

Original Article

# Measuring Industrial Competitiveness in The Financial Technology: A Study of Micro, Small, and Medium Enterprises (Msmes) in Bantul Regency, Special Region of Yogyakarta

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**Abstract:** *This study aims to determine the level of competitiveness of MSME business actors in the special region of Yogyakarta to find out the level of information technology usage by MSME actors in their business operations. This type of research is classified as exploratory. The subjects in this study are micro, small, and medium enterprises in Bantul Regency, Special Region of Yogyakarta. The objects of this study are the competitiveness of micro, small, and medium enterprises in Bantul Regency, Special Region of Yogyakarta. The research population comprises all MSME entrepreneurs in the handicraft sector of Bantul Regency, Special Region of Yogyakarta. The model used to measure the level of competitiveness is the Diamond Porter index model (2012). The measurement of financial technology use was conducted using the instrument developed by Chouhan et al. (2023). The sample was taken using the Multistage Random Sampling method. The condition of industrial competitiveness that received a sufficient rating has its own implications for MSME actors, especially in the handicraft sector in Bantul Regency, namely stagnant consumer demand, poor sales growth, and no increase in business profits.*

**Keywords:** *Financial Technology, Competitiveness Index, Micro, Small, Medium Craft Enterprise.*

## I. INTRODUCTION

The competitiveness of an industry greatly influences a business's success and survival. MSMEs must understand their competitiveness amid the rise of local, national, and regional competitors, including those within the ASEAN Economic Community (AEC). Although MSMEs in the Special Region of Yogyakarta (DIY) contributed significantly, reaching 7,700 businesses in the region and 57.56% of the national GDP in 2015, their competitiveness remains low. This situation is exacerbated by various issues, including limited capital, marketing constraints, limited human resources, and barriers to technology adoption. Competitiveness is particularly high in the era of free market competition and the rapid development of financial technology. Increasing competitiveness relies heavily on MSME owners, who must possess entrepreneurial leadership, be ambitious, performance-oriented, and visionary. The challenge faced by MSMEs in Bantul is the low adoption of appropriate technology, which results in low business efficiency and competitiveness.

The objects of this research are the craft MSMEs in Bantul Regency, Yogyakarta Special Region, to measure and map their level of competitiveness. The measurement results are expected to provide important input to the Yogyakarta Regional Government in formulating effective policies to support the sustainability of MSMEs. The method for measuring competitiveness uses the assessment components of Porter's Diamond Index (2012). The Porter Diamond Index consists of four dimensions: Factor Condition Dimension, which includes seven indicators; the Demand Condition Dimension, which consists of three indicators; the Corporate Strategy & Competitive Structure Dimension, which consists of six indicators; and the Supporting Industry & Related Industry Dimension, which consists of five indicators. Data collection was carried out through a combination of secondary data from the Yogyakarta Special Region Industry and Trade Office and primary data collected through questionnaires and in-depth interviews with MSME respondents at four craft industry centers in Bantul Regency. Sampling used a multistage random sampling technique. The collected data will be analyzed using Porter's Diamond Index calculation formula. In addition, the research systematics also includes the stages of initial studies, surveys, and measurement of the competitiveness index. The low adoption of technology, particularly financial technology, is a significant problem. A Lack of financial technology knowledge leads to high capital costs because business owners have difficulty finding efficient financing sources, and results in a lack of customer convenience in transactions. Based on these problem identifications, the research focuses on exploring the competitiveness of craft MSMEs in Bantul and their adaptation to developments in financial technology. Through these problems, the research objectives can be formulated: to determine the level of competitiveness of MSME business owners in Bantul Regency and the level of information technology use by MSME owners in their business operations. The benefits of this research are expected to provide information to MSME owners themselves and serve as a policy reference for local governments in fostering MSME businesses in the future.



## II. LITERATURE REVIEW

This type of research is an exploratory study, providing definitions or explanations of the concepts or patterns used in the research. This research seeks to explore the competitiveness of MSMEs in Bantul Regency, Yogyakarta Special Region. The subjects of this study are Micro, Small, and Medium Enterprises (MSMEs) in Bantul Regency, Yogyakarta Special Region. The objects of this research are the competitiveness of MSMEs in Bantul Regency, Yogyakarta Special Region.

The research population consists of all MSMEs in the craft sector of Bantul Regency, Yogyakarta Special Region, based on membership data from the Yogyakarta Special Region's Department of Industry, Trade, and Cooperatives. The MSMEs selected as research subjects meet specific criteria: they remain actively operational, function as producers rather than agents or traders, and are located within the administrative area of Bantul Regency, Special Region of Yogyakarta. The sample was selected using the Multistage Random Sampling method.

Data collection was conducted through in-depth interviews, questionnaires, and documentation. The model used to measure the competitiveness level was Porter's Diamond Index (2012). Meanwhile, the measurement of financial technology utilization was conducted by adopting the instrument developed by Chouhan et al. (2023). The research systematics or stages consist of a preliminary study, a survey stage, and the competitiveness index calculation or measurement stage. Once the data collection process was complete, the next step involved a data analyst. The technique employed is Porter's Diamond Index calculation (2012), as follows:

$$C1 = 1/n (\sum_i \sum_j X_{ij} \times W_{ij} \times Z_{ij})$$

$$Z_{ij} = (X_{ij} - \min(X_{ij})) / \text{Max}(X_{ij} - \min(X_{ij}))$$

C1 represents the average industrial competitiveness index;  $W_{ij}$  is the weight of the competitiveness value for dimension  $i$ , indicator  $j$ ;  $X$  is the sum of the results from each dimension  $i, j$ .

## III. RESULTS AND DISCUSSION

Based on the respondent data collected, the results show that the production processes of MSMEs across the four industrial centers are generally order-based and routine. Raw materials are sourced from areas surrounding Bantul Regency, Purworejo, Kulon Progo, Sragen, and Gunung Kidul, as well as from within the immediate vicinity of the MSMEs themselves. The workforce predominantly consists of residents from Bantul, with the number of employees ranging from 5 to 40. The average working time is approximately 8 hours per day, with average wages aligning with the Regional Minimum Wage (UMR), although some MSME owners still provide wages below this standard. Regarding educational background, younger workers are generally high school (SMU) graduates, while many older workers have only completed elementary school. Most of these workers possess only basic skills and have not yet received additional training to enhance their production capabilities.

The market for these products comprises local communities, other regions across Indonesia, and international markets through export and import activities. The existing distribution system involves direct sales to consumers or buyers, as well as through intermediaries and collectors. Product pricing is determined based on market mechanisms. While some businesses have implemented modern technology, the technology used remains largely traditional. Demand conditions in these four industrial centers are relatively stable, meaning there has been no significant increase in demand as of 2024. Most of the demand stems from local consumption and international markets through export and import activities.

The level of implementation and literacy regarding financial technology (fintech) among MSMEs in Bantul Regency shows that, on average, these businesses have already adopted payment channel systems. Regarding the use of digital banking, most MSMEs have implemented such systems through mobile banking or SMS banking for their business transactions. On the other hand, the average MSME in Bantul Regency does not utilize Peer-to-Peer (P2P) Lending or digital insurance. Based on the respondent data collected, the Criterion Score values can be calculated as follows:

$$\text{Criteria Score} = \text{Scale Score} \times \text{Number of respondents for each industrial center} = 5 \times 10 = 50$$

The next step to determine the interval range is to use the formula:

$$\text{Interval} = \frac{50}{\text{Number of categories}} = 10$$

### *Likert scale score*

Once the interval range from the respondent data is identified, we proceed to determine the ranking scale based on the criterion scores. Within the interval 0-50, the classification of business actors based on their competitiveness index can be identified as:

- Score 41-50: Very Good competitive
- Score 31-40: Good competitive
- Score 21-30: Fair competitive
- Score 11-20: Poor competitive

➤ Score 0-10: Noncompetitive industry

The following are the results of the calculation of the competitiveness index based on each region.

**A) Imogiri Industry**

**Table 1: Total Score Respondent of Imogiri Industry**

Dimensi dan Indikator	UNKM 1	UNKM 2	UNKM 3	UNKM 4	UNKM 5	UNKM 6	UNKM 7	UNKM 8	UNKM 9	UNKM 10
I-1	2	3	2	2	2	3	3	3	3	2
I-2	3	3	2	2	2	3	3	3	3	3
I-3	3	3	3	3	3	3	3	3	3	3
I-4	3	3	3	3	3	3	3	3	3	3
I-5	3	3	3	3	3	3	3	3	3	3
I-6	2	2	2	2	2	2	2	2	2	2
I-7	2	2	2	2	2	2	2	2	2	2
II-1	2	2	2	2	2	2	2	2	2	2
II-2	2	2	2	2	2	2	2	2	2	2
II-3	2	2	2	2	2	2	2	2	2	2
III-1	2	2	2	2	2	2	2	2	2	2
III-2	2	2	2	2	2	2	2	2	2	2
III-3	2	2	2	2	2	2	2	2	2	2
III-4	2	2	2	2	2	2	2	2	2	2
III-5	2	2	2	2	2	2	2	2	2	2
III-6	2	2	2	2	2	2	2	2	2	2
IV-1	3	3	3	3	3	3	3	3	3	3
IV-2	3	3	3	3	3	3	3	3	3	3
IV-3	3	3	3	3	3	3	3	3	3	3
IV-4	3	3	3	3	3	3	3	3	3	3
IV-5	3	3	3	3	3	3	3	3	3	3
<b>Total</b>	53	53	52	54	50	53	52	54	52	53

Based on the data collected from respondents, the total competitiveness score for Imogiri Industry was obtained =  $(0.1 \times 53) + (0.1 \times 53) + (0.1 \times 52) + (0.1 \times 54) + (0.1 \times 50) + (0.1 \times 53) + (0.1 \times 52) +$

$$(0.1 \times 54) + (0.1 \times 52) + (0.1 \times 53)$$

The value of competitiveness based on this data is:

*Total Score*

*(Lowest Likert Score x Number of Respondents)*

$$= \left( \frac{52.6}{10} \right) \times 100 = 526$$

210

Based on these data, it can be concluded that the competitiveness of the Imogiri industrial center is rated as fair.

**B) Kasongan Industry**

**Table 2: Total Score Respondent of Kasongan Industry**

dan Indikator	1	2	3	4	5	6	7	8	10
I-1	4	4	4	3	3	3	3	3	3
I-2	4	4	4	3	3	3	3	3	3
I-3	2	3	2	2	3	3	3	3	3
I-4	3	3	3	3	3	3	3	3	3
I-5	3	3	3	3	3	3	3	3	3
I-6	2	3	2	2	2	2	2	2	2
I-7	3	3	3	2	2	2	2	2	2
II-1	4	4	4	2	2	2	2	2	2
II-2	4	4	4	2	2	2	2	2	2
II-3	4	4	3	2	2	2	2	2	2
III-1	4	4	3	3	3	3	2	2	2
III-2	4	4	3	3	3	2	2	2	2

III-3	3	4	3	3	3	3	3	3	3
III-4	3	4	3	3	3	3	3	3	3
III-5	3	4	3	3	3	3	3	3	3
III-6	3	4	3	3	3	3	3	3	3
IV-1	3	3	3	3	3	3	3	3	3
IV-2	3	3	3	3	3	3	3	3	3
IV-3	3	3	3	3	3	3	3	3	3
IV-4	3	3	3	3	3	3	3	3	3
IV-5	3	3	3	3	3	3	3	3	3
<b>Total</b>	68	74	65	59	58	58	52	57	56

Based on the data collected from respondents, the total competitiveness score for Kasongan Industry was obtained:  
 $= (0.1 \times 68) + (0.1 \times 74) + (0.1 \times 65) + (0.1 \times 59) + (0.1 \times 58) + (0.1 \times 58) + (0.1 \times 52) + (0.1 \times 57) + (0.1 \times 56) + (0.1 \times 56)$

The value of competitiveness based on this data is:

$$\frac{\text{Total Score}}{(\text{Lowest Likert Score} \times \text{Number of Respondents})} = \frac{60.3}{210} \times 100 = 28.7$$

Based on these data, it can be concluded that the competitiveness of the Kasongan industrial center is rated as fair.

**C) Manding Industry**

**Table 3: Total Score Respondent of Manding Industry**

dan Indikator	1	2	3	4	5	6	7	8	9	10
I-1	4	4	4	4	4	4	4	4	4	4
I-2	4	4	4	4	4	4	4	4	4	4
I-3	4	3	3	3	4	4	4	4	3	3
I-4	4	3	3	3	4	4	4	4	3	3
I-5	4	3	3	3	4	4	4	4	3	3
I-6	4	3	3	3	4	4	4	4	3	3
I-7	3	3	3	3	3	3	3	3	3	3
II-1	3	4	3	4	3	4	3	4	3	4
II-2	4	3	4	3	4	3	4	3	4	3
II-3	4	3	4	3	4	3	4	3	4	3
III-1	4	4	4	4	4	4	4	4	4	4
III-2	3	4	3	4	3	4	3	4	3	4
III-3	3	4	3	4	3	4	3	4	3	4
III-4	3	4	3	4	3	4	3	4	3	4
III-5	3	3	3	3	3	3	3	3	3	3
III-6	3	3	3	3	3	3	3	3	3	3
IV-1	3	3	3	3	3	3	3	3	3	3
IV-2	3	3	3	3	3	3	3	3	3	3
IV-3	3	3	3	3	3	3	3	3	3	3
IV-4	3	3	3	3	3	3	3	3	3	3
IV-5	3	3	3	3	3	3	3	3	3	3
<b>Total</b>	72	70	68	70	72	74	72	74	68	70

Based on the data collected from respondents, the total competitiveness score for Manding Industry was obtained  $= (0.1 \times 72) + (0.1 \times 70) + (0.1 \times 68) + (0.1 \times 70) + (0.1 \times 72) + (0.1 \times 74) + (0.1 \times 72) + (0.1 \times 74) + (0.1 \times 68) + (0.1 \times 70)$

The value of competitiveness based on this data is:

$$\frac{\text{Total Score}}{(\text{Lowest Likert Score} \times \text{Number of Respondents})} = \frac{72}{210} \times 100 = 34.2$$

Based on these data, it can be concluded that the competitiveness of the Manding industrial center is rated as good.

**D) Pundong Industry****Table 4: Total Score Respondent of Pundong Industry**

dan Indikator	1	2	3	4	5	6	7	8	9	10
I-1	4	4	4	4	3	3	3	3	3	3
I-2	4	4	4	4	3	3	3	3	3	3
I-3	3	3	3	3	3	3	3	3	3	3
I-4	3	3	3	3	3	3	3	3	3	3
I-5	3	3	3	3	3	3	3	3	3	3
I-6	2	3	2	2	3	3	3	2	2	3
I-7	3	3	3	2	3	3	3	2	2	3
II-1	4	4	4	2	3	3	3	3	2	3
II-2	4	4	4	2	3	3	3	2	2	3
II-3	4	4	3	2	3	3	3	2	2	3
III-1	4	4	3	3	3	3	2	2	2	3
III-2	4	4	3	3	3	3	3	3	3	3
III-3	3	4	3	3	3	3	3	3	3	3
III-4	3	4	3	3	3	3	3	3	3	3
III-5	3	4	3	3	3	3	3	3	3	3
III-6	3	4	3	3	3	3	3	3	3	3
IV-1	3	3	3	3	3	3	3	3	3	3
IV-2	3	3	3	3	3	3	3	3	3	3
IV-3	3	3	3	3	3	3	3	3	3	3
IV-4	3	3	3	3	3	3	3	3	3	3
IV-5	3	3	3	3	3	3	3	3	3	3
Total	69	74	66	60	63	63	62	58	57	63

Based on the data collected from respondents, the total competitiveness score for Pundong Industry was obtained =  $(0.1 \times 69) + (0.1 \times 74) + (0.1 \times 66) + (0.1 \times 60) + (0.1 \times 63) + (0.1 \times 63) + (0.1 \times 62) + (0.1 \times 58) + (0.1 \times 57) + (0.1 \times 63)$

The value of competitiveness based on this data is:

*Total Score*

$$\frac{\text{(Lowest Likert Score} \times \text{Number Respondents)}}{\text{of}} = \left( \frac{57.5}{210} \right) \times 100 = 27$$

Based on these data, it can be concluded that the competitiveness of the Pundong industrial center is rated as fair.

The level of implementation and literacy regarding financial technology (fintech) among MSMEs in Bantul Regency is explained through several indicators: payment channel systems, digital banking, Peer-to-Peer (P2P) lending, and digital insurance. Regarding payment channel systems, the average MSME in Bantul Regency has already utilized fintech systems, specifically through e-money and bank debit cards. In terms of mobile banking systems, most MSMEs have integrated these into their business transactions via both mobile banking and SMS banking platforms. Conversely, the implementation of technology-based systems such as Peer-to-Peer (P2P) Lending and digital insurance has not been adopted by MSMEs in Bantul Regency.

#### IV. CONCLUSION

The competitive state of MSME actors in Bantul Regency remains quite concerning. This weak competitiveness is characterized by stagnant sales turnover, even though production capacity and human resources can generate a much larger output. The "Fair" (*Cukup*) competitiveness rating is partly due to the absence of a clear roadmap from the local government regarding MSME management. Beyond the lack of a strategic roadmap, this condition is also driven by the low quality of human resources, which results in products that fail to meet expected quality standards. Furthermore, competitiveness is hindered by the high cost of capital from banking institutions and the persistent difficulty in accessing financing sources. The combination of high capital costs and restricted access to financing prevents MSMEs from competing effectively; their products become relatively more expensive due to the burden of capital costs, and limited profit margins leave them unable to innovate or expand. These conditions align with the results of the competitiveness index measurement for MSMEs in Bantul Regency, which yielded an industrial competitiveness index with a "Fair" (*Cukup*) predicate.

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