

AI-Powered Market Insight and the Transformation of Local Entrepreneurship: Evidence from SMEs in Purwakarta, Indonesian

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Abstract.

This study examines how AI-powered market insight contributes to the transformation of local entrepreneurship, focusing on SMEs in Purwakarta, Indonesia. Despite increasing digital adoption, many SMEs remain unable to utilize data for strategic decision-making. A qualitative case study approach was employed, with data collected through in-depth interviews, observation, and document analysis, and analyzed using thematic analysis supported by systematic coding procedures. The findings reveal that while SMEs are digitally active, their use of technology remains largely operational rather than strategic. Entrepreneurs rely heavily on experience-based decision-making, with limited capability to interpret and utilize market data. As a result, business strategies tend to be reactive, leading to inconsistent market visibility and limited competitiveness. The study demonstrates that the impact of AI on entrepreneurial transformation is indirect, mediated through market insight capability and decision-making processes. This study contributes to the literature by highlighting that the transformation of local entrepreneurship requires not only digital adoption but also the development of data-driven capabilities. The findings provide implications for policymakers and practitioners in designing targeted interventions to support SMEs in leveraging AI for sustainable growth..

Keywords: Artificial Intelligence (AI); Market Insight; SMEs; Data-Driven Decision Making; Digital Transformation; Entrepreneurial Transformation; Business Strategy and Indonesia.

1. INTRODUCTION

Local entrepreneurship has been widely recognized as a critical driver of inclusive economic growth, particularly in developing regions where small and medium enterprises (SMEs) dominate the economic structure. In many local economies, entrepreneurship not only contributes to job creation and income generation but also strengthens community resilience and endogenous development. However, despite its strategic importance, local entrepreneurship often faces structural limitations, including restricted market access, limited managerial capacity, and inadequate utilization of digital technologies. These constraints hinder the ability of local businesses to compete in increasingly dynamic and data-driven markets. [1]

In the context of digital transformation, the integration of advanced technologies such as Artificial Intelligence (AI) has significantly reshaped how businesses analyze markets, predict consumer behavior, and formulate competitive strategies. AI-powered market insight enables firms to process large-scale data, identify hidden patterns, and generate predictive analytics that support evidence-based decision-making. This technological shift has created a new paradigm in entrepreneurship, where competitiveness is no longer solely determined by product quality or pricing, but also by the ability to leverage data-driven insights. However, this transformation remains uneven, particularly among local entrepreneurs and SMEs in developing regions, where technological adoption is still relatively low. [2]

Empirical evidence indicates that the limited adoption of digital tools among local entrepreneurs is often associated with low levels of entrepreneurial literacy, lack of technological infrastructure, and insufficient institutional support. For instance, studies on community-based entrepreneurship highlight that many small business actors still rely on traditional and experience-based decision-making processes, resulting in suboptimal business performance and limited scalability. Furthermore, institutional and structural constraints,

such as weak governance capacity and limited integration of local economic development (LED) strategies, further exacerbate the challenges faced by rural and local entrepreneurs . These conditions indicate a critical gap between the potential of local entrepreneurship and its actual contribution to regional economic development. [3]

In Indonesia, and particularly in regions such as Purwakarta Regency, local entrepreneurship is characterized by strong resource-based potential, including agro-industry, tourism, and creative economy sectors. Nevertheless, many local entrepreneurs still struggle to expand their market reach and enhance their competitiveness due to limited access to market intelligence and digital capabilities. While digital marketing adoption has increased in recent years, it remains largely operational rather than strategic, with minimal use of advanced analytics or AI-based tools. Consequently, business decisions are often reactive and short-term oriented, rather than proactive and data-driven. [4]

Despite the growing discourse on digital entrepreneurship, there is still a lack of research that specifically examines the integration of AI-powered market insight within local entrepreneurial ecosystems, particularly in the context of developing regions. Existing studies tend to focus either on digital marketing adoption or on general entrepreneurial development, without addressing how AI-driven analytics can transform decision-making processes at the local level. This gap is significant, as the effective use of AI has the potential to bridge information asymmetry, enhance market responsiveness, and improve business sustainability. [5]

Therefore, this study aims to explore how local entrepreneurship in Purwakarta can be strengthened through the integration of AI-powered market insight as a strategic tool for enhancing market visibility and competitiveness. By focusing on the intersection between entrepreneurship, digital transformation, and artificial intelligence, this research seeks to contribute to the development of a more adaptive and data-driven entrepreneurial ecosystem. The findings are expected to provide both theoretical contributions to the literature on digital entrepreneurship and practical implications for policymakers and local business actors in designing technology-driven development strategies. [6]

II. LITERATURE REVIEW

Local Entrepreneurship and Regional Economic Development

Local entrepreneurship has been widely acknowledged as a fundamental pillar of regional economic development, particularly in emerging and developing economies. It contributes not only to employment generation but also to income distribution, poverty alleviation, and the creation of resilient local economic systems. In rural and semi-urban contexts, entrepreneurship often emerges as both an economic necessity and a strategic response to limited formal employment opportunities. This aligns with the perspective that grassroots entrepreneurship plays a vital role in sustaining local livelihoods and fostering endogenous growth. [7]

However, the effectiveness of local entrepreneurship is highly dependent on the surrounding ecosystem, including institutional support, access to markets, and availability of resources. Empirical studies highlight that local economic development (LED) strategies often prioritize attracting external investments while neglecting the strengthening of local entrepreneurial capacity. As a result, the potential of local entrepreneurs to drive inclusive growth remains underutilized . This imbalance creates a structural gap where local businesses struggle to scale despite having strong community embeddedness and resource potential. [8]

Moreover, rural and local entrepreneurship is shaped by spatial and socio-economic conditions, such as geographic isolation, limited infrastructure, and restricted access to information. These constraints significantly influence business performance and market integration. Consequently, strengthening local entrepreneurship requires not only economic intervention but also institutional and technological support systems that enhance competitiveness and sustainability. [9]

Digital Transformation and SME Competitiveness

The rapid advancement of digital technologies has transformed the landscape of entrepreneurship, shifting traditional business models toward more dynamic and technology-driven approaches. Digital transformation enables SMEs to improve operational efficiency, expand market reach, and enhance customer engagement through various digital platforms such as social media, e-commerce, and digital payment systems. As a result, digital adoption has become a key determinant of competitiveness in modern business

environments. [10]

Despite these opportunities, the adoption of digital technologies among SMEs remains uneven, particularly in developing regions. Many small businesses still operate with limited digital capabilities and rely heavily on conventional marketing strategies. This digital divide is often driven by factors such as low digital literacy, lack of infrastructure, and limited access to technological resources. Studies indicate that SMEs with higher levels of digital adoption tend to exhibit better performance outcomes, including increased sales, improved customer retention, and stronger brand visibility. [11]

However, most digital transformation initiatives in SMEs are still focused on basic digitalization, such as social media marketing or online sales channels, rather than strategic data utilization. This suggests that while SMEs may be digitally present, they are not necessarily digitally intelligent. The lack of advanced data analytics capabilities limits their ability to make informed and predictive business decisions, thereby constraining their long-term competitiveness. [12]

Artificial Intelligence and Market Insight in Entrepreneurship

Artificial Intelligence (AI) has emerged as a transformative technology in the field of business and entrepreneurship, particularly in enhancing market intelligence and decision-making processes. AI-powered market insight refers to the use of machine learning algorithms, data analytics, and predictive modeling to analyze consumer behavior, identify market trends, and generate actionable business insights. This technology allows businesses to move beyond intuition-based decision-making toward data-driven strategies that are more accurate and adaptive. [13]

The integration of AI in business processes has been shown to significantly improve marketing effectiveness, customer targeting, and operational efficiency. AI enables entrepreneurs to process large volumes of structured and unstructured data, uncover hidden patterns, and predict future market dynamics. As a result, businesses that leverage AI technologies are better positioned to respond to market changes and maintain competitive advantage. [14]

Nevertheless, the adoption of AI among SMEs and local entrepreneurs remains limited. This is primarily due to high implementation costs, lack of technical expertise, and insufficient awareness of AI's potential benefits. Furthermore, in many local contexts, the absence of institutional support and digital infrastructure further restricts the integration of AI into business practices. These challenges highlight the need for context-specific strategies to facilitate AI adoption in local entrepreneurial ecosystems. [15]

Institutional and Structural Constraints in Local Entrepreneurship

Institutional capacity plays a crucial role in shaping the development and sustainability of local entrepreneurship. The ability of local governments and supporting institutions to design and implement effective economic development strategies significantly influences entrepreneurial outcomes. Institutional Capacity Theory emphasizes the importance of governance structures, resource allocation, and administrative capability in enabling economic development initiatives. [16]

In many developing regions, including contexts similar to Purwakarta, institutional weaknesses such as limited financial resources, lack of skilled personnel, and poor coordination among stakeholders hinder the effectiveness of local economic development programs. Studies reveal that these constraints reduce the ability of local governments to support entrepreneurship, particularly in providing access to markets, training, and technological resources. [17]

Additionally, there is often a misalignment between policy frameworks and the actual needs of local entrepreneurs. While policies may emphasize economic growth, they frequently overlook the importance of strengthening grassroots entrepreneurial ecosystems. This disconnect results in suboptimal outcomes, where local businesses remain marginalized despite the existence of development programs. Therefore, addressing institutional constraints is essential for fostering a supportive environment for entrepreneurship. [18]

Research Gap and Conceptual Direction

Based on the existing literature, it is evident that while there has been substantial research on local entrepreneurship, digital transformation, and AI in business, these domains are often studied in isolation. Limited research has explored the intersection between local entrepreneurship and AI-powered market insight, particularly in the context of developing regions such as Purwakarta. [19]

Most studies on SMEs focus on digital marketing adoption without examining how advanced technologies like AI can enhance strategic decision-making. Similarly, research on AI in business tends to concentrate on large enterprises, leaving a gap in understanding its applicability for small and local businesses. Furthermore, existing studies rarely consider the role of local context, including institutional and spatial factors, in shaping technology adoption. [20]

Therefore, this study aims to fill this gap by investigating how AI-powered market insight can be integrated into local entrepreneurial practices to enhance visibility, competitiveness, and sustainability. By combining perspectives from entrepreneurship, digital transformation, and artificial intelligence, this research proposes a more holistic approach to strengthening local economic development.

III. METHOD

Design

This study employs a qualitative **research approach** with an **exploratory case study design** to investigate how AI-powered market insight can strengthen local entrepreneurship in Purwakarta. A qualitative approach is appropriate because the research aims to understand complex social and behavioral phenomena, particularly how local entrepreneurs perceive, adopt, and utilize emerging technologies such as artificial intelligence in their business processes.

The case study design allows for an in-depth examination of real-life contexts where the boundaries between the phenomenon (AI adoption) and the environment (local entrepreneurial ecosystem) are not clearly defined. This approach is particularly relevant for capturing the contextual dynamics of local SMEs, including their interaction with digital tools, institutional support, and market conditions. By focusing on Purwakarta as a bounded system, the study seeks to generate context-rich insights that reflect the realities of local entrepreneurship.

Furthermore, this study adopts an interpretivist paradigm, which assumes that reality is socially constructed and that understanding human experiences requires direct engagement with participants. Therefore, the research emphasizes participants' perspectives, meanings, and interpretations regarding the use of AI and digital market insights in their entrepreneurial activities.

Research Site and Context

The study is conducted in **Purwakarta Regency, Indonesia**, a region characterized by a growing local economy with strong potential in sectors such as agro-industry, culinary business, tourism, and creative industries. Despite this potential, many local entrepreneurs still face challenges related to market access, digital literacy, and technological adoption.

Purwakarta provides a relevant context for this study because it represents a transitional local economy where traditional business practices coexist with emerging digital transformation. This setting allows the researcher to explore how AI-powered market insight can bridge the gap between conventional entrepreneurial practices and modern data-driven strategies.

The selection of this research site is also justified by its strategic position as a developing region with increasing exposure to digital platforms, yet still experiencing limitations in advanced technology adoption, particularly among micro and small enterprises.

IV. RESULTS AND DISCUSSION

Overview of Findings

The analysis of qualitative data from in-depth interviews, observations, and documentation reveals a consistent pattern: while SMEs in Purwakarta have embraced digital platforms, their transition toward **data-driven entrepreneurship** remains incomplete. The findings indicate a structural gap between **technology availability and entrepreneurial capability**, where AI-powered tools are present but not fully utilized for strategic purposes.

Five major themes emerged from the data:

- a. limited AI adoption,
- b. weak market insight capability,
- c. reactive entrepreneurial decision-making,
- d. uneven market visibility, and
- e. the critical role of enabling factors.

These themes collectively explain the mechanism through which local entrepreneurship can (or cannot) be strengthened.

Theme 1: Limited Adoption of AI-Powered Market Insight

The findings indicate that most SMEs are still at the early stage of AI adoption. Although participants are familiar with digital tools, their use of AI remains superficial.

Empirical Evidence

Aspect	Observation
AI usage	mostly for caption/content
analytics usage	rarely interpreted
decision support	not data-driven

“AI kami pakai hanya untuk bikin caption, belum untuk analisis pasar.” (UMKM-02)

“Kami belum tahu data dari marketplace bisa dipakai untuk strategi bisnis.” (UMKM-08)

Interpretation

AI is treated as a **supporting tool**, not as a **strategic system**. This confirms that the **technology layer has not yet translated into cognitive capability**, as proposed in the conceptual framework.

Theme 2: Weak Market Insight Capability

SMEs demonstrate limited ability to transform market information into actionable insight. Knowledge of customers exists but remains **informal and unstructured**.

Empirical Patterns

Dimension	Finding
Customer knowledge	based on repeat buyers
Trend analysis	observational, not systematic
Competitor analysis	Minimal
Feedback usage	rarely processed

“Kami tahu pelanggan dari yang sering beli, tapi tidak pernah dianalisis lebih lanjut.”

Interpretation

This reflects **low market insight capability**, meaning entrepreneurs are unable to fully interpret market signals. This aligns with the framework where **AI must first enhance insight capability before impacting decisions**.

Theme 3: Reactive Entrepreneurial Decision-Making

Entrepreneurial decisions are predominantly reactive and short-term oriented.

Observed Decision Behavior

Area	Pattern
Pricing	mengikuti pesaing
Product	berdasarkan permintaan sesaat
Promotion	tidak berbasis data
Channel	trial and error

“Kalau penjualan turun, baru kami ubah strategi.”

Interpretation

This confirms that **decision quality is low due to lack of data-driven insight**. Without analytical input, decisions rely on intuition, limiting strategic competitiveness.

Theme 4: Uneven Market Visibility

The study identifies significant variation in market visibility across SMEs.

Visibility Typology

Level	Characteristics
High	aktif di multi-platform
Medium	satu platform
Low	offline / WhatsApp

However, even highly visible SMEs do not optimize performance.

“Kami posting rutin, tapi tidak tahu mana yang efektif.”

Interpretation

Visibility alone is insufficient. Without data analytics, **digital presence does not translate into performance**, reinforcing the need for AI-driven optimization.

Theme 5: Role of Enabling Factors (Digital Literacy & Institutional Support)

The findings strongly emphasize the importance of enabling conditions.

Digital Literacy

Indicator	Observation
tool usage	basic only
analytics understanding	Low
AI awareness	Emerging

Institutional Support

Indicator	Observation
training programs	Generic
AI exposure	Minimal
ecosystem support	Fragmented

“Pelatihan ada, tapi belum sampai cara membaca data.”

Interpretation

These factors act as **moderators**, determining whether AI adoption becomes effective or not. This validates the conceptual framework.

Integrative Analysis (Framework Validation)

The findings strongly support the multi-layer framework:

Layer	Empirical Result
Technology	AI underutilized
Cognitive	insight capability weak
Strategic	decisions reactive
Outcome	visibility inconsistent
Moderator	critical influence

Process Mechanism Identified

AI (underused) → weak insight → reactive decision → inconsistent visibility → limited competitiveness

Theoretical Discussion

The findings extend the concept of dynamic capability, emphasizing that competitive advantage depends on the ability to:

- sense (AI tools)
- interpret (insight capability)
- act (decision quality)

However, SMEs in this study are mostly stuck at the sensing stage, without progressing to interpretation and action.



Fig1. Implementation of Community Service Program in Campaka Sari Village and Ceramic Craft Center

in Plered Purwakarta

V. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Purwakarta is not the lack of digital access, but the absence of **data-driven entrepreneurial capability**. While SMEs have adopted digital platforms, their use remains predominantly operational, with minimal integration of AI-powered market insight for strategic decision-making. The findings demonstrate that the impact of AI on entrepreneurial performance is **indirect and mediated** through cognitive and strategic processes. Specifically, AI-powered market insight contributes to improved outcomes only when it enhances **market insight capability** and **entrepreneurial decision quality**. In the absence of these capabilities, digital tools fail to generate meaningful business value, resulting in reactive decisions and inconsistent market visibility.

This study contributes to the literature by proposing a **multi-layer framework** that integrates technology, cognitive capability, and strategic action within the context of local entrepreneurship in emerging economies. It extends existing research by emphasizing that digital transformation must be understood as a **capability-building process**, rather than mere technology adoption.

Recommendations

a. *Managerial Recommendations*

Local entrepreneurs should shift from basic digital usage toward **data-informed decision-making practices**. This includes:

- utilizing AI tools not only for content creation but also for analyzing customer behavior and market trends;
 - developing routines for evaluating digital performance (e.g., engagement, reach, conversion);
 - integrating market insights into key decisions such as pricing, product development, and targeting.
- Without this shift, digital activities will remain superficial and fail to improve competitiveness.

b. *Policy Recommendations*

Local governments and supporting institutions should redesign SME development programs by prioritizing **analytical capability building** rather than generic digital training. Key actions include:

- providing structured training on data interpretation and AI-assisted market analysis;
- developing accessible AI-based tools tailored to SME needs;
- strengthening collaboration between government, academia, and digital platforms to create an integrated entrepreneurial ecosystem.

Such interventions are essential to ensure that technology adoption leads to measurable economic outcomes.

c. *Theoretical Recommendations*

Future research should further explore the role of **intermediate mechanisms** in digital

entrepreneurship, particularly how cognitive capabilities mediate the relationship between technology and performance. Additionally, comparative studies across regions or sectors would provide deeper insights into contextual variations in AI adoption and entrepreneurial transformation.

d. Theoretical Discussion

This study is limited to a qualitative case within a single regional context. Future studies are encouraged to:

- apply **mixed-method or quantitative approaches** to test the proposed framework;
- examine **longitudinal changes** in SME capability development;
- investigate sector-specific dynamics (e.g., tourism, agro-industry, creative economy).

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