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## **The Influence of E-Commerce and Social Media on Revenue Growth Moderated by Production Costs in Micro, Small, and Medium Enterprises (MSMES)**

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### ***Abstract:***

*Micro, Small, and Medium-Sized Enterprises (MSMEs) play a vital role in Indonesia's economy, yet many of them risked bankruptcy during the COVID-19 epidemic. This study aims to analyze the impact of social media and e-commerce on MSME income with the moderation of production costs. A quantitative descriptive approach was employed in this study to analyze the data obtained from the research instrument, a questionnaire. The approach included tests for validity, reliability, normality, autocorrelation, multicollinearity, heteroscedasticity, moderation regression analysis (MRA), F and t statistical tests, and the coefficient of determination test (R<sup>2</sup>). The results show that e-commerce and social media do not have a significant individual impact on increasing MSME income, and production costs do not moderate this relationship. The implications of this study highlight the importance of effective production cost management to maximize the benefits of digital technology in increasing MSME income. This study recommends expanding the sample scope and using mixed methods for more in-depth analysis in the future.*

**Keywords:** *E-commerce, digital marketing, revenue, social media, MSMES*

## **1. Introduction**

Approximately 64.2 million MSMEs were recorded in Indonesia in 2021 by the Ministry of Cooperatives and Small and Medium Enterprises (KUKM Ministry), accounting for 61.07 percent or Rp 8.573.89 trillion of the country's GDP. Approximately 60.4% of all investments in Indonesia are made by small and medium-sized businesses (SMEs), which also employ nearly all of the country's workforce (97%) (Rivai, 2022). These statistics indicate that the growth of Indonesian MSMEs positively impacts the country's economy, particularly in reducing poverty and unemployment. Nevertheless, unemployment remains an issue, mainly due to the increasing population (Brouwers, 2020). However, MSMEs remain an essential economic sector that can efficiently employ a large workforce.

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From 2019 to 2021, the global economy experienced instability due to the Covid-19 pandemic. According to a survey by the Asian Development Bank (ADB), nearly 50% or more than 37.000 micro, small, and medium enterprises (MSMEs) went bankrupt due to the direct impact of the pandemic (Zveglic, 2020). The decline in company revenues can be attributed to the loss of consumer purchasing power, primarily due to government-imposed social restrictions (Kurniawati & Munari, 2023). This factor has significantly contributed to the bankruptcy of several MSMEs in Indonesia (Sugiarti et al., 2020). To face these challenges, MSMEs must adopt effective strategies to enhance their competitiveness (Arilia & Munari, 2022). One crucial aspect of economic development in the digital era is marketing, which conveys product information to consumers (Nezamova & Olentsova, 2020). In this context, internet marketing has become a primary focus in attracting consumer interest. Online marketing through the Internet is now an urgent need for both consumers and producers, given the changes in consumer behavior and preferences in the digital era (Zhang et al., 2021). Therefore, MSMEs must leverage digital technology to expand their market reach and enhance their competitiveness amid economic challenges.

Several previous studies have examined the impact of e-commerce on MSME performance. Martini et al. (2023) showed that e-commerce significantly and positively impacts MSME financial performance, with business size as a moderator in this relationship. However, this study introduces novelty by adding social media as an independent variable and production costs as a moderating variable, providing a more comprehensive perspective on factors influencing MSME income. Additionally, Effendi & Subroto, (2021) highlighted that the adoption of e-commerce by MSMEs is influenced by external pressure and perceived benefits but only significantly increases operational revenue. Although this study is similar in examining e-commerce adoption and its impact on MSME income, it adds social media as an influential factor and production costs as a moderating variable, enriching the analysis of this technology's impact.

Another study by Amornkitvikai et al. (2022) found that internal e-commerce tools and external platforms can enhance the sustainability of MSME e-commerce. Although similar in investigating factors influencing e-commerce use, this study emphasizes e-commerce sustainability rather than direct income improvement. In contrast, this study focuses more on the direct impact of social media and e-commerce on increasing MSME income in the Gayungan District, with production costs as a moderating factor. Furthermore, Agnesia & Saputra, (2022) showed that social media positively affects MSME income growth, while e-commerce and financial technology do not significantly impact it. This study differs by using production costs as a moderating variable and examining the combined impact of social media and e-commerce on MSME income.

Thus, this study aims to analyze the impact of social media and e-commerce on the income of micro, small, and medium enterprises (MSMEs), with production costs as a moderating factor. This study offers novelty by combining the impact of social media and e-commerce on MSME income with production costs as a moderating factor. Not only does it examine the direct influence of these two technologies, but it

also looks at how production costs can moderate this relationship. This provides new insights into the factors affecting MSME income, which have yet to be deeply explored in previous research and offers important insights for MSME owners and policymakers to optimize the use of social media and e-commerce in different production cost contexts. This study contributes by combining the impact of social media and e-commerce on MSME income and identifying the moderating role of production costs, providing a new perspective on improving MSME financial performance in the digital era. By offering an in-depth analysis of how social media and e-commerce, along with production costs as a moderating variable, affect MSME income, this study provides practical guidance for business owners and policymakers to optimize their digital marketing strategies.

## **2. Theoretical Background**

### **Commerce**

Electronic commerce channels as computer-accessible platforms companies and consumers use to conduct transactions and gather information (Mollick et al., 2023). Meanwhile, as Laudon & Laudon, (2011) stated, the phrase E-commerce refers to conducting business transactions between organizations and consumers using computers as the medium. Budiarti et al. (2021) define electronic commerce as all monetary transactions conducted on digital platforms, such as the Internet. This includes the purchase and sale of products, the exchange of goods, fund transfers, and the provision of information services. E-commerce is defined as business transactions that utilize electronic and computer technology. E-commerce uses digital processing, information, and communication technology to transform and enhance the interaction between sellers and buyers when conducting economic transactions. E-commerce, also known as online shopping, is buying and selling goods and services or transferring money or data using internet-connected electronic devices (Oki et al., 2021).

### **Social Media**

The emergence of social media can be attributed to both technology progress and sociological shifts. More people are using new media, which has made interpersonal communication easier. Fraccastoro et al. (2021) argues that social media can introduce and facilitate the use of new and unique forms of technological communication that differ from traditional forms of social media. Social media has facilitated connections among all users, allowing them to move more easily due to increased mobility resulting from this interconnectedness. According to Appel et al. (2020), social media marketing, as opposed to traditional promotion strategies, enables people to advertise their websites, products, and services to a larger audience by utilizing online social networks. Qalati et al. (2021) state that social media is a rapidly developing internet technology with significant potential to enhance marketing efforts for small and medium enterprises (SMEs). Social media has distinctive attributes that make it suitable for product promotion to users. Recently, SMEs can now effectively boost their revenue with the use of social media. Because of the growing global usage of social media and the internet, Twitter, Instagram, and

Facebook have given micro, small, and medium-sized firms (MSMEs) the chance to reach a wider audience, establish their brand, and acquire clientele (Azraputra et al., 2021). Through social media, SMEs can extend their reach to a larger target audience, promote their products, and implement marketing strategies such as promotions and sales to improve sales performance (Djakasaputra et al., 2021).

### **Production Costs**

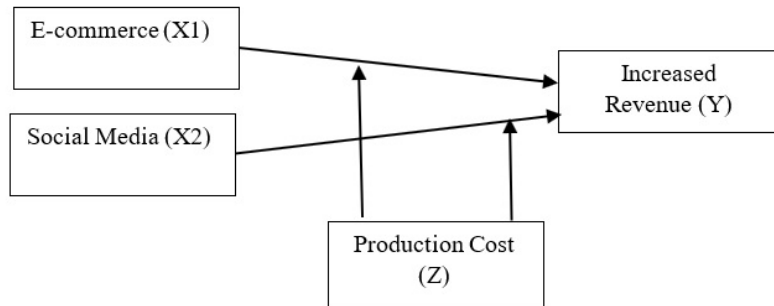
In economics, the definition of cost has been explained by various experts from different perspectives. Cost is defined by Petersen et al. (2019) as the monetary equivalent of the sacrifice of economic resources that has happened or is anticipated to occur for a certain goal. This definition emphasizes the aspect of economic sacrifice measured monetarily, whether it has already occurred or is predicted to occur, with a specific purpose. This means that costs include any form of expenditure incurred or to be incurred to achieve a particular objective, such as in the production or investment process. Lynch et al. (2019) states the cost is the acquisition price sacrificed or used to obtain income and will be used as a deduction from income. In this context, costs are not only seen as expenditures but also as key elements in the calculation of an entity's profit and loss. In determining the cost object, it is important to distinguish between cost and expense. As one of the main components in the cost of goods sold, production costs are defined by Triwidatin, (2022) as costs incurred to process raw materials into finished products ready for sale. This definition aligns with Hong & Guo, (2019), assert that expenses associated with producing things and rendering services are referred to as production costs. Several components go into production expenses, such as direct labor, raw materials, and manufacturing overhead. In the process of processing raw materials into finished products, each cost component must be managed efficiently to ensure that the cost of production can be minimized, thereby increasing profit margins. Proper identification between production costs and expenses is crucial in cost accounting, as errors in categorization can significantly impact financial statements and managerial decision-making (Gardi et al., 2021). A comprehensive understanding of costs is essential in financial management and accounting, as it directly influences cost control strategies and profit optimization. Therefore, effective cost management helps set competitive prices and maintain business sustainability in the long run.

### **Revenue**

Revenue is a key determinant of a company's performance because it regulates fluctuations in its financial status. Therefore, companies must strive to achieve projected revenue by optimizing the utilization of their internal resources. PSAK No. 23 is one of the documents in the Financial Accounting Standards Statement framework (Fauzi, 2019). Revenue is the total amount of economic benefits generated from the ordinary operating activities of an organization during a certain period, provided that these benefits result in an increase in equity not derived from investor contributions. In the broader Indonesian vocabulary, revenue is defined as the process, method, act of producing or obtaining the money received, and so on (KBBI, 2024). In economics, revenue refers to the total highest value consumed by a person within a certain period, assuming that the state at the end of the period is the same as at the

beginning (Giroud & Rauh, 2019). Revenue refers to the total wealth at the beginning of a certain time and the net gains achieved during that period, not just what is spent.

### Conceptual Framework



**Figure 1. Conceptual Framework**

### Hypothesis Development

E-commerce, as a telecommunications channel, facilitates the exchange, procurement, and sale of products or services using both physical and digital transportation across different locations. Commercial transactions through electronic means, facilitated by internet connectivity, enable SMEs to reach a wider market and increase sales volume. This aligns with the theory by Lin et al. (2020), this claims that e-commerce may improve accessibility and efficiency in business transactions, which will benefit revenue development.

**H0:** The use of e-commerce has no appreciable impact on SMEs' revenue growth.

**H1:** The use of e-commerce significantly affects SMEs' revenue growth.

As a digital marketing platform, social media can drive SME growth by facilitating product awareness and direct purchases. Marketing strategies through social media allow SMEs to reach a broader audience at a relatively low cost, enhancing the interactivity and compatibility of marketing messages. Harto et al. (2019) state that viral marketing through social media can result in rapid sales growth resembling a virus, which supports revenue growth for SMEs.

**H0:** The increase of SMEs' revenue is not significantly impacted by their use of social media.

**H1:** The use of social media significantly affects SMEs' revenue growth.

The efficiency of e-commerce in generating income can be impacted by appropriate manufacturing costs, which include material costs, direct labor expenses, and indirect production costs. Sun et al. (2019) explains that controlling production costs can help companies lower prices without sacrificing profit margins, ultimately increasing revenue. Therefore, the association between e-commerce and revenue development is anticipated to be moderated by manufacturing costs, with effective cost control enhancing e-commerce's beneficial effects on SME revenue.

**H0:** The increase of SMEs' revenue is not significantly impacted by production costs.

**H1:** The increase of SMEs' revenue is significantly impacted by their production costs.

Good production cost control can enhance the effectiveness of social media in increasing SME revenue. High production costs can reduce the profit margins from sales promoted through social media. Baah et al. (2021) states that accurately calculating production costs is essential to ensure healthy profit margins. Thus, production costs are expected to moderate the relationship between social media and revenue growth, where effective cost management will strengthen the positive impact of social media on SME revenue.

**H0:** Production Costs do not moderate E-commerce's influence on SMEs' revenue growth.

**H1:** Production Costs moderate E-commerce's influence on SMEs' revenue growth.

Social media has become a highly effective tool in increasing the revenue of Small and Medium Enterprises (SMEs) by enhancing visibility and market reach. Social media allows SMEs to interact directly with consumers, build brands, and optimize marketing strategies at relatively low costs (Adam et al., 2020). However, the effectiveness of social media in increasing revenue is also influenced by various other factors, including production costs (Dwivedi et al., 2023). High production costs can hinder the ability of SMEs to meet increased demand resulting from social media promotions, thereby affecting overall revenue growth.

**H0:** Production Costs do not moderate the influence of Social Media on the revenue growth of SMEs.

**H1:** Production Costs moderate Social Media's influence on SMEs' revenue growth.

### 3. Methodology

#### **Type of Research and Description of the Research Population (Objects)**

This study was conducted in the Gayungan District. According to Sugiyono (2016:2), research can be defined as a systematic and scientific approach used to collect data for specific purposes and uses. This study employs a quantitative research methodology. As described by Sugiyono, (2018), quantitative data refers to data expressed in numerical form or on a scale. This research focuses on Micro, Small, and Medium Enterprises (MSMEs) located in the Gayungan District. The study is conducted in the Gayungan District due to the high prevalence of MSMEs utilizing e-commerce platforms and social media. Another reason for conducting research in the Gayungan District is the researcher's residence, which facilitates the research process.

#### **Data Collection Techniques**

The data collection approach used in this study is primary data collection. Primary data are those that the researcher actually collected through observation. Questionnaires are the primary method of data collecting employed in this investigation. Written statements are given to participants, who are then asked to select responses that best represent their points of view. Only those who manage or own micro, small, and medium-sized (MSME) restaurants in the Gayungan District will be eligible to take the survey. The measurement scale employed in this study is the Likert scale.

### **Variables and Operational Definitions of Variables**

The independent variables in this study include e-commerce and social media. E-commerce, according to Greenstein & Vasarhelyi, (2002), is a telecommunications channel that facilitates the exchange, procurement, and sale of products or services using physical and digital transportation across different locations. E-commerce refers to conducting commercial transactions, such as exchanging goods, services, or financial transactions, through electronic means facilitated by Internet connectivity. The impact of e-commerce can be assessed through several indicators: marketing, ease of access, and ease of transaction. Social media is also a significant independent variable. Harto et al. (2019) define viral marketing as a strategy that encourages websites or internet users to spread marketing messages to other sites or users, resulting in rapid sales growth resembling a virus. Social media can drive the development of Micro, Small, and Medium Enterprises (MSMEs), facilitating the introduction and purchase of their products directly through these platforms. The impact of social media can be measured using indicators such as interactivity, price effectiveness, and compatibility.

The dependent variable in this study is income, defined as the gross inflow of economic benefits generated by the regular operations of an entity over a specific period, resulting in an equity increase not derived from investments, as explained by Turban et al., (2002). Income is calculated by measuring respondents' revenue and total costs. According to Han et al. (2020), income refers to the total earnings received by an individual for their labor over a certain period, such as daily, weekly, monthly, or yearly. Income can be measured using indicators such as income and sources of income. Additionally, there is a moderating variable in the form of production costs. According to Špacírová et al. (2020), the accuracy of calculating costs used to produce products consists of material costs, direct labor costs, and indirect production costs. The variable production cost is calculated using indicators such as capital, factory overhead, and direct labor costs.

### **Data Analysis Techniques**

A descriptive quantitative technique is used in this study's data analysis process to collect, analyze, and thoroughly present observational data. Tests for validity, reliability, and normality were carried out to ensure the data's quality. To evaluate the validity of the research instrument, item values are compared with the overall correlation using a *r* table at a significance level of 0.05. The reliability test uses the Cronbach alpha coefficient with a 0.60 threshold to evaluate the survey's consistency. Data normality is assessed using the One-Sample Kolmogorov-Smirnov test. A significance threshold of  $\geq 0.05$  is used to determine normality. Tests for classical assumptions include the Durbin-Watson (DW) autocorrelation test, the multicollinearity test to ensure that independent variables do not correlate, and the Glejser test for heteroscedasticity, which regresses the absolute value of residuals against independent variables to ensure that the optimal regression model does not have heteroscedasticity issues.

### **Hypothesis Testing**

#### **Moderated Regression Analysis (MRA)**

In order to preserve the sample's integrity and give direction to the moderator variable's influence, Moderated Regression Analysis (MRA) is employed (Ghozali 2016). It can be expressed in this study's formula as follows:

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 Z + \beta_4 (X_1 Z) + \beta_5 (X_2 Z) + e$$

Where:

Y = Increased Revenue

A = Constant

$\beta_1$ -  $\beta_5$  = Regression Coefficients

$X_1$  = E-commerce

$X_2$  = Social Media

Z = Production Cost

E = Standard Error

### F Statistical Test

The F statistical test establishes whether the dependent variable in the model is impacted by the independent or dependent variables combined.

### t Statistical Test

The t test is a statistical technique that may be used to determine how much an explanatory or independent variable can explain variation in the dependent variable (Ghozali, 2018).

### Coefficient of Determination ( $R^2$ ) Test

The coefficient of determination indicates how well the model fits the variability in the dependent variable. A low  $R^2$  value suggests that the independent factors' capacity to explain the dependent variable is limited. Conversely, a high  $R^2$  number indicates that almost all of the data needed to calculate the dependent variable is included in the independent variables (Ghozali, 2018).

## 4. Empirical Findings/Result

### Data Quality Testing

#### Validity Test

**Table 1. Validity Test Results**

Variable	Question Item	r-calculated	r-table	Sig.	Standard Sig.	Description
E-commerce	X1.1	0.714	0.312	0.000	0.05	Valid
	X1.2	0.601	0.312	0.000		
	X1.3	0.660	0.312	0.000		
	X1.4	0.664	0.312	0.000		
	X1.5	0.627	0.312	0.000		
	X1.6	0.766	0.312	0.000		
Social Media	X2.1	0.436	0.312	0.005	0.05	Valid
	X2.2	0.647	0.312	0.000		
	X2.3	0.776	0.312	0.000		
	X2.4	0.642	0.312	0.000		
	X2.5	0.772	0.312	0.000		



Variable	Question Item	r-calculated	r-table	Sig.	Standard Sig.	Description
Production Cost	Z1.1	0.736	0.312	0.000	0.05	Valid
	Z1.2	0.556	0.312	0.000		
	Z1.3	0.637	0.312	0.000		
	Z1.4	0.706	0.312	0.000		
	Z1.5	0.670	0.312	0.000		
Income	Y1.1	0.524	0.312	0.000	0.05	Valid
	Y1.2	0.777	0.312	0.000		
	Y1.3	0.670	0.312	0.000		
	Y1.4	0.713	0.312	0.000		
	Y1.5	0.615	0.312	0.000		
	Y1.6	0.547	0.312	0.000		
	Y1.7	0.760	0.312	0.000		

Source: SPSS Output 25 (2024)

The data shown in Table 1 indicates the validity of the research measuring instrument that was used. The results of the validity test show that all of the statement items were deemed valid as the variable indicators' r-calculated value was more than the r-table value of 0.312 and the significant value obtained was less than 0.05 ( $p < 0.05$ ).

### Reliability Test

**Table 2. Reliability Test Results**

Variable	Alpha	Cronbach Alpha	Description
E-commerce	0.758	0.6	Reliable
Social Media	0.657		
Production Cost	0.678		
Income Increase	0.785		

Source: SPSS Output 25 (2024)

All examined variables have a Cronbach Alpha value more than the minimal criterion of 0.6, as shown by the reliability test results in Table 2, which indicates that all variables are deemed trustworthy. The Cronbach Alpha values of the following variables: income increase (0.785), production cost (0.678), social media (0.657), and e-commerce (0.758). For future study, this indicates that the tools used to assess these four factors are dependable and consistent.

### Normality Test

**Table 3. Kolmogorov-Smirnov Normality Test**

Unstandardized Residual		
N		40
Normal Parametersa, b	Mean	0.000
	Std. Deviation	0.932
Most Extreme Differences	Absolute	0.122
	Positive	0.075
	Negative	-0.122
	Test Statistic	0.122
Asump. Sig. (2-tailed)		0.138c

Source: SPSS Output 25 (2024)

The data in the table above clearly exhibit a normal distribution, as shown by the Kolmogorov-Smirnov significance value of 0.138, which indicates a value larger than 0.05.

### Classical Assumptions

#### Autocorrelation Test

**Table 4. Durbin-Watson Autocorrelation Test**

Sample (n)	Durbin-Watson
40	1.767

Source: SPSS Output 25 (2024)

The Durbin Watson (d) value of 1.767 is displayed in the above table. At a significance level of five percent, this value will be compared to the value in the table. There are 40 samples (n) and 3 independent variables (k) in total. As a result,  $du = 1.6589$  and  $dl = 1.3384$  are the table values. It is possible to deduce that there is no negative autocorrelation because the value  $dU < d < 4 - dU$ , or  $1.6589 < 1.767 < 2.3411$ , indicates this.

#### Multicollinearity Test

**Table 5. Multicollinearity Test**

Model	Collinearity statistic	
	Tolerance	VIF
<b>(Constant)</b>		
E-commerce	0.142	7.065
Social Media	0.244	4.092
Production Cost	0.202	4.950

Source: SPSS Output 25 (2024)

The test findings, Table 5, indicate the absence of multicollinearity. This is due to the fact that every tolerance value above 0.10 and every VIF value is less than 10.

#### Heteroscedasticity Test

**Table 6. Heteroscedasticity Test**

Model	T	Sig.
(Constant)	0.708	0.483
E-commerce	0.399	0.692
Social Media	-0.635	0.529
Production Cost	0.192	0.849

Source: SPSS Output 25 (2024)

The findings of the computation, which can be seen in Table 6, indicate that the E-commerce variable has a significant value of 0.692, the Social Media variable has a value of 0.529, and the Production Cost variable has a value of 0.849. Since none of the significant values are smaller than 0.05 ( $<0.05$ ), these data show that there is no heteroscedasticity. It is therefore possible to conclude that there are no problems with heteroscedasticity.

**Hypothesis Testing****Moderated Regression Analysis (MRA)****Table 7. Moderated Regression Analysis (MRA)**

Model	Unstandardized Coefficients		T	Sig.
	$\beta$	Std. Error		
1. Constant	-33.149	9,217	-3,597	0.001
E-commerce	0.868	0.925	0.938	0.355
Social Media	1.760	0.964	1.826	0.077
Production Cost	2.556	0.621	4.114	0.000
E-commerce * Production Cost	-0.033	0.046	-0.718	0.478
Social Media * Production Cost	-0.070	0.047	-1.489	0.146

Source: SPSS Output 25 (2024)

Regression equation model produced based on data processing results indicated in Table 7 in the Unstandardized Coefficients column ( $\beta$ ).

$$Y = -33.149 + 0.868 X_1 + 1.760 X_2 + 2.556 Z - 0.033 (X_1 Z) - 0.070 (X_2 Z) + e$$

The equation for multiple linear regression reveals that the variables related to social media and e-commerce have positive coefficients. Thus, it can be said that there is a chance that these two factors will raise MSME revenue. On the other hand, there are negative coefficients found in the correlations between production costs and e-commerce and social media. This suggests that the income value will rise if the effect of e-commerce moderated by production costs or the influence of social media moderated by cost declines.

**F-Statistic Test****Table 8. F-Statistic Test**

Table 1. Summary of Regression Statistics						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	271.383	5	54.277	80.175	0.000 <sup>b</sup>
	Residual	23.017	34	0.677		
	Total	294.400	39			
a. Dependent Variabel : Income						
b.Predictors: (Constant), X2_Z2, E-commerce, Social Media, Production Cost, X1_Z1						

Source: SPSS Output 25 (2024)

Table 8 indicates that the computed value of F is 80.175. 0.000 is the computed significance value, which is less than 0.05. Thus, it can be said that the multiple regression model is workable and that social media and e-commerce, the independent variables, both affect the dependent variable of income increase at the same time.

**T-Statistic Test****Table 9. T-Statistic Test**

Model	Unstandardized Coefficients		T	Sig.
	$\beta$	Std. Error		
1. Constant	-33.149	9,217	-3,597	0.001
E-commerce	0.868	0.925	0.938	0.355
Social Media	1.760	0.964	1.826	0.077
Production Cost	2.556	0.621	4.114	0.000
E-commerce * Production Cost	-0.033	0.046	-0.718	0.478
Social Media * Production Cost	-0.070	0.047	-1.489	0.146

Source: SPSS Output 25 (2024)

Based on the data processing results shown in Table 9, it can be explained as follows: The hypothesis test result of the effect of E-Commerce usage on sales increase shows that  $t \text{ calculated} = 0.938 < t \text{ table} = 2.02809$ , or sig value  $0.355 > 0.05$ , so  $H_0$  is accepted or  $H_1$  is rejected. This indicates no significant correlation between E-Commerce usage and sales increase. The hypothesis test result of the effect of Social Media usage on sales increase shows that  $t \text{ calculated} = 1.826 < t \text{ table} = 2.02809$ , or sig value  $0.077 > 0.05$ , so  $H_0$  is accepted or  $H_1$  is rejected. This indicates no significant correlation between Social Media usage and sales increase. The hypothesis test result of the effect of E-commerce moderated by production cost shows that  $t \text{ calculated} = -0.718 < t \text{ table} = 2.02809$  and has a significance value of  $0.478 > 0.05$ . This indicates that the hypothesis is rejected, leading to the conclusion that Production Cost cannot mitigate the impact of E-commerce on MSME income. This research reveals that in the highly competitive e-commerce sector, companies often need to cut prices or offer discounts to attract customers. The company's capacity to reduce prices without sacrificing profit margins is constrained by high production costs, thus hindering revenue development. Additionally, resource allocation for the technology and infrastructure required for e-commerce can be limited if the production workload is excessive, hampering e-commerce operations' enhancement. The hypothesis test result of the effect of Social Media moderated by production cost shows that  $t \text{ calculated} = -1.489 < t \text{ table} = 2.02809$  and has a significance value of  $0.146 > 0.05$ . This indicates that the hypothesis is rejected, concluding that Production Cost cannot moderate Social Media's impact on MSME income. This research finds that high production costs can hinder the ability of social media to increase company revenue. High production costs reduce the profit margins from sales promoted through social media, so even though sales volume increases, net profit remains limited. Additionally, production capacity that cannot keep up with demand from social media campaigns can cause order fulfillment delays, reducing customer satisfaction and potential revenue loss.

### Coefficient of Determination ( $R^2$ ) Test

Table 10. Coefficient of Determination ( $R^2$ ) Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.937	0.877	0.871	0.988
2	0.960	0.922	0.910	0.823

Source: SPSS Output 25 (2024)

Based on the analysis conducted in Table 4.23, it can be explained that in the first regression model (X against Y), an Adjusted R Square value of 0.871 or 87.1% is obtained. This indicates that e-commerce and social media variables can explain 87.1% of the variability in income increase. In the second regression model (X against Y with moderation of Z), the Adjusted R Square value increases to 0.910 or 91%. This indicates that 91% of the variability in income increase can be explained by the variables of e-commerce, social media, and production cost as a moderating variable. The difference in contribution values between the first and second models shows a significant increase. In the first model, the Adjusted R Square value of 87.1% increases to 91% in the second model. The 3.9% increase in Adjusted R Square value indicates that the presence of production cost as a moderating variable provides an additional contribution in explaining the variability in income increase.

The increase in Adjusted R Square shows that the regression model involving the moderating variable (Z) provides a more comprehensive explanation of the phenomenon being studied. This is consistent with the hypothesis that moderating factors have the power to either amplify or attenuate the correlation between the independent variable (X) and the dependent variable (Y). As seen by the rise in the Adjusted R Square value, production cost functions as a moderating variable in this study, strengthening the impact of social media and e-commerce on income growth. This growth may also be seen as factual proof that manufacturing costs matter in the context of social media and e-commerce. Consequently, social media and e-commerce may both be more successful at generating cash when production expenses are managed well. Therefore, in order to obtain more optimum outcomes, management should take into account tactics that maximize social media and e-commerce and regulate manufacturing costs.

## 5. Discussion

Research indicates that, when production costs are moderated, the effects of social media and e-commerce on the income of micro, small, and medium-sized firms (MSMEs) differ. The study results show that social media and e-commerce have positive coefficients, suggesting that these two factors have the potential to increase MSME income. However, the findings of the hypothesis test, with significance values of 0.355 and 0.077, respectively, indicate that neither social networking nor e-commerce alone substantially affect MSME revenue. These outcomes are consistent with earlier research. Although social media and e-commerce have the potential to boost MSME income, their success is mostly reliant on other elements like internal management and manufacturing capability (Yusgiantoro et al., 2019). When considering production cost as a moderating variable, the research indicates that production cost fails to mitigate the impact of either e-commerce or social media on MSME revenue. This is evident from the significance values greater than 0.05, specifically 0.478 for the interaction between e-commerce and production cost and 0.146 for the interaction between social media and production cost. High production costs hinder the effectiveness of social media and e-commerce in increasing revenue.

High production costs reduce profit margins, so net profit remains limited even if sales volume increases.

Additionally, production capacity that cannot keep up with demand from social media campaigns can lead to delays in order fulfillment, reducing customer satisfaction and potential revenue loss. These findings support the view of Adiningrat et al., (2023) who states that operational efficiency and production cost management are key factors in determining the success of digital technology implementation in the MSME sector. Although e-commerce and social media can potentially increase MSME revenue, high production costs can inhibit this positive impact. Therefore, effective production cost management is key to maximizing the benefits of using e-commerce and social media to increase MSME revenue. The government and relevant stakeholders need to pay more attention to providing technology education and training to entrepreneurs to optimize e-commerce and social media use in this digital era. Consistent with the research by Marikyan & Papagiannidis, (2023) on the Technology Acceptance Model (TAM), this education and training can enhance the perception of ease of use and usefulness of technology, thereby increasing the adoption and utilization of digital technology by MSMEs.

Based on this research, which shows that neither e-commerce nor social media significantly influences increasing MSME revenue individually and that production costs fail to mitigate the impact of e-commerce or social media on MSME revenue, these findings are consistent with previous research. Study Martini et al. (2023) showed that e-commerce positively affects MSME financial performance, but this influence weakens for larger MSMEs. Study Effendi & Subroto, (2021) found that e-commerce adoption does not increase MSME operational revenue, consistent with the findings that other factors, such as internal management and production capacity, greatly influence e-commerce effectiveness. Study Amornkitvikai et al. (2022) also showed that while e-commerce can enhance MSME sustainability, many barriers affect success, such as e-commerce literacy and security. Study Agnesia & Saputra, (2022) revealed that e-commerce and fintech do not influence MSME revenue growth. Still, social media has a positive influence, which is consistent with the finding that effective production cost management is key to maximizing the benefits of digital technology. Thus, this research supports previous findings by demonstrating that while e-commerce and social media have potential, other factors, such as production costs, play an important role in determining the success of MSME revenue enhancement.

The implications of this research generally indicate that while e-commerce and social media can potentially increase the revenue of micro, small, and medium enterprises (MSMEs), their effectiveness is highly dependent on internal management and production capacity. High production costs can hinder the positive impact of these digital technologies, reducing profit margins and lowering customer satisfaction. Therefore, effective production cost management and operational efficiency improvements are crucial to maximizing e-commerce and social media benefits. The government and relevant stakeholders need to pay more attention to providing technology education and training to entrepreneurs to increase the adoption and

utilization of digital technology, consistent with the technology acceptance model, which shows that the perception of ease of use and usefulness of technology can enhance its successful implementation in the MSME sector

## 6. Conclusions

Based on the results of this research, social media and e-commerce can potentially increase the revenue of micro, small, and medium enterprises (MSMEs). However, their influence on MSME revenue growth is insignificant, as indicated by the significance values exceeding 0.05. Additionally, this research found that production costs need to moderate the impact of social media and e-commerce on MSME revenue, as shown by the insignificant hypothesis testing results. High production costs can hinder the effectiveness of social media and e-commerce in increasing revenue, as high production costs reduce profit margins, and inadequate production capacity leads to delays in order fulfillment and decreased customer satisfaction. Therefore, effective production cost management is crucial to maximizing the benefits of using social media and e-commerce to increase MSME revenue. However, there are limitations in this research, such as the sample being limited to the Gayungan District. A solution for future research is to expand the sample coverage to include various regions in Indonesia to make the research results more representative and generalizable. Additionally, future researchers can consider using qualitative or mixed methods to gain deeper insights into the factors influencing the effectiveness of e-commerce and social media, including a more detailed analysis of production cost components and MSME operational management.

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