ANALYSIS OF FACTORS AFFECTING E-COMMERCE ADOPTION AND THEIR EFFECT ON MSME PERFORMANCE

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Abstract

E-Commerce is often referred to as one of the drivers of economic growth in Indonesia. The huge potential of e-commerce cannot be separated from the development of internet users in Indonesia. In 2015, internet users in Indonesia reached 93.4 million people, an increase quite rapidly when compared to 88.1 million people in 2014. The potential for e-commerce can be seen from the figure that 77% of internet use is used to find product information and shop online, online shop customers who reach 8.7 million people, and the transaction value is predicted to reach US$ 4.89 billion in 2016. Small, Micro and Medium Enterprises (MSMEs) in Indonesia have an important role in the national economy. MSMEs are required to make changes and innovations to increase competitiveness, one of which is by utilizing e-commerce. This research was conducted using a quantitative approach. The research data were obtained from various MSMEs in Central Java. The results of this study indicate that technological factors and individual factors partially have a positive and significant effect on e-commerce adoption. On the other hand, organizational factors partially have a negative and insignificant effect on e-commerce adoption and environmental factors partially have positive and insignificant effects on e-commerce adoption in MSMEs.

Keywords: *Technology, Individual, Environment, E-commerce, Organizational.*

A. INTRODUCTION

E-Commerce is often referred to as one of the drivers of economic growth in Indonesia. This is not without reason because with a rapidly growing population and internet penetration, Indonesia is one of the potential e-commerce markets. The enormity of the e-commerce opportunity is inextricably linked to the growth of internet users in Indonesia (Astuti & Nasution, 2014). In 2015, Indonesia's internet users reached 93.4 million, a significant rise from 88.1 million in 2014. The potential for e-commerce can be seen from the figure that 77% of internet use is used to find product information and shop online, online shop customers reach 8.7 million people, and the transaction value is predicted to reach US$ 4.89 billion in 2016. This is an increase compared to 2015. According to ICD study, Indonesia's e-commerce market will rise 42 percent between 2012 and 2015. This figure is greater than those for Malaysia (14%), Thailand (22%), and the Philippines (28%) (Dhiranty et al., 2017).

The potential of MSMEs in driving the economy must be considered, and MSMEs are required to make changes and innovations to increase competitiveness. Chandler argues that a company is a very dynamic organization that requires adjustments to be able to compete, one of which is by utilizing e-commerce (Sturgeon, 2002).

According to data from the Director General of Small and Medium-Sized Industries at the Ministry of Industry, just 30-40% of SMEs used sophistication to grow their businesses in 2014. On this basis, the researcher wants to conduct study on the factors that determine e-commerce adoption and its impact on the performance of MSMEs (Haselip et al., 2014).

Based on this background, it is necessary to do research on what factors influence the adoption of e-commerce in MSMEs in Central Java. This study aims to determine the extent to which the adoption of e-commerce can affect the performance of SMEs in Central Java.

B. LITERATURE REVIEW

1. E-Commerce

Electronic commerce (e-commerce) is a relatively new concept that is typically defined as the process of purchasing and selling goods or services via the World Wide Web Internet, or as the process of purchasing and selling or exchanging products, services, and information via information networks such as the internet (Liang & Turban, 2011). People frequently classify e-commerce based on the nature of the transaction. Suyanto says that the following classifications are instantly discernible:

a. Business to business (B2B), is an e-commerce model in which the business players are businesses, and the transaction and interaction processes take place between businesses.
b. Business to Consumer (B2C), is an e-commerce model in which business actors interact directly with sellers (e-commerce service providers) and consumers or buyers.
c. Consumer to Consumer (C2C), is an e-commerce model in which individuals, either as sellers or as consumers, interact and deal directly with other persons, either as sellers or as buyers. This e-commerce concept is prevalent on online auction platforms.
d. Consumer to Business (C2B), is an e-commerce business model in which individuals or small groups of individuals perform transactions or interactions with one or more businesses. In Indonesia, this form of e-commerce is extremely rare (Chen et al., 2008).

2. Technology

Technological variables include a variety of indications, such as perceived benefits, suitability, and prices, all of which influence e-commerce technology adoption. Perceived advantage refers to the degree of acceptance of the benefits that will accrue to the business. The more managers comprehend the relative benefits of e-commerce, the more resources, such as managerial, financial, and technological resources, will be allocated (Alam, 2009). Conformity refers to the degree to which e-commerce adheres to the pre-existing technological infrastructure, culture, values, and work practices of the organization. An organization will readily accept an innovation if it is consistent with the organization's prevalent values, understands the needs, and is consistent with the organizational culture. Cost is one of the elements influencing MSMEs in Indonesia to use e-commerce in this scenario. Generally, the less expensive the technology is, the more quickly it will be embraced and used in a business (Sarooghi et al., 2015).

3. Organizational

Organizational variables are features of a business that can have an effect on its adoption of e-commerce technologies. Technology readiness and company size are two markers of organizational factors. Technological readiness is a decisive element in e-commerce adoption; it refers to the degree to which the technological infrastructure is compatible with the system and the business's technical capabilities enable e-commerce adoption (Aboelmaged, 2014). Technology readiness is comprised of two components: infrastructural technology and information technology employees, both of which are required if businesses are to embrace e-commerce as an integral element of the value chain. Another crucial aspect is the organization's size (firm size), as firm size is related to the ability of the corporation to arrange resources such as financial and human resources. The larger the business, the more capable it is of assembling the necessary resources, and the more likely it is to use e-commerce technologies (Zhu et al., 2004).

4. Environment

Environmental factors include exterior effects such as consumer/supplier pressure, competitive pressure, and other external factors that drive e-commerce adoption. The more the

pressure from business partners, the more likely businesses will adopt e-commerce in order to maintain their competitive position (Hung et al., 2011).

The greater the competitive pressure in an industry, the more enterprises will be obliged to implement e-commerce technology in order to maintain a competitive edge. The more competitive an industry is, the greater the benefits of e-commerce adoption. Additionally, the government and information technology providers have a role in the adoption of e-commerce (Hamad et al., 2018). According to Rahayu and Day's findings, the environmental context has no effect on e-commerce adoption, however Ningtyas' findings indicate that external/environmental incentives from outside the organization have a beneficial effect on e-commerce adoption (Rahayu & Day, 2015).

5. Individual

Along with the three factors mentioned above, this individual is a determining element in MSMEs' adoption of e-commerce in developing nations. This is because the majority of e-commerce adoption by MSMEs is highly dependent on the acceptability of e-commerce technology by business owners. This is entirely acceptable, given MSMEs are typically handled centrally, with firm owners/managers playing a significant part in decision-making (Macharia, 2009). The indicators used in this study are the innovation of the business owner, the experience and ability to use information technology from the owner. Owner's innovation is the extent to which business owners adopt innovations faster than others in a social context, whereas if business owners have experience and skills related to information technology, they will be confident and adopt e-commerce more quickly. The most important thing is that if business owners understand well the functions and benefits of adopting e-commerce, they will be faster to adopt it (Lee & Runge, 2001).

6. Enterprise Performance and E-Commerce Adoption

Firm performance is a metric used to assess a corporation's success in accomplishing stated goals; a company is said to have achieved success in an area if its existing practices meet all of the constituency's needs. According to Kraemer, a company's performance may be judged in three ways: efficiency, coordination, and trade (market position and sales), all of which are expected to improve as a result of a company's adoption of new information technology (Ittner & Larcker, 2003). Improved performance can manifest itself in the form of lower transaction costs and tighter coordination of economic operations among business partners. E-commerce, in particular, is expected to minimize coordination and transaction costs as a result of online transaction automation, as well as boost productivity and efficiency (Lin et al., 2002).

C. METHOD

This research was conducted using a quantitative approach. The research data were obtained from various MSMEs in Central Java. The method of analysis in this study uses multiple regression analysis which is used to see the indirect effect between one variable and another. To solve the multiple linear regression equation used SPSS software version 20.0. The object of this research is MSME actors in the Central Java region who have used internet technology in running their business.

D. RESULT AND DICUSSION

1. Characteristics of Respondents

From the questionnaire data that has been distributed, various information related to the characteristics of the respondents in this study were obtained, including gender, age, educational background, turnover value and type of business.

Table 1. Characteristics of Respondents Based on Gender

Gender	Amount	Percentage
Male	47	49,5%
Female	48	50,5%
Total	95	100%

Based on the data on the characteristics of the respondents by gender, 49.5% were male and the remaining 50.5% were female.

Table 2. Characteristics of Respondents by Age

Age	Amount	Percentage
<30	44	46%
30-39	38	40%
40-49	11	12%
≥50	2	2%
Total	95	100%

Characteristics of respondents based on age, dominated by age under 30 years as much as 46% and the least respondents are those aged over 50 years only as much as 2%.

Table 3. Characteristics of Respondents by Education Level

Level of Education	Amount	Percentage
Senior High School	22	23%
Associate's Degree	14	15%
Bachelor Degree	51	54%
Master Degree	8	8%
Total	95	100%

Based on the table above, the majority of respondents have an educational background of Bachelor's graduates as much as 54%, 23% of high school graduates and 15% of Diploma graduates, while the postgraduate education is 8%.

Table 4. Characteristics of Respondents Based on Turnover Value

Turnover Value	Amount	Percentage
<100 Million/Year	75 SMEs	79%
100 -500 Million/Year	16 SMEs	17%
500 Million -1 Billion/Year	4 SMEs	4%
Total	95 SMEs	100%

The largest respondent's turnover value is with a value of < 100 million per year as much as 79%, a turnover of 100 million - 500 million per year as much as 17% and a turnover of 500 million - 1 billion per year as much as 4%.

2. Data Analysis and Discussion

From the data that has been obtained, then the analysis data processing is carried out through several statistical tests, such as validity tests, reliability tests and linear regression.

a. Validity test

Data processing begins with the validity test using the coefficient r, which is obtained from the Product Moment Correlation formula. By using the SPSS 20.0 program, the correlation number for each variable is obtained as follows: The results of the validity test for the technological aspect variable (X1) are in the range of r_{count} values (Corrected Item-Total Correlation) between 0.658 - 0.862, meaning that the technical aspect questionnaire (X1) is is valid, because the value on the question item is greater than the r_{table} value of 0.12017.

Table 5. Test the Validity of X_1

Pearson Correlation	A1	A2	A3	A Total
A1	1	.331**	.402**	.658**
A2	.331**	1	.595**	.846**
A3	.402**	.595**	1	.862**
A Total	.658**	.846**	.862**	1

The validity test for the organizational aspect variable (X2) is in the range of r_{count} values (Corrected Item-Total Correlation) between 0.513 - 0.760, meaning that the organizational aspect questionnaire (X2) is valid, because the value on the question item is greater than the r_{table} value of 0.12017.

Table 6. Validity Test X_2

Pearson Correlation	A4	A5	A6	A7	A8	X_2 Total
A4	1	.337**	.158**	.246**	.170**	.513**
A5	.337**	1	.395**	.382**	.347**	.738**
A6	.158**	.395**	1	.461**	.568**	.730**
A7	.246**	.382**	.461**	1	.445**	.760**
A8	.170**	.347**	.568**	.445**	1	.715**
X_2 Total	.513**	.738**	.730**	.760**	.715**	1

The results of the validity test for the external aspect variable (X3) are in the range of r_{count} values (Corrected Item-Total Correlation) between 0.683 - 0.840, meaning that the organizational aspect questionnaire (X3) is valid, because the value of the question item is greater than the r_{table} value of 0.12017.

Table 7. Test the Validity of X_3

Pearson Correlation	A9	A10	A11	A12	X_3 Total
A9	1	.586**	.494**	.495**	.827**
A10	.586**	1	.381**	.592**	.840**
A11	.494**	.381**	1	.361**	.683**
A12	.495**	.592**	.361**	1	.780**
X_3 Total	.827**	.840**	.683**	.780**	1

The results of the validity test for the individual aspect variable (X4) are in the range of r_{count} values (Corrected Item-Total Correlation) between 0.828 - 0.910, meaning that the individual aspect questionnaire (X4) is valid, because the value of the question item is greater than the r_{table} value of 0.12017.

Table 8. Test the Validity of X_4

Pearson Correlation	A13	A14	A15	X_4 Total
A13	1	.596**	.628**	.828**
A14	.596**	1	.781**	.910**
A15	.628**	.781**	1	.908**
X_4 Total	.828**	.910**	.908**	1

The results of the validity test for the e-commerce adoption variable (Y1) are in the range of r_{count} values (Corrected Item-Total Correlation) between 0.821 - 0.861, meaning that the e-commerce adoption questionnaire (Y1) is valid, because the value of the question item is greater than the r_{table} value of 0.2017.

Table 9. Test the Validity of Y_1

Pearson Correlation	A16	A17	A18	A19	A20	Y_1 Total
A16	1	.668**	.443**	.593**	.748**	.827**
A17	.668**	1	.685**	.607**	.560**	.861**
A18	.443**	.685**	1	.515**	.433**	.770**
A19	.593**	.607**	.515**	1	.692**	.828**
A20	.748**	.560**	.433**	.692**	1	.821**
Y_1 Total	.827**	.861**	.770**	.828**	.821**	1

The results of the validity test for the MSME performance variable (Y2) are in the range of r_{count} values (Corrected Item-Total Correlation) between 0.896 - 0.945, meaning that the individual aspect questionnaire (X4) is valid, because the value of the question item is greater than the r_{table} value of 0.12017.

Table 10. Test the Validity of Y_2

Pearson Correlation	A21	A22	A23	Y_2 Total
A21	1	.829**	.780**	.945**
A22	.829**	1	.718**	.925**
A23	.780**	.718**	1	.896**
Y_2 Total	.945**	.925**	.896**	1

b. Reliability Test Results

Internal consistency test (reliability test) is done by calculating the coefficient (Crobanch Alpha) of each instrument in one variable. The instrument used in this variable is said to be reliable if it has a Crobanch Alpha coefficient of more than 0.60 (Nunnaly). Based on the results of the reliability test, it can be seen that all variables have an alpha coefficient greater than 0.60 so that this research instrument can be said to be reliable (reliable) and can be said to be reliable and can be used as a measuring tool.

Table 11. Reliability Test

Item	Cronbac'h Alpha	N of Items
X1	0.706	3
X2	0.729	5
X3	0.791	4
X4	0.856	3
Y1	0.875	5
Y2	0.912	3

From the results of the reliability test above, it can be seen that the Cronbach's alpha value that we get is 0.706 – 0.912, meaning that the questionnaire has a high level of reliability (reliability) because it is above 0.60.

3. Classic Assumption Test

a. Normality Test

The data normality test requires that if the data spreads around the diagonal line and follows its direction, the regression model is normal. The study's findings indicate that if the data spreads diagonally. This regression model satisfies the normality condition.

b. Autocorrelation Test

A good regression model is free from autocorrelation. From testing using Durbin Watson, the following results were obtained:

Table 12. Durbin Watson Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.721[a]	.520	.499	2.735	2.161

Based on table 12, Durbin Watson's value is 2.161 which is in the range 1.55 - 2.46, it can be concluded that there is no autocorrelation.

c. Multicollinearity Test

The presence or absence of multicollinearity can be seen from the value of VIF (Variance Inflation Factors). A small VIF value indicates the absence of a high (perfect) correlation between the X variables in the regression model. The value limit for the variable is said to be high collinearity if the VIF value for the independent variable is greater than 10.

Table 13. Calculation Results of Tolerance Value and VIF

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	X1	.569	1.758
	X2	.375	2.666
	X3	.430	2.328
	X4	.496	2.016

From table 13 above, it can be seen that the Variance Inflation Factor (VIF) value of the three variables is less than 10, so it can be concluded that there is no multicollinearity problem between variables and is feasible to use.

d. Heteroscedasticity Test

A good regression model is that there is no heteroscedasticity. Based on the Heteroscedasticity test using the Scatter Plot, it shows that there is no certain pattern and the points spread above and below 0 on the Y axis, so it can be concluded that there is no heteroscedasticity.

4. Regression Analysis Test Results

a. Multiple Linear Regression Test Results

Multiple linear regression analysis is a statistical technique used to examine the relationship between a single dependent variable and two or more independent variables. Multiple linear regression analysis is used to determine the effect of technological, organizational, environmental, and individual factors on e-commerce adoption. After processing the data with the SPSS 20.0 tool, the following results were obtained:

Table 14. Results of Multiple Regression Equations

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	10.301	2.251		4.576	.000
	X1	.283	.124	.220	2.273	.025
	X2	-.003	.119	-.003	-0.028	.978
	X3	.129	.106	.136	1.220	.226
	X4	.685	.149	.475	4.587	.000

Based on the results of the calculations in the table above, the following regression equation can be made: **Y = 10,301 + 0,823 X1 - 0,003 X2 + 0,129 X3 + 0,685 X4 + e**

Description Y = Adoption of e-commerce
X1 = Technological factor
X2 = Organizational factors
X3 = Environmental factor

X4 = Individual factors
e = error

From the multiple linear regression equation above, a constant value of 10.301 is obtained. That is, if the E Commerce Adoption variable (Y) is not influenced by the four independent variables or Technological Factors (X1), Organizational Factors (X2), Environmental Factors (X3) and Individual Factors (X4) are zero, then the average size of E Commerce Adoption will be worth 10,301.

The regression coefficient for the independent variable X1 (Technology Factor) is positive, indicating a unidirectional relationship between Technology Factor (X1) and E Commerce Adoption (Y). The regression coefficient for the X1 variable is 0.823, which means that for every one unit increase in Technology (X1), it will cause an increase in E Commerce Adoption (Y) of 0.823.

The regression coefficient for the independent variable X2 (Organizational Factors) is negative, indicating an opposite relationship between Organizational Factors (X2) and E-Commerce Adoption (Y). The regression coefficient for the X2 variable is -0.003 which means that for every increase in Organizational Factors (X2) by one unit, it will cause a decrease in E Commerce Adoption (Y) by 0.003.

The regression coefficient for the independent variable X3 (Environmental Factors) is positive, indicating a unidirectional relationship between environmental factors (X3) and E-Commerce Adoption (Y). The regression coefficient of the X3 variable is 0.129, which means that for every increase in environmental factors (X3) of one unit, it will cause an increase in E Commerce Adoption (Y) of 0.129.

The regression coefficient for the independent variable X4 (Individual Factors) is positive indicating a unidirectional relationship between Individual Factors (X4) and E-Commerce Adoption (Y). The X4 variable regression coefficient of 0.685 means that for each individual factor increase (X4) of one unit, it will cause an increase in E Commerce Adoption (Y) of 0.685.

b. Simple Regression Test Results

Simple linear regression analysis is an analysis of the relationship between one dependent variable and another. To examine the effect of e-commerce adoption on the performance of MSMEs. After processing the data with the help of the SPSS 20.0 program, the results of data processing are as follows:

Table 15. Results of the Simple Regression Equation

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.002	1.488		2.018	.047
	X1	.510	.049	.732	10.362	.000

Based on the results of the calculations in the table above, the following regression equation can be made: **Y2 = 3.002 + 0.510 Y1 + e**

Description: Y2 = MSME Performance
Y1 = Adoption of e-commerce
e = error

From the linear regression equation above, a constant value of 3.002 is obtained. That is, if the MSME Performance variable (Y2) is not influenced by the independent variable or e-commerce adoption (Y1) is zero, then the average MSME performance in Central Java will be 0.510. The regression coefficient for the independent variable of e-commerce adoption is positive, indicating a unidirectional relationship between E-Commerce Adoption and MSME Performance in Central Java (Y). The regression coefficient for the X1 variable of 0.510 means

that for every increase in E-Commerce adoption by one unit, it will cause an increase in MSME performance by 0.510.

c. Coefficient of Determination Test (R2)

This test looks at how much the dependent variable regression model is explained by the independent variable.

Table 16. Coefficient of Determination Test Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.721[a]	.520	.499	2.735

From table 16, the magnitude of R Square is 0.520. This means that 52% of the variation in e-commerce adoption can be explained by the four independent variables, namely technology, organizational, environmental and individual, while 48% is explained by other variables not analyzed in this study.

Table 17. Coefficient of Determination Test Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.732[a]	.536	.531	1.845

From table 17, the magnitude of R Square is 0.536. This means that 53.6% of the variation in MSME performance can be explained by e-commerce adoption, while 46.4% is explained by other variables not analyzed in this study.

5. Hypothesis Test

a. Simultaneous Hypothesis Testing

The reference used in this test is to compare the sig value obtained with $\alpha = 0.05$. If the sig value obtained is smaller than the degree of significance, then the model used is feasible.

Table 18. F Statistical Test Results

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	729.816	4	182.454	24.396	.000[a]
	Residual	673.089	90	7.479		
	Total	1402.905	94			

Based on table 18, it can be seen that the results of the ANOVA test or F test obtained the following results:

1) Based on calculated F and F table

The results of table 18 obtained the calculated F value of 24,396. The value of the F-table at a significance level of 5% and the degree of freedom (df) of k = 5, the value of df1 = k-1 = 5 - 1 = 4 while the value of df2 = n – k = 95 – 5 = 90. If the test is carried out using the value of $\alpha = 5\%$, so the value of the F table is 2.47. The value of $F_{count} > F_{table}$ is 24.396 > 2.47, so the fifth hypothesis is accepted. The fifth hypothesis is that technological readiness factors, organizational factors, environmental factors and individual readiness have a joint effect on the adoption of e-commerce on MSMEs in Central Java.

2) Based on significant figures

In table 18 it can be seen that the significance is 0.000 <0.05 so it is said to be significant. This means that the variables of technological readiness factors, organizational factors, environmental factors and individual knowledge have a joint effect on the adoption of e-commerce on MSMEs in Central Java.

b. Partial Hypothesis Testing (t Test)

Based on the calculation results obtained the following results:

Table 19. Statistical Test Results t

Variable	Coefficient B	T	Significance	Influence on e-commerce (Y1)
X1 (Technology)	0.283	2.273	.025	Yes
X2 (Organizational)	-0.003	-0.028	.978	No
X3 (Environment)	0.129	1.220	.226	No
X4 (Individual)	0.685	4.587	.000	Yes

From the results of the t-statistical test in table 4.20 obtained:

1) Testing the influence of technology readiness factor variables (X1) on e-commerce adoption (Y)
   - Based on t-count and t-table, it can be seen that the t-count of the technology factor variable is 2.273. Hypothesis testing with α = 5%. If the degree of freedom of the test is n – k = 95 – 5 = 90 then the value of t table is 1.664, then it is found that t count > t table is 2.273 > 1.664, so the first hypothesis is accepted. The first hypothesis is that technological factors have a significant positive effect on e-commerce adoption.
   - Based on the significance number for the technology factor variable, it is 0.025 < 0.05 so the results are significant. This means that technology factors have a significant positive effect on e-commerce adoption.
2) Testing the influence of organizational factor variables (X2) on e-commerce adoption (Y)
   - Based on t_{count} and t_{table}, it can be seen that the t count of organizational factor variables is - 0.028. Hypothesis testing with α = 5%. If the degree of freedom of the test is n – k = 95 – 5 = 90 then the value of t table is 1.664, then it is found that t count < t table is - 0.028 < 1.664, so the second hypothesis is rejected. The second hypothesis is that organizational factors have a significant positive effect on e-commerce adoption
   - Based on the significance number for the organizational factor variable, it is 0.978 > 0.05 so the results are not significant. This means that organizational factors have a negative and insignificant effect on e-commerce adoption
3) Testing the effect of environmental factor variables (X3) on e-commerce adoption (Y)
   - Based on t-count and t-table, it can be seen that t-count for environmental factor variables is 1.220. Hypothesis testing with α = 5%. If the degree of freedom of the test is n – k = 95 – 5 = 90 then the value of t table is 1.664, then it is found that t count < t table is 1.220 < 1.664, so the third hypothesis is rejected.

     The third hypothesis is that environmental factors have a positive and significant effect on e-commerce adoption
   - Based on the significance number for the environmental factor variable, it is 0.226 > 0.05 so the results are not significant. This means that environmental factors have a positive and insignificant effect on e-commerce adoption.
4) Testing the influence of individual factor variables (X4) on e-commerce adoption (Y)
   - Based on t-count and t-table, it can be seen that the t-count of the individual factor variables is 4.587. Hypothesis testing with α = 5%. If the degree of freedom of the test is n – k = 95 – 5 = 90 then the value of t table is 1.664, then it is found that t count > t table is 4.587 > 1.664, so the fourth hypothesis is accepted. The fourth hypothesis is that individual factors have a positive and significant effect on e-commerce adoption.

- Based on the significance number for the individual factor variables of 0.000 < 0.05 so the results are significant. This means that individual factors have a positive and significant effect on e-commerce adoption

Table 20. Statistical Test Results for Y2

Variable	Coefficient B	T	Sig.	Influence on MSME Performance (Y2)
X1 (E-commerce adoption)	0.510	10,362	.000	Yes

From the results of the t-statistical test in table 4.21, it is obtained: Testing the effect of the e-commerce adoption variable (Y1) on the adoption of MSME performance (Y2)

1) Based on t-count and t-table, it can be seen that the t-count of the e-commerce adoption variable is 10.362. Hypothesis testing with α = 5%. If the degree of freedom of the test is n – k = 95 – 5 = 90 then the value of t table is 1.664, then it is found that t count > t table is 10.362 > 1.664, so the sixth hypothesis is accepted. The fifth hypothesis is that the adoption of e-commerce has a positive and significant effect on the performance of MSMEs
2) Based on the significance number for the e-commerce adoption variable of 0.000 <0.05 so the results are significant. This means that the adoption of e-commerce has a significant positive effect on the performance of MSMEs

6. Discussion

Based on table 19, the results show that technological factors have a positive effect on e-commerce adoption. This can be seen from t arithmetic > t table, which is 2.273 > 1.664, with a significance number of 0.025 which is smaller than 0.05. This means that if the technological factor increases, the adoption of e-commerce will increase. It can be explained in this case, cost is one of the factors that influence MSMEs in Indonesia in adopting e-commerce. Usually, the cheaper the cost of the technology used, the faster it will be adopted and implemented in an organization. This research is in line with the research conducted by Rita Rahayu and John Day which in their research proves that technological factors have a positive and significant effect on e-commerce adoption (Rahayu & Day, 2015).

Based on table 19, the results show that organizational factors have no significant and negative effect on e-commerce adoption. This can be seen from t count > t table, namely -0.028 < 1.664, with a significance number of 0.978 greater than 0.05. This means that if organizational factors increase, the adoption of e-commerce will decrease. It can be explained in this case that almost all MSMEs in Central Java do not think that company size will affect them in adopting e-commerce, this is because MSMEs in Central Java in particular and Indonesia in general are still at the lowest level in terms of e-commerce adoption (Lertwongsatien & Wongpinunwatana, 2003).

Central Java MSMEs only use email, social media or websites which cannot maximize their opportunities to access capital from the banking sector, when compared to using Electronic Data Interchange (EDI), there are also some MSMEs that have technological facilities but do not understand well how to manage it and its utilization. The results of this study are in line with research conducted by Ningtyas and Rita Rahayu and John Day which in their research proves that organizational factors have a negative and insignificant effect on e-commerce adoption in MSMEs in Central Java (Yanto et al., 2016).

Based on table 19, the results show that environmental factors have a positive and insignificant effect on e-commerce adoption. This can be seen from the t count < t table, namely 1.220 < 1.664, with a significance number of 0.226 greater than 0.05. This means that if environmental factors increase, the adoption of e-commerce will increase. The results of this study are in line with the results of research conducted by Rita Rahayu and John Day (2015),

where environmental influences have a positive and insignificant effect on e-commerce adoption. This result contradicts the results of research from Ningtyas, PK., Sunarko B, Jaryono. This indicates that pressure from customers/suppliers, pressure from competitors and encouragement from external parties are not considered by MSMEs in Central Java as factors that influence them in adopting e-commerce (Hurley, 2018).

A very possible explanation for this condition is that consumers in Indonesia, especially Central Java are "online shoppers with a conventional manner", which means that consumers only visit online stores to see the products offered, but if they are interested, they will directly transact either by telephone, social media or face to face. Mentoring support and training facilitation from the government or from business partners is not a guarantee that MSMEs will adopt e-commerce.

Based on table 19, the results show that individual factors have a positive and significant effect on e-commerce adoption. This can be seen from t count > t table, which is 4,587 > 1,664, with a significance number of 0.000 less than 0.05. This means that if individual factors increase, the adoption of e-commerce will increase. The results of this study are in line with the results of research conducted by Rita Rahayu and John Day, where environmental influences have a positive and significant influence on e-commerce adoption (Rahayu & Day, 2015).

Based on table 20, the results show that the adoption of e-commerce has a significant and positive effect on the performance of MSMEs. This can be seen from the t count > t table which is 10.362 > 1.664, with a significance number of 0.000 less than 0.05. This means that if the adoption of e-commerce increases, the performance of MSMEs will increase. The results of this study are in line with the results of research conducted by Fatmariani and Ningtyas et al., where the adoption of e-commerce has a positive and significant influence on the performance of MSMEs (Nurunnisha & Dalimunthe, 2018).

E. CONCLUSION

On the basis of the definition of the problem, the research objectives, the theoretical foundation, the hypotheses, and the findings of the research, it can be stated that technological elements have a partially positive and considerable effect on e-commerce adoption in SMEs in Central Java. Then organizational characteristics have a little but detrimental effect on MSMEs' adoption of e-commerce in Central Java. Additionally, environmental factors have a small but beneficial effect on the adoption of e-commerce by MSMEs in Central Java. Individual considerations thus have a partially positive and significant effect on MSMEs' adoption of e-commerce in Central Java. Following that, technological variables, organizational factors, environmental factors, and individual factors all influence SMEs in Central Java's adoption of e-commerce. Finally, the adoption of e-commerce has a considerable favorable effect on the performance of Central Java's MSMEs.

REFERENCES

Aboelmaged, M. G. (2014). Predicting e-readiness at firm-level: An analysis of technological, organizational and environmental (TOE) effects on e-maintenance readiness in manufacturing firms. *International Journal of Information Management*, *34*(5), 639-651.

Alam, S. S. (2009). Adoption of internet in Malaysian SMEs. *Journal of Small Business and Enterprise Development*.

Astuti, N. C., & Nasution, R. A. (2014). Technology readiness and e-commerce adoption among entrepreneurs of SMEs in Bandung City, Indonesia. *Gadjah Mada International Journal of Business, 16*(1), 69-88.

Chen, D. N., Jeng, B., Lee, W. P., & Chuang, C. H. (2008). An agent-based model for consumer-to-business electronic commerce. *Expert Systems with Applications*, *34*(1), 469-481.

Dhiranty, A., Suharjo, B., & Suprayitno, G. (2017). An analysis on customer satisfaction, trust and loyalty toward online shop (a case study of tokopedia. com). *Indonesian Journal of Business And Entrepreneurship (IJBE)*, *3*(2), 102-102.

Hamad, H., Elbeltagi, I., & El-Gohary, H. (2018). An empirical investigation of business-to-business e-commerce adoption and its impact on SMEs competitive advantage: The case of Egyptian manufacturing SMEs. *Strategic Change*, *27*(3), 209-229.

Haselip, J., Desgain, D., & Mackenzie, G. (2014). Financing energy SMEs in Ghana and Senegal: Outcomes, barriers and prospects. *Energy Policy*, *65*, 369-376.

Hung, Y. C., Yang, Y. L., Yang, H. E., & Chuang, Y. H. (2011). Factors affecting the adoption of e-commerce for the tourism industry in Taiwan. *Asia Pacific Journal of Tourism Research*, *16*(1), 105-119.

Hurley, C. O. (2018). MSME competitiveness in small island economies: a comparative systematic review of the literature from the past 24 years. *Entrepreneurship & Regional Development*, *30*(9-10), 1027-1068.

Ittner, C. D., & Larcker, D. F. (2003). Coming up short on nonfinancial performance measurement. *Harvard business review*, *81*(11), 88-95.

Lee, J., & Runge, J. (2001). Adoption of information technology in small business: Testing drivers of adoption for entrepreneurs. *Journal of Computer Information Systems*, *42*(1), 44-57.

Lertwongsatien, C., & Wongpinunwatana, N. (2003). E-commerce adoption in Thailand: an empirical study of small and medium enterprises (SMEs). *Journal of Global Information Technology Management*, *6*(3), 67-83.

Liang, T. P., & Turban, E. (2011). Introduction to the special issue social commerce: a research framework for social commerce. *International Journal of electronic commerce*, *16*(2), 5-14.

Lin, F. R., Huang, S. H., & Lin, S. C. (2002). Effects of information sharing on supply chain performance in electronic commerce. *IEEE Transactions on engineering management*, *49*(3), 258-268.

Macharia, J. (2009). Factors affecting the adoption of e-commerce in SMEs in Kenya. *International Journal of Technology Intelligence and Planning*, *5*(4), 386-401.

Nurunnisha, G. A., & Dalimunthe, G. P. (2018). The Effect of E-Commerce Awareness in E-Commerce Technology Acceptance on MSME in Bandung. *DeReMa (Development Research of Management): Jurnal Manajemen*, *13*(2), 198-217.

Rahayu, R., & Day, J. (2015). Determinant factors of e-commerce adoption by SMEs in developing country: evidence from Indonesia. *Procedia-social and behavioral sciences*, *195*, 142-150.

Sarooghi, H., Libaers, D., & Burkemper, A. (2015). Examining the relationship between creativity and innovation: A meta-analysis of organizational, cultural, and environmental factors. *Journal of business venturing*, *30*(5), 714-731.

Sturgeon, T. J. (2002). Modular production networks: a new American model of industrial organization. *Industrial and corporate change*, *11*(3), 451-496.

Yanto, H., Handayani, B. D., Solikhah, B., & Mula, J. M. (2016). The behavior of Indonesian SMEs in accepting financial accounting standards without public accountability. *International Journal of Business & Management Science*, *6*(1).

Zhu, K., Kraemer, K. L., & Dedrick, J. (2004). Information technology payoff in e-business environments: An international perspective on value creation of e-business in the financial services industry. *Journal of management information systems*, *21*(1), 17-54.