



Adaptive Entrepreneurial Leadership and Innovative Behavior in Madura Grocery Store MSMEs

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Aims: This study aims to test five hypotheses focusing on the role of Adaptive Entrepreneurial Leadership in encouraging Employee Innovative Behavior. Specifically, it examines the direct effects on Employee Innovative Behavior and Psychological Empowerment, the effect of Psychological Empowerment on innovative behavior, its mediating role, and the moderating role of Socio-Cultural Adaptability.

Study Design: This study uses a quantitative approach with an explanatory research method to test causal relationships among variables.

Place and Duration of Study: The research was conducted on Madurese ethnic grocery store MSMEs in Malang City.

Methodology: Data were collected from 101 MSME owners and analyzed using structural model testing to assess direct, mediating, and moderating effects.

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Results: Results indicate that adaptive entrepreneurial leadership significantly influences employee innovative behavior and psychological empowerment. Psychological empowerment affects innovative behavior and partially mediates this relationship. Socio-cultural adaptability moderates the link, strengthening the impact of adaptive entrepreneurial leadership on innovative behavior MSMEs.

Conclusion: Employee innovative behavior in MSMEs is shaped by the synergy between adaptive leadership, psychological empowerment, and socio-cultural adaptability. Future research is recommended to employ longitudinal or mixed-method designs and to examine broader MSME contexts to enhance the generalizability of these findings.

Keywords: Adaptive entrepreneurial leadership; psychological empowerment; socio-cultural adaptability; employee innovative behavior; MSMEs; ethnic-based enterprises; Madurese community; leadership and innovation.

1. INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) play a strategic role in the Indonesian economy, contributing approximately 61% to national GDP and employing over 97% of the workforce, making them a crucial pillar in job creation, poverty reduction, and strengthening the local economy (Anwar & Noviaristanti, 2025; Saputera et al., 2021). Within this ecosystem, Madurese grocery stores occupy a unique position as part of the traditional retail distribution network, providing essential necessities, creating employment opportunities, and supporting local suppliers. The resilience of MSMEs in the face of crises, including the COVID-19 pandemic, is influenced by flexible resource management, close ties to the community, and utilization of government support such as Rumah BUMN (State-Owned Enterprises House) (Anwar & Noviaristanti, 2025; Ilham et al., 2025; Sjofoyan & Prijadi, 2018). Madurese grocery stores exhibit a distinctive work culture that integrates economic and non-economic goals, such as personal satisfaction and social welfare, through strong community ties, customer loyalty, and adaptive decision-making (Sjofoyan & Prijadi, 2018).

Retail competition in Malang City is increasingly complex with the expansion of franchise minimarkets offering competitive prices, a wide product variety, and a convenient shopping experience, putting pressure on the sustainability of small retailers (Kurniawan & Ma'Ruf, 2018). Local government support for the growth of modern retail widens the competitive gap for MSMEs. At the same time, changing consumer preferences demand visual merchandising strategies such as planograms (Elquthb & Mansur, 2025) and seasonal variation management (Ayu et al., 2018). Digital transformation is also changing shopping

patterns, yet many MSMEs have not yet optimally utilized e-commerce (Hoo & Kusumawati, 2024; Syahputra et al., 2025). However, technologies such as GIS and mobile applications can support strategic location selection and strengthen market presence (Wagistina et al., 2022). Resource constraints drive the need for efficiency and innovation (Suyono et al., 2016), including developing innovative employee behavior through agile organizational structures and the use of digital tools (Peuser, 2023; Suryani et al., 2020). Strategic orientation, innovation capabilities, and supply chain management are critical factors for small retail competitiveness (Puspita et al., 2020).

The cultural characteristics of Madurese grocery stores align with the principles of adaptive entrepreneurial leadership (AEL), which is built through kinship-based leadership, collective work, and rapid decision-making. Strong emotional bonds between owners and employees strengthen work engagement and reduce turnover (Abidin et al., 2023; Pariyanti et al., 2025). The collective values of Madurese encourage collaboration and collaborative problem-solving, aligning with the adaptive leadership framework (Abidin et al., 2023; Lei, 2025). Rapid decision-making enables agile market responses, in line with the concept of strategic agility (Ben-Asher et al., 2018; Gasaway, 2024; Jufri & Hadiwibowo, 2025). The AEL perspective is relevant because it emphasizes creativity, opportunity seeking, and emotional intelligence, which are reflected in the practices of Madurese grocery stores (Oluwafemi, 2025; Vignochi et al., 2019).

Employee Innovative Behavior (EIB) is a crucial element for the sustainability of MSMEs, especially since innovation in grocery stores

often occurs improvisationally and informally. Ethical, authentic, and autonomy-giving leadership styles enhance psychological well-being and encourage innovative behavior (Brunetto et al., 2024; Islam et al., 2024; Wen et al., 2021; Kusmaningtyas & Halik, 2024). Leader well-being also influences the innovation climate (Bagiyam et al., 2025). A supportive work environment and quality leader-member relationships strengthen innovative commitment (Islam et al., 2024; Miller & Miller, 2020).

Psychological empowerment plays a mediating role in the leadership-innovation relationship through the dimensions of meaning, competence, autonomy, and work impact (Park & Kim, 2022; Al Samman et al., 2024; Yadav et al., 2023; Çetinkaya & Yeşilada, 2022; Surya et al., 2024).

The Madurese cultural context requires high socio-cultural adaptability to strengthen leadership effectiveness and innovation. Cultural adaptation influences the alignment of leadership styles and employees' courage to express ideas (Abdul Manaf & Abdul Latif, 2014; Kebe et al., 2025; Lee et al., 2007; Imran et al., 2025).

Research gaps are evident in the limited number of studies on EIB in ethnic MSMEs, particularly Madurese grocery stores, and the lack of research examining AEL as a predictor of innovation in micro-enterprises (Abidin et al., 2023; Nguyen et al., 2023; Tian & Zhang, 2020). There is no integrative model that simultaneously examines AEL, psychological empowerment, and socio-cultural adaptability (Alshiha et al., 2025; Liu et al., 2019; Marampa et al., 2025).

The urgency of this research is strong because the integration of these three factors is believed to increase the innovation capacity of ethnic MSMEs, strengthen business resilience, and improve social welfare (Malibari et al., 2025; Nyamboga, 2025; Kim, 2024; Zia et al., 2024; Rizkita et al., 2025).

2. LITERATURE REVIEW

Various studies have shown that Adaptive Entrepreneurial Leadership (AEL) plays a crucial role in encouraging Employee Innovative Behavior (EIB). Adaptive and entrepreneurially oriented leaders are able to build creative self-efficacy through role modeling, encouraging opportunity exploration, and creating a sense of psychological safety that enables employees to

take risks and experiment (Mehmood et al., 2020, 2021; Newman et al., 2018; Nugroho, 2024). In addition to directly influencing innovation, AEL also strengthens psychological empowerment by increasing a sense of meaning, competence, and control at work, in line with findings on transformational leadership styles that show similar effects (Mehmood et al., 2019, 2021; Giang & Dung, 2021; Lim et al., 2024; Sağnak et al., 2015).

Meanwhile, psychological empowerment itself has been shown to increase EIB because empowered employees are more prepared to generate and implement new ideas. Even the dimensions of competence and self-determination have a strong contribution to creativity (Koo et al., 2018; Al Daboub et al., 2024; Sheeba & Christopher, 2024). This mechanism also mediates the relationship between entrepreneurial leadership and innovation, including in the context of transformational and empowering leadership (Mehmood et al., 2021; Miao et al., 2018; Supriyanto et al., 2023; Yadav et al., 2023).

Finally, socio-cultural adaptability has the potential to strengthen the influence of AEL on EIB because cultural adaptability makes employees more flexible, responsive, and ready to maximize the innovative demands of leaders (Malibari et al., 2025; Malibari & Bajaba, 2022; Newman et al., 2018).

H1: Adaptive Entrepreneurial Leadership has a positive effect on Employee Innovative Behavior.

H2: Adaptive Entrepreneurial Leadership has a positive effect on Psychological Empowerment.

H3: Psychological Empowerment has a positive effect on Employee Innovative Behavior.

H4: Psychological Empowerment mediates the relationship between Adaptive Entrepreneurial Leadership and Employee Innovative Behavior.

H5: Socio-Cultural Adaptability moderates the effect of Adaptive Entrepreneurial Leadership on Employee Innovative Behavior.

3. METHODS

This study uses a quantitative approach with an explanatory research method that aims to test the causal relationship between Adaptive Entrepreneurial Leadership, Psychological Empowerment, Socio-Cultural Adaptability, and Employee Innovative Behavior in Madurese ethnic grocery store MSMEs in Malang City.

3.1 Population and Sample

This study involved employees of a Madura grocery store in Malang City. Purposive sampling was used, considering employees who had worked for at least six months.

3.2 Research Instruments

This research instrument was developed based on the theoretical constructs of each variable so that each item represents psychological and behavioral aspects relevant to the MSME context. Adaptive Entrepreneurial Leadership is measured through four dimensions: entrepreneurial leadership behaviors (Pihie et al., 2014), adaptive leadership competencies (Shams et al., 2025), emotional and cognitive flexibility (Oluwafemi, 2025; Vignochi et al., 2019), and entrepreneurial orientation and values (Saptono & Najah, 2018). Psychological Empowerment refers to meaning, competence, self-determination, and impact (Bhattacharya & Narad, 2024; Kariri et al., 2023). Socio-Cultural Adaptability includes social functioning (Valenti et al., 2022), cultural competence (Wilson et al., 2013, 2017), language proficiency (Valenti & Faraci, 2025), and ecological adaptability (Wilson et al., 2017). Employee Innovative Behavior is represented by idea generation, promotion, implementation, and

opportunity exploration (Abouziad & Omar, 2023).

4. RESULTS AND DISCUSSION

4.1 Convergent Validity

Convergent validity is tested to ensure that each indicator truly measures its latent construct. Testing is carried out through Outer Loading and Average Variance Extracted (AVE) values. Based on the guidelines (Hair et al., 2017), an indicator is declared valid if it has an outer loading value ≥ 0.70 , but values between 0.60–0.70 can still be maintained as long as the AVE value and construct reliability meet the criteria. In addition, the overall construct convergent validity is considered met if the AVE value ≥ 0.50 , indicating that the construct explains at least 50% of the variance of its indicator.

Based on Table 1, all constructs meet the convergent validity criteria. The AVE values for Adaptive Entrepreneurial Leadership (0.616), Psychological Empowerment (0.636), Socio-Cultural Adaptability (0.560), and Employee Innovative Behavior (0.655) exceed the recommended threshold of 0.50 (Hair et al., 2017), indicating adequate construct-level validity. Most indicators exhibit outer loadings above 0.70, while a few fall within the acceptable range of 0.60–0.70 and were retained due to

Table 1. Convergent validity

Variable	Items	Loading Factor	AVE
Adaptive Entrepreneurial Leadership	X1.1	0,705	0,616
	X1.3	0,855	
	X1.4	0,816	
	X1.5	0,735	
	X1.6	0,803	
Psychological Empowerment	Z1	0,756	0,636
	Z2	0,836	
	Z3	0,857	
	Z4	0,846	
	Z5	0,727	
	Z6	0,751	
Socio-Cultural Adaptability	X2.2	0,705	0,560
	X2.3	0,756	
	X2.4	0,790	
	X2.5	0,718	
	X2.6	0,769	
Employee Innovative Behavior	Y1	0,782	0,655
	Y2	0,775	
	Y3	0,758	
	Y4	0,886	
	Y5	0,839	

sufficient AVE values. Employee Innovative Behavior demonstrates the strongest convergent validity with consistently high loadings and the highest AVE. Overall, all constructs are confirmed as valid for further analysis.

4.2 Reliability

Reliability is used to assess the internal consistency of research instruments in measuring the same construct. The criteria used are Cronbach's Alpha and Composite Reliability (CR). A construct is considered reliable if both values are ≥ 0.70 (Hair et al., 2019). The Composite Reliability value is preferred because it is considered more accurate for PLS-SEM analysis than Cronbach's Alpha because it takes into account differences in indicator weights.

Based on Table 2, all constructs demonstrate strong internal consistency reliability. Cronbach's Alpha values range from 0.803 to 0.884, exceeding the minimum threshold of 0.70, indicating satisfactory internal consistency. The rho_A values (0.805–0.889) further confirm the stability of the measurement model. In addition, Composite Reliability values for all constructs range from 0.864 to 0.912, well above the recommended cutoff of 0.70. These results confirm that the measurement instruments for all constructs are reliable and suitable for subsequent structural model analysis.

4.3 R-Square dan Q-Square

The quality of the structural model is evaluated through the Coefficient of Determination (R²) and Predictive Relevance (Q²) values. The R² value indicates the proportion of endogenous variable variance explained by exogenous variables, where a value of 0.75 is categorized as strong, 0.50 as moderate, and 0.25 as weak (Hair et al., 2017). Meanwhile, the Q² value must be greater than zero ($Q^2 > 0$) to confirm that the model has predictive relevance beyond in-sample data.

Based on Table 3, the R-square value for Employee Innovative Behavior is 0.731 (Adjusted R² = 0.719), indicating that 73.1% of the variance in innovative behavior is explained by its predictors, reflecting strong explanatory power. Meanwhile, Psychological Empowerment shows an R-square of 0.395 (Adjusted R² = 0.389), suggesting a moderate level of explained variance. The small differences between R-square and adjusted R-square across both constructs indicate good model stability and the absence of overfitting. Overall, the structural model demonstrates adequate to strong predictive accuracy.

Based on Table 4, the Q-square value for Employee Innovative Behavior is 0.454, indicating strong predictive relevance and confirming the high explanatory power shown by its R-square value. Psychological Empowerment records a Q-square of 0.231, reflecting moderate

Table 2. Reliability

Variable	Cronbach's Alpha	rho_A	Composite Reliability
Adaptive Entrepreneurial Leadership	0,842	0,845	0,889
Psychological Empowerment	0,884	0,889	0,912
Socio-Cultural Adaptability	0,803	0,805	0,864
Employee Innovative Behavior	0,867	0,872	0,905

Table 3. R-square

Variable	R Square	R Square Adjusted
Employee Innovative Behavior	0,731	0,719
Psychological Empowerment	0,395	0,389

Table 4. Q-square

Variable	SSO	SSE	Q ² (=1-SSE/SSO)
Adaptive Entrepreneurial Leadership	490,000	490,000	
Employee Innovative Behavior	490,000	267,737	0,454
Psychological Empowerment	588,000	452,459	0,231
Socio-Cultural Adaptability	490,000	490,000	

predictive relevance and supporting its moderate R-square result. Adaptive Entrepreneurial Leadership and Socio-Cultural Adaptability both show Q-square values of 0.000 because their SSO and SSE values are identical, indicating that they are not predicted by other constructs in the model. Overall, the model demonstrates strong predictive accuracy for the main endogenous variable and adequate prediction for the mediating variable.

4.4 Hypothesis Testing

Hypothesis testing was conducted using the Bootstrapping procedure (Hair et al., 2019) with sufficient subsamples to obtain T-Statistics and P-Values. A direct relationship is considered significant at the $\alpha = 5\%$ level if the T-Statistics value is ≥ 1.96 or P-Value ≤ 0.05 . For the Mediation test, significance is seen from the Specific Indirect Effects path, and the Moderation test is seen from the significance of the coefficient on the Interaction Term. If the P-Value ≤ 0.05 , the hypothesis is accepted, which means the mediating or moderating variable has a significant role in the model.

The test results show that Adaptive Entrepreneurial Leadership has a significant effect on Employee Innovative Behavior ($O = 0.413$; $t = 5.289$; $p = 0.000$) and a significant effect on Psychological Empowerment ($O = 0.628$; $t = 9.478$; $p = 0.000$). Furthermore, Psychological Empowerment also has a significant positive effect on Employee Innovative Behavior ($O = 0.372$; $t = 3.580$; $p = 0.000$). These findings indicate that adaptive

entrepreneurial leadership directly enhances employee innovative behavior and simultaneously strengthens employees' psychological empowerment, which in turn promotes innovative behavior.

Based on Table 6, Psychological Empowerment significantly mediates the relationship between Adaptive Entrepreneurial Leadership and Employee Innovative Behavior ($O = 0.234$; $t = 3.390$; $p = 0.001$), indicating that adaptive leadership enhances innovative behavior through increased psychological empowerment. In addition, the moderating effect on Employee Innovative Behavior is also significant ($O = 0.250$; $t = 3.012$; $p = 0.003$), demonstrating that this contextual factor strengthens the influence on innovative behavior. These results confirm the presence of an indirect effect through empowerment and a reinforcing conditional effect within the structural model.

Adaptive Entrepreneurial Leadership has been widely recognized as a key driver of Employee Innovative Behavior through both direct and psychological mechanisms. Based on Social Exchange Theory, learning oriented and goal focused leadership encourages employees to reciprocate with innovative contributions (Obuobisa-Darko, 2025). Prior studies also demonstrate that entrepreneurial leadership enhances creative self-efficacy, which in turn strengthens innovative behavior (Mehmood et al., 2020; Bagheri et al., 2020; Newman et al., 2018). These findings support the general argument that leadership plays a central role in stimulating employee innovation.

Table 5. Direct effect

Hipotesis	Original Sample (O)	t-Statistic	P-Value
Adaptive Entrepreneurial Leadership -> Employee Innovative Behavior	0,413	5,289	0,000
Adaptive Entrepreneurial Leadership -> Psychological Empowerment	0,628	9,478	0,000
Psychological Empowerment -> Employee Innovative Behavior	0,372	3,580	0,000

Table 6. Mediating-moderating effect

Hipotesis	Original Sample (O)	t-Statistic	P-Value
Adaptive Entrepreneurial Leadership -> Psychological Empowerment -> Employee Innovative Behavior	0,234	3,390	0,001
Moderating Effect 1 -> Employee Innovative Behavior	0,250	3,012	0,003

However, the findings of this study indicate that although Adaptive Entrepreneurial Leadership significantly strengthens Psychological Empowerment, empowerment does not automatically translate into innovative behavior. While previous studies confirm that Psychological Empowerment mediates the relationship between leadership and innovative behavior (Lim et al., 2024; Miao et al., 2017), the present results suggest that this mediating mechanism operates in a more conditional manner. Empowerment becomes effective only when it is activated through appropriate adaptive leadership processes. This indicates that empowerment functions not as an independent driver of innovation, but as a leadership-dependent psychological mechanism.

This conditional role of empowerment is particularly relevant in ethnic based MSME settings where hierarchical norms and social harmony remain dominant. Although employees may experience meaning, competence, self-determination, and impact at the psychological level, they may still limit the expression of innovative behavior when innovation is perceived as potentially disrupting existing social structures. This finding reinforces prior arguments that empowerment serves as a key psychological mechanism linking leadership and innovative behavior, but its effectiveness is highly context sensitive (Bin Saeed et al., 2019; Dust et al., 2014; Cheng et al., 2022).

Furthermore, the significant moderating role of Socio Cultural Adaptability confirms that the effectiveness of adaptive leadership in stimulating innovative behavior depends on employees' ability to adjust to social values and environmental dynamics. Higher adaptability strengthens the leadership innovation relationship, supporting the view that leadership outcomes are shaped by the interaction between leadership behavior and contextual readiness.

Overall, these findings confirm that employee innovation in MSMEs does not emerge from leadership alone, but from the interaction between adaptive leadership, conditional psychological empowerment, and socio cultural adaptability. This integrative pattern explains why empowerment does not always produce direct innovative outcomes, yet remains strategically important within the broader leadership innovation mechanism.

5. CONCLUSION

This study demonstrates that adaptive-entrepreneurial leadership plays a significant role in shaping employee innovative behavior, both directly and through its indirect effect via psychological empowerment. Although psychological empowerment is strengthened by adaptive entrepreneurial leadership, the findings indicate that empowerment also plays a direct role in encouraging employee innovative behavior. Employees who experience higher levels of meaning, competence, autonomy, and impact are more likely to translate leadership support into innovative actions. Thus, psychological empowerment functions not only as a mediating mechanism but also as an important psychological driver of innovation in MSME contexts.

Furthermore, sociocultural adaptability provides a significant reinforcing effect, indicating that employees who are able to adapt to diverse values and dynamic work environments are more capable of expressing innovative behavior under adaptive leadership. Overall, these findings confirm that employee innovation in MSMEs is not solely driven by leadership or psychological conditions alone, but emerges from the complementary interaction between adaptive leadership, psychological empowerment, and sociocultural adaptability.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that generative AI technologies such as Large Language Models, etc. have been used during the writing or editing of manuscripts. This explanation will include the name, version, model, and source of the generative AI technology and as well as all input prompts provided to the generative AI technology

Details of the AI usage are given below:

1. ChatGPT (OpenAI, model GPT-5.1) was used to improve academic language quality, and clarity of expression
2. The AI tool was used for paraphrasing text and refining the structure of the discussion and conclusion sections.
3. The AI tool was not used for data collection, data analysis, hypothesis testing, statistical processing, or generation of research results. All empirical analyses and interpretations remain the full responsibility of the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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