many as 143.26 million Indonesians were internet users, and the growth had started from 1998 to 2017[3].Data from wearesocial.com on 30 January 2018 revealed that 45% of the internet users searched for products or services online, 45% visited online retail stores, 40% bought products or services online, 31% made online purchases using a laptop or computer and 31% made online purchases through mobile devices[4].

Online shopping is very popular in Indonesia because of the ease of the process and the system. It has now penetrated all types of services and products. One of the most desirable things to buy online is various needs related to travel [5].This is in line with changes in the consumption patterns of Indonesian people from being mere buyers of various goods and commodities in the past to becoming consumers of various recreational products and services today. According to Sri Soelistyowati, Deputy of Balance sheet and Statistics Analysis, the increase in demand for recreational activities is due to higher work pressure.[6]. Based on data published by APJII in 2016, tickets are the most purchased products online in Indonesia, reaching 25.7%. Transportation, recreation, event/activity, and cinema tickets are the most offered and purchased[7].

Traveloka is an e-commerce site in Indonesia that provides airline, train, bus, shuttle, activity & leisure ticketing, and hotel booking services[8]. According to katadata.co.id, Traveloka is one of 4 Unicorn Startups in Indonesia, along with Gojek, Tokopedia, and Bukalapak[9]. This makes Traveloka a technology company considered to have unusual ideas and solutions with a valuation of more than US $ 1 billion[10]. Furthermore, based on SimilarWeb data, Traveloka is ranked the best in the Travel & Tourism category[11]. Despite the above achievements, Traveloka users still face information security threats. The following are phishing cases that happened to several Traveloka users:

Table 1: Traveloka Phishing Cases

No	Date	Case	Source
1	19/02/2019	Fraud by a hijacker in aTraveloka Paylater Account	Ramli Ahmad (2019) [12]
2	09/03/2019	Misuse of TravelokaPaylater deactivated account	SitiNurbayani (2019) [13]
3	14/03/2019	The use of a Traveloka account by someone else but the payment was charged to the account owner	MeylindaRachmadanniar (2019) [14]
4	01/08/2019	TravelokaPayLater account hijacking	ArieNugraha (2019) [15]

One factor that could allow the cases in table 1 to occur is the low level of information security awareness. Information security is important because it is useful for protecting the assets of organizations and individuals from various threats[16].Threats come not only from external parties or cyberspace, but also from internal and environmental influences[17].Criminals, on the other hand, always find new ways of committing crimes, and they make the growth of cybercrime continue to increase.[18].

Considering the above explanation, the researchers were encouraged to measure the level of information security awareness of Indonesian internet users and remind them of the negative effects of sloppy online shopping.

2. THEORETICAL BACKGROUND

Management information system is the implementation of an information system in an organization to facilitate information needs for all levels of management [16]. Management information system is a system providing data or information which can affect all computer operations[19].In addition, management information security system is a structure of process based on a business risk approach aimed at planning, implementing & operating (Do), monitoring & reobserving (Check), and maintaining& expanding (Act) corporate information security [20]. Meanwhile, the information security management system is closely related to "how users secure their information," and security awareness plays an important role in this situation.

Security awareness is a set of rules made with the aim of reducing the number of incidents or violations of information security due to carelessness or intentionality.[21]. Agung et al., in their research, employed four indicators to measure information security awareness, including the basic, technical, advocacy, and responsiveness[22].

Kotler & Armstrong divided demographic segmentation into age, gender, family size, family life cycle, income, position, education, religion, race, and nationality[23]. Whereas Agung et al. classified demographics into gender, age, educational background, income level[22].

This research focuses on information security awareness of Traveloka e-commerce users in Indonesia. This study measures the level of information security awareness (basic, technical, advocacy, and responsiveness) of Traveloka e-commerce users based on their demographic categories (gender, age, educational background, income level, and expense level). Demographics are user characteristics and the components of information system

3. METHOD

Data in this study were collected using convenience sampling through the selection of several members of the population willing to be sampled to provide the information needed.[24]. The respondents are Indonesians who have used Traveloka. The questionnaire contained 34 questions about information security awareness when using Traveloka e-commerce. The collected data was then processed using SPSS v23. The respondents were grouped by gender, age, educational background, income level, and expense level. Data analysis was carried out using cross-tabulation descriptive method. Table 2 below shows the questions cited from the journal of Agung et al. [22] and the journal of Koyuncu et al.[25] which was adapted to Traveloka e-commerce:

Table 2: List of Questions for Traveloka Users

Variable	Question
Basic_1	I change my password or PIN every three months
Basic_2	I create a password with a difficult combination
Basic_3	I do not leave the computer unattended when making transactions
Basic_4	I do not keep personal confidential data on smartphone
Basic_5	I use a password for securing confidential private data on Smartphone
Basic_6	I do always log out after using an e-mail or other accounts
Basic_7	I respond toemails requesting personal information, logging in information or changing password notification
Basic_8	I always check the balance in my account every time I make a transaction or check any unauthorized transactions
Technical_1	I use https: // in the URL instead of http: // when logging in
Technical_2	I see the status bar for the security icon (padlock)
Technical_3	I install softwares from trusted sources
Technical_4	I always update software with the latest version
Technical_5	I read the privacy policy
Technical_6	I read the information policy
Technical_7	I pay attention to what my application can access on my mobile
Technical_8	I pay attention to what my application can access on my mobile
Technical_9	I ensure all email attachments are scanned
Technical_10	I always update patches or existing files
Technical_11	I delete browser cache,cookies in the browser
Technical_12	I delete history transaction on browser after completingan online transaction
Technical_13	Data (internet) connection on my smartphone is not always active
Technical_14	I do not use Wi-Fi with open access in public places
Technical_15	I use an antivirus program on my smartphone and computer

Advocacy_1	I educate the people closest to me about what information must be kept confidential and not to be shared
Advocacy_2	I ask my closest people to let me know if someone asks them to talk about sensitive things or make them uncomfortable.
Advocacy_3	I told my closest people that the information posted could not be retrieved.
Responsiveness_1	I respond to harassment or threat posts in my profile.
Responsiveness_2	I respond if there is a fraudster or sexual offender in the site.
Responsiveness_3	I contact the company's official call center if I receive an email message about winning the Lottery to verify the truth

With reference to the explanation above, the research framework was then arranged to be displayed as in Figure 1.

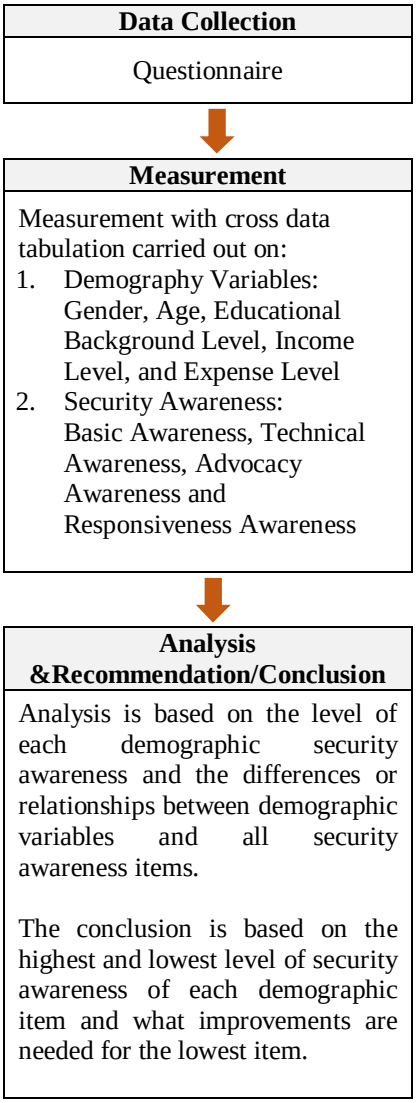

Figure 1: Research Framework

4. RESULTS AND DISCUSSION

This study involved 400 respondents as the sample, and the survey took place in Indonesia in January 2020. Tables 3 through 7 show the characteristics of respondents who have used Traveloka at least once.

Table 3: Respondent Characteristics Based on Gender

Gender	(%)
Man	45%
Woman	55%

Table 4: Respondent Characteristics Based on Age

Age	(%)
10 y.o. < x ≤ 25 y.o.	59%
25 y.o. < x ≤ 40 y.o.	27%
40 y.o. < x ≤ 60 y.o.	13%
60 y.o. < x ≤ 74 y.o.	1%

Table 5: Respondent Characteristics Based on Educational Background

Education Level	(%)
Senior High School	30%
Associate's Degree	9%
Bachelor Degree	61%
Master Degree	1%

Table 6: Respondent Characteristics Based on Income Level Per Month

Income Level	(%)
≤ Rp 2,000,000	26.5%
Rp 2,000,001 – Rp 5,000,000	38.8%
Rp 5,000,001 – Rp 10,000,000	26%
Rp 10,000,001 – Rp 20,000,000	8.5%
>Rp 20,000,000	0.3%

Table 7: Respondent Characteristic Based on Expense Level for online Shopping Per Month

Expense Level	(%)
<Rp 1,000,000	75%
Rp 1,000,000 - Rp 2,000,000	21%
Rp 2,000,000 - Rp 3,000,000	3%
>Rp 3,000,000	1%

After discussing the characteristics of the respondents above, the following Table 8 to Table 12 will illustrate the results of security awareness analysis using cross-tabulations.

Table 8: Results of Cross Tabulation Analysis Based on Gender (%)

Item	Men		Women	
	Yes	No	Yes	No
Basic	71	29	66	34
Technical	70	31	66	35
Advocacy	85	15	81	19
Responsiveness	43	57	44	56
Total Average	67	33	64	36

Based on Table 8, the total average shows that men (67%) have greater security awareness than women (64%). This is supported by LIPI's research that men tend to have a higher level of understanding concerning science and technology issues than women[26]. Basic_8 has the highest value in men's security awareness, which means they always check the balance in their account every time they make a transaction or check any unauthorized transactions. Meanwhile, Responsiveness_1 has the lowest value in men's security awareness, which means they do not respond to harassment or post threats on their profile.Women have the highest value of security awareness in Technical_3, which means they more often installsoftware fromtrusted sources. Basic_1 has the lowest value in women's security awareness, which means they do not pay attention tochanging their password or PIN every three months.The results of this study in terms of gender are in contrast with the research of Agung et al.[22], which investigated a marketplace users and Sari et al.[27] which researched the social media users. Their results showed that women have greater safety awareness than men

Table 9: Results of Cross Tabulation Analysis Based on Age (%)

Item	10<x≤25		25<x≤40		40<x≤60		60<x≤ 74	
	Y	N	Y	N	Y	N	Y	N
Basic	63	37	77	23	68	33	63	38
Technical	65	35	73	27	66	34	53	47
Advocacy	70	22	93	7	83	17	67	33
Responsiveness	49	51	37	63	34	66	17	83
Total Average	62	36	70	30	63	37	50	50

What makes this research different from the previous ones is that it uses generation theory.Based on Table 9, the total average shows that the 25 y.o. $<x \leq 40$ y.o. age group has the highest level of security awareness (70%). As known that the age group of 25 y.o.$<x \leq 40$ y.o. is generation Y (born between 1980 - 1995) whose daily lives are inseparable from information technology.[28]. Generation Y is passionate users of social media, and their lives are greatly influenced by technological developments[29].Advocacy has the highest value in each age group. It means they are aware of the need to teach and educate their closest people about information security issues, especially their families, relatives, and children. Then, each age group has the same lowest security awareness value on Responsiveness, which means they are not aware of acting or responding to incidents or a suspicious account on an e-commerce site (Traveloka). This research uses a different age group reference from the research of Agung et al. and Sari et al. Agung et al.[22]which stated that 36 y.o – 45 y.o age group has the highest level of security awareness, while Sari et al. argued that < 18 y.oage group has the highest level of security awareness[27].

Table 10: Results of Cross Tabulation Analysis Based on Educational Background Level (%)

Item	Senior High School		Associate's Degree		Bachelor Degree		Master Degree	
	Y	N	Y	N	Y	N	Y	N
Basic	61	39	70	30	70	30	91	9
Technical	65	35	68	33	68	32	75	25
Advocacy	70	22	93	7	83	17	67	33
Responsiveness	49	51	37	63	34	66	17	83
Total Average	61	37	67	33	64	36	62	38

Based on Table 10, respondents with an Associate degree have a better level of security awareness than respondents with other levels of educational background (67%).Those with Associate degrees are superior in advocacy awareness (93%).From the results of this study, it is obvious that those with Associate degrees are confident in applying knowledge advocacy. The Associate's degree has the highest value in Advocacy, it means they have an awareness of the need to teach and educate their closest people about information security issues, especially families, relatives, and children. Then, each level of educational background has the lowest value of security awareness on Responsiveness, which means they are not aware of acting or responding to incidents or a suspicious account on an e-commerce site (Traveloka). The results of this research in terms of educational level are in accordance with the research of Agung et al.[22], which produced the Associate Degree as the highest percentage.It differs from the research of Sari et al., which revealed that Master degree is the educational background with the highest security awareness values[27].

Table 11: Results of Cross Tabulation Analysis Based on Income Level Per Month (%)

Item	≤ Rp2,000,000		Rp2,000,001 - Rp5,000,000		Rp5,000,001 - Rp10,000,000		Rp10,000,001 - Rp20,000,000		> Rp20,000,000	
	Y	N	Y	N	Y	N	Y	N	Y	N
Basic	63	37	63	37	75	25	81	20	50	50
Technical	63	37	65	35	71	29	75	25	67	33
Advocacy	82	18	85	15	82	18	100	0	82	18
Responsiveness	43	57	48	52	40	60	36	64	67	33
Total Average	63	37	65	35	67	33	73	27	66	34

Based on Table 11, the total average shows that users with an income level of Rp 10,000,000 - Rp 20,000,000 have a better level of security awareness than the respondents with other income levels (73%).The results also show that the users with an income level of ≤ Rp. 2,000,000 have the lowest level of security awareness compared to respondents with other income levels. When viewed from the lowest to highest income levels, most security awareness percentages show an increasing trend except for the income level of>Rp. 20,000,000, which decreased by 7%.Advocacy has the highest value of security awareness in each income level group. This means that they have an awareness of the need to teach and educate their closest people about information security issues, especially their families, relatives, and children. However, the group with theincome level of Rp 10,000,000 - Rp 20,000,000 has the highest value ofAdvocacy awareness. Responsiveness is the lowest security awareness based on income level, it means they are not aware of acting or responding to a suspicious incident or account on the e-commerce site (Traveloka).The research of Sari et al. showeda different result related to this category because, according to them, the group with the income level of >Rp. 6,000,000 has the highest security awareness[27].

Table 12: Results of Cross Tabulation Analysis Based on Expense Level for Online Shopping Per Month (%)

Item	< Rp1,000,000		Rp 1,000,000 - Rp2,000,000		Rp 2,000,000 - Rp3,000,000		>Rp 3,000,000	
	Y	N	Y	N	Y	N	Y	N
Basic	66	34	76	24	64	36	46	54
Technical	66	35	71	26	63	37	38	62
Advocacy	81	19	89	11	77	23	100	0
Responsiveness	43	57	45	55	36	64	67	33
Total Average	64	36	70	29	60	40	63	37

Based on Table 12, respondents with the expense level of Rp 1,000,000 - Rp2,000,000 have a better level of security awareness than those of other expense levels (70%).While respondents with the expense level of Rp 2.000.000 - Rp3.000.000 have the lowest value of security awareness. Advocacy is the highest security awareness at every level of expenditure, which means they have an awarenessof the need to teach and educate their closest people about information security issues, especially their families, relatives, and children. The respondents with >Rp 3.000.000 income level have the lowest value inTechnical awareness, it means they are not aware of technical settings for owning or accessing a secure site. The expense level was not used as a demographic variable in the research of Agung et al. and Sari et al. [20] [25].

After showing the cross-tabulation analysis, the researchers will present a chi-square analysis to find out the correlations between each security awareness andthe demographic indicators (there are responses that differ from demographic indicators on awareness items). The measurement is based on two criteria: Chi-Square Count> Chi-Square Table results and significance <0.05[30]. The results can be seen in Table 13.

Tabel 13: The Relationships between Each Awareness Item and The Demographic Indicators

Item	Gender	Age	Educa-tional Level	Income Level	Expense Level
Basic_1	x	√	√	√	√
Basic_2	√	√	√	√	√
Basic_3	x	√	√	√	√
Basic_4	x	√	√	√	x
Basic_5	x	√	x	x	x
Basic_6	√	√	x	√	x
Basic_7	x	√	x	√	√

Basic_8	√	x	x	√	√
Tech_1	x	√	x	√	x
Tech_2	x	x	x	√	x
Tech_3	x	x	x	√	√
Tech_4	x	√	x	√	√
Tech_5	x	√	x	√	√
Tech_6	x	√	x	√	√
Tech_7	x	√	√	x	x
Tech_8	x	√	√	√	√
Tech_9	x	√	x	x	x
Tech_10	x	√	x	√	x
Tech_11	x	x	x	x	x
Tech_12	x	√	x	√	x
Tech_13	x	√	√	√	√
Tech_14	x	√	√	√	√
Tech_15	x	√	x	√	√
Advocacy_1	x	√	x	√	x
Advocacy_2	x	x	x	x	x
Advocacy_3	x	√	x	√	√
Respon_1	x	√	x	√	x
Respon_2	x	√	√	√	x
Respon_3	x	√	x	√	x

The results of this study about respondents based on gender indicate that both men and women have relationships and differences with awareness items of Basic_2, Basic_6, and Basic_8. Men and women have a tendency to understand various technological problems [24], but the difference affects their answers to questions: creating passwords in difficult combinations, logging out after using an email or other account, always checking the balance in the account every time a transaction is carried out or checking any invalid transaction.

Meanwhile, in the group of respondents based on age, it can be seen that the age groups have a relationship or differences with almost all items except Basic_8, Tech_2, Tech_3, Tech_11, and Advocacy_2. This refers to the generation theory put forward by Putra's research [26], which stated that there are differences in the characteristics of each generation, for example, the lives of generations Y and Z are strongly attached and influenced by technological developments.

In the group of respondents based on education level, it was found that education level has a relationship with awareness of changing passwords or PINs every three months, making passwords with difficult combinations, not leaving the computer unattended when making transactions, not storing personal data on smartphones, paying attention to what applications can be accessed on a smartphone, paying attention to what application can be run and activated, not always activating the data connection (internet) on a smartphone, not using Wi-Fi with open access in public places and not responding to fraudsters or sexual criminals on the site (Traveloka).

In the group of respondents based on income level, it was revealed that income levels have a relationship or difference with almost all security awareness items except Basic_5, Tech_7, Tech_9, Tech_11, and Advocacy_2.

In the group of respondents based on expense level, it was found that expense levels have a relationship or difference with changing passwords or PINs every 3 months, making passwords with difficult combinations, not leaving the computer unattended when making transactions, not responding to emails asking for personal information, login information, or change password notifications, always checking the balance in my account every time I make a transaction or checking for unauthorized transactions, installing software from trusted sources, updating the latest version of the software, reading the privacy policy, reading the information policy, paying attention to what applications can be run and activated, not always activating the data connection (internet) on my smartphone, not using Wi-Fi with open access in public places, using antivirus programs on my smartphone & computer and notifying the closest persons that the information posted is irrevocable.

On the other hand, the categories of awareness that have no relationship with demographic indicators are technical awareness and advocacy awareness. They are contained in Tech_11: delete cache and cookies in the browser and Advocacy_2: ask the closest person to let you know if someone asks or talks about something sensitive and uncomfortable. Low value security awareness items need to be developed to create a sense of security in carrying out e-commerce activities.

Table 14: The lowest level of Average Awareness (%)

Item	Gender	Age	Educational Level	Income Level	Expense Level
Basic_1	17	15	31	17	17
Tech_9	40	39	37	51	44
Tech_10	44	41	41	33	40
Respon_1	21	10	15	33	22

It is seen in Table 14 that a basic awareness item, Basic_1: changing your password or PIN every three months, has the lowest average level of awareness in each demographic category, and it needs to be improved. However, Basic_1 has a relationship with demographic items such as age, education level, income level, and expense level.

In terms of technical awareness, Technical_9: ensuring all email attachments are scanned, has a low value. Then, based on Table 13, this item has a relationship with or influence on only one demographic item (age), so it needs to be improved.

5. CONCLUSION

It can be concluded from the results that some items of information security awareness have a relationship with demographic elements. Based on gender, men have a higher level of information security awareness than women, especially on basic and advocacy awareness. Based on the age group, the 25 years old $<x \leq 40$ years old has a higher level of information security awareness compared to other groups, which shows that generation Y has the highest level of awareness. Based on educational background,the level of Associate Degree has the highest level of security awareness information compared to others. Based on income level, users from the group with an income level of IDR 10,000,000 - IDR 20,000,000 has a superior level of information security awareness. Based on expense level, those with the expenditure of Rp 1,000,000 - Rp2,000,000 have a higher level of information security awareness compared to other groups.

However, there are also some indicators of security awareness items that still need to be improved, such as: changing passwords or PIN every three months (basic) and ensuringall email attachments are scanned (technical).

For further research, it is suggested to measure the information security awareness of other e-commerce users in the same travel category to ensure the information security awareness levels to minimalize risks.

REFERENCES

1. E. Kasparova, **ICT Usage in the Czech Business and the Strategy of Digital Literacy in the Czech Republic**, *International. Journal of Advanced Trends Computer Sciene and Engineering*, Vol. 8, pp. 51–54, 2019. https://doi.org/10.30534/ijatcse/2019/1181.32019
2. S. Sorooshian and T. S. Teck, **Information Technology for Supply Chain Management: Literature Review**, *International. Journal of Advanced Trends Computer Sciene and Engineering*, Vol. 9, pp. 80–86, 2020. https://doi.org/10.30534/ijatcse/2020/13912020
3. APJIII, **Infografis Penetrasi & Perilaku Pengguna Internet Indonesia.** Jakarta, 2017.
4. S. Kemp, **Digital In 2018,** 2018, available at https://wearesocial.com/blog/2018/01/global-digital-report-2018
5. A. P. Sari, I. M. K. Negara, and I. W. Suardana, **Analisis Faktor-Faktor Yang Mendorong Wisatawan Melakukan Keputusan Pembelian Tiket Pesawat Melalui Mobile Booking Pada Situs Traveloka.com**, *Jurnal Industri Perjalanan Pariwisata*, Vol. 4, pp. 74–78, 2016. https://doi.org/10.24843/IPTA.2016.v04.i01.p14
6. G. Gumelar, **BPS: Tren Konsumsi 'Leisure' Masih akan Bergeliat 2018**, 2018, available at https://www.cnnindonesia.com/ekonomi/20180205142550-92-273890/bps-tren-konsumsi-leisure-masih-akan-bergeliat-2018
7. APJII, **Infografis Penetrasi & Perilaku Pengguna Internet di Indonesia. Jakarta,** 2016.
8. Traveloka, **Profil Travelok**a, available at https://en.wikipedia.org/wiki/Traveloka
9. A. Lidwina, **Profil 4 Startup Unicorn Indonesia, 2019**, available at https://katadata.co.id/infografik/2019/08/01/profil-4-startup-unicorn-indonesia
10. CNN Indonesia, **Mengenal Istiral Unicorn dalam 'Dunia' Startup**, 2019, available at https://www.cnnindonesia.com/teknologi/20190218014809-185-370201/mengenal-istilah-unicorn-dalam-dunia-startup
11. SimilarWeb, **Top Websites**, 2019, available at https://pro.similarweb.com/#/industry/topsites/Travel_and_Tourism/360/1m?webSource=Total
12. A. Ramli, **Astagfirullah, akun Traveloka Saya Dibobol dan Fasilitas PayLater Disalahgunakan**, 2019, available at https://mediakonsumen.com/2019/02/19/surat-pembaca/astagfirullah-akun-traveloka-saya-dibobol-dan-fasilitas-paylater-disalahgunakan
13. S. Nurbayani, **Traveloka Tidak Bertanggung Jawab atas Penyalahgunaan PayLater yang Telah Ditutup**, 2019, available at https://mediakonsumen.com/2019/04/09/surat-pembaca/traveloka-tidak-bertanggung-jawab-atas-penyalahgunaan-paylater-yang-telah-ditutup
14. M. Rachmadanniar, **PayLater Traveloka Dipakai Orang Lain dan Lagi-lagi Pelanggan Disalahkan**, 2019, available at https://mediakonsumen.com/2019/03/14/surat-pembaca/paylater-traveloka-dipakai-orang-lain-dan-lagi-lagi-pelanggan-disalahkan/comment-page-2
15. A. Nugraha, **Fasilitas Traveloka PayLater Saya Dibobol dan Tagihan Tetap Dibebankan Kepada Saya**, 2019, available at https://mediakonsumen.com/2019/08/01/surat-pembaca/fasilitas-traveloka-paylater-dibobol-tagihan-tetap-dibebankan-kepada-saya
16. Sutabri, **Konsep Sistem Informasi**. Yogyakarta, Andi, 2012.
17. Candiwan, P. K. Sari, and N. Nurshabrina, **Assessment of Information Security Management on Indonesian Higher Education Institutions**, *Advanced Computer and Communication Engineering Technology*, pp. 375–385, 2016.
18. R. K. Alqurashi, M. A. Alzain, B. Soh, M. Masud, and J. Al-Amri, **Cyber attacks and impacts: A Case Study in Saudi Arabia**, *International. Journal of Advanced Trends Computer Sciene and Engineering*, Vol. 9, pp. 217–224, 2020. https://doi.org/10.30534/ijatcse/2020/33912020
19. Nafiudin, **Buku Ajar Mata Kuliah Sistem Informasi Manajemen.** Published by Penerbit Qiara Media, Pasuruan, 2019.
20. R. Sarno and I. Iffano, **Sistem Manajemen Keamanan Informasi.** Published by ITS Press,

Surabaya, 2009.
21. M. E. Whitman and H. J. Mattord, **Principles of Information Security,4th Edition**. Published by Cengage Learning, Atlanta, 2011.
22. P. M. Agung and Candiwan, **Measurement of Information Security Awareness E-Commerce Tokopedia Users in Indonesia**, *Journal Advanced Science Letters*, Vol. 24, pp. 2926–2930, 2018. https://doi.org/10.1166/asl.2018.11096
23. P. Kotler and A. Gary, **Prinsip-prinsip Pemasaran**, **12th ed**. Published by Erlangga, Jakarta, 2008.
24. P. Indrawati, **Metode Penelitian Manajemen dan Bisnis. Konvergensi Teknologi Komunikasi dan Informasi.** Published by Refika Aditama, Bandung, 2015.
25. M. Koyuncu and P. Tolga, **Security Awareness Level of Smartphone Users: An Exploratory Case Study**, Hindawi Mobile Information System, Vol. 2019, 2019. https://doi.org/10.1155/2019/2786913
26. A. Krisnawati and H. R. Taslima, **Gender Dalam Ilmu Pengetahuan dan Teknologi: Perkembangan, Kebijakan & Tantangannya di Indonesia**. Published by LIPI Press, Anggota Ikapi, Jakarta, 2018.
27. P. K. Sari and F. S. Sihotang, **Measurement of Information Security Awareness Among Facebook Users in Indonesia,***Journal of Contemporary Education and Communication Technology*, Vol. 2, pp. 104–113, 2016.
28. Y. S. Putra, **Theroritical Review: Teori Perbedaan Generasi,**Among Makarti, Vol. 9, 2016.
29. S. Lyon, **An Exploration of Generational Values in life and At Work**, *ProQuest Diessertations and Theses*, pp. 441–441, 2004.
30. D. Priyatno, **Analisis korelasi Regresi dan Multivariate dengan SPSS**. Published by Gava Media, Yogyakarta, 2014.