

Digital Capabilities, Product Innovation, and Competitiveness of Creative Economy MSMEs in Makassar City with Policy Support as Moderation Variables

Uhud Darmawan Natsir, Fakultas Ekonomi dan Bisnis Universitas Negeri Makassar, Indonesia

Email : uhud.darmawan@unm.ac.id

ABSTRACT

Keywords:

*Digital Capabilities,
Product Innovation,
MSME Competitiveness,
Creative Economy,
Policy Support*

Article Info:

Received: 17/04/2026

Revised: 24/04/2026

Accepted: 30/04/2026

Published: 05/06/2026

Background: Digital transformation has fundamentally changed the competitive landscape of businesses, especially for MSMEs in the creative economy sector. In the framework of the Resource-Based View (RBV), digital capabilities are seen as strategic resources that determine sustainable competitiveness. The city of Makassar as the center of economic growth in the Eastern Indonesia region is a relevant context to study this phenomenon.

Objective: This study aims to examine the influence of digital capabilities on the competitiveness of creative economy MSMEs in Makassar City, with product innovation as a mediation variable and government policy support as a moderation variable. **Methods:** The study used a quantitative approach with an associative-explanatory design and a moderated mediation model. Data was collected from 285 creative economy MSME respondents through purposive sampling and analyzed using SEM-PLS.

Results: Digital capabilities have a positive and significant effect on the competitiveness of MSMEs, both directly and through the mediation of product innovation. Policy support has been proven to moderate the relationship between digital capabilities and the competitiveness of MSMEs, although business actors' perceptions of their effectiveness are still at a moderate level. All constructs meet the criteria for convergent validity with an AVE value above 0.50.

Conclusion: Digital capabilities are strategic resources that encourage product innovation and increase the competitiveness of creative economy MSMEs. This research makes a theoretical contribution by integrating policy moderation into the mediation model of digital capabilities product innovation competitiveness in the context of MSMEs in Eastern Indonesia.



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How to cite:

Natsir, U. D. (2026). Digital Capabilities, Product Innovation, and Competitiveness of Creative Economy MSMEs in Makassar City with Policy Support as Moderation Variables. SINOMIKA JOURNAL: Publikasi Ilmiah Bidang Ekonomi Dan Akuntansi, 5(1). <https://doi.org/10.54443/sinomika.v5i1.4859>



Introduction

Digital transformation has fundamentally changed the competitive landscape of businesses, including for micro, small, and medium enterprises (MSMEs) operating in the creative economy sector. In the framework of the Resource-Based View (RBV), digital capabilities are seen as strategic resources that are not easy to replicate and are the main determinants of sustainable competitiveness (Lestari et al., 2021). Recent studies in various regions of Southeast Asia confirm that the adoption of digital technologies including social

media marketing, e-commerce, and platform-based management significantly improves the performance of MSME businesses (Rahayu & Day, 2022; Kurniawati et al., 2023). In Indonesia, this context is increasingly relevant considering that more than 64 million MSME units account for more than 60 percent of the national gross domestic product, but most are still operating on a micro scale with limited digital capabilities. The city of Makassar as the center of economic growth in the Eastern Indonesia region recorded economic growth of 5.39 percent year-on-year in the third quarter of 2025, with the tertiary sector including the creative economy growing the highest by 5.52 percent. This condition emphasizes the urgency of empirical studies on how digital capabilities can be optimized as a driver of the competitiveness of creative economy MSMEs at the local level (Ardito et al., 2021; Falahat et al., 2021).

Various studies have shown that the relationship between digital capabilities and the competitiveness of MSMEs is not direct, but mediated by intermediate variables such as product innovation and market orientation. Hapsari et al. (2022) found that digital marketing capabilities have a significant effect on the performance of MSMEs through the mediation of product innovation in the creative economy sector. In line with that, Widiastuti et al. (2022) emphasized that innovation ability plays a critical role as a critical mediator in the relationship between digital marketing adoption and the competitive advantage of creative MSMEs. However, Chege and Wang (2021) found that the influence of technological innovation on the performance of MSMEs is highly dependent on the internal innovation capacity of business actors, so not all MSMEs are able to convert digital capabilities into innovations with market value. In Makassar City, of the total 32,739 MSME units recorded in One Makassar City Data in 2024, as many as 31,350 units or 95.8 percent are still micro business status. This condition indicates a structural gap between the size of the number of MSMEs and their actual capacity to adopt digital innovations strategically, especially in creative economy business actors involved in region-based programs such as Lorong Wisata (Nugroho et al., 2022; Zulkarnain et al., 2023).

A deepening of the existing literature reveals significant methodological and contextual gaps. First, most of the research on the digital capabilities and competitiveness of MSMEs was conducted in the context of manufacturing or general trade on the island of Java, so the findings cannot necessarily be generalized to creative economy MSMEs in Eastern Indonesia that have different characteristics of digital infrastructure, business ecosystems, and policy support (Setiawan et al., 2023). Second, the moderation mechanism of local government policy support

in strengthening the relationship between digital capabilities and the competitiveness of creative MSMEs has not been systematically explored in an integrated empirical model. Muafi and Uyun (2021) only tested digital technology mediation without considering the policy context as a moderator, while Purwanto et al. (2021) acknowledged the limitations of their study in accommodating the role of government intervention. Third, a study based on the Technology Acceptance Model (TAM) and Innovation Diffusion Theory (IDT) conducted by Handayani et al. (2023) shows that marketing digitalization has an effect on the performance of MSMEs, but does not test whether the effect varies depending on the intensity of policy support received by business actors. These gaps collectively show that a more comprehensive conceptual model one that integrates digital capabilities, product innovation, competitiveness, and policy support in a single framework is urgently needed, especially for the context of creative economy MSMEs in Makassar City (Bocconcelli et al., 2023).

The urgency of this research is even stronger if it is associated with the policy dynamics and empirical conditions of MSMEs in Makassar City. In the 2024–2026 period, the South Sulawesi Provincial Government explicitly emphasizes the importance of economic digitalization for MSMEs in the creative economy sector as a strategy to improve living standards and drive the regional economy. This momentum was strengthened by the holding of MSME Fiesta 2025 in Makassar with the theme Upgrading MSMEs Through Digitalization and Sustainability Approach, marking that digitalization is no longer an option but a strategic imperative. However, the Lorong Wisata program as an incubator for region-based culinary MSMEs still faces the reality that business actors are not fully able to utilize technology strategically to expand the market, build brands, and maintain business sustainability (Setiawan et al., 2023; Zulkarnain et al., 2023). Cao et al. (2021) remind that the attitudes and intentions of business actors towards technology greatly determine the success of digital adoption, so that policy programs that do not consider actual capability factors risk becoming symbolic interventions without measurable impacts. Without strong empirical evidence on the mechanisms of intervariable relationships in the local context of Makassar, the resulting policy recommendations will be generic and insensitive to the specific characteristics of creative economy MSMEs in the Eastern Indonesia region (Wahyuni & Sara, 2021; Ardito et al., 2021).

The novelty of this research lies in three dimensions that have not been simultaneously tested in an empirical model before in the context of creative economy MSMEs in Eastern Indonesia. Theoretically, this study integrates Resource-Based View (RBV), Technology

Acceptance Model (TAM), and Innovation Diffusion Theory (IDT) into one integrated conceptual framework to explain the digital transformation mechanism of creative economy MSMEs in Makassar City. This multi-theory integration responds to the call of Bocconcelli et al. (2023) who affirm the need for a layered theoretical approach in understanding the behavior of MSME technology adoption. Methodologically, this study introduces a mediation-moderation model that places product innovation as a mediator and local government policy support as a moderator in the relationship between digital capabilities and the competitiveness of MSMEs a design that has never been applied in the context of creative economy MSMEs based on tourism areas in Eastern Indonesia (Kurniawati et al., 2023; Hapsari et al., 2022). Contextually, this study is the first quantitative study that explicitly makes digital creative economy MSMEs in Makassar City including business actors involved in the Lorong Wisata program as an analysis unit, thus producing relevant empirical findings for policymakers at the city and provincial levels in designing digitalization interventions that are more targeted and data-based (Nugroho et al., 2022; Widiastuti et al., 2022).

Based on the background description, literature gap, and empirical urgency that has been presented, this study aims to: (1) test the influence of digital capabilities on the competitiveness of creative economy MSMEs in Makassar City; (2) analyze the role of product innovation mediation in the relationship between digital capabilities and the competitiveness of creative economy MSMEs; and (3) examining the role of moderation of government policy support in strengthening or weakening the relationship between digital capabilities, product innovation, and the competitiveness of creative economy MSMEs. The research question formulated is: to what extent does digital capabilities affect the competitiveness of creative economy MSMEs in Makassar City? Does product innovation mediate the relationship between digital capabilities and the competitiveness of creative economy MSMEs? And does government policy support significantly moderate the relationship? This study uses a quantitative survey approach with Structural Equation Modeling (SEM) techniques based on Partial Least Square (PLS) on a sample of digital creative economy MSMEs in Makassar City. Practically, the results of this study are expected to provide data-driven guidance for city governments, MSME associations, and financing institutions in designing more effective and sustainable digitalization assistance programs (Falahat et al., 2021; Lestari et al., 2021; Setiawan et al., 2023).

Method

This study uses a quantitative approach with an associative-explanatory design that aims to empirically test the causality relationship between variables. Specifically, this study adopts a moderated mediation model, where product innovation acts as a mediating variable on the relationship between digital capabilities and the competitiveness of MSMEs, while government policy support functions as a moderation variable. This design was chosen because it was able to simultaneously test direct effects, indirect effects, and conditional effects in one integrated structural model, in line with the dominance of the SEM-PLS approach in the related literature (Hair et al., 2019).

The population of this study is all MSMEs in the creative economy sector that are registered and actively operating in Makassar City. The sampling technique used is purposive sampling, with inclusion criteria: (1) MSMEs engaged in the creative economy subsector; (2) has been in operation for at least two years; and (3) have access to at least one digital platform. The determination of sample size refers to the rule of Hair et al. (2014) for SEM-PLS analysis, which is at least 10 times the number of indicators in the model. With a total of 24 indicators, the minimum sample size is 240 respondents. The upper limit is set at 300 respondents to anticipate invalid data, so the targeted final sample is in the range of 240-300 respondents.

The operationalization of variables in this study includes four main constructs that are conceptually and operationally defined, respectively. Digital capabilities are measured through the ability of MSMEs to utilize digital technology for business processes. Product innovation is measured based on the level of novelty and differentiation of the resulting product. The competitiveness of MSMEs is measured by the relative advantages of the business compared to competitors. Policy support is measured from the perception of business actors on the effectiveness of government interventions. All variables were measured using a five-point Likert scale (1 = strongly disagree; 5 = strongly agree).

Variabel	Operational Definition	Indicator	Scale	References
Digital Capabilities (X)	The ability of MSMEs to utilize digital technology in business operations	Use of e-commerce, social media, platform management, data analytics	Likert 1–5	Lestari et al. (2021)
Product Innovation (M)	The level of novelty and differentiation of products developed by MSMEs	Product novelty, feature variety, speed of development of new products	Likert 1–5	Hapsari et al. (2022)
Competitiveness of MSMEs (Y)	The relative competitive	Market share, customer loyalty,	Likert 1–5	Falahat et al. (2021)

	advantage of MSMEs to competitors in the market	price advantage, brand reputation		
Policy Support (Z)	Business actors' perception of the effectiveness of government policies	Access to financing, digital training, supporting regulations, incubation programs	Likert 1–5	Setiawan et al. (2023)

Source: Data Processed, 2026

Policy Support (Z) Business actors' perception of the effectiveness of government policies Access to financing, digital training, supporting regulations Setiawan et al. (2023)

The research instrument was in the form of a structured questionnaire with a total of 24 statement items distributed in four constructs. The convergent validity test used an Average Variance Extracted (AVE) value with an AVE threshold of ≥ 0.50 , and an outer loading ≥ 0.70 for each indicator. The discriminant validity test used the Fornell-Larcker and HTMT (Heterotrait-Monotrait Ratio) criteria with an HTMT value of < 0.85 . The reliability test used Composite Reliability (CR) with a CR value of ≥ 0.70 and Cronbach's Alpha ≥ 0.70 as the acceptance threshold.

Construct	Outer Loading	AVE	Composite Reliability	Cronbach's Alpha	Remarks
Digital Capabilities	0,71–0,85	0,62	0,88	0,84	Valid & Reliable
Product Innovation	0,72–0,83	0,60	0,86	0,81	Valid & Reliable
The Competitiveness of MSMEs	0,74–0,87	0,64	0,89	0,85	Valid & Reliable
Policy Support	0,70–0,82	0,58	0,85	0,80	Valid & Reliable

Source: Data Processed, 2026

Data collection was carried out in person and online for eight weeks. The questionnaire was distributed through two channels: (1) direct visits to the creative economy MSME cluster in the Lorong Wisata area and the center of the creative center of Makassar City; and (2) online

distribution through Google Form links distributed through MSME associations and the Makassar City Cooperative Office. Data quality control is carried out through checking the completeness of the fills, eliminating respondents who fill in all items with uniform values (straight-lining), and confirming business identity through the business identification number (NIB).

Data analysis uses Structural Equation Modeling based on Partial Least Squares (SEM-PLS) with the following structural equation model:

****Model Mediasi:****

$$M = \alpha_1 + \beta_1 X + \varepsilon_1$$

$$Y = \alpha_2 + \beta_2 X + \beta_3 M + \varepsilon_2$$

****Moderation Model:****

$$Y = \alpha_3 + \beta_4 X + \beta_5 M + \beta_6 Z + \beta_7 (X \times Z) + \beta_8 (M \times Z) + \varepsilon_3$$

Description: Y = MSME competitiveness; X = digital capabilities; M = product innovation; Z = policy support; X×Z = interaction of digital capabilities and policies; M×Z = interaction of product innovation and policy; β₁–β₈ = path coefficient; α = constant; ε = residual.

Testing is carried out in stages. First, the evaluation of the measurement model (outer model) includes the test of convergent validity (AVE ≥ 0.50), discriminant validity (HTMT < 0.85), and reliability (CR ≥ 0.70). Second, the evaluation of the structural model (inner model) used the R² value to measure the variance described, the Q² value (Stone-Geisser) for predictive relevance (Q² > 0), and the SRMR value < 0.08 as an indicator of goodness of fit. Third, hypothesis testing was carried out through a bootstrapping procedure with 5,000 subsamples to obtain t-statistical and p-values, with hypothesis acceptance criteria at t > 1.96 and p < 0.05 (bidirectional). The mediation effect was tested using an indirect effect with a 95% confidence interval that did not include zeros.

All stages of data analysis were carried out using SmartPLS software version 4.0 (Ringle et al., 2022) which was specifically designed for SEM-PLS model estimation. The software was chosen for its ability to handle complex models with latent variables and reflective indicators, as well as supporting moderated mediation analysis in an integrated manner. Additional descriptive statistics were processed using IBM SPSS Statistics version 26 for profiling of respondent characteristics and frequency distribution of demographic data.

The demographic profile of the respondents reflects the characteristics of creative economy MSMEs in Makassar City which are dominated by women entrepreneurs of productive age with secondary to high education backgrounds. The dominance of the culinary and fashion/craft subsectors is consistent with the national creative economy map, while a significant proportion of the visual communication design subsector reflects the growth of the digital-based creative industry in Makassar.

Table 3: Evaluation Results of Measurement Model (Outer Model)

Construct	AVE	Composite Reliability (CR)	Cronbach Alpha	HTMT Maks.	Remarks

Digital Capabilities (KD)	0,587	0,869	0,831	0,782	Valid & Reliable
Product Innovation (IP)	0,612	0,879	0,847	0,801	Valid & Reliable
MSME Competitiveness (DS)	0,601	0,874	0,839	0,793	Valid & Reliable
Policy Support (DK)	0,574	0,851	0,801	0,764	Valid & Reliable

Source: Data Processed, 2026

All constructs met the criteria of convergent validity ($AVE > 0.50$), composite reliability ($CR > 0.70$), and discriminant validity ($HTMT < 0.85$). These results confirm that the measurement instruments used have sufficient psychometric qualities to support the testing of structural hypotheses.

Table 4: Results of Evaluation of Structural Model (Inner Model)

Construct endogenous	R-Squared (R^2)	Q-Squared (Q^2)	Interpretation of R^2
Product Innovation (IP)	0,423	0,389	Moderate
MSME Competitiveness (DS)	0,581	0,521	Substantial

Source: Data Processed, 2026

The R^2 value for MSME Competitiveness of 0.581 indicates substantial model clarity, indicating that the combination of digital capabilities, product innovation, and policy support is able to explain more than half of the variation in MSME competitiveness. A positive Q^2 value for both endogenous constructs confirms the overall predictive relevance of the model.

Table 5: Hypothesis Testing Results

Hipotesis	Jalur	Coeficin β	t-Statistics	p-Value	95% CI Below	Top 95% CI	Verdict
H1	KD \rightarrow DS (Live)	0,312	4,187	0,000	0,168	0,456	Accepted
H2	KD \rightarrow IP	0,487	6,312	0,000	0,341	0,633	Accepted
H3	IP \rightarrow DS	0,389	5,124	0,000	0,241	0,537	Accepted
H4	KD \rightarrow IP \rightarrow DS (Mediasi)	0,198	3,542	0,001	0,089	0,311	Accepted
H5	KD \times DK \rightarrow IP (Moderation)	0,241	3,891	0,000	0,121	0,361	Accepted

H6	Moderated Mediation Index	0,089	2,847	0,004	0,041	0,147	Accepted
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Source: Data Processed, 2026

All six hypotheses put forward in this study were accepted at a significance level of 5%. The most crucial finding is the confirmed effect of moderated mediation (H6), which proves that the mediating power of product innovation on the relationship between digital capabilities and competitiveness is conditional on policy support. This makes an original empirical contribution to the understanding of the complex mechanisms of the competitiveness of MSMEs in the creative economy.

Table 6: Analysis of the Conditional Effects of Moderation on the Three Levels of Policy Support

Policy Support Level	DK Value	KD → IP Effect (β)	t-Statistics	p-Value	Significance
Rendah (Mean - 1 SD)	2,63	0,298	2,891	0,004	Signifikan
Medium (Mean)	3,41	0,487	6,312	0,000	Signifikan
Tinggi (Mean + 1 SD)	4,19	0,676	7,124	0,000	Signifikan

Source: Data Processed, 2026

Conditional effects analysis shows a consistent pattern: the higher the level of policy support, the stronger the influence of digital capabilities on product innovation. The increase in the coefficient from 0.298 (low support) to 0.676 (high support) illustrates a substantive policy amplification effect, implying that targeted policy interventions can multiply the benefits of MSME digital investment.

Conclusion

This research has succeeded in empirically proving that digital capabilities have a positive and significant effect on the competitiveness of creative economy MSMEs in Makassar City, both directly and through the mediation of product innovation. Using the SEM-PLS approach to 285 respondents, the moderated mediation model was built to meet all the required criteria of validity and reliability. These findings strengthen the Resource-Based View (RBV) framework by showing that digital capabilities are a strategic resource that drives product innovation and ultimately increases business competitiveness. Furthermore, policy support has been proven to moderate the relationship between digital capabilities and the competitiveness of MSMEs, although business actors' perceptions of the effectiveness of government interventions are still at a moderate level. This research makes a theoretical

contribution by integrating policy moderation into the mediating model of digital-innovation-competitiveness capabilities in the context of the creative economy of Eastern Indonesia.

Suggestions

Practically, the Makassar City government is advised to optimize digital support programs such as Lorong Wisata by expanding access to digital platform training and e-commerce facilitation for MSME actors, especially the culinary and fashion subsectors that dominate the research sample. MSME actors also need to increase the intensity of strategic use of digital platforms to encourage sustainable product innovation. This research has limitations in the form of geographical coverage that is limited to the city of Makassar so generalizations to other regions need to be done carefully. Further research is recommended to adopt a longitudinal design to measure changes in digital capabilities and competitiveness over time, as well as expand the scope of the region to other cities in the Eastern Indonesia region to strengthen the external validity of the findings.

Acknowledgement

The authors would like to thank the Institute for Research and Community Service (LPPM) of Hasanuddin University for the institutional support and research facilities provided. Appreciation was also conveyed to the Makassar City Cooperatives and SMEs Office for facilitating access to data and a network of creative economy MSME respondents. This research is supported in part by a competitive research grant from the Higher Education Basic Research Program (PDUPT) for the 2023 Fiscal Year. The author also thanks all MSME actors who are willing to take the time as respondents, as well as to the anonymous reviewers who provide constructive input to improve the quality of this manuscript.

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