

ANALYSIS OF FACTORS AFFECTING BEHAVIOR OF STUDENTS ONLINE SHOPPING (CASE: DIPONEGORO UNIVERSITY)

Zainal Fanani Rosyada, Naniek Utami Handayani, Manik Mahacandra, Ega Rizkiyah.

Department of Industrial Engineering

Diponegoro University

Semarang, 50275, Indonesia

rosyada@lecturer.undip.ac.id, naniekh@ft.undip.ac.id, manik.mahachandra@ft.undip.ac.id,
egarizkiyah@students.undip.ac.id

Abstract

Shopping online is a phenomenon that is growing rapidly nowadays. The growth of the industry indicates that there is still great potential in the e-commerce market. The internet provides new opportunities for marketers to improve marketers' practices when developing marketing strategies. The younger generation (18 to 30 years old) is not only more familiar with e-commerce, but also processes information on the website five times faster than the older generation (58 to 75 years old). Students are the biggest potential market in Indonesian for online shopping. This research provides a significant contribution to obtaining information about student behavior in online shopping. This study aims to understand market segmentation for online shopping in Indonesia. Knowing factors that influence online shopping behavior is fundamental and important for providers of products or services in online shopping. The hypothesis of this research is processed using multiple linear regression analysis. The result of the analysis is a recommendation to improve business strategy. Based on the research results, factors that significantly influence online shopping behavior are perceived risk, online advertising, trust and security, and enjoyment. The recommendations are completeness of the information and good handling in shipping goods, innovative advertising concepts, ensuring the confidentiality and security of consumer data in conducting transactions, as well as providing products quickly, safely, and easily.

Keywords:

Online shopping behavior, multiple linear regression, t-test, recommendations

1. Introduction

The growth of information technology makes the internet based business application also grow together. Based on the APJII (Indonesian Association of Internet Provider) in 2018, the user of the internet has grown by 10.12% since the last year. In 2018 the internet user was 64.8% while in 2017 was 54.68%. The internet user in Central Java was 14.3% of the total internet user in Java Island. Based on the education, 92.6% of the university student is the active user while the last 7.4% is not active. Based on age, 91% of people between 15 to 19 years old were active internet users, and 88.5% in the people between 20 to 24 years old. The survey also has shown that 1.7% of the internet user did an online shop.

Online shop is the current phenomena that grow rapidly. The exponential growth of the business actors shows that there was a big opportunity in e-commerce (Lim, etc., 2016). The actors of e-commerce are firms, companies, industries, and customers (Qin, 2009). According to Muda, etc., (2016), the online shop is a form of electronic commerce that facilitates the customer to buy directly from the seller via the internet.

An online shop is an electronic form of commerce that the customer can buy directly from the seller via the internet. The customer must have access to and knowledge of the internet to do online shopping. Once the infrastructure is set up, the internet can give customers easy access to information and fast shopping, 24 hours, seven days a week.

Online shoppers tend to be younger than traditional buyers are. Although online shoppers in the older generation are increasing, young people still dominate in online shopping. According to Kim and Ammeter (2018), young people (18 to 30) is not only more familiar with e-commerce, but the younger generation also processes the information on the website five times faster than the older generation (58 to 76 years). Gen Y specifically refers to the generation born between the 1980s and early 1990s. This generation of well informed of technology because this generation grows up in the information age and tends to use media every day. It also underlies the belief that Gen Y is the largest group that uses the Internet as a channel for shopping.

Research on online consumer behavior has been conducted in various disciplines including information systems, marketing, management science, psychology, psychosocial, and others (Javadi, et al, 2012). The studies conducted by Kuswanto, et al., (2020) explains that the factors affecting online shopping behavior are the perception of risk, pleasure, social influence, safety and security, and online advertising. The study was conducted at the Surabaya Institute of Technology (ITS), taking into account that the student is a potential target in the online market. The study of online shopping consumer behavior has become one of the most important research agendas in e-commerce.

This paper is further research on online shopping behavior and the factors affecting online shopping behavior at the University of Diponegoro. According to Kuswanto, et al., (2020) student is the largest potential market in online shopping in Indonesia. This research can make a significant contribution to obtaining information about student behavior in online shopping. This research aim is to understand the segmentation of the market of online shopping in Indonesia, fundamental information for providers of products or services in online shopping. The provider of the online shop (e-marketplace) can use information in the data set of factors that influence shopping behavior as a reference to enhance the business strategy, to attract the wider market.

2. THEORY

2.1 Online Shopping

Online shopping is a part of e-commerce, which refers to the business activities that use communication technologies such as the internet (Grant & Meadows, 2008). E-commerce can be defined as any form of trade or commerce of goods or services using electronic media. It can be the business to consumer (B2C), business-to-business (B2B), or trading with structured electronic data interchange (Ustadiyanto, 2002).

2.2 Online Shopping Behavior

Online shopping behavior refers to the process of purchasing products or services over the Internet. According to Liang and Lai (2002), online buying behavior is the process of purchasing products or services through the internet. The online purchase process has different steps in physical buying behavior. The process of buyers search for information related to goods or services that consumer's need via the internet

Two groups of factors influence the decision-making process of online shoppers. The first group is external factors, which are derived from the seller and the internet community, the second group is the internal factors such as motives, emotional, social, and cultural factors, and other psychological factors. Other factors affecting online shopping behavior is the perception of the benefits. According to Kim, Ferrin, & Rao (2008), benefit perception is consumers' confidence about the extent to which online shopping sites can provide a benefit rather than expenditure through conventional stores.

2.3 Factors Affecting Online Shopping

Several factors influence shopping via the Internet (Kotler & Armstrong, 2003), namely:

1. Convenience. Consumers do not need to deal with traffic, no need to look for a parking area, and walk to the store.
2. Completeness of Information. Consumers can interact with the vendor's site to find the information, products, or services that are the consumer wants, then order or download information on the spot.
3. Time. Consumers can check the prices and order goods 24 hours a day, and from anywhere.
4. Consumer Confidence. Events and activities that initiate consumer-buying behavior. Freight security, data privacy - personal data including credit card use.

2.4 Online Shop

Online shop is one of the e-marketplaces to purchase goods and services via the Internet. This is one form of electronic commerce for the transactions of the seller to other sellers or the seller to the customer. Goods sold in the online store in Indonesia has developed quite rapidly, ranging from mobile phones, guitars, boutiques, book, food, fashion clothing, and electronics (Admin, 2014).

2.5 E-commerce

Kalakota & Whinston (1997) define e-commerce from four perspectives, namely:

1. Communications Perspective, e-commerce is a delivery of goods, services, information, or payments over computer networks or other electronic equipment.
2. Business process perspective, e-commerce is an application of technology to the automation of business transactions and workflow.
3. Services perspective, e-commerce is a tool that meets the needs of the company, management, and customers to reduce the cost of services while improving the quality of services and increase the speed of service delivery.
4. Online perspectives, e-commerce provides the ability to buy and sell products or information via the Internet and other online means.

2.6 Validity and Reliability

Validity and reliability are the two main requirements that must be met by an instrument to be eligible to be used as research a data collection tool. Validity is a measure that indicates the level of validity of an instrument. The instrument is valid or invalid, it means having a high validity, and vice versa. An instrument is said to be valid if it can measure what they need or reveal the data of the variables studied properly.

Reliability is the level of accuracy and precision of an instrument. Thus, the reliability indicates whether the instrument is consistently delivering the results the same size of the measured object at different times (Misbahuddin & Hasan, 2013).

2.7 Multiple Linear Regression

Multiple linear regression analysis is a technique for analyzing the relationship between a dependent variable and several independent variables. Regression analysis was conducted to see the effect of an independent variable (independent variable) on the dependent variable (dependent variable). Another objective regression analysis was done to assess the magnitude of the quantitative effects of an incident on another incident. (Hair, 2014).

Multiple regression or compound if there is more than one independent variable.

Example Equation:

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k$$

Symbols:

a = constant / intercept

Y= dependent variabel / criteria variabel

β = slope / regression coefficient

X= independent variabel

Predicted value= intercept + (regression coefficient x predictor value)

2.8 Classical Assumption in Multiple Regression

Assumptions that must be met in regression/compound are as follows:

- a. Heteroscedasticity

Multiple regression equation needs to be tested on the same or not the variance of the residuals of the observations of the other observations

b. Normality

The data distribution is a perfectly symmetrical bell-shaped curve. The normality test aims to test whether a variable regression model dependent and independent variables have a normal distribution or not

c. Multicollinearity

Multicollinearity test is the ability of dependent variables to predict the independent variables, which is not only seen from the correlation of the independent variables on the dependent variable but also the correlation between these two variables

b. Autocorrelation test

According to Arief (2006) assessment of the linear regression model assumes that there is no serial correlation or autocorrelation. Autocorrelation or serial correlation is likely to occur in the time series data. A good regression model does not allow the occurrence of autocorrelation

2.9 Hypothesis test in multiple regression

a. Simultaneous Significance Test (F Test)

This test is used to determine whether the independent variables (X1, X2Xn) together significantly influence the dependent variable (Y).

b. Individual Significance Test (t-test)

This test is used to determine whether the independent variable in the regression model (X1, X2,Xn) partially significant effect on the dependent variable (Y).

3. RESEARCH METHODS

This research approach is based on a survey approach. The survey is a quantitative study which used to investigate symptoms of a group or individual behavior. In the survey there is no intervention, the survey collected information from a person's actions, knowledge, wishes, opinions, behaviors, and values. Survey research is research that takes a sample of the population and questionnaire as the main data collection tool (Singarimbun & Effendi, 2011).

Variables to be studied and identified in this study there are two independent variables (independent variable) and the dependent variable (dependent variable). The independent variables used in this study is the perception of risk, online advertising, trust and security, social influence, the quality of the website, and pleasure. The dependent variable used in this research is online shopping behavior. The framework of this research can be seen in Figure 1.

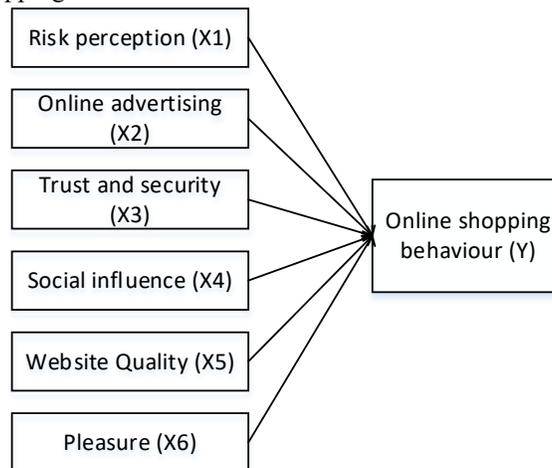


Figure 1. Research framework

The hypothesis in this study is processed using the t-test, to determine is there a significant influence factor towards online shopping behavior. The hypothesis in this study is as follows

H₀ : There is no significant influence of independent variables on the dependent variable

H₁ : There is a significant influence between risk perceptions on online shopping behavior

H₂ : There is a significant influence between online advertising towards online shopping behavior

H₃ : There is a significant influence between trust and security to the online shopping behavior

H₄ : There is a significant influence between social influences on behavior online shopping

H₅ : There is a significant influence between the qualities of a website to conduct online shopping

H_6 : There is a significant influence between the pleasures to online shopping behavior

The basis for a decision in the t-test is if the value of P-Value < 0.05 , it can be concluded that H_1 accepted and H_0 rejected.

The questionnaires were distributed online to 112 students as respondents in this study. Where 50 respondents or 45% male and 62 or by 55% female. The Likert scale was used in this study to measure attitudes, opinions, and perceptions of a person or a group of social phenomena. The Likert scale has five categories used. With general criteria for each score answer research is

- 1 = Strongly disagree
- 2 = Disagree
- 3 = Quite agree
- 4 = Agree
- 5 = Strongly agree

The samples in this study are determined using the Taro Yamane formula, with a confidence level of 95%. Here is the equation of determination of samples:

$$n = N / (1 + N[(e)]^2)$$

Where n is the sample size, N is the population size and e is the precision level

Based on the data described on the website (Ayokuliah.id) Diponegoro University student number as many as 45.155. Therefore, by using the Yamane formula, the number of the sample as follows:

$$N = N / (1 + N[(e)]^2) = 45155 / (1 + 45155[(0.005)]^2) = 397 \text{ students}$$

4. RESULTS AND DISCUSSION

The hypothesis of this research is processed using multiple linear regression, to estimate the average value of a variable based on the value of other variables, besides, to determine the effect of several independent variables on the dependent variable. Where is the basis for a decision in multiple linear regression, especially in the t-test, t-test which is used to explain the behavior of the independent variables affect the dependent variable is if the value of P-Value < 0.05 , it can be concluded that H_1 accepted and H_0 rejected.

The questionnaire regarding online shopping behavior is as follows:

- PR1 : high risk of getting a defective product
- PR2 : difficulty in resolving problems as they arise
- PR3 : the probability of receiving a defective product
- PR4 : difficulty in assessing the quality of an online
- PR5 : may not receive the products ordered
- IO1 : ads affect consumers to buy new products
- IO2 : ads affect consumers to try other types of products
- IO3 : ads affect the decision to change to another brand
- KK1 : convenience in online shopping
- KK2 : confidence in online shopping web sites
- KK3 : guarded privacy when shopping online
- KK4 : security features on online shopping web sites
- KK5 : reputable sites online shopping website
- PS1 : influence of the group in doing online shopping
- PS2 : recommendation about the group in doing online shopping
- PS3 : influence of technological developments in online shopping
- KSW1 : website visually appealing and organized
- KSW2 : ease of navigation flow on the online store
- KSW3 : ease of understanding the website and the information provided
- KSW4 : fees and transaction processing free and easy
- KSW5 : completeness of information online shop
- K1 : saving shopping time online
- K2 : ease to buy goods online
- K3 : availability of information and facilities to compare products
- K4 : ease of online shopping online
- PBO1 : repetition in doing online shopping
- PBO2 : consumer choice in online shopping or conventional.

Classic assumption test has been met in this research include:

- Linearity Test

If the probability value > 0.05 then the relationship between the variables X and Y is linear.

If the probability value < 0.05 , then the relationship between the variables X and Y is not linear.

risk perception variables, $p = 0.483 > 0.05$

online advertising variables, $p = 0.719 > 0.05$

trust and security variables, $p = 0.423 > 0.05$

social influence variables, $p = 0.706 > 0.05$

the variable quality of the website, $p = 0.228 > 0.05$

It can be concluded that the social influence and the online shopping behavior variable has an independent variable linear relationship.

- Normality test

The decision in the normality test is if the significance value > 0.05 , so it can be concluded that the residuals were normally distributed.

The significance of the SPSS output is $0.494 > 0.05$, so it can be concluded that the residuals were normally distributed.

- Multicollinearity

The decision in test multicollinearity is when $VIF > 10$, it indicated the model has multicollinearity symptoms.

VIF from SPSS output that is equal to $VIF < 10$, so that the data does not have symptoms of multicollinearity.

- heteroscedasticity

The decision in the heteroscedasticity test is if the spread of the value of the predictions does not form a particular pattern. It can be concluded that there is no heteroscedasticity.

- autocorrelation

The decision in the autocorrelation test is if the value of Durbin Watson of SPSS was fitting range $k - d_u < DW < k + d_u$, then the data is not autocorrelated.

From the table Durbin Watson, for $\alpha = 0.05$; $k = 6$ and $n = 112$, the value and $d_L d_u = 1.806 = 1.580$. Based on the value of Durbin Watson 4:15 tables of SPSS by 1.974 in the range $d_u < DW < k - d_u$, ($1.806 < 1, 974 < 4.194$) it can be concluded that the data did not autocorrelated.

SPSS output for multiple linear regression is as follows:

$$Y = 0.380 - 0,189X_1 + 0,141X_2 + 0,307X_3 + 0,115X_4 + 0,150X_5 + 0,326X_6$$

The decision on the F test is when the value prob. F count (SPSS output shown in column sig.) is smaller than the error rate $\alpha = 0.05$ (predetermined) it can be said that the estimated regression model feasible.

Table 1 Result of SPSS F Test

ANOVA ^b					
Model	Sum of Squares	df	Mean Square	F	Sig.
1. Regression	26.003	6	4.339	13.070	.000 ^a
Residual	34.858	105	.332		
Total	60.891	111			

a. Predictors: (Constant), Pleasure, Risk Perception, Online Advertising, Social Influence, Website Quality, Trust and Security

b. Dependent variable: Online Shopping Behaviour

Decision-making on the t-test is when the value prob. t (SPSS output shown in column sig.) is smaller than the error rate $\alpha = 0.05$ (predetermined) it can be said that the independent variable (from t such) a significant effect on the dependent variable.

Based on the decision table 1, it can be obtained as follows:

Risk Perception variable: $0.025 < 0.05$ (H_0 rejected)

Online Advertising variable: $0.013 < 0.05$ (H_0 rejected)

Trust and Security variable: $0.004 < 0.05$ (H_0 rejected)

Social Influence variable: $0.177 > 0.05$ (H_0 accepted)

Website Quality variable: $0.139 > 0.05$ (H_0 accepted)

Pleasure variable: $0.008 < 0.05$ (H_0 rejected)

Table 2. Result of SPSS t Test

Model	Coefficients ^a						
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			tolerance	VIF
1 (Constant)	.380	.507		.749	.456		
Risk Perception	-.189	.083	-.175	-2.279	.025	.920	1.087
Online Advertising	.141	.056	.199	2.528	.013	.876	1.142
Trust and Security	.107	.104	.266	2.956	.004	.672	1.489
Social Influence	.115	.084	.112	1.360	.177	.805	1.241
Website Quality	.150	.101	.125	1.492	.139	.772	1.296
Pleasure	.326	.121	.263	2.701	.008	.574	1.746

a. Dependent Variable: Online shopping behavior

It can be concluded at the significance level of 0.05, the social influence and website quality variables are received (H_0 received), meaning that the regression coefficient is not significant. At the 0.05 significance level, risk perception, online advertising, trust and security, and pleasure variables are rejected (H_0 rejected), it means a significant regression coefficient.

5. Recommendation

The results of this study indicate that factors affecting online shopping behavior in students are the perception of risk, online advertising, trust and security, and pleasure. Recommendations can be given in this study for providers of online shopping (online marketplace) to improve the business strategy to attract a wider market are:

1. Concerns of respondents to the defective product received can be done to provide complete information about the product and good handling in delivering the goods. Difficulties resolve problems such as returns that can be avoided with ease in a groove and a clear procedure regarding the return of goods. Assessment of quality in addition to visits from some of the reviews available on online shop, it is better if each product is reviewed using video. To avoid any suspicion about the authenticity of the online store about the displayed image.
2. The effect of online advertising affects the interest to do online shopping or switch to other products. It can be concluded that online shops must have a concept that is always innovative advertising to attract customers.
3. Comforts and consumer trust in the privacy of the online stores affect consumer desires in the decision to buy the product. Therefore, that online site has to maintain the privacy of any consumer data to support the good reputation of the online store.
4. The timesaving, convenience, availability of information, and facilities to compare products affect the interests of consumers towards online shopping activities. This gives the advantage to the online shop to provide products that fit consumer needs.

6. Conclusion

The results of the t-test for independent variables that affect the dependent variable with P-Value <0.05 re the value of the risk perception (0.025), online advertising (0.013), trust and security (0.004), and pleasure (0.008). It can be concluded that the factors that significantly influence behavior are risk perception, online advertising, trust and security, and pleasure.

Based on the results of multiple linear regression analysis, the recommendations are the completeness of the information and good handling in the shipping of goods. The online store should have a concept of innovative advertising to attract customers. Consumer confidential data must be secured in the transaction online shopping. Providing products according to customer needs will help consumers quickly find the product. Convenience, time savings, completeness of the information that able to compare one product with another is the top priority of respondents in choosing online shopping.

Further research on online shopping behavior in students, among others, to realize the results of experimental studies the existing recommendation on online marketplace provider. So it can be known whether these factors can increase sales.

References

- Lim, Y.J., Osman, A., Salahuddin, S.N., Romle, R.A., Abdullah, S. (2016). Factors Influencing Online Shopping Behavior: The Mediating Role of Purchase Intention. *Procedia Economics and Finance*, 401-410.
- Kuswanto, H., Pratama, W.B.H., Ahmad, I.S. (2020). Survey data on students' online shopping behavior: A focus on selected university students in Indonesia. *Data in Brief*, Vol 29,

- Qin, Zheng. (2009). Introduction to E-commerce. China: Tsinghua University Press, Beijing, and Springer-Verlag GmbH Berlin Heidelberg.
- Muda, M., Mohd, R., Hassan, Salwana. (2016). Online Purchase Behavior of Generation Y in Malaysia. *Procedia Economics and Finance*, 292-298.
- Kim, D., Ammeter, A.P. (2018). Examining shifts in online purchasing behavior: decoding the next generation. *Academy of Information and Management Sciences Proceedings*, 1-25.
- Zendehdel, M., Paim, L. H., Osman, S. B. (2015). Students' online purchasing behavior in Malaysia: Understanding online shopping attitude. *Cogent Business and Management*, 1-13.
- Sinha, J., Kim, J. (2012). Factors affecting Indian Consumers' online buying behavior. *Innovative Marketing*, Vol 8, Issue 2.
- Sunaryo. (2004). Psikologi Untuk Keperawatan. Jakarta: EGC.
- Misbahuddin, & Hasan, I. (2013). Analisis Data Penelitian dengan Statistik. Jakarta: PT Bumi Aksara.
- Grant, A. E., & Meadows, J. H. (2008). Communication Technology Update and Fundamentals (11th edition). Taylor & Francis.
- Ustadiyanto, R. (2002). E-business plan: perencanaan, pembangunan dan strategi bisnis di internet. Yogyakarta: ANDI
- Laudon, K. C., & Laudon, J. P. (1998). Management Information Systems: New Approaches to Organization and Technology (5th edition). New Jersey: Pearson.
- Kalakota, R., & Whinston, A. B. (1997). Electronic Commerce: A manager's Guide, 431.
- Admin. (2014). What is an online shop? Retrieved from <https://filloshop.com/docs/post/apa-itu-toko-online>
- Kotler, P., & Armstrong, G. (2003). Marketing (6th edition). New Jersey: Pearson Prentice Hall.
- Liang, T. P., & Lai, H. J. (2002). Effect of Store Design on Consumer Purchases: An empirical study of online bookstores. *Information and Management*. 431-444.
- Sumarwan, U. (2014). Model Keputusan Konsumen (1st edition, pp. 1-41). Universitas Terbuka.
- Kim, D. J., Ferrin, D. I., & Rao, H. R. (2008). A trust-based consumer decision-making model in electronic commerce: The role of trust, perceived risk, and their antecedents. *Decision Support Systems*, 544-564.
- Javadi M. H. M., etc, (2012). An Analysis of Factors Affecting on Online Shopping Behavior of Consumers. Vol. 4, No.5.
- Bhatnagar, D., Soran, H.H., Durrington, P.N. 2008. Hypercholesterolaemia and its management. *BMJ*, 337.
- Jahng, Jungjoo. Heman, Jain., Ramamurthy. (2001). The Impact of Electronic Commerce Environment on User Behavior: The Case of a Complex Product. *E-Service Journal*, Volume 1, Number 1, Fall 2001 pp. 41-53.
- Yamane, Taro. 1967. Statistics, An Introductory Analysis, 2nd Ed., New York: Harper and Row.
- Israel, Glenn, D., 2003. Determining Sample Size. University of Florida: Institute of Food and Agricultural Sciences (IFAS).

Biographies

Zainal Fanani Rosyada is a Lecturer in the Industrial Engineering Department, Faculty of Engineering, Diponegoro University, Indonesia. He finished his bachelor's degree in industrial engineering at Sepuluh November Institute of Technology, Indonesia, and a master's degree in Mechanical Engineering at Diponegoro University, Indonesia. He has published conference papers in industrial engineering. He is a member of the Indonesian Ergonomics Association. His research interests are ergonomics, decision support systems, and industrial management. (rosyada@lecturer.undip.ac.id)

Naniek Utami Handayani is an Assistant Professor in Industrial and Systems Engineering at the Department of Industrial Engineering - Faculty of Engineering - Diponegoro University. She earned a Bachelor Degree in Mathematics from Brawijaya University, Malang, Master Degree and Doctoral Degree in Industrial Engineering and Management from the Bandung Institute of Technology (ITB), Bandung. She is a member of the Institute of Supply Chain and Logistics Indonesia, Head of Optimization and Industrial System Design Laboratory, and Head of Quality Assurance Team of Faculty of Engineering, Diponegoro University. She has published journal and conference papers in Industrial Engineering. Her research interests are industrial clusters, SME's management, disaster logistics, performance measurement, quality systems, higher education performance modeling, and engineering education. (naniekh@ft.undip.ac.id).

Manik Mahachandra is an Assistant Professor in the Industrial Engineering Department, Faculty of Engineering, Diponegoro University, Indonesia. She finished a bachelor's degree in industrial engineering at Bandung Institute of Technology, Indonesia, a master's degree in occupational health at Gadjah Mada University, Indonesia, and a doctoral degree in industrial engineering and management at Bandung Institute of Technology, Indonesia. She has published journal and conference papers in industrial engineering, especially ergonomics. She is a member of the Indonesian Ergonomics Association and secretary of the Occupational Safety and Health Team of Faculty of Engineering, Diponegoro University. Her research interests are ergonomics, occupational safety and health, transportation safety, and work organization.

Ega Rizkiyah earned a Bachelor's Degree in Industrial and Systems Engineering from the Department of Industrial Engineering, Diponegoro University. She is a student in the Master Program of Industrial Engineering and Management of Diponegoro University (egarizkiyah@students.undip.ac.id).