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Performance Measurement of E-Commerce Utilization in MSMEs in Situbondo Regency

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ABSTRACT

The development of the digital is inseparable from the convenience factor and greater benefits that can be obtained by users. Likewise in the business, with the development of digital platforms for product marketing activities, it will also have an impact on micro and medium businesses. This study wants to find out whether it is true that the use of e-commerce can improve the performance of MSMEs businesses. Factors that influence such as how technology, organization and environment will impact the adoption of e-commerce itself which will ultimately affect business performance in this case the MSMEs business. This study is explanatory research that explains the causal relationship (cause and effect) between variables using SEM / PLS analysis. The test results show that technology and the environment have a positive and significant effect on the adoption of e-commerce and the organization has a positive but not significant effect on the adoption of e-commerce. As an intervening variable, namely the adoption of technology, it is produced that technology and the environment affect the performance of MSMEs through the e-commerce adoption variable and the organization has a positive but not significant effect on the performance of MSMEs through the e-commerce adoption variable. Results showed that the increase in MSMEs performance influenced by technological factors based on the convenience, usefulness and ability to use it. Environmental factors, especially consumer behavior in utilizing technology and trends in utilizing technology in the online shopping process, also have a significant influence on the adoption of the technology itself, thus impacting business performance.

I. Introduction

Micro, Small and Medium Enterprises (MSME) are a form of enterprise or business carried out by individuals, groups, small business entities and households. In the development of the digital world, it cannot be denied that the use of digital platforms in business is starting to grow. The emergence of several digital platforms that facilitate new ways of shopping will greatly influence MSMEs in developing their businesses. Technology is a very important factor for the development of the MSMEs world, where with the adoption of digital platforms the greater convenience, speed and suitability of technology will be obtained by MSMEs players. [1] Although there are obstacles for MSMEs in adapting information technology (IT) as part of the business media influenced by the level of digital literacy of MSME to the technology itself, when micro and small enterprises know the environmental conditions of the company, they can make changes to their enterprise so as not to be missed in the era of modern technology today. [2] The culture of innovation plays an important role in the adoption of e-commerce that will ultimately affect the financial performance of the entrepreneur, including the involvement of the influence of business partners to be able to compete with the electronic market, which will affect the success of MSMEs entrepreneurs in the business world [3]. The practice of implementing the use of e-commerce in this era of digitalization is essential

and has become the essence of the development of modern times. The implementation of e-commerce will contribute to the improvement of SME performance in the long term, although it is important to consider that business owners must have a clear objective before using e-commerce, as the alignment of business objectives and the use of technology must still be taken into account. The digital platforms offered as a medium for the marketing of products are also diverse, with all the advantages and disadvantages of each. However, whether it is true that e-commerce can help improve MSMEs performance is a question that needs further research to determine its effectiveness. Whether the size of MSMEs is also a determining factor in the adoption of technology so that it affects the performance of the MSMEs itself, and whether competitor factors also influence the use of technology and therefore also affect the performance. According to [5], it is known that there are owners of MMSE's with a level of technological readiness that makes them less interested in using e-commerce, while owners with higher earnings have a higher level of optimism in the application of e-commerce because of the benefits they have felt.

A. Technological Factors

Three indicators—relative advantage, perceived complexity, and compatibility—are linked to technological characteristics. The degree to which adopting new technologies is thought to be able to help an organization more than preserving older ones is known as relative advantage.[6][7] Adoption can be impeded by a lack of technical understanding of e-commerce if people find technological applications challenging to use and comprehend; on the other hand, innovation adoption is more likely in cases where e-commerce technology is user-friendly. [7][3] Technology has the power to persuade MSMEs to use e-commerce in their operations. This occurs when MSMEs adopt e-commerce to a greater extent the more convenient, quick, and appropriate the technology they are familiar with and have used. [1]

H1 : Technological factors have a positive influence on e-commerce adoption in MSMEs

B. Organizational Factors

According to earlier research, MSMEs' use of ICT and e-commerce is significantly influenced by the employees' familiarity with these topics [8]. One of the three most significant indicators of adoption is the size of the business [5][7]. The ability to use e-commerce technology requires information technology skills or knowledge from SME management [7][8]. Financial resources, technological advancements, and skilled labor resources seem to be the essential components for boosting MSMEs' adoption of e-commerce.[8]

H2: Organizational factors have a positive influence on e-commerce adoption in MSMEs

C. Environmental Factors

The adoption of e-commerce was positively connected with managers' perceptions of: 1) the level of competition; 2) the backing of industry "support" groups; 3) governmental assistance; and 4) supplier and buyer behavior. [8] A key factor in a company's decision to implement e-commerce is consumer preparedness, which takes into account prospective market size, customers' comprehension of the benefits and uses, and social influences or subjective norms. All of these factors will make it easier for MSMEs to adopt e-commerce.[9]

H3 : Environmental factors have a positive influence on e-commerce adoption in MSMEs

D. E-commerce adoption on MSMEs performance

The performance of MSMEs is positively and significantly impacted by e-commerce adoption; thus, the more e-commerce is used, the better MSMEs will perform [1]. Adopting E-Commerce and MSMEs marketing performance are significantly correlated; these findings emphasize the necessity of improving the metrics used to assess MSMEs sector performance in order to boost their competitiveness [3]. According to the study by [10], the financial perspective, customer perspective,

internal process perspective, and learning and growth perspective of MSMEs manufacturing performance were all significantly impacted by the adoption of B2B e-commerce.

H4 : The adoption of e-commerce has a positive effect on the performance of MSMEs

II. Research Method

This research employs a quantitative methodology. The MSMEs owners in Situbondo Regency were given questionnaires, which served as the data source. The SmartPLS program will be used to process the data after it has been collected. The questionnaire was originally assessed for validity and reliability before being distributed. A five-point Likert scale was used to rate each item, and the ratings were as follows: 1 represents extreme disagreement, 2 disagree, 3 mild agreement, 4 agreement, and 5 great agreements. A thorough evaluation of the literature was used to generate the measurement questions. Purposive sampling was utilized to choose the study's sample. Whatsapp and Instagram were among the tech-based sites used to distribute the questionnaires. Descriptive analysis, inner and outer model testing, and hypothesis testing are the techniques employed. The operational variables in the research are categorized into independent, dependent, and intervening variables. Here's a breakdown:

1. Independent Variables:
    a. Technology Factor: This variable assesses the influence of technological advancements and tools on the adoption of e-commerce by MSMEs, with indicators:[9]
        - Perceived usefulness
        - Perceived ease of use
        - Perceived behavioral control
    b. Organizational Factor: This variable evaluates how company characteristics and resources, such as the objectives of MSMEs, readiness to use e- commerce technology and business size, with indicators:[8][9]
        - Employee's e-commerce knowledge
        - Scope of business operations
        - Organization mission
    c. Environmental Factor: This variable looks at external environmental influences, such as market conditions and competition, that may impact the adoption of e-commerce, with indicators:[4][3]
        - Competitive pressure
        - Consumer readiness
        - Business partner pressure
2. Intervening Variable:

    E-Commerce Adoption: This variable measures the extent to which MSMEs adopt e-commerce practices in their operations, with indicators:[11]
    - Business expansion
    - External partnership
3. Variable Dependent:

    MSMEs Performance: This variable assesses the performance outcomes of MSMEs as a result of e-commerce adoption. E-Commerce technology adoption will improve the interaction between business and its clients, with indicators:[12][1]
    - Revenue improvement
    - Increased sales

- Improved company image
- Improved speed processing

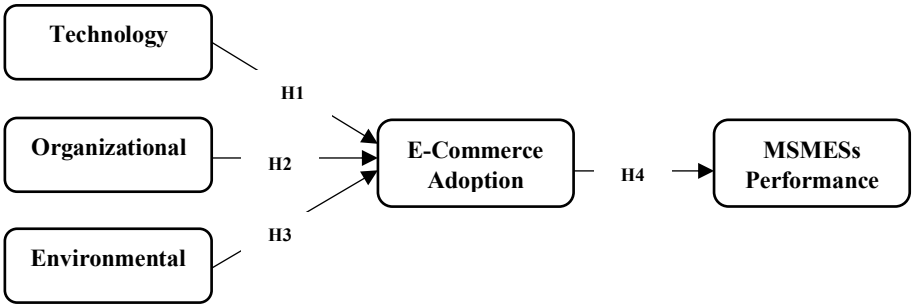

Fig.1 Research Model

III. Results And Discussion

A. Overview of Research Objects

The questionnaire was distributed to 100 potential respondents via social media. Of the 100 potential respondents, 48 responses were received. Of the 48 responses, 3 did not meet the criteria. So that the data that could be processed was 45 respondents. The distribution of the questionnaire was not only personal through MSMEs owners directly but also through information transmission between MSMEs owners in Situbondo Regency. The characteristics of respondents who had filled out the questionnaire were that 90% of their business activities were in the food and beverage sector, 5% were in the catering sector and the rest were in the crafts or crafts sector. The length of the respondents' business was 40% less than 1 year, 40% had a business period of 3 years and the remaining 20% had reached 5-6 years.

B. Validity testing

Examining the Construct Reliability and Validity output, specifically the Average Variant Extracted (AVE) number, is how validity testing is done. The results of the outer loading analysis are seen in Table 1 According to Ghozali and Latan (2015) if the outer loading value is > 0.7, it means that all of these indicators can measure their variables. According to Hair et al. (2017) the AVE value must be > 0.5, and the results show that the variables environment, organization, technology, e-commerce adoption and UMKM performance have good variable values with the resulting value > 0.5.

Table 1. Convergence Validity Test (AVE)

Variable	Average Variance Extracted (AVE)
E Commerce Adoption	0.812
Environment	0.754
Organizational	0.745
Performance MSMEs	0.725
Technology	0.783

C. Reliability Test

The reliability test in this study uses Cronbach alpha. This research instrument is said to be reliable if it has a Cronbach alpha value greater than 0.70 and the indicators in this study are said to be reliable if they achieve composite reliability above 0.70 [13] More details can be seen in the table below:

Table 2. Reliability Test

Variable	Cronbach's Alpha
E Commerce Adoption	0.769
Environment	0.838
Organizational	0.831
Performance MSMEs's	0.871
Technology	0.864

D. Inner Model Testing

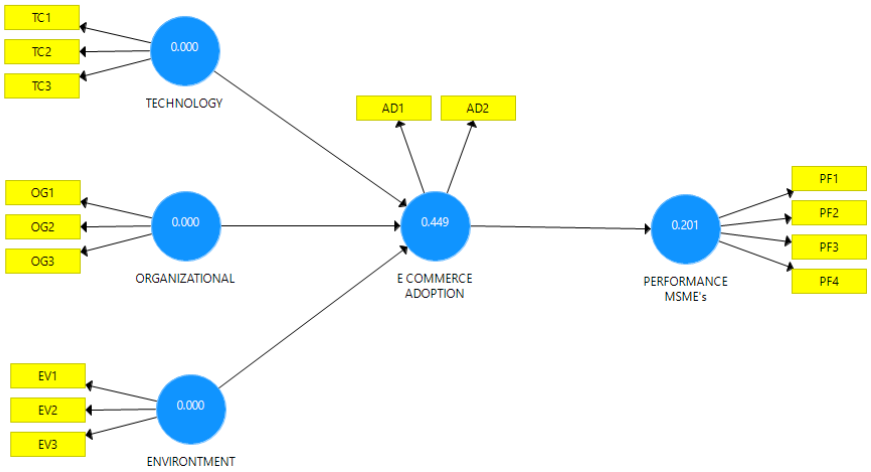

Fig 2. Blindfolding Q-square Test in SmartPLS

1. R-Square Test (R2)

The results of the Determination Coefficient statistical test used to measure the magnitude of the influence of independent variables on the dependent variable show that the influence of technology, organization and environment factors affect the e-commerce adoption variables and MSMEs performance. The findings indicate that while technology, organization, and environment have a 65% influence on e-commerce adoption, other factors not included in this study account for 35% of the variation. Technology, organization, environment, and e-commerce adoption factors collectively impact MSMEs performance by 29%, according to the evaluation of the r-square value on MSMEs performance; however, other variables not included in this study account for 71% of the variation.

Table 3. R-Square Test Results

Variable	R Square	R Square Adjusted
E Commerce Adoption	0.677	0.654

Variable	R Square	R Square Adjusted
Performance **MSMEs**	0.305	0.289

2. Q-Square Test (Q2)

From the results of the Q2 calculation, it can be seen in table 4 that the value of the e-commerce variable is 0.449 and the MSMEs performance variable is 0.201, which means that the value is > 0, if the Q2 value is > 0, it can be said that the model has a good observation value [14].

Table 4. Q2 Test Results

Variable	SSO	SSE	Q² (=1-SSE/SSO)
E commerce Adoption	90.000	49.570	0.449
Environment	135.000	135.000	
Organizational	135.000	135.000	
Performance MSMEs	180.000	143.753	0.201
Technology	135.000	135.000	

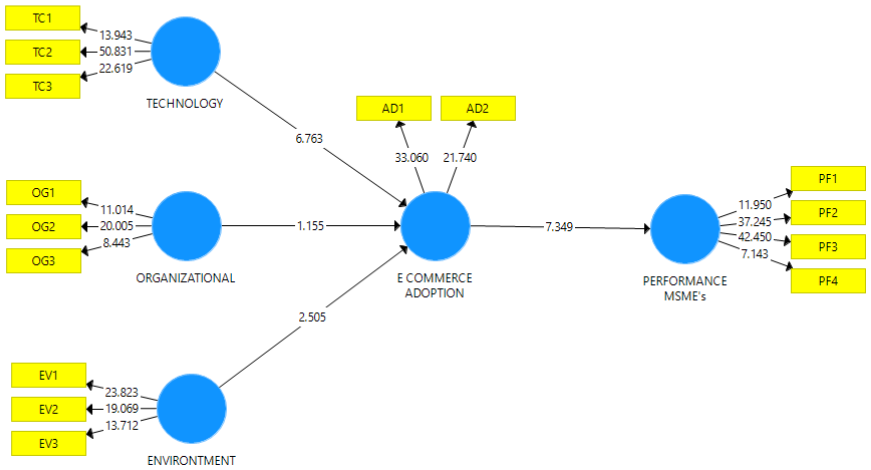

Fig 3. Bootstrapping T-Statistic Test in SmartPLS

3. Direct Hypothesis Testing

Table 4. Structural Equation Analysis (inner model)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
E Commerce Adoption -> Performance MSMEs	0.553	0.574	0.075	7.349	0.000
Environment -> E Commerce Adoption	0.243	0.251	0.097	2.505	0.013
Organizational -> E Commerce Adoption	0.157	0.149	0.136	1.155	0.249

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Technology -> E Commerce Adoption	0.600	0.614	0.089	6.763	0.000

The results of direct hypothesis testing on technology based on the original sample (0.600) T Statistics 6.763 (>1.964) and P Value of 0.000 (<0.05) have a positive and significant effect on e-commerce adoption, so Hypothesis 1 is accepted. In the organization based on the original sample (0.157) T Statistics 1.155 (<1.964) and P Value of 0.249 (<0.05) have a positive but not significant effect on e-commerce adoption, so Hypothesis 2 is rejected. In the environment based on the original sample (0.243) T Statistics 2.505 (>1.964) and P Value of 0.013 (<0.05) have a positive and significant effect on e-commerce adoption, so Hypothesis 3 is accepted. In the adoption of e-commerce based on the original sample (0.553) T Statistics 7.349 (>1.964) and P Value of 0.000 (<0.05) has a positive and significant effect on MSMEs performance, so Hypothesis 4 is accepted.

4. Hypothesis Test of Indirect Effect / Test through Intervening Variable

Table. 5
Hypothesis Test of Indirect Effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Environment -> E Commerce Adoption -> Performance MSMEs	0.134	0.144	0.060	2.256	0.025
Organizational -> E Commerce Adoption -> Performance MSMEs	0.087	0.088	0.082	1.059	0.290
Technology -> E Commerce Adoption -> Performance MSMEs	0.331	0.351	0.060	5.519	0.000

The indirect influence hypothesis test results indicate that technology, as measured by the adoption of e-commerce, significantly affects MSMEs performance. This is supported by the original sample value, which is positive (0.331), the T-Statistic value of 5.519 (> 1.964), and the P Value of 0.000 (<0.05), indicating that the hypothesis is accepted. Based on the original sample value of 0.087, the T-Statistic value of 1.059 (<1.964) and P Value of 0.290 (<0.05) indicate that the indirect influence hypothesis test on Organizational has a positive but not significant effect on the performance of MSMEs through the adoption of e-commerce. Therefore, the hypothesis is rejected. In the indirect influence hypothesis test, it shows that the environment has a significant effect on MSMEs performance through e-commerce adoption, this refers to the original sample value which is positive (0.134), the T-Statistic value is 2.256 (> 1.964) with a P Value of 0.025 (<0.05), so the hypothesis is accepted.

E. Interpretation of Research Results

1. The Influence of Technology Factors on E-commerce Adoption

The results of the hypothesis test on the influence of technology on e-commerce adoption show a positive and significant influence, this means that the benefits of technology, ease of use of

technology and belief in the use of technology itself will influence MSMEs to adopt e-commerce. This means that the greater the level of belief in the benefits, belief in the ease and ability to use technology, the greater the level of adoption of e-commerce in MSMEs. Respondent data also shows that MSMEs who use e-commerce are greatly influenced by the greater benefits they will receive, as well as the ease of use of e-commerce applications and the ability to use e-commerce itself. This supports research [1] that technology factors have a positive and significant influence on e-commerce adoption. This means that technology factors can influence MSMEs to adopt e-commerce in their business. Where this happens when the greater the ease, speed, suitability of the technology they know and feel, the greater. This also supports research [9] where technology factors based on perceived usefulness, perceived ease of use, and perceived behavioral control have been shown to have a significant influence on e-commerce adoption.

2. The Influence of Organizational Factors on E-commerce Adoption

The results of the hypothesis test on organizational factors show that the organization has a positive but insignificant effect on e-commerce adoption. This is based on the original sample (0.157) T Statistics 1.155 (<1.964) and a P Value of 0.249 (<0.05). So that the second hypothesis is not accepted because the organizational factor has a positive but insignificant effect. The results of this test show that the correlation of knowledge about e-commerce, the size of the business and the future business mission does not affect e-commerce adoption, so these findings do not support previous research by [9]. This can be interpreted that the size of the MSMEs business in this digital era does not affect the adoption of e-commerce, where MSMEs businesses with small sizes can now easily use e-commerce to support their business. Even by utilizing e-commerce, it will actually increase the opportunities and reach of marketing the MSMEs products produced.

3. The Influence of Environmental Factors on E-commerce Adoption

The results of the hypothesis test of the influence of the environment on the adoption of e-commerce show a positive and significant influence, this is based on the original sample (0.243) T Statistics 2.505 (> 1.964) and a P Value of 0.013 (<0.05), this means that environmental factors, namely pressure from fellow MSMEs actors, and the trend of technology use by consumers have an influence on the use of e-commerce. The more MSMEs actors and consumers who utilize online shopping, the greater the tendency to use e-commerce. The results of this hypothesis test are consistent with research [1][9], which argues that consumers' preference for online shopping and MSMEs actors' desire to stay competitive are the driving forces behind the high adoption of e-commerce among MSMEs actors today.

4. The Effect of E-commerce Adoption on MSMEs Performance

The fourth hypothesis test is acceptable since it yielded results that were consistent with the original sample (0.553), T Statistics 7.349 (>1.964), and a P Value of 0.000 (<0.05), indicating that e-commerce adoption has a positive and substantial impact on MSMEs performance. The test results indicate that MSMEs perform better in terms of boosting sales turnover, income, improving their reputation, and providing effective and efficient customer service when they use e-commerce more frequently. In keeping with studies [1] that demonstrate the adoption of e-commerce has a favorable and noteworthy impact on MSMEs performance. This implies that the performance of MSMEs produced increases with more e-commerce usage.

IV. Conclusion

Based on the analysis's findings, it was determined that: (1) Technology influences MSMEs adoption of e-commerce, with the hypothesis test's results demonstrating a positive and significant effect. This suggests that MSMEs will be influenced to adopt e-commerce by the advantages of technology, its ease of use, and their confidence in its application. (2) The results of the hypothesis

test on the organizational factor showed that the organization has a positive but not significant effect on the adoption of e-commerce. This means that the size of the MSMEs business in this digital era does not affect the adoption of e-commerce, where MSMEs with small sizes can now easily use e-commerce to support their business. (3) Environmental factors show a positive and significant effect on the adoption of e-commerce. This means that the more MSMEs and consumers who use online shopping, the greater the tendency to use e-commerce. (4) The adoption of e-commerce has a positive and significant effect on the performance of MSMEs, where the greater the use of e-commerce, the greater the performance obtained by MSMEs in terms of increasing sales turnover, increasing income, increasing the image of MSMEs and the effectiveness and efficiency of customer service. It is necessary to develop indicators for each variable to obtain better results in measuring MSMEs performance. Furthermore, for factors that cannot be represented in this study, in-depth interviews should be conducted to better understand opinions, both those that have a significant and insignificant influence, so that a comprehensive analysis can be obtained by capturing ideas or thoughts from respondents. Deep research is still required to evaluate how well UMKM performs while using technology, one of which is the enhancement of the company's image by the owners as well as the simplicity of transactions for the acquisition of items. Support from the government is also required to train UMKM owners in order to enhance their ability to produce original material, which will raise the value of their products.

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