

The Influence of TOE Factors and Entrepreneurial Orientation on Social Media-related Performance: The Mediating Role of Innovation Capability and CRM Capability, and Moderating Role of Social Media Adoption

Nilawati Puspita Ningrum* & Elok Savitri Pusparini

Strategic Speciality Management Study Program, Faculty of Economics and Business, Universitas Indonesia, Depok, Indonesia

Abstract

This study investigates the influence of (Technological-Organizational-Environmental) TOE Factors and Entrepreneurial Orientation on Social Media-related Performance of multi-industry Micro, Small, and Medium Enterprises (MSMEs) in Jabodetabek. Specifically, it examines the mediating roles of Innovation Capability and Customer Relationship Management (CRM) Capability, as well as the moderating role of Social Media Adoption. MSMEs were selected for this study due to their pivotal contribution to Indonesia's economy despite facing persistent challenges in leveraging digital technologies, particularly social media. This study employs a quantitative research approach and utilizing Partial Least Squares Structural Equation Modeling (PLS-SEM) method, involving 243 respondents from multi-industry MSMEs in Jabodetabek to answer questionnaire distributed via both online and offline channels. The results reveal that Innovation Capability significantly mediates the relationship between TOE Factors and Social Media-related Performance, while CRM Capability significantly mediates the relationship between Entrepreneurial Orientation and Social Media-related Performance. In contrast, Social Media Adoption does not exhibit a significant role as a moderator in strengthening these relationships. These findings contribute to the theoretical advancement of Dynamic Capability Theory and TOE framework by emphasizing the importance of organizational readiness and strategic orientation in cultivating digital capabilities. From a practical standpoint, these results emphasize the necessity for MSMEs to go beyond mere social media adoption by fostering structural preparedness, cultivating entrepreneurial leadership, and enhancing sustained CRM practices. This study also provides relevant managerial implications for MSMEs, policymakers, and business support institutions engaged in digital transformation initiatives.

Keywords: CRM capability, entrepreneurial orientation, innovation capability, MSMEs, TOE factor

Received: 16 July 2025

Revised: 23 September 2025

Accepted: 21 October 2025

1. Introduction

Micro, Small, and Medium Enterprises (MSMEs) constitute the backbone of Indonesia's economy, contributing approximately 61% to the national Gross Domestic Product (GDP) and employing 97% of the workforce (Fauzan, 2025). Despite their substantial domestic contribution, their contribution to national exports remains modest, at approximately 15.7% (Limanseto, 2025). The ongoing digital transformation presents a great opportunity for MSMEs to enhance their global competitiveness, particularly through the adoption of digital technology such as social media.

Social media has evolved from a purely promotional tool into a strategic instrument for strengthening brand visibility and fostering customer relationships (Ainin et al., 2015; Salimon et al., 2017). In Indonesia, the digital transformation of MSMEs has shown remarkable growth. By 2023, 22 million MSMEs had integrated into digital ecosystem, with the government targeting 30 million by the end of 2024 (INDEF., 2024). Social media has become the most widely used platform among MSMEs due to its flexibility and cost-efficiency. Additionally, the adoption of Quick Response Code

* Corresponding author.

E-mail address: nilawatipn@gmail.com

Indonesian Standard (QRIS), a digital payment system, has further accelerated this transformation, with MSMEs comprising 92% of the 29.6 million QRIS merchants (Simanjuntak & Wijaya, 2023).

Jabodetabek stands as one of the largest MSME growth centers in Indonesia, with a total of more than 217,000 business units (BPS., 2024; BPS West Java., 2024; BPS Banten Province., 2024). Despite these advancements, MSMEs in this area continue to struggle to utilize social media strategically. Common challenges include low levels of digital literacy and the absence of coherent digital marketing strategies. Although prior studies indicate that strategic use of social media can expand market reach and significantly increase customer loyalty (Septiani, 2024), and boost business turnover by more than 88%. However, in practice, social media is often used passively or without clear direction. Bernando & Ray (2025) argue that the impact of social media may be negligible and insignificant without complementary factors such as market orientation or institutional support. Similarly, Irawan (2024) found that many MSMEs often quit using Facebook ads due to poor cost-benefit outcomes.

The Technological-Organizational-Environmental (TOE) Factors is a theoretical approach to explains the factors of technology adoption within organizations (Tornatzky & Fleischer, 1990). It outlines three key contextual factors, technological, organizational, and environmental, that influence organization's decision to adopt social media (Fan et al., 2021; Fu et al., 2024). Technological factors include perceived ease of use, affordability, and compatibility; organizational factors include managerial support and human capital; while environmental factors relate to market competition and external support. TOE factors has demonstrated empirical relevance in explaining social media adoption, particularly in terms of enhancing customer engagement and improving operational efficiency (Amoah et al., 2023).

Complementing the TOE factors, Entrepreneurial Orientation represents a critical internal aspect of digital strategy adoption. Entrepreneurial orientation comprises dimensions such as innovativeness, proactiveness, and risk-taking (Covin & Wales, 2012). Fan et al.,(2021) emphasize entrepreneurial orientation's role in encouraging innovation and facilitating social media adoption among MSMEs. This is further supported by Fang et al., (2022) that entrepreneurial orientation positively influences innovative capabilities, ultimately enhancing MSMEs performance. However, in the context of Jabodetabek, many MSMEs exhibit conservative tendencies and a reluctance to innovate despite having access to digital tools. Generational gaps and limited exposure to digital entrepreneurship training are commonly cited as significant barriers (Fauzan, 2025). Therefore, entrepreneurial orientation is considered an important foundation that shapes the extent to which MSMEs can develop digital capabilities and leverage social media effectively.

Innovation Capability refers to an organization's capability to generate added value through the creative and strategic utilization of technology (Otahe & Obsolete, 2022). This capability is closely linked to the competitiveness and adaptability of MSMEs in responding to market changes (Jalil, M. F., Ali & Kamarulzaman, 2022; Scott, 2022). Fan et al., (2021) emphasizes that Innovation Capability mediates the relationship between entrepreneurial orientation and business performance. However, this capability remain underdeveloped in many MSMEs in Jabodetabek due to limited resources and a lack of collaborative innovation efforts.

Customer Relationship Management (CRM) capability is another critical internal resource in cultivating long-term customer relationships in the digital era. The integration of CRM with social media, commonly referred to as social CRM, can improve both customer loyalty and service quality (Alshourah & Jodeh, 2021; Foltean et al., 2019). Nevertheless, most MSMEs in Jabodetabek continue to rely on basic communication tools, such as WhatsApp, and have not used a formal CRM systems (Alhawamdeh et al., 2024; Ministry of Cooperatives and SMEs., 2022). In this context, implementing an effective CRM strategy is essential for sustaining competitiveness in increasingly saturated digital markets.

This study addresses both theoretical and practical gaps by integrating TOE Factors and Entrepreneurial Orientation to explain MSMEs' Social Media-related Performance. It specifically examines the mediating roles of Innovation Capability and CRM Capability, as well as the moderating role of Social Media Adoption. The proposed conceptual model aims to provide a more holistic understanding of digital strategy adoption among MSMEs in Jabodetabek. Ultimately, the findings are expected to provide both theoretical insights and practical recommendations for business owners, policymakers, and support institutions aiming to enhance the digital competitiveness of Indonesian MSMEs.

2. Literature Review

2.1. Technological-Organizational-Environmental (TOE) Factors

The Technological-Organizational-Environmental (TOE) Factors was introduced by Tornatzky & Fleischer, (1990) and

has been widely used to explain organizational decisions concerning technology adoption. TOE posits that technology adoption decisions are influenced by three primary dimensions: technological context, organizational context, and external environment (environmental context).

In the context of MSMEs, TOE offers insight into the readiness and barriers that influence the adoption of digital tools such as social media as part of broader digital transformation initiatives. Technological factors include relative advantage (Ahmad et al., 2019), cost-effectiveness (Odoom et al., 2017), compatibility and interactivity (Sulaiman et al., 2015), visibility (Dutot & Bergeron, 2016), and complexity (Ali Abbasi et al., 2022). Meanwhile, organizational factors include top management support (Ahmad et al., 2019), availability of financial support and employee capability (Ali Abbasi et al., 2022). Environmental factors include competitive pressure, bandwagon effect, and competitive intensity (Ahmad et al., 2019), customer pressure and vendor support (Ali Abbasi et al., 2022). TOE factors has demonstrated its empirical relevance in understanding how digital platforms are adopted to support customer engagement, enhance market reach, and improve operational efficiency in MSMEs.

2.2. Entrepreneurial Orientation (EO)

Entrepreneurial Orientation is a strategic organizational posture characterized by a proactive pursuit of innovation and a willingness to take calculated risks. Traditionally, entrepreneurial orientation comprises three main dimensions: innovativeness, proactiveness, and risk-taking (Covin & Slevin, 1989; Lumpkin & Dess, 1996). More contemporary interpretations have expanded entrepreneurial orientation to include two additional dimensions: autonomy and competitive aggressiveness (Wales, 2016).

Entrepreneurial orientation plays a pivotal role in enhancing the agility of MSMEs, especially under uncertain and volatile market conditions. It encourages the adoption of digital strategies such as social media usage for marketing and customer engagement. Empirical studies have found that entrepreneurial orientation significantly contributes to the innovation process, facilitates the strategic use of digital platforms, and ultimately improves firm performance (Fan et al., 2021; Fang et al., 2022).

2.3. Innovation Capability

Innovation Capability is defined as an organization's ability to generate, develop, and implement new ideas that yield value and competitive advantage. Calantone et al., (2002) measure these capabilities through activities such as new product development, innovative operational processes, and organizational readiness to act as a market pioneer.

In the context of MSMEs, innovation capability is closely linked to the technological adoption and continuous learning. According to Teece (2018), the concept of Dynamic Innovation Capability emphasizes the importance of agile innovation strategies in response to technological and market changes. Setiawan & Putri (2023) further demonstrate that the use of social media positively contributes to product innovation among MSMEs, indicating that innovation capability acts as a critical driver of performance in the digital economy.

2.4. CRM Capability

CRM Capability refers to the organization's ability to build, manage, and maintain long-term customer relationships through systematic strategies and technological tools (Foltean et al., 2019). In the digital context, CRM extends beyond conventional approach to include Social CRM, integrated platforms that utilize social media to enhance personalization, service quality, and real-time engagement.

Despite the growing relevance of CRM, many MSMEs in Indonesia continue to rely on manual data record and basic communication tools, such as WhatsApp for customer interaction. The integration of CRM systems with social media has the potential to improve operational efficiency and unlock new market opportunities. Social CRM further allows organization to implement data-driven customer engagement strategies, enabling proactive responses to changing consumer behavior.

2.5. Social Media Adoption (SMA)

Social Media Adoption refers to the degree to which an organization incorporates social media into its business

operations, including operations, marketing, communication, and customer relationship management (Freixanet et al., 2021; Scarlet et al., 2022). For MSMEs, social media is considered as a strategic tool that offers a cost-effective solution to overcome resource limitations and expand market access.

Social media adoption is measured through three dimensions: marketing usage, customer relationship, and access to information (Parveen et al., 2016; Scarlet et al., 2022). According to Khaki & Khan (2024), factors such as the perception of ease of use and external pressure significantly influence social media adoption decisions. For MSMEs, effective social media adoption increases brand awareness, fosters customer engagement, facilitates digital innovation.

3. Methods

This study employed a quantitative approach using a cross-sectional research design, which intended to collect data at a specific point in time to understand the relationships among variables simultaneously. This approach is considered appropriate to identify relevant causal relationship patterns and assessing variable interdependence in the context of multi-industry MSMEs in Jabodetabek undergoing digital transformation through social media utilization.

3.1. Research Conceptual Model

The conceptual model integrates the TOE Factors and Entrepreneurial Orientation to explain MSMEs' Social Media-related Performance. The model also incorporates two mediating variables, Innovation Capability and CRM Capability, and one moderating variable, Social Media Adoption. This model builds on previous research conducted by Fu et al. (2024), Qalati et al. (2021), and Qalati et al. (2022), and is contextualized to reflect the digital ecosystem of Indonesian MSMEs.

3.2. Research Hypothesis

A total of 14 hypotheses were formulated to analyze both the direct and indirect relationships between TOE Factors and Entrepreneurial Orientation to Social Media-related Performance. These relationships are also examined through the mediating effects of Innovation Capability and CRM Capability, as well as moderating effects of Social Media Adoption. For instance, Hypothesis 1 proposes that TOE Factors positively influences Innovation Capability, while Hypothesis 6 posits that CRM Capability positively influence Social Media-related Performance.

3.3. Research Variables

The independent variables in this study are TOE Factors and Entrepreneurial Orientation, whereas the dependent variable is Social Media-related Performance. Innovation Capability and CRM Capability serve as mediating variables, and Social Media Adoption functions as moderating variable. All constructs were measured using validated indicators from previous empirical studies and further adapted to fit the local MSME context in Jabodetabek.

3.4. Population and Sample

The target population consisted of MSMEs owners or managers in Jabodetabek who actively use social media for business purposes. A purposive sampling technique was employed, resulting in 243 valid responses. Inclusion criteria required that participants operate a business that had been active for at least one year and regularly use social media platforms such as Instagram, Facebook, or WhatsApp Business for business purposes.

3.5. Research Instruments

Data were collected using a structured, close-ended questionnaire, measured using 7-point Likert scale. The instrument underwent content validation through potential respondents and was assessed for readability to ensure clarity and suitability for the digital literacy levels of target respondents. The 7-point scale was selected for its greater sensitivity in capturing perceptions compared to traditional 5-point scale.

3.6. Data Collection Procedures

Data collection was conducted through both online and offline questionnaire distribution channel. Digital platforms such as WhatsApp, Facebook, and Instagram were used to distribute the questionnaire efficiently. Questionnaire were chosen due to its ability to reach a large number of respondents, and aligns with the recommendations of Van der Stede (2014), who advocates the scalability of survey-based methods in behavioral research.

3.7. Data Analysis Methods

The analytical method employed was the Partial Least Squares Structural Equation Modeling (PLS-SEM), using SmartPLS 4.0 software. PLS-SEM is particularly suitable for complex models involving multiple constructs and does not require normal distribution data. Moreover, PLS-SEM is effective for simultaneously testing both mediation and moderation effects within structural models.

3.8. PLS-SEM Analytical Procedures

The PLS-SEM analysis was carried out in three stages: (1) evaluation of measurement models (outer model), (2) evaluation of structural models (inner model), and (3) hypothesis testing. The outer model was assessed using criteria such as Loading Factor, Average Variance Extracted (AVE), Cronbach's Alpha, and Composite Reliability to ensure construct validity and reliability. The inner model was evaluated using path coefficients, R^2 , Q^2 , and f^2 to evaluate the strength and quality of the relationships among constructs, and model fit. Hypothesis testing was conducted through bootstrapping with a significance level of 5% to determine the statistical relevance of hypothesized relationships.

3.9. Sample and Size Criteria

According to Hair & Alamer (2022), the appropriate sample size in PLS-SEM should be five to ten times the number of indicators in the most complex constructs. Given that the TOE Factors construct comprises 31 indicators, the recommended sample size ranges from 155 to 310. The collected sample of 243 respondents thus satisfies this criterion and supports the generalizability of the study's findings to the broader MSME population in Jabodetabek.

4. Result and Discussions

4.1. Respondent Characteristics

This study collected data from 243 respondents consisting of owners and managers of MSMEs operating in Jabodetabek who actively utilize social media for business purposes. The demographic and business-related profiles of the respondents are summarized in Table 1.

Table 1. Business Characteristics (n = 243)

Characteristics	Category	Quantity (n)	Percentage (%)
Business Age	1-5 years	58	23.9%
	2-4 years	108	44.4%
	>5 years	77	31.7%
Number of Employees	1-4 persons	135	55.6%
	5-19 persons	85	35.0%
	20-99 persons	23	9.5%
Business location	Jakarta	93	38.3%
	Bekasi	43	17.7%
	Depok	31	12.8%
	Tangerang	48	19.8%
Industrial sector	Bogor	28	11.5%
	Food and Beverage	79	32.5%
	Fashion	27	11.1%
	Handicrafts	17	7.0%
	Trade	45	18.5%

Characteristics	Category	Quantity (n)	Percentage (%)
	Transportation and Warehousing	13	5.3%
	Digital Technology	34	14.0%
	Service	28	11.5%

Source: Processed by the researcher (2025)

The majority of MSME respondents are in the early to mid-growth phase, with 44.4% of businesses operating for 2 to 4 years, reflecting active development in building customer networks and achieving operational stability. Meanwhile, 31.7% of respondents have been businesses for more than 5 years, indicating more experienced organizations with mature capabilities, while 23.9% have operated for 1 to 2 years, reflecting participation from enterprises still in the startup phase. In terms of the number of employees, the majority of MSMEs are classified as micro and small businesses, with 55.6% employing 1-4 employees, 35.0% employing 5-19 employees, and only 9.5% employing 20-99 employees. This indicates that most MSMEs operate with limited human resources, which constraints their capacity for technology adoption and innovation management.

Regarding business locations, respondents are distributed across the Jabodetabek area, with the majority located in Jakarta (38.3%), followed by Tangerang (19.8%) and Bekasi (17.7%). Depok and Bogor account for 12.8% and 11.5%, respectively, indicating a strong concentration of MSMEs in both the economic center and surrounding areas. In terms of industry sectors, the food and beverage sector dominates with 32.5% of respondents, followed by trade (18.5%) and digital technology (14%). Other sectors, such as services, fashion, and handicrafts, each contribute between 11% and 18% of the total respondents.

Table 2. Use of Social Media in MSMEs

Characteristics	Category	Quantity (n)	Percentage (%)
Budget Allocation for Social Media	<25%	127	52.3%
	26%-50%	76	31.3%
	>50%	40	16.5%
Rate of Social Media Usage for Operational Purposes	Minimal	68	28.0%
	Low	39	16.0%
	Moderate	106	43.6%
	Extensive	30	12.3%
Duration of Social Media Use for Operational Purposes	1 year	117	48.1%
	2-4 years	98	40.3%
	>5 years	28	11.5%
Rate of Social Media Usage for Marketing Purposes	Minimal	14	5.8%
	Low	20	8.2%
	Moderate	123	50.6%
	Extensive	86	35.4%
Duration of Social Media Use for Marketing Purposes	1 year	95	39.1%
	2-4 years	108	44.4%
	>5 years	40	16.5%

Source: Processed by the researcher (2025)

The findings from Table 2 indicate that the majority of MSMEs in the Jabodetabek area still allocate a relatively small proportion of their budget to social media within their digital marketing strategies. Out of 243 respondents, 52.3% allocate less than 25% of their total budget to social media, 31.3% allocate between 26% and 50%, and only 16.5% allocate more than 50%. This suggests that social media has not yet been fully positioned as a core component of MSMEs’ digital strategies, which may be due to budget constraints or a limited understanding of the strategic benefits of social media in building customer relationships, enhancing brand awareness, and supporting business innovation.

Regarding the rate of social media usage for operational purposes, the majority of MSMEs (43.6%) reported using social media at a moderate level, indicating routine use with relatively complete features and specific strategies. Meanwhile, 28.0% use social media at a minimal level, 16.0% at a low level, and only 12.3% use it extensively, integrated across various operational aspects of the business and consistently involving more than one platform. Although most business owners recognize the importance of social media in supporting business operations, many have not yet leveraged it optimally, possibly due to limitations in resources, digital literacy, and strategic maturity.

In terms of the duration of social media use for operational activities, nearly half of the respondents (48.1%) have only used it within the past year, 40.3% have used it for two to four years, and just 11.5% have more than five years of experience. This finding suggests that the adoption of social media in MSME operations in the Jabodetabek area is still relatively recent, with most business actors in the early stages of digital technology implementation, thereby requiring capacity building and ongoing support for sustainable digital strategies.

For marketing purposes, the majority of MSMEs (50.6%) use social media at a moderate level, followed by extensive use (35.4%), low use (8.2%), and minimal use (5.8%). This reflects the role of social media as an important channel for many business actors, although a segment of MSMEs has yet to maximize its potential.

With respect to the duration of social media use for marketing, 44.4% of MSMEs have used it for two to four years, 39.1% for less than one year, indicating a recent adoption trend following increased post-pandemic digitalization, and 16.5% have more than five years of experience. This distribution demonstrates that most business actors are still in the learning or development stage of digital marketing strategies, with considerable potential to enhance campaign effectiveness as experience with social media use grows. Overall, these findings emphasize the need for increased digital literacy and strategic support to help MSMEs optimize their use of social media and enhance their digital strategy efforts.

4.2. Hypothesis Test

4.2.1. Direct Effect Test

The direct effect analysis was conducted using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach, with hypotheses accepted when the t-statistic exceeded 1.96 at a 5% significance level. Results are summarized in Table 3.

Hypothesis 1 examined the influence of TOE Factors on Innovation Capability. The analysis yielded a t-value of 2.847, exceeding the 1.96 threshold, with a p-value of 0.004 ($p < 0.05$) and a 95% confidence interval (0.075, 0.381) that does not cross zero. This confirms a statistically significant and positive effect of TOE Factors on Innovation Capability, with a positive path coefficient of 0.221.

Hypothesis 2 examined the influence of TOE Factors on CRM Capability. The results revealed a t-value of 1.788, which is below the threshold of 1.96, with a p-value of 0.074 ($p > 0.05$), and a 95% confidence interval ranging from -0.006 to 0.293, which crosses zero. This indicates that TOE Factors does not have a statistically significant effect on CRM Capability, despite a positive path coefficient of 0.136.

Hypothesis 3 examined the influence of Entrepreneurial Orientation on Innovation Capability. The results showed a t-value of 2.333 at a significance level of 5% and a p-value of 0.020 ($p < 0.05$). The confidence interval ranged from 0.044 to 0.323, which does not cross zero. These results confirm a significant and positive relationship of Entrepreneurial Orientation on Innovation Capability, with a positive path coefficient of 0.169.

Hypothesis 4 examined the influence of Entrepreneurial Orientation on CRM Capability. The results revealed a t-value of 3.512 is significantly above the threshold, with a p-value of 0.000 ($p < 0.05$), and a confidence interval from 0.106 to 0.345. This validates a significant and positive relationship of Entrepreneurial Orientation on CRM Capability, with a positive path coefficient of 0.221.

Hypothesis 5 examined the influence of Innovation Capability on Social Media-related Performance, showing a t-value of 3.544 and a p-value of 0.000, with a confidence interval from 0.141 to 0.483. These results demonstrate a statistically significant positive effect of Innovation Capability on Social Media-related Performance, with a positive path coefficient of 0.310.

Hypothesis 6 examined the influence of CRM Capability on Social Media-related Performance, revealing a t-value of 4.925, a p-value of 0.000, and a confidence interval from 0.276 to 0.633. This confirms a significant and positive influence of CRM Capability on Social Media-related Performance, with the highest path coefficient among all direct effects in the model, at 0.443.

Overall, the results highlight that TOE factors significantly affect innovation capability but not CRM capability. Entrepreneurial orientation positively influences both innovation and CRM capabilities. Furthermore, both innovation capability and CRM capability significantly enhance social media-related performance, with CRM capability exhibiting the strongest direct effect.

Table 3. Direct Hypothesis Results

Hypothesis Statement	Path Coef.	T-Value	P-value	95% Confidence Interval		Remarks
				Upper Limit	Lower Limit	
H1 TOE → IC	0.221	2.847	0.004	0.075	0.381	Significant
H2 TOE → CRMC	0.136	1.788	0.074	-0.006	0.293	Insignificant
H3 EO → IC	0.169	2.333	0.020	0.044	0.323	Significant
H4 EO → CRMC	0.221	3.512	0.000	0.106	0.345	Significant
H5 IC → P	0.310	3.544	0.000	0.141	0.483	Significant
H6 CRMC → P	0.443	4.925	0.000	0.276	0.633	Significant

Source: Processed by the researcher (2025)

4.2.2. Indirect Effect Test

The mediation analysis was performed using SmartPLS to determine the extent to which mediator constructs explained the relationships between independent and dependent variables. A mediation effect is considered statistically significant when the *t*-statistic exceeds 1.96 at a 5% significance level. Results are summarized below in Table 4.

Hypothesis 7 examined the mediating role of innovation capability in the relationship between TOE factors and social media-related performance. The results revealed a path coefficient of 0.068, a *t*-value of 2.003, and a *p*-value of 0.045 ($p < 0.05$), with a 95% confidence interval (0.019, 0.155) not crossing zero. This confirms a significant mediating effect, indicating that innovation capability significantly transmits the influence of TOE factors to social media-related performance.

Hypothesis 8 examined the mediating role of CRM capability between TOE factors and social media-related performance. The path coefficient was 0.060 with a *t*-value of 1.497 and a *p*-value of 0.134 ($p > 0.05$). The 95% confidence interval (-0.000, 0.163) crossed zero, indicating that CRM capability does not significantly mediate this relationship.

Hypothesis 9 evaluated the indirect effect of innovation capability in mediating the relationship between entrepreneurial orientation and social media-related performance. The analysis yielded a path coefficient of 0.053, a *t*-value of 1.714, and a *p*-value of 0.087 ($p > 0.05$), with the confidence interval (0.011, 0.133) crossing zero. This suggests that the mediation effect is statistically insignificant.

Hypothesis 10 investigated the mediating effect of CRM capability between entrepreneurial orientation and social media-related performance. The results indicated a path coefficient of 0.098, a *t*-value of 2.499, and a *p*-value of 0.012 ($p < 0.05$), with a confidence interval (0.039, 0.191) not crossing zero. This confirms that CRM capability serves as a significant mediator in this relationship.

Overall, these findings reveal that innovation capability significantly mediates the relationship between TOE factors and social media-related performance, while CRM capability significantly mediates the relationship between entrepreneurial orientation and social media-related performance. In contrast, no significant mediation effects were observed for the other examined relationships.

Table 4. Indirect Hypothesis Results (Mediating Effect)

Hypothesis Statement	Path Coef.	T-Value	P-value	95% Confidence Interval		Remarks
				Upper Limit	Lower Limit	
H7 TOE → IC → P	0.068	2.003	0.045	0.019	0.155	Significant
H8 TOE → CRMC → P	0.060	1.497	0.134	0.000	0.163	Insignificant
H9 EO → IC → P	0.053	1.714	0.087	0.011	0.133	Insignificant
H10 EO → CRMC → P	0.098	2.499	0.012	0.039	0.191	Significant

Source: Processed by the researcher (2025)

In the context of Structural Equation Modeling (SEM) using the Partial Least Squares (PLS) approach, moderation analysis examines the extent to which a moderating variable strengthens or weakens the relationship between independent and dependent constructs. This involves examining interaction terms between the independent and moderator variables. A moderation effect is considered statistically significant when the *t*-statistic exceeds 1.96 at the 5% significance level.

The results indicate that social media adoption does not exhibit a statistically significant moderating effect on any of the proposed relationships. Results are summarized below in Table 5.

Hypothesis 11 examined the moderating effect of social media adoption on the relationship between TOE factors and innovation capability. The path coefficient was -0.151, with a *t*-value of 1.530 and a *p*-value of 0.126 (*p* > 0.05), suggesting no significant moderating effect.

Hypothesis 12 examined the moderating role of social media adoption between TOE factors and CRM capability. The analysis produced a path coefficient of -0.046, a *t*-value of 0.537, and a *p*-value of 0.591 (*p* > 0.05), indicating no significant moderating effect.

Hypothesis 13 examined the moderating effect of social media adoption on the relationship between entrepreneurial orientation and innovation capability. The results yielded a path coefficient of -0.061, a *t*-value of 0.640, and a *p*-value of 0.522 (*p* > 0.05), showing an insignificant moderating influence.

Hypothesis 14 examined the moderation of social media adoption between entrepreneurial orientation and CRM capability. The path coefficient was -0.151, with a *t*-value of 1.741 and a *p*-value of 0.082 (*p* > 0.05). Although this result is relatively closer to the significance threshold, it remains statistically insignificant.

In summary, social media adoption does not significantly moderate any of the hypothesized relationships, indicating that its role as a contextual variable in this model is limited.

Table 5. Indirect Hypothesis Results (Moderating Effect)

Hypothesis Statement	Path Coef.	T-Value	P-value	95% Confidence Interval		Remarks
				Upper Limit	Lower Limit	
H11 TOE x SMA → IC	-0.151	1.530	0.126	-0.338	0.052	Insignificant
H12 TOE x SMA → CRMC	-0.046	0.537	0.591	-0.211	0.131	Insignificant
H13 EO x SMA → IC	-0.061	0.640	0.522	-0.247	0.129	Insignificant
H14 EO x SMA → CRMC	-0.151	1.741	0.082	-0.327	0.022	Insignificant

Source: Processed by the researcher (2025)

The results from hypotheses testing indicate that the TOE factors exert a significant positive influence on innovation capability but do not significantly affect CRM capability. This suggests that technological availability, organizational preparedness, and external support are more influential in fostering innovation within MSMEs than in enhancing customer relationship management capabilities.

Similarly, entrepreneurial orientation was found to have a statistically significant effect on both innovation capability and CRM capability. This underscores the critical role of entrepreneurial traits, such as proactiveness, innovation, and risk-taking, in strengthening MSMEs' strategic capacity to innovate and effectively manage customer engagement.

Both innovation capability and CRM capability demonstrated a significant direct impact on social media-related performance among MSMEs. These findings affirm that internal capabilities are vital drivers of business success in the digital environment. Specifically, the stronger a business's innovation and CRM capabilities, the more effective its social media strategies are in increasing digital visibility, user engagement, and conversion rates.

From an indirect effect perspective, innovation capability was shown to significantly mediate the relationship between TOE factors and social media-related performance. This implies that technology, organizational, and environmental readiness influence performance outcomes primarily through the enhancement of innovation capabilities. Conversely, CRM capability did not serve as a significant mediator in this relationship.

In contrast, the relationship between entrepreneurial orientation and social media-related performance was significantly mediated by CRM capability but not by innovation capability. This suggests that entrepreneurial orientation drives performance outcomes mainly through strengthened customer relationship management rather than innovation alone.

This distinction reveals two unique influence pathways: TOE factors contribute to performance through innovation, while entrepreneurial orientation exerts its influence primarily via CRM.

Regarding moderation effects, social media adoption did not significantly moderate any of the examined relationships. Specifically, its role in moderating the effects of TOE factors and entrepreneurial orientation on both innovation and CRM capabilities was statistically insignificant. This suggests that social media use among MSMEs in the Jabodetabek area remains largely operational rather than strategic, lacking the sophistication needed to strengthen internal organizational processes such as innovation development or CRM enhancement.

These findings highlight the need for MSMEs to advance from basic operational use of social media toward more strategic and data-driven integration. Leveraging digital platforms for informed decision-making, product innovation, and enhanced customer engagement will be essential for sustaining competitiveness in the digital era.

Table 6. Path Effect Analysis

No	Path	Path Effect
1	EO → CRMC → P	0.098
2	TOE → IC → P	0.069
3	TOE → CRMC → P	0.060
4	EO → IC → P	0.052
5	TOE x SMA → IC → P	-0.047
6	EO x SMA → IC → P	-0.047
7	TOE x SMA → CRMC → P	-0.020
8	EO x SMA → IC → P	-0.019

Source: Processed by the researcher (2025)

Table 6 presents the pathways with the strongest influence on social media-related performance. The most influential pathway is **Entrepreneurial Orientation → CRM Capability → Social Media-related Performance** (path effect = 0.098). This suggests that entrepreneurial orientation, particularly traits such as proactiveness, innovation, and risk-taking, plays a pivotal role in strengthening CRM capabilities. Enhanced CRM capabilities, in turn, have a significant positive impact on MSMEs’ social media-based performance in the Jabodetabek area. The findings indicate that MSMEs in this region are increasingly adopting data-driven and risk-taking approaches, which support improvements in customer relationship management. However, proactive market anticipation remains a weakness, as many MSMEs still lack readiness to respond rapidly to market changes. Strategic improvements could include strengthening market intelligence, optimizing CRM systems to monitor trends in real time, and engaging customers through analytics-based interactions.

The **TOE Factors → Innovation Capability → Social Media-related Performance** pathway (path effect = 0.069) highlights the crucial role of technological, organizational, and environmental readiness in fostering innovation capabilities that enhance performance. Despite its significance, several challenges persist, such as the complexity of digital tools, limited human resource competencies, and insufficient training. Many MSMEs still perceive digital adoption as complex and difficult to integrate effectively. Many MSMEs also still in the early stages of adopting digital tools, often relying on basic systems that do not enhance efficiency. Tailored technology adoption strategies, aligned with organizational capabilities, are therefore essential to ensure innovation readiness translates into tangible performance gains.

The **TOE Factors → CRM Capability → Social Media-related Performance** pathway (path effect = 0.060) reinforces the relevance of TOE readiness for developing CRM capabilities. However, digitizing CRM processes is often hindered by financial constraints and limited access to funding, particularly among family-owned MSMEs. Many continue to rely on manual or semi-digital CRM systems, limiting scalability and efficiency. Enabling MSME management to access external support, such as training, financing, and technical assistance, can bridge the gap between organizational readiness and market demands. MSME coaching programs, local government initiatives, and industry associations play a vital role in facilitating this transition.

The **Entrepreneurial Orientation → Innovation Capability → Social Media-related Performance** pathway (path effect = 0.052) shows that entrepreneurial orientation also impacts innovation, particularly Innovativeness and Risk-Taking significantly contribute to innovation performance, although not as strongly as its influence on CRM. This may be due to a tendency toward incremental rather than radical innovations, driven by limited access to Resource & Development (R&D) resources and a lack of strong internal innovation culture. Continuous capacity building and incentive programs are needed to strengthen innovation outcomes.

Interestingly, all pathways involving **Social Media Adoption** as a moderator, such as **TOE × SMA → IC → P** and **EO × SMA → IC → P**, demonstrated negative path effects. This indicates a potential misalignment between social media adoption practices and MSMEs' internal readiness for innovation. This contradicts theoretical expectations and suggests a gap between digital tool adoption and strategic utilization for innovation. While the Information Accessibility indicator from Social Media Adoption scores relatively high, suggesting that MSMEs are indeed leveraging social media for marketing, many remain focused solely on promotional content rather than leveraging customer data for innovation and service development. This highlights a need to realign social media strategies from marketing-only functions to tools that generate actionable customer insights.

Finally, the moderation pathways **TOE × SMA → CRMC → P** and **EO × SMA → CRMC → P** also showed negative effects, suggesting weak synergy between social media adoption and CRM systems. Weaknesses in CRM processes, such as inconsistent service quality and the absence of dedicated personnel or standard operating procedures, further diminish the potential benefits of social media integration. Professionalizing digital CRM management, including standardized workflows and skilled personnel, is critical to realizing the full value of social media in enhancing customer loyalty and experience.

In summary, the enhancement of social media-based performance among MSMEs depends not only on entrepreneurial orientation and TOE readiness but also on the strategic integration of internal capabilities and digital tools. Entrepreneurial orientation primarily strengthens CRM effectiveness, while TOE readiness fosters innovation development. However, the current limitations in the moderating role of social media adoption underscore the need for more strategic, data-driven approaches to digital platform utilization. Aligning technology adoption with organizational readiness, strengthening human resource capabilities, and developing flexible, integrated digital strategies will be essential for translating internal readiness into sustained, digitally driven performance outcomes.

5. Conclusions

The findings of this study indicate that TOE Factors and Entrepreneurial Orientation significantly influence the internal capabilities of MSMEs, particularly Innovation Capability and CRM Capability. These internal capabilities, in turn, contribute positively to Social Media-related Performance. Innovation Capability was found to significantly mediate the relationship between TOE Factors and Social Media-related Performance outcomes, whereas CRM Capability mediates the relationship between Entrepreneurial Orientation and Social Media-related Performance. In contrast, Social Media Adoption was not found to have a significant moderating effect on these relationships. These results underscore the critical role of strengthening internal capabilities as a foundational step in enhancing the strategic use of social media among MSMEs.

The findings of this study provide important theoretical implications for the development of digital marketing and strategic management theories, particularly in the context of MSMEs undergoing digital transformation. The confirmation of CRM Capability as the strongest mediating pathway between Entrepreneurial Orientation and Social Media-related Performance supports and extends the theoretical framework of Dynamic Capability Theory. This suggests that CRM should not merely be viewed as an operational tool but as a dynamic capability shaped by internal organizational values such as proactiveness, innovation, and adaptability. The study also reinforces the relevance of the TOE framework in explaining digital readiness, revealing that organizational factors, especially financial capacity and managerial literacy, play a more decisive role than technology alone in driving successful digital adoption among MSMEs.

From a managerial perspective, the study offers practical insights into how MSMEs, especially those in densely populated and competitive urban regions like Jabodetabek, can design sustainable strategies to enhance Social Media-related Performance. Emphasizing the importance of CRM systems, digital literacy, and employee engagement in customer interaction, MSMEs are encouraged to adopt structured, data-driven service models and integrate simple, accessible digital tools. Furthermore, governments, financial institutions, and local business communities should play a more active role in supporting digital transformation through accessible financing schemes, collaborative platforms, and hands-on training. Ultimately, successful MSME digitalization requires not only internal preparedness and innovation but also an ecosystem of support that aligns technological tools with inclusive, ethical, and sustainable business practices.

Despite being built upon a robust theoretical foundation and a comprehensive analytical model, this study presents several limitations that warrant consideration. The use of a cross-sectional design, wherein data were collected at a

single point in time, limits the ability to capture longitudinal dynamics such as the evolving nature of social media adoption, shifts in internal capabilities like innovation and CRM, and their long-term impacts on MSME performance. Consequently, although the model demonstrates statistically significant relationships, it cannot confirm temporal or causal validity. Additionally, the data collection method relied on closed-ended self-assessment questionnaires, which may introduce social desirability bias and misinterpretation of abstract constructs, particularly among respondents with limited managerial literacy. The relatively low response rate further reduces statistical power and restricts the generalizability of the findings, especially in the context of MSMEs with minimal academic exposure or engagement.

Moreover, the performance measurement used in this study focuses exclusively on non-financial indicators such as brand visibility, digital engagement, and online interactions, omitting essential financial metrics such as revenue growth, cost savings, and return on investment. Future research is encouraged to adopt a longitudinal approach to better observe causal dynamics over time and implement mixed-method strategies, such as in-depth interviews, to mitigate bias and gain richer insights into the organizational and behavioral dimensions of digital transformation. Expanding the geographical scope and improving response rates will also strengthen external validity and enable testing across different socio-cultural and industrial contexts. Furthermore, integrating digital literacy as a moderating variable could help explain heterogeneity in digital capability outcomes among MSMEs, while considering external environmental factors, such as institutional support, digital infrastructure, and local ecosystem maturity, may provide a more holistic understanding of the enablers and barriers to digital adoption. These enhancements will contribute to a more nuanced and comprehensive framework for assessing MSME digital performance in the evolving digital economy.

References

- Ahmad, S. Z., Abu Bakar, A. R., & Ahmad, N. (2019). Social media adoption and its impact on firm performance: the case of the UAE. *International Journal of Entrepreneurial Behavior & Research*, 25(1), 84–111. <https://doi.org/10.1108/IJEER-08-2017-0299>
- Ainin, S., Parveen, F., Moghavvemi, S., Jaafar, N. I., & Shuib, N. L. M. (2015). Factors influencing the use of social media by SMEs and its performance outcomes. *Industrial Management and Data Systems*, 115(3), 570–588.
- Alhawamdeh, H., Al-Afeef, M. A. M., Alkhaldeh, B. Y., Nawasra, M., Al_Rawashdeh, H. A. A., Zraqat, O., Hussien, L. F., & Al-Eitan, G. N. (2024). The relationship between marketing capabilities and financial performance: the moderating role of customer relationship management in Jordanian SMES. *Cogent Business and Management*, 11(1).
- Ali Abbasi, G., Abdul Rahim, N. F., Wu, H., Iranmanesh, M., & Keong, B. N. C. (2022). Determinants of SME's Social Media Marketing Adoption: Competitive Industry as a Moderator. *Sage Open*, 12(1). <https://doi.org/10.1177/21582440211067220>
- Alshourah, S., & Jodeh, I. (2021). *Social Customer Relationship Management Capabilities and Performance Moderating Social Media Usage among SMEs Jordanian*.
- Amoah, J., Bruce, E., Shurong, Z., Bankuoru Egala, S., & Kwarteng, K. (2023). Social media adoption in smes sustainability: evidence from an emerging economy. *Cogent Business and Management*, 10(1).
- Bernardo, F. O., & Ray, E. L. (2025). Social Media Adoption, Halal Orientation, and Government Policy: Impacts on Business Performance of Food and Beverage SMEs in Indonesia. *Society*, 13(1), 504–519.
- BPS. (2024). *Jumlah Perusahaan Industri Skala Mikro dan Kecil Menurut Provinsi (Unit)*, 2023.
- BPS Jabar. (2024). *Ekonomi Jawa Barat Triwulan III-2024 Tumbuh 4,91 Persen (Y-on-Y)*. Badan Pusat Statistik Provinsi Jawa Barat.
- BPS Provinsi Banten. (2024). *Banyaknya Usaha/Perusahaan Industri Mikro dan Kecil Menurut Kabupaten/Kota dan Kelompok Pekerja di Provinsi Banten, 2021-2022*.
- Calantone, R. J., Tamer Cavusgil, S., & Zhao, Y. (2002). *Learning orientation, firm innovation capability, and firm performance*. *Industrial Marketing Management*, (Vol. 31, Nomor 6).
- Covin, J. G., & Slevin, D. P. (1989). Strategic Management of Small Firms in Hostile and Benign Environments. *Management Journal*, 10, 75–87.

- Covin, J. G., & Wales, W. J. (2012). The Measurement of Entrepreneurial Orientation. *Entrepreneurship: Theory and Practice*, 36(4), 677–702.
- Dutot, V., & Bergeron, F. (2016). From strategic orientation to social media orientation: improving SMEs' performance on social media. *Journal of Small Business and Enterprise Development*, 2(3).
- Fan, M., Qalati, S. A., Khan, M. A. S., Shah, S. M. M., Ramzan, M., & Khan, R. S. (2021). Effects of entrepreneurial orientation on social media adoption and SME performance: The moderating role of innovation capabilities. *PLoS ONE*, 16(4 April 2021), 16(4 april 2021).
- Fang, G. G., Qalati, S. A., Ostic, D., Shah, S. M. M., & Mirani, M. A. (2022). Effects of entrepreneurial orientation, social media, and innovation capabilities on SME performance in emerging countries: a mediated–moderated model. *Technology Analysis and Strategic Management*, 34(11), 1326–1338.
- Fauzan, M. (2025). Jumlah UMKM Indonesia Capai 66 Juta pada 2023. *GoodStats*.
- Foltean, F. S., Trif, S. M., & Tuleu, D. L. (2019). Customer relationship management capabilities and social media technology use: Consequences on firm performance. *Journal of Business Research*, 104, 563–575.
- Freixanet, J., Braojos, J., Rialp-Criado, A., & Rialp-Criado, J. (2021). Does international entrepreneurial orientation foster innovation performance? The mediating role of social media and open innovation. *International Journal of Entrepreneurship and Innovation*, 22(1), 33–44.
- Fu, C. J., Silalahi, A. D. K., Yang, L. W., & Eunike, I. J. (2024). *Advancing SME performance: a novel application of the technological-organizational-environment framework in social media marketing adoption*.
- Hair, J., & Alamer, A. (2022). Partial Least Squares Structural Equation Modeling (PLS-SEM) in second language and education research: Guidelines using an applied example. *Research Methods in Applied Linguistics*, 1(3).
- INDEF. (2024). *PERAN PLATFORM DIGITAL TERHADAP PENGEMBANGAN UMKM DI INDONESIA*.
- Irawan, A. J. (2024). International Journal of Current Science Research and Review Understanding Factors That Affect Social Media Advertisement Adoption for Small Medium Enterprises in Indonesia the Case of Facebook Advertisement. *International Journal of Current Science Research and Review*, 7(2).
- Jalil, M. F., Ali, A., & Kamarulzaman, R. (2022). Does innovation capability improve SME performance in Malaysia? The mediating effect of technology adoption. *International Journal of Entrepreneurship and Innovation*, 23(4), 253–267.
- Kemenkop UKM. (2022). *Program Adaptasi dan Transformasi Ekonomi Nasional (PATEN) Edisi Ketiga*.
- Komdigi. (2025). *Nezar Patria: UMKM Go Digital Tingkatkan Omzet dan Ekspor ke Pasar Global*. Siaran Pers Komdigi.
- Kompasiana. (2023). *Tantangan UMKM di Era Digital*. (Nomor October 29).
- Limanseto, H. (2025). *Pemerintah Dorong UMKM Naik Kelas, Tingkatkan Kontribusi terhadap Ekspor Indonesia*. Kementerian Koordinator Bidang Perekonomian Republik Indonesia. January 30.
- Lumpkin, G. T., & Dess, G. G. (1996). *Clarifying The Entrepreneurial Orientation Construct and Linking it to Performance*. *Academy of Management Review*, (Vol. 21, Nomor 1).
- Mongkol, K. (2022). The Impact of Dynamic Capabilities on the Performance of Thai Small and Medium Enterprises. International. *Journal of Asian Business and Information Management*, 13(1).
- Odoom, R., Anning-Dorson, T., & Acheampong, G. (2017). Antecedents of social media usage and performance benefits in small- and medium-sized enterprises (SMEs). *Journal of Enterprise Information Management*, 30(3), 383–399. <https://doi.org/10.1108/JEIM-04-2016-0088>
- Otache, I., & Usang, O. U. E. (2022). Innovation capability and SME performance in times of economic crisis: does government support moderate? *African Journal of Economic and Management Studies*, 13(1), 76–88.
- Parveen, F., Jaafar, N. I., & Ainin, S. (2016). Social media's impact on organizational performance and entrepreneurial orientation in organizations. *Management Decision*, 54(9), 2208–2234.
- Qalati, S. A., Ostic, D., Shuibin, G., & Mingyue, F. (2022). A mediated–moderated model for social media adoption

- and small and medium-sized enterprise performance in emerging countries. *Managerial and Decision Economics*, 43(3), 846–861.
- Salimon, M. G., Bamgbade, J. A., Nathaniel, A. O., & Adekunle, T. A. (2017). Integrating technology acceptance model and organizational innovativeness in the adoption of mobile commerce. *Management Science Letters*, 7(10), 497–512.
- Septiani, L. (2024). *56% UMKM Jualan Lewat Instagram, Facebook, TikTok*.
- Setiawan, H., & Putri, M. A. (2023). Pengaruh Perputaran Kas, Perputaran Piutang Dan Perputaran Persediaan Terhadap Profitabilitas. *Jurnal Ilmiah Akuntansi Kesatuan*, 11(1).
- Simanjuntak, M. H., & Wijaya, A. (2023). BI: Jumlah merchant QRIS capai 29,6 juta. *ANTARA.*, November 2024.
- Sulaiman, A., Farzana, P., Sedigheh, M., Ismawati, J. N., & Liyana, M. S. N. (2015). Factors Influencing the Use of Social Media by SMEs and Its Performance Outcomes. *Industrial Management & Data Systems*, 115, 570–588.
- Teece, D. J. (2018). Business models and dynamic capabilities. *Long Range Planning*, 51(1), 40–49.
- Tornatzky, L. G., & Fleischer, M. (1990). *Processes of Technological Innovation*. Lexington Books.
- Van der Stede, W. A. (2014). A manipulationist view of causality in cross-sectional survey research. *Accounting, Organizations and Society*, 39(7), 567–574.
- Wales, W. J. (2016). Entrepreneurial orientation: A review and synthesis of promising research directions. *International Small Business Journal: Researching Entrepreneurship*, 34(1), 3–15.