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Determinants of Innovation Strategy on Business Performance with Competitiveness as an Intervening Variable in Batik MSMEs in East Java

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ABSTRACT

Objective: *The purpose of this study was to examine; (1) the effect of product innovation, process innovation, technological innovation, organizational innovation and service innovation partially on competitiveness (2) the effect of competitiveness on business performance (3) the effect of product innovation, process innovation, technological innovation, organizational innovation and service innovation partially on business performance (4) the effect of product innovation, process innovation, technological innovation, organizational innovation and service innovation partially on business performance through competitiveness in Batik MSMEs in East Java.* ***Methods:*** *The data processing method in this study used Statistical Package for the Social Sciences (SPSS) software version 27 and path analysis with Structural Equation Modeling (SEM) modeling PLS program version 4.00. The population in this study was 657 Batik MSME owners in East Java, with the calculation of the Slovin formula found as many as 249 samples.* ***Results****: The results showed that; (1) product innovation, process innovation, technological innovation, organizational innovation and service innovation partially have a positive and significant effect on competitiveness (2) competitiveness has a positive and significant effect on business performance (3) product innovation, process innovation, technological innovation, organizational innovation and service innovation partially have a positive and significant effect on business performance (4) product innovation, process innovation, technological innovation, organizational innovation and service innovation partially have a positive and significant effect on business performance through competitiveness in Batik MSMEs in East Java.* ***Novelty:*** *The novelty in this study lies in the use of the Digital Maturity Index as a new indicator in measuring business performance.*

INTRODUCTION

Indonesia's population growth rate is rapid and inevitable. High population growth can have a positive impact on economic improvement [1]. Population growth is an important element in increasing production and developing economic activities with the availability of abundant labor, if the supporting facilities and infrastructure are not in line with the increase in population, this will have a negative impact on a country, namely increasing unemployment and poverty.

One of the efforts in reducing unemployment and poverty in many developing countries is by empowering micro, small and medium enterprises [2], [3], [4], [5]. MSMEs are trading businesses that have stood alone and can be managed by individuals or groups and communities both individuals and groups that have an important role for the community to improve the people's economy can also be managed by business entities [6], [7].

One of the MSMEs in East Java is batik MSMEs, batik is an important sector in the Indonesian economy, not only because of its contribution to the national economy but also as a guardian of a rich and valuable cultural heritage. Batik, recognized as the

Heritage of Humanity for Oral and Intangible Culture by UNESCO in 2009, has a significant role in the social and economic life of Indonesian society.

Innovation is key in improving the business performance and competitiveness of MSMEs [8], [9], [10], [11]. Innovation can be a valuable tool to address social and environmental issues in the company [12]. Innovation strategy is a series of decisions related to the development and renewal of batik offerings write [13]. According to [14]the factors that determine innovation strategy are product innovation, process innovation, technological innovation, organizational innovation, and service innovation, these factors are several innovation strategies that can be applied to achieve competitive advantage.

Innovation allows batik MSMEs to keep abreast of the latest trends and adapt their products to the needs and wants of the market [15]. Thus, batik products remain relevant and in demand by various groups. Then to increase the added value of the product, innovation can increase the added value of batik products. Products that have a story behind their making, such as batik with regional motifs or using natural coloring techniques, can have a higher selling value and attract consumers who care about sustainability. Product price has become an important factor influencing customer choice [16].

Batik MSMEs in East Java face various problems that affect their ability to innovate and compete effectively. The results of research conducted by [17], with the title, *Impact of product and process innovation practices on competitiveness of manufacturing enterprises in Ethiopia mediated by competitive advantage.* The results showed that product innovation and process innovation had a positive and significant effect on competitiveness.

This research has a very important urgency in the context of the development and sustainability of MSMEs, especially in the batik industry sector in East Java. From the description of the *research gap,* the author needs to conduct research **with the** title "**Determinants of Innovation Strategy on Business Performance with Competitiveness as an Intervening Variable in Batik MSMEs in East Java**".

Research Objectives

Based on the formulation of the problem, the main objectives of this study are as follows,

1. Examine the effect of product innovation on competitiveness in Batik MSMEs in East Java?
2. Examine the effect of process innovation on competitiveness in Batik MSMEs in East Java?
3. Examine the effect of technological innovation on competitiveness in Batik MSMEs in East Java?
4. Testing the effect of organizational innovation on the competitiveness of batik MSMEs in East Java?
5. Testing the effect of service innovation on the competitiveness of batik MSMEs in East Java?
6. Testing the effect of competitiveness on business performance of batik MSMEs in East Java?

7. Testing the effect of product innovation on business performance in batik MSMEs in East Java?
8. Testing the effect of process innovation on business performance in batik MSMEs in East Java?
9. Testing the effect of technological innovation on business performance of Batik MSMEs in East Java?
10. Testing the effect of organizational innovation on business performance in batik MSMEs in East Java?
11. Testing the effect of service innovation on business performance of batik MSMEs in East Java?
12. Testing the effect of product innovation on business performance through competitiveness in batik MSMEs in East Java?
13. Testing the effect of process innovation on business performance through competitiveness in batik MSMEs in East Java?
14. Testing the effect of technological innovation on business performance through competitiveness in batik MSMEs in East Java?
15. Testing the effect of organizational innovation on business performance through competitiveness in batik MSMEs in East Java?
16. Testing the effect of service innovation on business performance through competitiveness in batik MSMEs in East Java?

RESEARCH METHOD

This research design uses a quantitative method pattern. Quantitative research is an approach to prove a theory by measuring several variables used [18]. Measurement of these variables is then analyzed using statistics and has data in the form of numbers. The results obtained in the form of data are usually described using tables, graphs, and others. The data processing method in this study used Statistical Package for the Social Sciences (SPSS) version 27 software and path analysis with Structural Equation Modeling (SEM) modeling PLS program version 4.00. The population in this study was 657 Batik MSME owners in East Java, with the calculation of the Slovin formula found as many as 249 samples.

RESULTS AND DISCUSSION

Table 1. Direct Effect Test Results.

Hypothesis	Variable	Original sample (O)	T statistics (|O/STDEV|)	P values	Description
H1	X1 -> Z	0.258	3.005	0.003	Significant
H2	X2 -> Z	0.319	4.611	0.000	Significant
H3	X3 -> Z	0.279	3.7	0.000	Significant
H4	X4 -> Z	0.24	2.972	0.003	Significant
H5	X5 -> Z	0.308	4.434	0.000	Significant
H6	Z -> Y	0.389	6.633	0.000	Significant
H7	X1 -> Y	0.206	3.855	0.000	Significant

H8	X2 -> Y	0.15	2.843	0.004	Significant
H9	X3 -> Y	0.206	3.56	0.000	Significant
H10	X4 -> Y	0.249	3.823	0.000	Significant
H11	X5 -> Y	0.245	5.446	0.000	Significant

Source: SmartPLS 4 Data Processing Results, (2025).

The following are the results of the statistical analysis calculations that have been displayed in the table above, the following conclusions can be drawn:

1. The effect of product innovation (X1) on competitiveness (Z).

Based on the results of testing the effect of product innovation variables (X1) on competitiveness (Z) which have been presented in the table above, it can be seen that the p-value of 0.003 is smaller than the significant level of 0.05 with a t-count value of 3.005 greater than the t-table of 1.96 and a *path coefficient* value of 0.258. Thus it can be concluded that product innovation (X1) has a positive and significant effect on competitiveness (Z) and that the results obtained have met the requirements so that it can be stated that hypothesis 1 in this study is accepted.

2. Effect of process innovation (X2) on competitiveness (Z)

Based on the results of testing the effect of the process innovation variable (X2) **on** competitiveness (Z) which has been presented in the table above, it can be seen that the p-value of 0.000 is smaller than the significant level of 0.05 with a t-count value of 4.611 greater than the t-table of 1.96 and a *path coefficient* value of 0.319. Thus it can be concluded that process innovation (X2) has a positive and significant effect on competitiveness (Z) and that the results obtained have met the requirements so that it can be stated that hypothesis 2 in this study is accepted.

3. The effect of technological innovation (X3) on competitiveness (Z).

Based on the results of testing the effect of the technological innovation variable (X3) on competitiveness (Z) which has been presented in the table above, it can be seen that the p-value of 0.000 is smaller than the significant level of 0.05 with a t-count value of 3.7 greater than the t-table of 1.96 and a *path coefficient of* 0.279. Thus it can be concluded that technological innovation (X3) has a positive and significant effect on competitiveness (Z) and that the results obtained have met the requirements so that it can be stated that hypothesis 3 in this study is accepted.

4. The effect of organizational innovation (X4) on competitiveness (Z).

Based on the results of testing the effect of the organizational innovation variable (X4) on competitiveness (Z) which has been presented in the table above, it can be seen that the p-value of 0.003 is smaller than the significant level of 0.05 with a t-count value of 2.974 greater than the t-table 1.96 and a *path coefficient* value of 0.24. Thus it can be concluded that organizational innovation (X4) affects competitiveness (Z) and that the results obtained have met the requirements so that it can be stated that hypothesis 4 in this study is accepted.

5. Effect of service innovation (X5) on competitiveness (Z)

Based on the results of testing the effect of the service innovation variable (X5) on competitiveness (Z) which has been presented in the table above, it can be seen that the p-value of 0.000 is smaller than the significant level of 0.05 with a t-count value of 4.434 greater than the t-table 1.96 and a *path coefficient* value of 0.308. Thus it can be concluded that service innovation (X5) has a positive and significant effect on competitiveness (Z) and that the results obtained have met the requirements so that it can be stated that hypothesis 5 in this study is accepted.

6. Effect of competitiveness (Z) on business performance (Y)

Based on the results of testing the effect of the competitiveness variable (Z) on business performance (Y) which has been presented in the table above, it can be seen that the p-value of 0.000 is smaller than the significant level of 0.05 with a t-count value of 6.633 greater than the t-table 1.96 and a *path coefficient* value of 0.389. Thus it can be concluded that competitiveness (Z) has a positive and significant effect on business performance (Y) and that the results obtained have met the requirements so that it can be stated that hypothesis 6 in this study is accepted.

7. Effect of product innovation (X1) on business performance (Y)

Based on the results of testing the effect of the product innovation variable (X1) on business performance (Y) which has been presented in the table above, it can be seen that the p-value of 0.000 is smaller than the significant level of 0.05 with a t-count value of 3.855 greater than the t-table of 1.96 and a *path coefficient* value of 0.206. Thus it can be concluded that product innovation (X1) has a positive and significant effect on business performance (Y) and that the results obtained have met the requirements so that it can be stated that hypothesis 7 in this study is accepted.

8. The effect of process innovation (X2) on business performance (Y).

Based on the results of testing the effect of the process innovation variable (X2) **on** business performance (Y) which has been presented in the table above, it can be seen that the p-value of 0.004 is smaller than the significant level of 0.05 with a t-count value of 2.843 greater than the t-table of 1.96 and a *path coefficient* value of 0.15. Thus it can be concluded that process innovation (X2) has a positive and significant effect on business performance (Y) and that the results obtained have met the requirements so that it can be stated that hypothesis 8 in this study is accepted.

9. Effect of Technological Innovation (X3) on Business Performance (Y).

Based on the results of testing the effect of the technological innovation variable (X3) on business performance (Y) which has been presented in the table above, it can be seen that the p-value of 0.000 is smaller than the significant level of 0.05 with a t-count value of 3.56 greater than the t-table of 1.96 and a *path coefficient* value of 0.206. Thus it can be concluded that technological innovation (X3) has a positive and significant effect on business performance (Y) and that the results obtained have met the requirements so that it can be stated that hypothesis 9 in this study is accepted.

10. The effect of organizational innovation (X4) on business performance (Y).

Based on the results of testing the effect of the organizational innovation variable (X4) on business performance (Y) which has been presented in the table above, it can be seen that the p-value of 0.000 is smaller than the significant level of 0.05 with a t-count value of 3.823 greater than the t-table of 1.96 and a *path coefficient* value of 0.249. Thus it can be concluded that organizational innovation (X4) has a positive and significant effect on business performance (Y) and that the results obtained have met the requirements so that it can be stated that hypothesis 10 in this study is accepted.

11. The effect of service innovation (X5) on business performance (Y).

Based on the results of testing the effect of the service innovation variable (X5) on business performance (Y) which has been presented in the table above, it can be seen that the p-value of 0.000 is less than the significant level of 0.05 with a t-count value of 5.446 greater than the t-table of 1.96 and a *path coefficient* value of 0.245. Thus it can be concluded that service innovation (X5) has a positive and significant effect on business performance (Y) and that the results obtained have met the requirements so that it can be stated that hypothesis 11 in this study is accepted.

Table 2. Intervening Variable Test Results.

Hypothesis	Variable	Original sample (O)	T statistics (|O/STDEV|)	P values	Description
H12	X1 -> Z -> Y	0.1	2.751	0.006	Significant
H13	X2 -> Z -> Y	0.124	3.796	0.000	Significant
H14	X3 -> Z -> Y	0.109	3.08	0.002	Significant
H15	X4 -> Z -> Y	0.093	2.433	0.015	Significant
H16	X5 -> Z -> Y	0.12	3.419	0.001	Significant

Source: SmartPLS 4 Data Processing Results, (2025).

The following are the results of the statistical analysis calculations that have been displayed in the table above, the following conclusions can be drawn:

1. The effect of product innovation (X1) on business performance (Y) through competitiveness (Z).

Based on the results of testing the effect of product innovation variables (X1) **on** business performance (Y) through competitiveness (Z) which has been presented in the table above, it can be seen that the p-value of 0.006 is smaller than the significant level of 0.05 with a t-count value of 2.751 greater than the t-table of 1.96 and a *path coefficient* value of 0.1. Thus it can be concluded that product innovation (X1) has a positive and significant effect on business performance (Y) with mediation competitiveness (Z) and that the results obtained have met the requirements so that it can be stated that hypothesis 12 in this study is accepted.

2. The effect of process innovation (X2) on business performance (Y) through competitiveness (Z)

Based on the results of testing the effect of the process innovation variable (X2) **on** business performance (Y) through competitiveness (Z) which has been described in the table above, it can be seen that the p-value of 0.000 is smaller than the significant level of 0.05 with a t-count value of 3.796 greater than the t-table of 1.96 and a *path coefficient* value of 0.124. Thus it can be concluded that process innovation (X2) has a positive and significant effect on business performance (Y) with mediation competitiveness (Z) and that the results obtained have met the requirements so that it can be stated that hypothesis 13 in this study is accepted.

3. The effect of technological innovation (X3) on business performance (Y) through competitiveness (Z)

Based on the results of testing the effect of technological innovation variables (X3) on business performance (Y) through competitiveness (Z) presented in the table above, it can be seen that the p-value of 0.000 is smaller than the significant level of 0.05 with a t-count value of 3.08 greater than the t-table of 1.96 and a *path coefficient* value of 0.109. Thus it can be concluded that technological innovation (X3) has a positive and significant effect on business performance (Y) with mediation competitiveness (Z) and that the results obtained have met the requirements so that it can be stated that hypothesis 14 in this study is accepted.

4. The effect of organizational innovation (X4) on business performance (Y) through competitiveness (Z).

Based on the results of testing the effect of the organizational innovation variable (X4) on business performance (Y) through competitiveness (Z) which has been presented in the table above, it can be seen that the p-value of 0.015 is smaller than the significant level of 0.05 with a t-count value of 2.433 greater than the t-table 1.96 and a *path coefficient* value of 0.093. Thus it can be concluded that organizational innovation (X4) has a positive and significant effect on business performance (Y) with mediation competitiveness (Z) and that the results obtained have met the requirements so that it can be stated that hypothesis 15 in this study is accepted.

5. The effect of service innovation (X5) on business performance (Y) through competitiveness (Z).

Based on the results of testing the effect of the service innovation variable (X5) on business performance (Y) through competitiveness (Z) which has been presented in the table above, it can be seen that the p-value of 0.001 is less than the significant level of 0.05 with a t-count value of 3.419 greater than the t-table of 1.96 and a *path coefficient* value of 0.12. Thus it can be concluded that service innovation (X5) has a positive and significant effect on business performance (Y) and with the mediation of competitiveness (Z) that the results obtained have met the requirements so that it can be stated that hypothesis 16 in this study is accepted.

CONCLUSION

Fundamental Finding : The study reveals that product, process, technological, organizational, and service innovations each have a positive and significant effect on competitiveness in Batik MSMEs in East Java. Competitiveness itself significantly enhances business performance. Moreover, all innovation dimensions also directly and indirectly (through competitiveness) improve business performance, highlighting the mediating role of competitiveness. **Implication :** These results imply that product innovation strengthens competitiveness through unique designs and quality, while process innovation improves efficiency and cost-effectiveness. Technological innovation enhances competitiveness by adopting modern tools, and organizational innovation fosters effective management structures. Service innovation boosts competitiveness via online ordering, consultations, and exclusive packaging. Competitiveness ultimately drives better performance by attracting customers, maintaining loyalty, and improving market adaptability. **Limitation :** The study is limited to Batik MSMEs in East Java, which restricts generalization to other creative industries or regions. The quantitative approach used does not fully capture qualitative insights such as managerial challenges or cultural influences. Moreover, external environmental factors like government policy, global markets, and sustainability considerations were not included in the analysis. **Future Research :** Further research could expand to Batik MSMEs in other provinces or compare across creative industries to test consistency. Qualitative studies, including case studies or interviews, are recommended to uncover deeper perspectives. Future works should also explore external influences such as policy, digital ecosystems, and sustainability initiatives, as well as longitudinal studies to track innovation practices over time and their role in sustaining competitiveness under global challenges.

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