

FACTORS AFFECTING THE BEHAVIOR INTENTION TO MAKE PURCHASES ONLINE ONE-COMMERCE

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Abstract

This study aims to determine and analyze the factors that influence behavioral intentions to make purchases online with the object of research e-commerce. The focus of this research are performance expectancy, effort expectancy, social influence, anxiety, personal innovativeness, and behavioral intention to purchase online. Sources of data obtained by distributing online questionnaires. Data were collected through questionnaires distributed to 398 respondents and then analyzed using path analysis and MGA (Multigroup Analysis) with SPSS (Statistical Package for Social Sciences) and SmartPLS 3.0 software. The results showed that performance expectancy, effort expectancy, social influence, and personal innovativeness had a positive and significant influence on behavioral intention to purchase online for the entire group, but there was no difference in the effect between the two gender groups. On the other hand, anxiety has a negative and significant influence on behavioral intention to purchase online in both gender groups and has a significant difference in influence which is dominated by the female group compared to the male group.

Keywords: behavior intention, UTAUT model, e-commerce.

INTRODUCTION

Technological developments have influenced consumer shopping behavior patterns in everyday life. This is due to the involvement of the user's role in technological advances regarding the acceptance and use of technology (Celik, 2011). Venkatesh et al. (2003) introduced the Unified Theory of Acceptance and Use of Technology (UTAUT model) model to measure how one can adapt to existing information technology. One of the shopping platforms created by the support of technological developments is the e-commerce service industry. The existence of the e-commerce service industry has attracted a lot of public attention and has had a major impact on the world economy (Celik, 2016). Consumers who initially shopped traditionally through physical stores, changed their behavior to shop online through multichannel retailing (Kim & Park, 2005).

The growth of e-commerce in Indonesia itself has shown a very high increase. In 2019 Indonesia recorded e-commerce growth of 78%, and was the highest growth in the world. One of the biggest e-commerce players in Indonesia is Lazada, with the highest average monthly e-commerce web visits in fourth place with 22 million visits. In Southeast Asia, Lazada is ranked 2nd as the e-commerce that has the most

active users. Although e-commerce is a rising phenomenon in the world, several studies still inconclusive, and the interrelationships between several variables need to be investigated. The factors forming online purchase intention usually include performance expectancy, effort expectancy, and social influence (Dewi et al, 2020; Fard et al., 2016; Gutierrez & Crespo, 2012). These three studies found different results for the effect of social influence. Furthermore, Dewi et al., 2020 added the variables of anxiety and personal innovativeness as factors that influence buying interest. This study itself is a replication of Dewi et al 2020, with the context of the Lazada object in Indonesia. This study aims to determine and analyze the factors that influence behavioral intentions to make purchases online with the object of research e-commerce.

Venkatesh et al. (2003) explained that UTAUT is the most comprehensive theory to explain and predict how individuals can accept and reject adaptation to new technologies. The UTAUT model is the result of the integration of eight models which are combined based on concepts and empirical synthesis to examine the conceptual perspective on the acceptance and use of technology in online shopping. In general, this UTAUT model is divided into four core determinants, namely performance expectancy, effort expectancy, social influence, and facilitating conditions that are used to shape consumer behavior in adopting information technology (Venkatesh et al., 2003; Gutierrez & Crespo, 2012; Sair & Danish, 2018). However, further studies are needed to provide a better understanding of online purchasing through the UTAUT model. Thus, Dewi et al. (2020) added two additional constructs as independent variables, anxiety and personal innovativeness and looked at their effect on the behavior intention of consumers to make purchases online. Dewi et al. (2020), defines behavioral intention as the tendency of whether someone will show certain behavior in behaving. However, in the context of the discussion in this journal that examines the UTAUT model on behavioral intention, namely to see consumer behavior towards their intention to use IT (Celik, 2016; Venkatesh et al., 2003). According to Venkatesh et al. (2012) and Celik (2016) performance expectancy is defined as an external motivational factor that demonstrates the expectations that consumers have when comparing the use of new technology or systems in improving their performance in completing a task or activity. Venkatesh et al. (2003) defines effort expectancy as the level of ease associated with the use of a technology or system. Sair & Danish (2018) also defines effort expectancy which is in line with Venkatesh et al. (2003), namely as the level of convenience felt by consumers in using technology in an easy way and how much power there is in the use of technology. It can be said that through effort expectancy, consumers will evaluate and decide whether the behavior of using a technology can be implemented in everyday life. Social influence according to Venkatesh et al. (2003) is the individual's perception that other people think that he/she should use information technology tools. In the context of online purchases, according to Ho et al. (2016), opinion is an important factor that can influence individual purchasing decisions. When individuals can communicate information about products with fellow buyers and sellers, it will affect their purchasing decisions.

Dewi et al (2020) include two additional variables into the UTAUT model, namely anxiety and personal innovativeness. In the context of online purchases, consumers always feel anxious and worried about the continuity of the transaction. Celik (2016) examines consumer concerns about online shopping, such as fraud, identity theft or abuse, security breaches, and misleading product promotions that will increase consumers' anxiety levels. On the other hand, online shopping also requires consumers to have personal innovativeness, especially related to their willingness to try new technologies (Agarwal & Prasad, 1998). Personal innovativeness is defined as an individual's innovative and inherent personality towards the use of new

technologies (Dewi et al., 2020). In contrast to social influence which is driven by external stimuli, the emergence of this innovative behavior comes from the internal stimulus of individual motivation (Dewi et al., 2020). Celik (2016) explains that performance expectancy works as an external motivator which refers to the results of using technology. The relationship between performance expectancy and behavioral intention to shop online is related to how individuals evaluate the performance of using technology related to customer expectations, such as time efficiency, good promotions, diverse product choices, and price, can significantly influence online purchase intentions (Dewi et al., 2020; Celik, 2016). From these arguments, the following hypothesis is proposed.

H1. Performance expectancy has a positive effect on online purchase intention on the use of e-commerce.

Effort expectancy is often associated with the level of ease of using a technology or system (Venkatesh et al. 2003). In contrast to performance expectancy, effort expectancy is an internal motivator referring to the process that facilitates results (Celik, 2016). For example, when consumers use e-commerce to make purchases, consumers will measure how much effort is expended in purchasing behavior. This will later positively affect the intention of buyers to adopt methods in online shopping (Dewi et al., 2020). Thus the proposed hypothesis is as follows.

H2. Effort expectancy has a positive effect on online purchase intention on the use of e-commerce.

Ho et al. (2016) stated that opinions given by others can also influence consumer purchasing decisions. This is due to the encouragement or motivation from the external environment outside of the consumer's personal intentions. In Celik (2016), several researchers support that social influence has a direct effect on individual behavioral intentions because every involvement / no involvement in the use of technology will get social rewards or punishments. Dewi et al. (2020) stated that researchers found a significant relationship between social influence as a motivation for the emergence of behavioral intention in consumer technology acceptance (Bashir & Madhavaiah, 2015; Ghalandari, 2012; Gao & Bai, 2014; Lian & Yen, 2014; Tan, 2013; Yang & Forney, 2013). Ho et al. (2016) stated that opinions given by others can also influence consumer purchasing decisions. This is due to the encouragement or motivation from the external environment outside of the consumer's personal intentions. In Celik (2016), several researchers support that social influence has a direct effect on individual behavioral intentions because every involvement / no involvement in the use of technology will get social rewards or punishments. Dewi et al. (2020) stated that researchers found a significant relationship between social influence as a motivation for the emergence of behavioral intention in consumer technology acceptance (Bashir & Madhavaiah, 2015; Ghalandari, 2012; Gao & Bai, 2014; Lian & Yen, 2014; Tan, 2013; Yang & Forney, 2013). So we propose the following hypothesis:

H3. Social influence has a positive effect on online purchase intention on the use of e-commerce.

Anxiety can affect individual behavioral intentions in shopping online due to temporary obstacles and worries that arise when shopping. The higher the level of anxiety that consumers have, the negative impact on their intention to shop through online shopping channels (Dewi et al., 2020). In addition to the occurrence of avoidance, Celik (2016) state that anxiety also causes the effort required to complete the shopping task to be greater and prevents consumers from producing the desired task. It can be concluded that anxiety not only negatively affects one's behavioral intentions in shopping online, effort expectancy and performance expectancy are also

negatively affected in the context of online shopping. Thus, the following hypotheses can be made:

H4. Anxiety has a negative effect on online purchase intention on the use of e-commerce.

According to Gutierrez & Crespo (2012), innovative behavior is strongly influenced by an individual's innovative personality. A consumer who has innovative characteristics, according to Dewi et al. (2020), is a good determinant in the process of adapting to the internet as a new channel for shopping. Intention to purchase behavior online can be characterized by the availability of consumers to try new technologies or channels. According to Ha and Im (2014) and Takhur & Srivastava (2015), personal innovativeness has an important role in an adaptation to innovation and has a direct effect on an individual's decision to adapt. Previous studies by Nagar & Gandotra (2016) and Gutierrez & Crespo (2012) showed a positive influence between personal innovativeness on online shopping behavioral intentions. Thus the proposed hypothesis is:

H5. Personal innovativeness has a negative effect on online purchase intention on the use of e-commerce.

Celik (2016) states in his literature that differences in individual perceptions and influences on technology use are influenced by gender differences. Thus, this will result in different behavior of men and women in the use of new technology. Many previous studies have compared gender in online purchase intention, such as Bae & Lee (2011), Celik (2016), Fard et al. (2016), and others. The difference between the shopping behavior of men and women is further explained through the results of research conducted by Celik (2016), that compared to women, in doing online shopping men are more motivated by benefits, success and achievements and are easier to master and use technology functions. Regarding its relationship with performance expectancy on individual behavioral intentions, Wang et al. (2009) stated that the effect shown was stronger in men when compared to women. In contrast to effort expectancy, where the effect on individual behavioral intentions is stronger in women than men. This is supported by research conducted by Venkatesh et al. (2012), Celik (2016), and Wang et al. (2009). The effect of social influence on individual behavioral intentions is also stronger in women, because women are more influenced by opinions and recommendations from others, such as friends and family in their intention to use a new technology (Celik, 2016). When it comes to anxiety, Celik (2016) states that women are more worried about risk and are very concerned about safety in shopping than men. This is also supported by research by Ahmed & Sathish (2015), Makhitha & Dlodlo (2014), and Lian and Yen (2014) which state that women have higher levels of anxiety than men. Bae & Lee (2011) examined the relationship between personal innovativeness and individual behavioral intentions, stating that women have a high level of innovation in their intention to shop online. Thus, the effects of performance expectancy, effort expectancy, social influence, anxiety, and personal innovativeness on behavioral intentions in online shopping are moderated by gender differences, so the following hypothesis can be proposed:

H6. The effect of performance expectancy on online purchase intention will be stronger on male consumers regarding the use of e-commerce.

H7. The effect of effort expectancy on online purchase intention will be stronger on female consumers regarding the use of e-commerce.

H8. The effect of social influence on online purchase intention will be stronger on female consumers regarding the use of e-commerce.

H9. The effect of anxiety on online purchase intention will be stronger in female consumers regarding the use of e-commerce.

H10. The effect of personal innovativeness on online purchase intention will be stronger for female consumers regarding the use of e-commerce.

The research model proposed is as follows

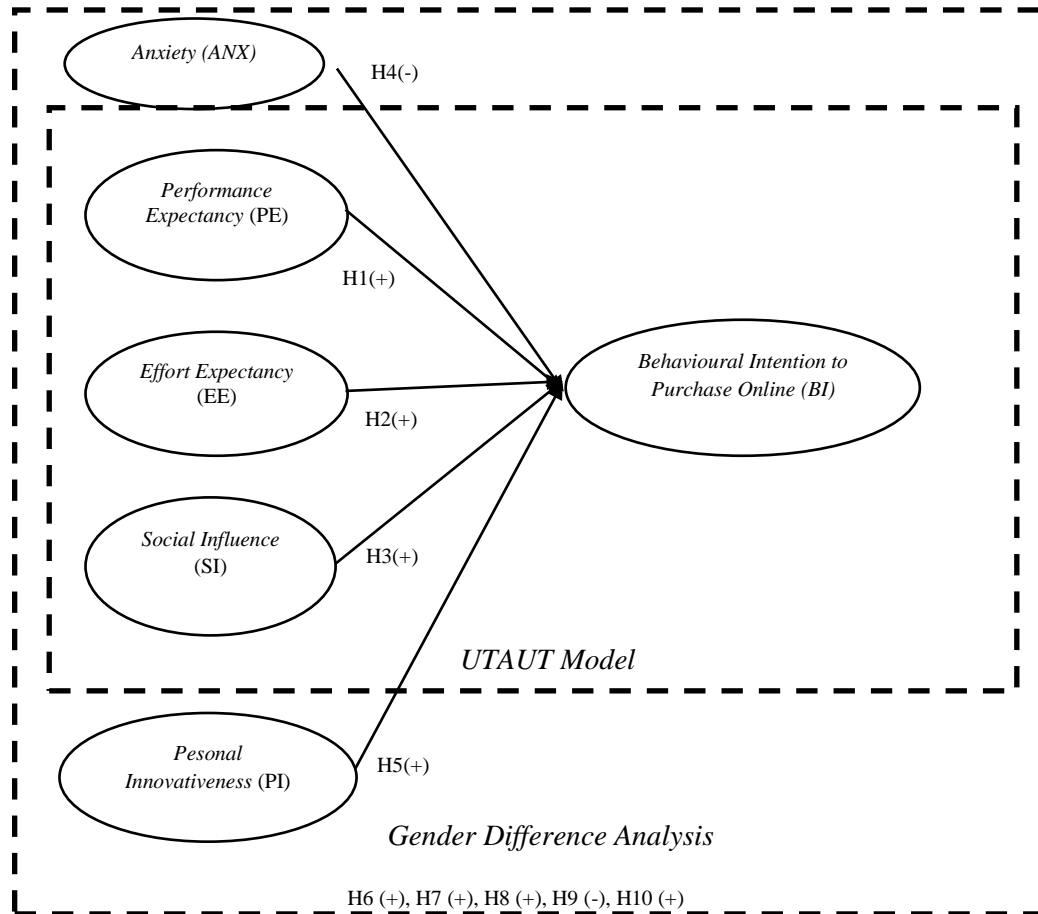


Figure 1
Research Model

RESEARCH METHODS

This research is a basic research, with a causal design and quantitative research. All questionnaire questions were derived from Dewi et al (2020). The scale used is an interval with a 5-point Likert scale. The target population in this study are consumers who have used Lazada e-commerce in shopping online within the last six months. The characteristics of the selected respondents are consumers who are domiciled in Indonesia and have a minimum age of 18 years. This study will take a total of 300 samples according to the minimum number of samples, which is ten times the number of question items in the questionnaire recommended by Hair et al. (2014). The sampling technique used is convenience sampling by distributing online questionnaires. All data from 300 respondents were analyzed using PLS-SEM with two stages of testing. The first stage is the measurement model or the outer model test on all construct variables. Tests were carried out using Kaiser-Meyer-Olkin (KMO) and Bartlett's test, convergent validity test by looking at the AVE value and standardized loadings, discriminant validity test by looking at the cross loading value and AVE sense value and correlation between constructs, and reliability test.

RESULT AND DISCUSSION

The results on all items have shown valid results by meeting the standardized loading value 0.7, but there are PI3 items that is not used because they do not meet the

minimum standardized loading value. The AVE measurement on each variable has also shown valid results, so that the measurement results above can be said to have met the validity criteria and can be continued to the next stage. The results on all items in the sample of male respondents have shown valid results by meeting the standardized loading value 0.7, but there are EE1 and PI3 items that are not used because they do not meet the minimum requirements for standardized loading values. The AVE measurement on each variable has also shown valid results, so that the measurement results above can be said to have met the validity criteria and can be continued to the next stage. The results on all items in table 3 to test the sample of female respondents have shown valid results by meeting the standardized loading value of 0.7, but there are items EE4 and PI3 that are not used because they do not meet the minimum requirements for standardized loading values. The AVE measurement on each variable has also shown valid results, so that the measurement results above can be said to have met the validity criteria and can be continued to the next stage.

The results of discriminant validity show that the male and female sample groups have good validity. The test results are continued by looking at the reliability of the sample both as a whole and by gender groups. The reliability results show satisfactory results so that data analysis can be continued. The overall results of hypothesis testing can be seen in table 1. These results indicate that all hypotheses are supported because they have t-value above 1.96. The strongest influence is shown by personal innovativeness with a regression coefficient of 0.259.

Table 1
Hypothesis testing results

Hypotheses	<i>Std. Estimate</i>	<i>t-value</i>	<i>p-value</i>	Results
H1 (+) PE → BI	0,157	3,129	***	supported
H2 (+) EE → BI	0,160	2,512	0,006	supported
H3 (+) SI → BI	0,169	2,992	0,001	supported
H4 (-) AXN → BI	-0,245	3,842	***	supported
H5 (+) PI → BI	0,259	3,334	0,001	supported

Multigroup analysis and permutation tests were conducted to test hypotheses 6 to 10. This test aims to analyze the difference in the magnitude of the influence between men and women in shopping behavior at Lazada. The test results for multi-groups can be seen in table 2. From the results of the hypothesis test, there is no difference between the male and female groups, except for hypothesis 9. The influence of anxiety on purchase intention is greater in the female group than the male group.

Hypothesis 1 (PE-->BI) is supported with a positive (+) direction and has a standardized estimate value of 0.157. Meanwhile, the t-value is 3.129 (0.001**). These results are supported by research from Fard et al. (2016) which states that there is a positive influence on the use of technology for shopping. Thus, it can be concluded that most respondents (male/female) consider convenience, such as increased productivity, benefits and costs, when shopping online using Lazada e-commerce.

Table 2
Multi-group analysis

Hypotheses	Path coefficient		p-value difference (one-tailed)		Results
	Male	Female	Henseler's MGA	Permutation Test	
H6 (+) PE → BI	0,165	0,122	0,333	0,377	Not supported
H7 (+) EE → BI	0,173	0,155	0,499	0,515	Not supported
H8 (+) SI → BI	0,169	0,161	0,445	0,439	Not supported
H9 (+) AXN → BI	-0,169	-0,400	0,018*	0,040*	supported
H10 (+) PI → BI	0,324	0,190	0,133	0,195	Not supported

Hypothesis 2 (EE-->BI) is supported with a positive (+) direction, and has a standardized estimate value of 0.160. Meanwhile, the t-value is 2,512 (0.006**). These results are in line with research by Alleyne and Lavine (2013), Ho et al. (2016), and Dewi et al. (2019). So, it can be concluded that most of the respondents (male/female) use Lazada e-commerce to shop because it can provide convenience and speed in shopping.

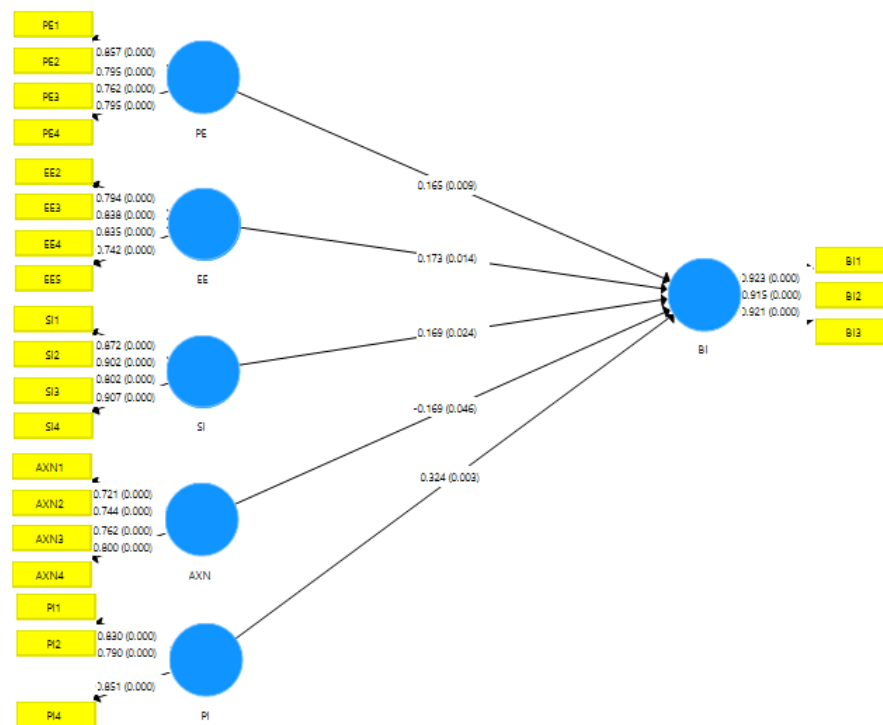


Figure 2
Inner Model for Male Respondents

Hypothesis 3 (SI-->BI) is supported because the direction of influence that occurs between SI to BI variables is positive (+) and has a standardized estimate value of 0.169. Meanwhile, the t-value is 2,992 (0.001**). These results are supported by the research of Gao and Bai (2014) and Lian and Yen (2014) in Dewi et al. (2019) which states this. Increasing traffic by creating active and user-friendly social media can increase buyer interest in buying online. So, it can be concluded that

most of the respondents (male/female) use Lazada e-commerce due to the influence of the social environment.

Hypothesis 4 (AXN-->BI) is supported by the direction of negative influence (-), and has a standardized estimate value of -0.245. Meanwhile, the t-value is 3,842 (0.000***). This proves that H4 is supported and in line with the explanation of Dewi et al. (2019) that anxiety has a negative effect on behavioral intention to purchase online in both gender groups.

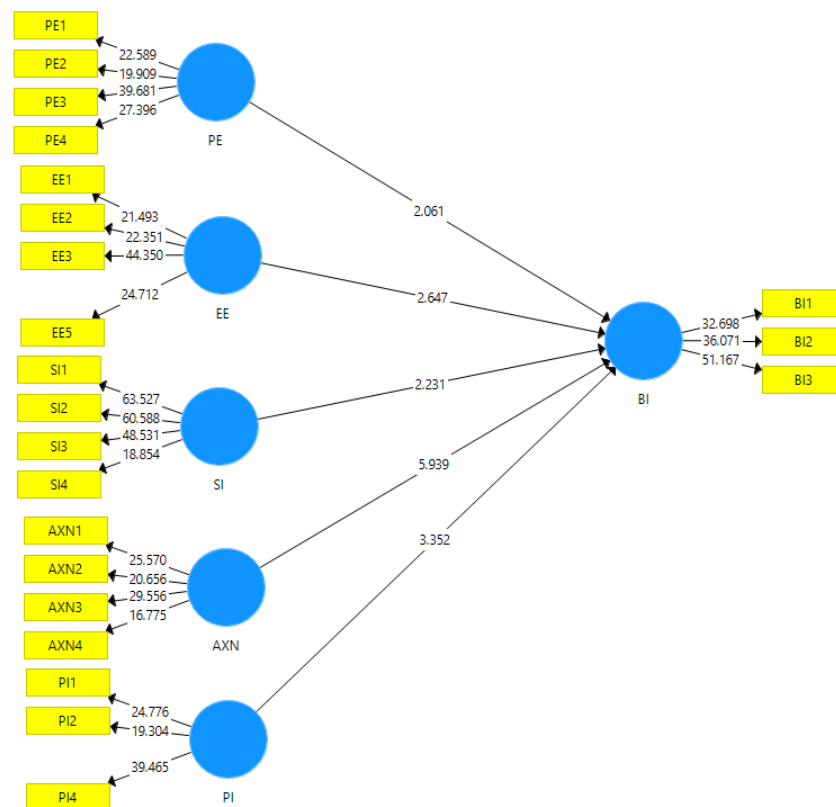


Figure 3
Inner Model for Female Respondents

Hypothesis 5 (PI-->BI) is supported with a positive (+) direction, and has a standardized estimate value of 0.259. Meanwhile, the t-value is 3.334 (0.00***). Previous research conducted by Rodriguez & Trujillo (2014), Gutierrez & Crespo (2012), and Dewi et al. (2019) also supports that personal innovativeness has a positive influence on shopping intentions. Thus, it can be said that most of the respondents' shopping intentions are influenced by the personal innovativeness of a person when using Lazada e-commerce. The higher the personal innovativeness, the stronger the shopping intention.

Hypothesis 9 is supported by the p-value on MGA and permutation test 0.018* and 0.040* (below 0.05). The effect of anxiety will be stronger in women than men. This anxiety effect should be mitigated because it has a negative influence on shopping intentions. So, it can be interpreted that women are more driven by anxiety in making purchases compared to men. These results were not followed by other hypotheses (H6, H7, H8, and H10) where all of them showed insignificant results.

Personal innovativeness has the biggest influence on purchase intention on Lazada. Consumers who have the character of daring to try, aware of the existence of

new technology will tend to have higher purchase intentions. Regarding this result, Lazada can use influencers who really have the desire to try new technology and make them endorsers so that it affects the buying intentions of their followers.

The results of this study indicate that anxiety has the second greatest influence on purchase intention. The higher the anxiety, the lower the intention to buy Lazada consumers. This of course has consequences for shopping site managers, especially in terms of suppressing the anxiety. This anxiety can come from unclear information, doubts about transaction security, delivery problems and so on. Lazada must provide assurance that all the things that consumers are worried about do not happen and provide guaranteed solutions for every problem.

The interesting thing is that during the multigroup analysis only anxiety has a significant test result. The effect of anxiety on purchase intention is higher in the female respondent group than the male respondent group. This implies that Lazada needs to pay attention to the composition of their consumers. If the majority of consumers are women, then Lazada can use communication that emphasizes the assurance of the online sales services provided. This is useful for reducing anxiety during the shopping process.

CONCLUSION

Based on the research results, recommendations for e-commerce Lazada Indonesia can be put forward. The results of this study indicate that personal innovativeness has the highest influence on shopping interest compared to other variables. This means that Lazada Indonesia e-commerce users are driven by individual innovativeness in using technology to shop. Thus, it is important for Lazada Indonesia to use social media tools, such as Facebook, Twitter, Instagram, and Tiktok as communication channels to attract users effectively to use Lazada e-commerce. The results of the multigroup test show that the influence of anxiety on behavioral intention to purchase online in women is higher than that of men. Anxiety itself is a major factor that adversely affects the intention to shop online. Thus, Lazada Indonesia needs to raise awareness that they have provided good security guarantees, good service contacts and can be contacted, and have security certifications in e-commerce services such as 100% buyer protection and satisfaction guarantees. This can make consumers feel safe and can mitigate the effects of anxiety on users' intentions to shop using Lazada Indonesia e-commerce.

The researcher also has several recommendations for further researchers, namely other researchers can expand this research on other e-commerce that can be compared with the results of research that has been done so far and can take samples of respondents who are more diverse in terms of age. This study also has research limitations that can be used as input for further researchers. In addition, other researchers can also consider other variables, such as customer experience and perceived risk that can explain the differences in Indonesian consumers.

REFERENCES

- Agarwal, R., & Prasad, J. 1998. The antecedents and consequents of user perceptions in information technology adoption. *Decision Support System*, 22(1), 15-29.
- Ahmed, K.A.A., & Satish, A.S. (2015). Unleashing the Utilitarian Motivations of Online Shopping among Indian Youth. *Mediterranean Journal of Social Sciences*, 6(2), 391-398.
- Bae, S., & Lee, T. (2011). Gender Differences in Consumers' Perception of Online Consumer Views. *Electronic Commerce Research*, 11, 201-214.

- Bashir, I. & Madhavaiah, C. (2015). Consumer attitude and behavioural intention towards Internet banking adoption in India. *Journal of Indian Business Research*, 7(1), 67-102
- Çelik, H. (2011). Influence of social norms, perceived playfulness, and online shopping anxiety on customers' adoption of online retail shopping. *International Journal of Retail & Distribution Management*, 39 (6), 390-413.
- Celik, H. (2016). Customer online shopping anxiety within the Unified Theory of Acceptance and Use Technology (UTAUT) framework. *Asia Pacific Journal of Marketing and Logistics*, 28(2), 1-36.
- Dewi, C.K., Mohaidin, Z., & Murshid, M.A. (2019). Determinants of online purchase intention: a PLS-SEM approach: evidence from Indonesia. *Journal of Asia Business Studies*, 14(3), 281-306.
- Fard, S.S., Tamam, E., Hassan, M.S., Waheed, M., & Zaremohzzabieh, Z. (2016). Factors affecting Malaysian university students' purchase intention in social networking sites. *Cogent Business & Management*. 3(1), 1-12.
- Gao, L. & Bai, X. 2014. Online consumer behaviour and its relationship to website atmospheric induced flow: Insights into online travel agencies in China. *Journal of Retailing and Consumer Services*, 21(4), 653-665.
- Ghalandari, K. 2012. The Effect of Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions on Acceptance of E-Banking Services in Iran: the Moderating Role of Age and Gender. *Middle-East Journal of Scientific Research*, 12(6), 801-807.
- Gutierrez, H.S.M., & Crespo, H.A. (2012). Influence of the user's psychological factors on the online purchase intention in rural tourism: Integrating innovativeness to the UTAUT framework. *Tourism Management*, 33(2), 341-350.
- Ha, Y., & Im, H. (2014). Determinants of mobile coupon service adoption: assessment of gender difference. *International Journal of Retail & Distribution Management*, 42(5): 441-459.
- Ho, C.B., Chou, Y.D., & Fang, H.V. (2016). Technology adoption of podcast in language learning: using Taiwan and China as examples. *International Journal of E-Education, e-Business, e-Management and e-Learning Technology*, 6(1), 1-13.
- Hair, J.F., Black, W.C., Babin, B.J., & Anderson, R.E. (2014). *Multivariate Data Analysis. 7th ed.* United Kingdom: Pearson Education Limited.
- Kim, J., & Park, J. (2005). A consumer shopping channel extension model: attitude shift toward the online store. *Journal of Fashion Marketing and Management: An International Journal*, 9(1): 106-121.
- Lian, J.W., & Yen, D.C. (2014). Online shopping drivers and barriers for older adults: Age and gender differences. *Computers in Human Behavior*, 37, 133-143.
- Makhitha, M., & Dlodlo, N. (2014). Examining Salient Dimensions of Online Shopping and the Moderating Influence of Gender: The Case of Students at a South African University, *Mediterranean Journal of Social Sciences*, 50(23), 1838-1848.
- Nagar, K., & Gandrota, P. 2016. Exploring Choice Overload, Internet Shopping Anxiety, Variety Seeking and Online Shopping Adoption Relationship: Evidence from Online Fashion Stores. *Global Business Review* 17(4), 851-869.
- Rodriguez, T.E., & Carvajal-Trujillo, E. (2014). Online purchasing tickets for low cost carriers: An application of the unified theory of acceptance and use of technology (UTAUT) model. *Tourism management*, 43(August), 70-88.

- Sair, S.A., & Danish, R.Q. (2018). Effect of performance expectancy and effort expectancy on the mobile commerce adoption intention through personal innovativeness among Pakistani consumers. *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, 12(2), 501-520.
- Tan, P.J. (2013). Applying the UTAUT to understand factors affecting the use of english E-learning websites in Taiwan. *SAGE Open*, 3(4), 1-12.
- Thakur, R., & Srivastava, M. (2015). A study on the impact of consumer risk perception and innovativeness on online shopping in India. *International Journal of Retail & Distribution Management*, 43(2), 148-166.
- Venkatesh, V., Morris, M.G., Davis, G.B., & Davis, F.D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 27(3), 425-478.
- Wang, H., Nagy, J.D., Gilg, O., & Kuang, Y. (2009). The roles of predator maturation delay and functional response in determining the periodicity of predator-prey cycles. *Mathematical Biosciences*, 221(1), 1-10.
- Yang, K., & Forney, J.C. (2013). The Moderating Role of Consumer Technology Anxiety in Mobile Shopping Adoption: Differential Effects of Facilitating Conditions and Social Influences. *Journal of Electronic Commerce Research*, 14, 334-347.