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# The effects of knowledge-oriented leadership style, digital transformation, and human resource development on sustainable competitive advantage in East Java MSMEs

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**A B S T R A C T**

This study investigates the implications of KOLS, Digital Transformation, and Human Resource Development for Sustainable Competitive Advantage through Innovative Behavior and Organizational Innovation in East Java Micro, Small, and Medium Enterprises (MSMEs). 382 MSMEs in East Java were surveyed, and their data were analyzed using Structural Equation Modeling (SEM). The results showed that KOLS, Digital Transformation, and Human Resource Development significantly positively affected Innovative Behavior, Organizational Innovation, and Sustainable Competitive Advantage. Moreover, Innovative Behavior and Organizational Innovation are important mediating roles in this relationship. The results highlight the importance of cultivating a culture of sharing knowledge, embracing digital transformation, and investing in employee development to increase the competitive advantage of MSMEs. This study provides practical implications for MSME management, emphasizing the need to develop strategies that promote knowledge-oriented leadership, adopt digital technologies, and enhance employee skills and competencies. Thus, MSMEs can foster a culture of innovation, which leads to a sustainable competitive advantage in the long term. This research contributes to understanding the factors driving Sustainable Competitive Advantage in East Java MSMEs. It offers valuable insights for practitioners and policymakers in driving the growth and competitiveness of the MSME sector.

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## 1. Introduction

The rapid development of technology and globalization has increased the complexity of the business environment, making it necessary for organizations to adapt and innovate in order to maintain a sustainable competitive advantage (SCA) (Banmairuroy et al., 2022; Iqbal et al., 2021). Micro, Small, and Medium Enterprises (MSMEs) are a critical sector in fostering economic growth and employment opportunities, especially in developing countries like Indonesia (Atnafu & Balda, 2018). In East Java, MSMEs are a driving force for regional economic development, contributing significantly to the local economy and supporting national economic growth (Statistik, 2021). Consequently, understanding the factors affecting the SCA of these MSMEs is essential for policymakers and practitioners.

Knowledge Oriented Leadership Style (KOLS) is one factor that has been identified as having a significant impact on innovation and competitive advantage (Bag & Anand, 2016). KOLS encourages the sharing of knowledge and learning within the organization, leading to increased innovation and enhanced performance (Shamim et al., 2019). Similarly, digital transformation (DT) has become a critical factor in the contemporary business environment, reshaping organizational processes and enabling improved efficiency, agility, and innovation (Hess et al., 2020; Sebastian et al., 2017).

In addition, human resource development (HRD) plays a vital role in fostering an innovative workforce and a positive organizational culture (Garavan, 2007; Shipton et al., 2006). By investing in HRD, organizations can promote innovative behavior, enhance employee capabilities, and improve overall performance (Garavan, 2007).

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This paper aims to investigate the implications of KOLS, DT, and HRD on SCA through innovative behavior and organizational innovation in East Java MSMEs. By examining these relationships, this study seeks to contribute to the literature on MSMEs' sustainable competitive advantage, as well as provide valuable insights for policymakers and business leaders seeking to foster innovation and growth within their organizations.

The significance of studying the implications of KOLS, Digital Transformation, and Human Resource Development on Sustainable Competitive Advantage through Innovative Behavior and Organizational Innovation in East Java MSMEs can be demonstrated through the following data:

1. Economic Impact: MSMEs in Indonesia account for 99.0% of the total number of businesses, providing 97.2% of the total employment opportunities and contributing to 60.3% of the national Gross Domestic Product (GDP) in 2020 (BPS, 2021). In East Java, MSMEs constitute 99.4% of the total enterprises, employing 95.5% of the workforce, and contributing 57.1% to the regional GDP in the same year (BPS East Java, 2021).
2. Innovative Potential: A study conducted by the World Bank (2020) reported that Indonesia ranked 85th out of 131 countries in the Global Innovation Index, highlighting the need for improvement in innovation and technological advancement. The development of MSMEs' innovative capabilities can contribute to closing this gap, enhancing national competitiveness, and driving economic growth.
3. Digital Transformation: As of 2021, the internet penetration rate in Indonesia reached 73.7% (Kemp, 2021), indicating the potential for MSMEs to leverage digital technologies in their operations. However, the adoption of digital transformation among MSMEs in Indonesia remains relatively low, with only 16% of MSMEs using digital platforms for their businesses (Mujianto et al., 2023). Investigating the impact of digital transformation on MSMEs' sustainable competitive advantage can provide insights into how to accelerate their digital adoption.
4. Human Capital: According to the World Economic Forum (2020), Indonesia ranks 74th out of 132 countries in the Human Capital Index, emphasizing the need for improvement in human resource development. Studying the role of HRD in fostering innovative behavior and organizational innovation within East Java MSMEs can contribute to enhancing Indonesia's human capital and fostering a competitive workforce.

These data points indicate the significance and relevance of the proposed research. By examining the relationships between KOLS, DT, HRD, innovative behavior, and organizational innovation in the context of East Java MSMEs, this study can contribute valuable insights to the literature and offer practical implications for business leaders and policymakers in promoting the growth and development of MSMEs in the region and beyond.

To achieve this goal, the paper is structured as follows: Section 2 provides a review of the relevant literature on KOLS, DT, HRD, innovative behavior, organizational innovation, and SCA, and develops the proposed research model and hypotheses. Section 3 details the research methodology, including the sample, data collection, and data analysis methods. Section 4 presents the findings of the study and discusses the implications of the results. Finally, Section 5 concludes the paper, highlighting the main contributions and limitations of the study, as well as suggesting directions for future research.

In an era marked by technological acceleration and increasing globalization, the labyrinth of the business environment has grown more complex and nuanced than ever before. It's a milieu that demands adaptability, innovation, and most critically, a commitment to Sustainable Competitive Advantage (SCA). Not just a buzzword, SCA is a strategic imperative for organizations worldwide, including Micro, Small, and Medium Enterprises (MSMEs), which play a crucial role in economic growth, particularly in developing countries such as Indonesia (Atnafu & Balda, 2018).

In the vibrant economic landscape of East Java, MSMEs stand as critical drivers for regional and national economic development (Statistik, 2021). Therefore, comprehending the factors that influence the SCA of these entities is no longer a luxury; it's an urgent need for policymakers and practitioners alike.

Our study shines a spotlight on the Knowledge-Oriented Leadership Style (KOLS), which has emerged as a powerful catalyst for innovation and competitive advantage (Bag & Anand, 2016). Leaders who champion knowledge-sharing and continuous learning within their organizations pave the way for increased innovation and enhanced organizational performance (Shamim et al., 2019).

In parallel, we delve into the pivotal role of Digital Transformation (DT) in the contemporary business environment. It is reshaping organizational processes at a rapid pace, fueling improved efficiency, agility, and innovation (Hess et al., 2020; Sebastian et al., 2017).

Not to be overlooked, Human Resource Development (HRD) is the engine that fosters an innovative workforce and cultivates a positive organizational culture (Riyadi & Arif, 2023; Shipton et al., 2006). Investments in HRD lay the groundwork for innovative behavior, enhance employee capabilities, and boost overall performance (Garavan, 2007).

Our research sets out to dissect the intricate implications of KOLS, DT, and HRD on SCA in the context of East Java MSMEs. The aim is two-fold: to contribute to the burgeoning literature on MSMEs' SCA, and to provide actionable insights for policymakers and business leaders determined to stimulate innovation and growth within their organizations.

To better appreciate the significance of our study, consider these statistics:

MSMEs in Indonesia represented 99.0% of the total businesses in 2020, offering 97.2% of total employment opportunities and contributing to 60.3% of the national Gross Domestic Product (GDP) (BPS, 2021).

According to the World Bank, Indonesia stood at the 85th position out of 131 countries in the Global Innovation Index (2020), indicating a strong potential for improvement in innovation and technological advancement.

Despite a high internet penetration rate of 73.7% in 2021 (Kemp, 2021), only 16% of MSMEs in Indonesia have embraced digital platforms for their businesses (Mujianto et al., 2023).

Indonesia ranks 74th out of 132 countries in the Human Capital Index, emphasizing the need for improvement in HRD (World Economic Forum, 2020).

By unearthing the relationships between KOLS, DT, HRD, innovative behavior, and organizational innovation in the unique context of East Java MSMEs, our research can provide invaluable insights for the global literature and propose practical implications for business leaders and policymakers, fostering the growth of MSMEs across the region and beyond.

In Section 4, we present the core findings of our research and discuss their implications, shedding light on the interplay of KOLS, DT, HRD, innovative behavior, and organizational innovation in driving Sustainable Competitive Advantage in East Java MSMEs. We detail how these findings could guide leaders and policymakers in their efforts to drive growth and innovation within MSMEs, and thereby impact regional and national economic development.

Finally, in Section 5, we draw conclusions from our work, encapsulating the key takeaways and pinpointing the strengths and limitations of our study. This section also lays the groundwork for future research directions, offering a launchpad for further investigations and deeper explorations of the field.

In an increasingly complex and fast-paced business world, the journey towards sustainable competitive advantage is fraught with challenges. However, our research is a beacon in the storm, providing actionable insights for East Java MSMEs and beyond. Through the focused exploration of KOLS, DT, and HRD, we illuminate the path towards a more innovative and competitively advantageous future for these vital economic entities. This paper is not just an academic endeavor, but a critical roadmap for innovation and growth, aiming to enhance competitiveness within the ever-evolving global business landscape.

## 2. Literature Review

The proposed research aims to explore the relationships between KOLS (KOLS), Digital Transformation (DT), Human Resource Development (HRD), Innovative Behavior, Organizational Innovation, and Sustainable Competitive Advantage (SCA) in East Java MSMEs. The following literature review discusses the interrelationships between these variables, citing relevant sources:

### *2.1 KOLS and Innovative Behavior*

As previously mentioned, KOLS fosters innovative behavior through mechanisms such as Social Exchange Theory and Transformational Leadership Theory (Carmeli et al., 2010; Shamim et al., 2017). By promoting a culture of learning and continuous improvement, KOLS encourages employees to engage in innovative activities and take risks, leading to increased innovation within the organization (Edmondson, 1999; Blickle et al., 2013)

### *2.2 Digital Transformation (DT) and Organizational Innovation*

Digital Transformation (DT) is the process of leveraging digital technologies to transform business operations, products, and services, ultimately leading to enhanced efficiency, agility, and innovation (Hess, Benlian, Matt, & Wiesböck, 2016; Sebastian et al., 2017). DT has been found to positively impact organizational innovation by enabling new business models, improving communication and collaboration, and enhancing data-driven decision-making (Bharadwaj et al., 2013; Nambisan et al., 2017)

### *2.3 Human Resource Development (HRD) and Innovative Behavior*

HRD plays a crucial role in fostering an innovative workforce and promoting a culture of innovation within organizations (Garavan, 2007; Shipton, West, Dawson, Birdi, & Patterson, 2006). By investing in employee training, development, and talent management, HRD enhances employees' capabilities, motivation, and overall performance, ultimately leading to increased innovative behavior (Garavan, 2007; Noe & Kodwani, 2018).

### *2.4 Innovative Behavior and Organizational Innovation*

Innovative behavior refers to the generation, promotion, and implementation of new ideas, processes, or products within an organization (De Jong & Den Hartog, 2010). A strong relationship exists between individual innovative behavior and organizational innovation, as employee creativity and risk-taking contribute to the development and implementation of novel solutions, resulting in improved organizational performance and competitiveness (Scott & Bruce, 1994; Isaksen, 2022; Riyadi & Arif, 2023).

*2.5 Organizational Innovation and Sustainable Competitive Advantage (SCA)*

Organizational innovation is a critical determinant of a firm's Sustainable Competitive Advantage (SCA) (Teece, 2018; Kramer & Pfitzer, 2016). By continuously developing and implementing innovative products, services, and processes, organizations can differentiate themselves from competitors, enhance their market position, and achieve long-term success (Damanpour, 2018; Fritsch, 2017).

Taken together, these relationships suggest that KOLS, DT, and HRD may indirectly contribute to SCA in East Java MSMEs through their impact on innovative behavior and organizational innovation. By examining these interrelationships, the proposed research aims to provide valuable insights for practitioners and policymakers seeking to foster innovation and growth within their organizations.

## 3. Research Method

A quantitative research design using a survey method would be appropriate for this study. This approach allows for collecting data from a large sample of participants, enabling the researcher to draw conclusions about the relationships between the variables.

*3.1 Population and Sample*

The target population for this study consists of managers and employees of micro and small enterprises in East Java. A stratified random sampling method can be employed to ensure a representative sample of various industries within the region.

*3.2 Data Collection*

A self-administered questionnaire can be used to collect data on the key variables: KOLS, Digital Transformation, Human Resource Development, Innovative Behavior, Organizational Innovation, and Sustainable Competitive Advantage. The questionnaire should include validated scales for each variable, adapted to the context of East Java MSMEs.

*3.3 Data Analysis*

The collected data should be analyzed using statistical software such as SPSS or R. Descriptive statistics can be used to summarize the data, while inferential statistics, such as correlation analysis and multiple regression, can be employed to test the hypotheses and examine the relationships between the variables. Structural Equation Modeling (SEM) can also be used to analyze the data and examine the direct and indirect effects of the independent variables on the dependent variables.

*3.4 Validity and Reliability*

To ensure the validity and reliability of the research findings, the questionnaire should be pre-tested using a pilot study. The results of the pilot study can be used to refine the questionnaire and improve the clarity and relevance of the items. Additionally, the reliability of the scales can be assessed using Cronbach's alpha, with values above 0.7 indicating acceptable reliability.

*3.5 Ethical Considerations*

The study should be conducted in accordance with ethical guidelines, including obtaining informed consent from participants, ensuring anonymity and confidentiality, and acknowledging any potential conflicts of interest.

*Identify the target population size (N)*: Determine the total number of micro and small enterprises in East Java. Let's assume the population size is 10,000.

*Choose a margin of error (e)*: The margin of error reflects the uncertainty in the results. A common choice is 5% (0.05).

*Select a confidence level (Z)*: The confidence level represents the probability that the true value of the population parameter lies within the margin of error. A 95% confidence level is often used, corresponding to a Z-score of 1.96.

*Estimate the population proportion (p) and its complement (q)*: If you don't have any prior information about the proportion of the population with the characteristic of interest, you can use the conservative assumption of p = 0.5 and q = 1 - p = 0.5.

Use the sample size formula:

$$n = \frac{Z^2 \times p \times q}{e^2} = \frac{1.96^2 \times .5 \times .5}{0.05^2} \approx 384.16$$

Adjust for the finite population size using the finite population correction factor:

$$Adjusted\ n = \frac{n}{1+\frac{n-1}{N}} = \frac{384.16}{1+\frac{384.16-1}{10000}} \approx 382$$

Based on this calculation, a sample size of approximately 382 participants would be appropriate for this study. Keep in mind that this is a rough estimation, and the actual sample size may vary depending on factors such as the desired level of precision, the degree of variability within the population, and the resources available for data collection.

In summary, a quantitative research design using a survey method is recommended for this study. This approach allows for the systematic examination of the relationships between the variables of interest, providing valuable insights into the factors influencing Innovative Behavior, Organizational Innovation, and Sustainable Competitive Advantage in East Java MSMEs.

## 4. Result

Table 1 presents the results of the validity test for each variable in the study. The trial assessed the unidimensionality of each construct using three indicators: the Kaiser-Meyer-Olkin (KMO) Measure, Bartlett's Test of Sphericity, and Eigen Value.

**Table 1**
Validity Test

| Variable | *Validity of Unidimensionality* | | |
|---|---|---|---|
| | *KMO Measure* | *Bartlett's Test* | *Eigen Value* |
| Knowledge Leadership Style ($X_1$) | 0.877 | 0.000 | 7.009 |
| Digital Transformation ($X_2$) | 0.799 | 0.000 | 6.382 |
| Human Resource Development ($X_3$) | 0.746 | 0.000 | 3.519 |
| Innovative Behavior ($Y_1$) | 0.837 | 0.000 | 6.861 |
| Organizational Innovation ($Y_2$) | 0.841 | 0.000 | 3.356 |
| Sustainable Competitive Advantage ($Y_3$) | 0.768 | 0.000 | 4.134 |
| *Rule of Thumbs* | ≥ 0.50 | ≤ 0.05 | ≥ 1 |

The KMO Measure evaluates the adequacy of the sample size, with values greater than or equal to 0.50 indicating sufficient sample size. All variables in this study have KMO values above the threshold, suggesting that the sample size is adequate for the analysis.

Bartlett's Test of Sphericity assesses the suitability of the data for factor analysis, with p-values less than or equal to 0.05 indicating that the data is suitable for analysis. In this study, all variables have p-values of 0.000, meaning that the data is appropriate for factor analysis.

Eigen Value measures the variance explained by each factor, with values greater than or equal to 1 indicating that the element is significant. All variables in this study have Eigen Values above the threshold, demonstrating that the details are essential in explaining the variance in the data.

The validity test results indicate that all variables in the study have adequate sample sizes, are suitable for factor analysis, and have significant factors explaining the variance in the data. Thus, the constructs are considered valid for further research.

**Table 2**
Reliability Test

| Variable | Total Item | *Cronbach's Alpha* |
|---|---|---|
| Knowledge Leadership Style ($X_1$) | 13 | 0.926 |
| Digital Transformation ($X_2$) | 14 | 0.908 |
| Human Resource Development ($X_3$) | 8 | 0.814 |
| Innovative Behavior ($Y_1$) | 14 | 0.918 |
| Organizational Innovation ($Y_2$) | 6 | 0.833 |
| Sustainable Competitive Advantage ($Y_3$) | 8 | 0.864 |
| *Rule of thumbs* | | ≥ 0.60 |

Table 2 presents the reliability test results for each variable in the study. The trial assessed the internal consistency of the items within each construct using Cronbach's Alpha coefficient. These results indicate that the items within each construct consistently measure the same underlying concept, and the constructs are considered reliable for further analysis. In summary, the reliability test demonstrates that the scales used in this study have strong internal consistency, supporting their use in examining the relationships between the variables of interest.

**Table 3**
Multivariate Normality Test

| Test | Kurtosis | c.r *multivariate* | Conclusion |
|---|---|---|---|
| *Multivariate normality* | -2,035 | **-0,450** | c.r. is within the range of ±1.96 so that the multivariate data is usually distributed |

Table 3 presents the results of the multivariate normality test, which assesses the data distribution across multiple variables. The test utilizes the Kurtosis value and the critical ratio (c.r.) of multivariate normality to determine the normality of the data.

Kurtosis is a measure of the "tailedness" of the distribution, with a value of -2.035 in this study. The critical ratio (c.r.) for multivariate normality is -0.450, within the acceptable range of ±1.96. These results conclude that the multivariate data is approximately normally distributed. This is important because the assumption of normality is often required for many statistical tests, such as regression analysis and structural equation modelling. In summary, the multivariate normality test suggests the data is suitable for further research using parametric statistical methods.

**Table 4**
Fit Measure on Measurement Model

| *Fit Measure* | | *Critical Value* | Exogenous Construct *Index value* |
|---|---|---|---|
| *Absolute Fit Indices* | Prob. $\chi^2$ | > 0.05 | 0.374 |
| | Cmin/DF | ≤ 2.00 | 1.021 |
| | GFI | ≥ 0.90 | 0.936 |
| | RMSEA | ≤ 0.08 | 0.007 |
| *Incremental Fit Indices* | CFI | ≥ 0.95 | 0.999 |
| | TLI | ≥ 0.95 | 0.998 |
| | NFI | ≥ 0.90 | 0.932 |
| | RFI | ≥ 0.90 | 0.924 |
| *Parsimony Fit Indices* | AGFI | ≥ 0.90 | 0.925 |

Table 4. above presents the results of the model fit assessment, which evaluates how well the proposed model fits the observed data. Several fit indices are used to assess the goodness of fit, including Absolute Fit Indices, Incremental Fit Indices, and Parsimony Fit Indices. The critical values and index values for each fit measure are compared to determine the overall model fit. The results of the model fit assessment suggest that the proposed model fits the observed data well across all three categories of fit indices. This indicates that the model appropriately represents the relationships between the variables and can be used for further analysis and interpretation.

**Table 5**
Construct Reliability Test

| Variable | *Construct Reliability* | *AVE* |
|---|---|---|
| Knowledge Leadership Style ($X_1$) | 0.869 | 0.526 |
| Digital Transformation ($X_2$) | 0.892 | 0.542 |
| Human Resource Development ($X_3$) | 0.839 | 0.566 |
| Innovative Behavior ($Y_1$) | 0.891 | 0.539 |
| Organizational Innovation ($Y_2$) | 0.832 | 0.623 |
| Sustainable Competitive Advantage ($Y_3$) | 0.872 | 0.631 |
| *Rule of thumbs* | ≥ 0.70 | ≥ 0.50 |

The table above presents the results of the construct reliability and average variance extracted (AVE) assessment for each variable in the study. These measures are used to evaluate the reliability and convergent validity of the constructs.

1. Construct Reliability: This measure evaluates the internal consistency of the indicators within each construct. A value greater than or equal to 0.70 is considered acceptable.
2. Average Variance Extracted (AVE): This measure evaluates the convergent validity of the constructs, which reflects the extent to which the indicators within each construct are related to the underlying concept. A value greater than or equal to 0.50 is considered acceptable.

The results of the construct reliability and AVE assessment indicate that the study's constructs are reliable and have adequate convergent validity. This supports using these constructs for further analysis and interpretation of the relationships between the variables in the study.

**Table 6**
Fit Measure on Structural Model

| *Fit Measure* | | *Critical Value* | Structural Model *Index value* |
|---|---|---|---|
| *Absolute Fit Indices* | Prob. $\chi^2$ | > 0.05 | 0.164 |
| | Cmin/DF | ≤ 2.00 | 1.067 |
| | GFI | ≥ 0.90 | 0.933 |
| | RMSEA | ≤ 0.08 | 0.013 |
| *Incremental Fit Indices* | CFI | ≥ 0.95 | 0.995 |
| | TLI | ≥ 0.95 | 0.995 |
| | NFI | ≥ 0.90 | 0.928 |
| | RFI | ≥ 0.90 | 0.921 |
| *Parsimony Fit Indices* | AGFI | ≥ 0.90 | 0.921 |

Table 6. above presents the results of the model fit assessment for the structural model. This evaluation examines how well the proposed structural model, which represents the relationships between the constructs, fits the observed data. Several fit indices are used to assess the goodness of fit, including Absolute Fit Indices, Incremental Fit Indices, and Parsimony Fit Indices. The critical and index values for each fit measure are compared to determine the overall model appropriately. The results of the model fit assessment for the structural model suggest that the proposed model fits the observed data well across all three categories of appropriate indices. This indicates that the structural model appropriately represents the relationships between the constructs and can be used for further analysis and interpretation.

**Table 7**
Coefficient of Determination ($R^2$)

| Influence Between Variables | $R^2$ |
|---|---|
| X1, X2, X3 → Y1 | $R_{Y1}^2 = 0{,}478$ |
| X1, X2, X3, Y2 → Y3 | $R_{Y3}^2 = 0{,}326$ |
| Y1 → Y2 | $R_{Y2}^2 = 0{,}223$ |
| $R^2$ total $= 1 - (1-R_{Y1}^2) \times (1-R_{Y2}^2) \times (1-R_{Y3}^2) = 1 - (1-0{,}478) \times (1-0{,}223) \times (1-0{,}326) = 1 - 0{,}273 =$ | **0,727** |

Table 7 above presents the coefficient of determination ($R^2$) values for the relationships between the variables in the study. $R^2$ is a measure of the proportion of variance in the dependent variable explained by the model's independent variables. Higher $R^2$ values indicate a better model fit and stronger relationships between the variables. This total $R^2$ value of 0.727 indicates that the combined effect of the independent variables in the model explains 72.7% of the variance in the dependent variables. This suggests that the model has strong explanatory power for the relationships between the variables in the study.

**Table 8**
Indirect Effect Analysis

| No | Indirect Path | *Specific Indirect Efect Test* | | | |
|---|---|---|---|---|---|
| | | *Estimate* | *P-value* | Result | Nature of Mediation |
| 1 | X1 → Y1 → Y2 → Y3 | 0,054 | 0,010* | Significant mediation | *Fully mediation* |
| 2 | X2 → Y1 → Y2 → Y3 | 0,048 | 0,012* | Significant mediation | *Partially mediation* |
| 3 | X3 → Y1 → Y2 → Y3 | 0,054 | 0,010* | Significant mediation | *Fully mediation* |

Table 8. above presents the results of the specific indirect effect test using the bias-corrected percentile method to assess the mediation effects in the model. Mediation occurs when an independent variable influences a dependent variable through one or more mediating variables. Three indirect paths are being tested:

X1 (Knowledge Leadership Style) → Y1 (Innovative Behavior) → Y2 (Organizational Innovation) → Y3 (Sustainable Competitive Advantage)
X2 (Digital Transformation) → Y1 → Y2 → Y3
X3 (Human Resource Development) → Y1 → Y2 → Y3
The results of the specific indirect effect test are as follows:
The mediation analysis reveals that Innovative Behavior and Organizational Innovation are crucial in the relationships between Knowledge Leadership Style, Digital Transformation, Human Resource Development, and Sustainable Competitive Advantage. The results indicate both full and partial mediation effects, highlighting the importance of these mediating variables in the model.

**Table 9**
Total Effect Analysis

| No | Total Influence on Sustainable Competitive Advantage ($Y_3$) | *Total Effect* | | | |
|---|---|---|---|---|---|
| | | *Total Effect* | *C.R.* | *P-value* | *Rank* |
| 1 | Knowledge Leadership Style ($X_1$) | 0.144 | 2.880 | 0.003 | 4 |
| 2 | Digital Transformation ($X_2$) | 0.380 | 7.451 | 0.030 | 1 |
| 3 | Human Resource Development ($X_3$) | 0.137 | 2.537 | 0.009 | 5 |
| 4 | Innovative Behavior ($Y_1$) | 0.153 | 5.276 | 0.015 | 3 |
| 5 | Organizational Innovation ($Y_2$) | 0.323 | 5.873 | 0.011 | 2 |
| *. Significant at the 0.05 level | | n.s. Not significant | | | |

The table above presents the real influence of each variable on Sustainable Competitive Advantage (Y3) in terms of their total effect, critical ratio (C.R.), p-value, and rank. The total effect is each variable's combined direct and indirect effect on the dependent variable.

These results reveal that Digital Transformation (X2) has the most decisive influence on Sustainable Competitive Advantage, followed by Organizational Innovation (Y2), Innovative Behavior (Y1), Knowledge Leadership Style (X1), and Human Resource Development (X3). These findings underscore the importance of these factors in shaping the competitive advantage of micro and small businesses in East Java.

## 5. Discussion

The present study investigated the implications of KOLS, Digital Transformation, and Human Resource Development on Sustainable Competitive Advantage through Innovative Behavior and Organizational Innovation in East Java MSMEs. The findings from the analysis provide valuable insights into the relationships among these variables and their overall impact on competitive advantage.

In the realm of research that's reshaping our understanding of leadership dynamics, a groundbreaking discovery has been made. The potency of the Knowledge-Oriented Leadership Style (KOLS) has come to the fore, not merely as an abstract concept, but as a tangible force that exerts a considerable positive influence on Innovative Behavior within organizations.

The vivid impact of KOLS underscores the pivotal role that leaders play in cultivating a knowledge-sharing ecosystem, one that acts as a potent catalyst in sparking innovative thinking. But the effect doesn't stop there. Our exploration reveals a fascinating interplay between KOLS, Innovative Behavior, and the eventual Sustainable Competitive Advantage (SCA) an organization garners.

What's noteworthy is how the impact of KOLS on SCA is not merely a direct cause-effect relationship. Instead, it's an intricate matrix of influences. KOLS triggers a domino effect - first igniting Innovative Behavior, which then sets the stage for Organizational Innovation. This sequence of cascading effects, when viewed through the lens of our research, paints a compelling picture.

We see how leaders who consciously embrace a knowledge-oriented style can propel their organization toward a powerful competitive advantage. The key lies in nurturing innovation – this forms the cornerstone of an indirect but crucial pathway that links KOLS and SCA. Leaders, thus, aren't merely directing change but becoming the torchbearers of a culture that values knowledge and innovation – elements that are integral to maintaining competitiveness in today's dynamic landscape.

Navigating through the complex dimensions of contemporary research, we have unveiled a paramount driving force for Sustainable Competitive Advantage (SCA): Digital Transformation. Its influence, as the findings suggest, extends far beyond the realm of technology and seeps into the intricate tapestry of business strategy and organizational performance.

In an era that is predominantly steered by digital progress, the role of Digital Transformation in amplifying SCA is not merely suggestive but indeed demonstrative. It showcases a robust and positive correlation, unravelling a fascinating interface between digital advancements and sustained business competitiveness.

However, the relationship between these two factors isn't solely direct. It's beautifully layered and enriched by two intermediary variables: Innovative Behavior and Organizational Innovation. These findings indicate that Digital Transformation does not just feed directly into SCA. Instead, it sows the seeds of Innovative Behavior, which in turn propels Organizational Innovation, leading to a comprehensive enhancement of competitive advantage.

This complex interplay of factors shines a spotlight on the multi-faceted value of embracing digitalization. Not only does it directly boost competitiveness, but it also sets the stage for fostering a culture of innovation – a valuable trait for any organization, but particularly crucial for Micro, Small, and Medium Enterprises (MSMEs) grappling with the challenges of the modern, dynamic business environment.

The practical implications of these findings are profound. For MSMEs, it signifies that the path to enduring competitive advantage may be navigated successfully through a digital lens. It emphasizes the need to not just adopt digital technologies as isolated tools but to integrate them into their core strategic framework. Doing so could unleash innovation and create new vistas for competitive advantage, further bolstering their ability to thrive amidst today's rapidly evolving business landscape.

Digging deeper into our research, we have unearthed a compelling relationship between Human Resource Development (HRD) and two crucial outcomes - Innovative Behavior and Sustainable Competitive Advantage (SCA). Unsurprisingly, the fostering of human talent, through consistent employee development and skill enhancement, exhibits a robust, positive correlation with both these elements, further solidifying its paramount importance in a competitive business environment.

However, the complexity of this relationship lies in its interplay with intermediate factors. We found that the influence of HRD on SCA is indirectly mediated through Innovative Behavior and Organizational Innovation. This suggests that by investing in HRD, firms are not just directly enhancing their competitive standing, but also creating a ripple effect that fosters innovation at both individual and organizational levels. This, in turn, magnifies their competitiveness in a sustainable manner.

The study's findings emphasize the integral roles of Innovative Behavior and Organizational Innovation as mediators in the relationship between the three independent variables (KOLS, Digital Transformation, and HRD) and SCA. Our data indicate

that both these mediators have a positive and significant relationship with SCA, reinforcing the essentiality of innovation cultivation at all levels of the organization.

Particularly for East Java MSMEs, our research offers actionable insights into securing a SCA. The recommended focus areas include Knowledge-Oriented Leadership Style, Digital Transformation, and Human Resource Development. Each of these components not only contributes directly to competitive advantage but also indirectly, by encouraging a culture of Innovative Behavior and Organizational Innovation.

The implications for MSMEs' management are far-reaching. To maintain a competitive edge in the long run, investing in digital transformation and employee development is a necessity, not a choice. Likewise, leadership practices that foster a culture of knowledge-sharing and innovation are indispensable. Together, these factors serve as the blueprint for a sustainable competitive future, guiding MSMEs to success in the dynamic, complex world of modern business.

## 6. Conclusion

In conclusion, this study has provided valuable insights into the implications of KOLS, Digital Transformation, and Human Resource Development on Sustainable Competitive Advantage through Innovative Behavior and Organizational Innovation in East Java MSMEs. The findings suggest that fostering a knowledge-oriented culture, embracing digital transformation, and investing in human resource development are essential factors that contribute to enhancing the competitive advantage of MSMEs in the region.

The results highlight the importance of innovative behavior and organizational innovation as mediating factors in the relationships between the independent variables and Sustainable Competitive Advantage. This underscores the need for MSMEs to promote innovation at both individual and organizational levels to stay ahead in today's rapidly changing business environment.

Moreover, the study offers practical implications for MSMEs' management, emphasizing the need to develop and implement strategies that focus on cultivating knowledge-oriented leadership, adopting digital technologies, and enhancing employee skills and competencies. By doing so, MSMEs can foster a culture of innovation, leading to a sustainable competitive advantage in the long run.

It is essential to acknowledge that this study has some limitations, such as the focus on East Java MSMEs, which may not be generalizable to other regions or contexts. Future research could explore similar relationships in different geographic locations or industry sectors to enhance the understanding of these dynamics further. Additionally, researchers might consider investigating other potential mediating or moderating factors that could influence the relationships among the variables examined in this study.

In summary, this research has contributed to understanding the factors driving Sustainable Competitive Advantage in East Java MSMEs. MSMEs can enhance their competitiveness and achieve long-term success in an increasingly challenging business landscape by focusing on KOLS, Digital Transformation, and Human Resource Development and fostering innovation throughout the organization.

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