Empowering Local MSMEs in Purwakarta through AI-Based Market Intelligence (a Case Study at Ceramic Product)

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Abstract.
This international community service program aims to empower local Micro, Small, and Medium Enterprises (MSMEs) in Purwakarta through the application of AI-based market intelligence, focusing on ceramic product MSMEs. Unlike conventional digital marketing assistance, this program emphasizes the development of market-sensing capability, customer insight, product positioning, and data-informed promotional planning. The activity was implemented through participatory training, guided practice, mentoring, and evaluation involving lecturers, students, an international academic partner, and local MSME actors. Participants were introduced to practical AI tools to identify customer segments, generate product narratives, analyze market opportunities, and develop promotional content for ceramic products. The results show that the program improved participants' awareness of market-oriented decision-making and enhanced their ability to translate product uniqueness into customer-centered marketing messages. Participants were also able to develop simple customer personas, AI-assisted product descriptions, competitor observation notes, and digital content ideas. The activity demonstrates that AI-based market intelligence can be used as an empowerment instrument for MSMEs when introduced through simple, contextual, and practice-based methods. Continuous mentoring is recommended to strengthen digital confidence, improve content consistency, and support sustainable market expansion for local ceramic MSMEs.

Keywords: *Artificial Intelligence, Ceramic Products, Market Intelligence, MSME Empowerment and Purwakarta.*

1. INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) are essential actors in local economic development because they support employment, household income, community entrepreneurship, and regional creative industries. In Purwakarta, ceramic product MSMEs represent an important part of the local creative economy because their products combine functional value, artistic design, craftsmanship, and local identity. However, many local MSMEs still face limitations in market access, customer analysis, digital promotion, product storytelling, and competitive positioning.

MSME empowerment should not only focus on increasing production capacity but also on strengthening business actors' ability to understand markets, identify customer needs, communicate product value, and make better marketing decisions. In the current business environment, MSMEs are required to become more market-oriented and adaptive to digital changes. Studies on MSME marketing capabilities show that market orientation, digital marketing capability, product innovation, and customer engagement are important factors in improving competitive advantage and marketing performance [1], [2], [3], [4], [5]. Strengthening managerial capability is essential to improve MSME performance and long-term sustainability [6].

Market intelligence is one approach that can help MSMEs become more responsive to market changes. Market intelligence refers to the process of collecting, interpreting, and using information about customers, competitors, trends, and business opportunities [7]. For ceramic MSMEs, market intelligence is

useful for identifying potential customer groups, understanding consumer preferences, comparing competitor products, developing product positioning, and designing promotional messages [8], [9].

Artificial Intelligence offers new opportunities for MSMEs to practice market intelligence in a simpler and more affordable way. AI tools can help business actors generate customer personas, identify product ideas, create product descriptions, write social media captions, analyze simple market trends, and formulate promotional strategies [10], [11]. Recent studies show that AI adoption among MSMEs can support productivity, decision-making, market understanding, and marketing effectiveness when business actors perceive the technology as useful, easy to use, and relevant to their business needs [12], [13], [14], [15].

From a broader perspective, AI capability has been recognized as a strategic resource that enhances organizational creativity, knowledge creation, and business performance [16], [17]. In marketing contexts, AI can support customer relationship management, predictive analytics, and data-driven personalization strategies [18], [19]. Moreover, AI enables firms to improve customer engagement, optimize communication strategies, and create more responsive marketing systems [20], [21].

The relevance of AI-based market intelligence becomes stronger for local creative products such as ceramics. Ceramic MSMEs often have unique product characteristics, but these advantages are not always communicated effectively to customers. Many MSMEs still promote products by showing photos and prices without developing clear narratives about product uniqueness, design identity, production process, or customer benefits. AI can support MSMEs in transforming product information into customer-oriented messages, such as storytelling for handmade products, promotional captions for social media, and product descriptions for digital catalogues [22], [23].

However, AI adoption among MSMEs is not without challenges. Several studies indicate that MSMEs often experience barriers such as limited digital skills, low technological confidence, lack of infrastructure, limited financial resources, lack of awareness, and uncertainty about the return on technology investment [24], [25], [26]. In addition, concerns related to data usage, privacy, and ethical considerations in digital markets also influence the adoption of AI-based systems [27].

Higher education institutions can play an important role in empowering MSMEs through community service programs. Universities can transfer knowledge, provide mentoring, introduce applicable technology, and help MSMEs translate digital tools into practical business strategies. In this context, empowerment means helping MSME actors develop confidence, skills, market awareness, and decision-making capability.

Based on these considerations, the international community service program entitled “Empowering Local MSMEs in Purwakarta through AI-Based Market Intelligence: A Case Study at Ceramic Product” was conducted to support local ceramic MSMEs in strengthening their market-oriented capabilities. This program focused on practical AI-based market intelligence activities, including customer segmentation, customer persona development, competitor observation, product positioning, product storytelling, and AI-assisted digital content creation. Through this activity, MSME actors were expected to improve their ability to understand markets, communicate product value, and develop more adaptive marketing strategies.

II. METHODS

This international community service program used an MSME empowerment-based approach through participatory training, guided practice, mentoring, and reflective evaluation. This method was selected because the program focused not only on introducing artificial intelligence tools, but also on strengthening the ability of local ceramic MSME actors to understand markets, recognize customer needs, and develop more market-oriented promotional strategies.

The program was implemented for local ceramic product MSMEs in Purwakarta. The activity involved lecturers from Politeknik Jatiluhur, Universitas Ekuitas Indonesia, an international academic partner from Thai Global Business Administration Technological College, students, and local MSME actors. The implementation process consisted of six stages: needs identification, empowerment program design, introduction to AI-based market intelligence, guided practice, mentoring, and evaluation.

Needs Identification

The first stage was conducted to identify the actual conditions and challenges faced by ceramic MSMEs in Purwakarta. The team observed participants’ business activities, product characteristics, marketing practices, digital platform usage, and obstacles in reaching wider markets. This stage showed that

MSME actors had strong product potential but still required assistance in understanding customer segments, communicating product uniqueness, creating digital content, and analyzing market opportunities.

Empowerment Program Design

Based on the needs identification, the team designed an empowerment program that emphasized practical skills and market-oriented thinking. The training materials were arranged to help MSME actors understand how market intelligence can support business decision-making. The program did not focus only on technical AI usage, but also on how AI can assist MSMEs in identifying customer needs, developing product narratives, observing competitors, and improving promotional communication.

Introduction to AI-Based Market Intelligence

The next stage introduced participants to the concept of AI-based market intelligence. The team explained how artificial intelligence can be used as a practical tool to support simple market analysis. Participants were introduced to several AI-supported activities, including customer persona development, product description writing, market trend identification, competitor observation, and promotional content generation.

The explanation was delivered using simple examples related to ceramic products so that participants could easily connect the materials with their daily business activities. This stage aimed to build participants' awareness that AI is not only a technological tool, but also a business assistant that can support customer understanding and marketing decision-making.

Guided Practice

After the introductory session, participants were involved in guided practice. In this stage, participants directly applied AI tools to develop simple market intelligence outputs for their ceramic products. The guided practice focused on five main activities:

1. Identifying potential customer segments for ceramic products.
2. Creating customer personas based on product use and customer needs.
3. Developing product positioning based on uniqueness, design, function, and local identity.
4. Generating product descriptions and promotional captions using AI tools.
5. Conducting simple competitor observation through digital platforms.

This stage was designed to ensure that participants did not only understand the concept of AI-based market intelligence but were also able to apply it in a practical way.

Mentoring and Feedback

The mentoring stage was conducted to assist participants in refining the outputs produced during guided practice. The community service team provided feedback on customer personas, product positioning statements, product descriptions, and promotional content ideas. Participants were encouraged to discuss their business challenges and receive suggestions based on their product characteristics and target markets.

This stage emphasized dialogue and collaborative learning. Lecturers provided conceptual and strategic guidance, students assisted with technical practice, and the international academic partner contributed comparative perspectives on MSME empowerment and market development.

Evaluation

Evaluation was conducted through observation, discussion, participant feedback, and review of the practical outputs produced during the program. The evaluation focused on participants' ability to understand market intelligence, use AI tools for marketing purposes, identify customer segments, develop product narratives, and formulate digital promotional ideas.

Table 1. Evaluation and Indicators

Evaluation Aspect	Indicator
Market awareness	Ability to identify customers, competitors, and market opportunities
AI understanding	Ability to recognize AI as a tool for market intelligence
Customer insight	Ability to create simple customer personas
Product positioning	Ability to explain product uniqueness and customer value
Digital content readiness	Ability to create AI-assisted promotional content
Empowerment outcome	Increased confidence in using AI for marketing activities

Program Outputs

The expected outputs of the program included improved market awareness, increased digital confidence, and practical marketing materials for ceramic MSMEs. The specific outputs consisted of customer persona drafts, product positioning statements, product descriptions, social media caption ideas, and simple competitor observation notes.

Overall, the method used in this program emphasized empowerment, practical learning, and market-oriented capacity building. This approach was considered appropriate because local MSMEs require not only technological knowledge, but also confidence and practical skills to transform market information into effective business strategies.

III. RESULT AND DISCUSSION

The international community service program entitled "Empowering Local MSMEs in Purwakarta through AI-Based Market Intelligence: A Case Study at Ceramic Product" was implemented to strengthen the market-oriented capability of local ceramic MSMEs. Unlike general digital training, this program emphasized empowerment through customer insight development, product value communication, competitor observation, and AI-assisted promotional planning. The results of the activity are presented in five main aspects: participant engagement, market awareness improvement, practical AI-based market intelligence outputs, empowerment outcomes, and program evaluation.

Participant Engagement and Program Implementation

The program was attended by local ceramic MSME actors in Purwakarta with different levels of business experience and digital readiness. Some participants had already used social media to promote their products, while others still relied on direct selling, customer recommendations, local exhibitions, and offline networks. This diversity created a useful learning environment because participants could share different experiences and challenges in marketing ceramic products.

The activity was conducted through interactive sessions consisting of material presentation, guided discussion, AI tool demonstration, group practice, and mentoring. The program team introduced AI-based market intelligence as a practical approach to help MSMEs understand customers, observe competitors, and develop more attractive product communication.

Fig 1. Opening session and introduction of the AI-based market intelligence program

During the implementation, participants showed active involvement, especially in discussions related to product uniqueness, target customers, and digital promotional challenges. Their participation indicated that local ceramic MSMEs had a strong willingness to improve their marketing capability when the program was delivered in a practical and contextual manner.

Improvement of Market Awareness

One of the main outcomes of the program was the improvement of participants' market awareness. Before the activity, many participants promoted ceramic products mainly by displaying product photos, prices, and basic specifications. After the training and mentoring, participants began to understand that ceramic products need to be communicated through customer benefits, product stories, design uniqueness, and market positioning.

Participants also learned that ceramic products can serve different customer groups. For example, the same ceramic product can be offered as household equipment, decorative items, souvenirs, business gifts, hotel and restaurant supplies, or creative lifestyle products. This broader market perspective helped participants develop more targeted marketing messages.

Table 1. Market Awareness Improvement Before and After the Program

Aspect	Before Program	After Program
Understanding of target customers	General and unclear	More specific based on customer needs and product use
Product communication	Focused on price and physical features	Focused on value, uniqueness, design, and benefits
Market opportunity identification	Limited to local buyers	Expanded to household, souvenir, decoration, and business segments
Competitor observation	Rarely conducted	Participants understood the importance of observing similar products
Promotional strategy	Mostly spontaneous	More planned and customer-oriented
Product storytelling	Limited	Improved through AI-assisted narrative development

The results show that participants experienced a shift from product-centered thinking to customer-centered thinking. This shift is important because empowerment in MSMEs is not only about adopting technology but also about improving the ability to make better market decisions.

Practical Outputs of AI-Based Market Intelligence

The program produced several practical outputs that can be directly used by ceramic MSMEs in their marketing activities. Participants were guided to use AI tools to develop customer personas, product positioning statements, promotional captions, product descriptions, and competitor observation notes.

Fig 2. Guided practice session on creating customer personas and product positioning using AI tools

The customer persona activity helped participants identify who their potential customers are, what they need, and why they may purchase ceramic products. The product positioning activity encouraged participants to define the unique value of their ceramic products, such as handmade quality, local identity, artistic design, durability, and functional use.

Table 2. Practical Outputs Produced by Participants

Output	Description	Use for MSMEs
Customer persona	Simple profile of potential customers based on needs and buying motives	Helps MSMEs design targeted promotion
Product positioning statement	Short explanation of product uniqueness and customer value	Helps strengthen brand communication
AI-assisted product description	Product narrative for social media and digital catalogue	Helps improve product attractiveness
Promotional caption	Short marketing message for social media	Helps support digital content consistency
Competitor observation note	Simple comparison of similar products and promotional styles	Helps MSMEs identify differentiation
Content idea list	Collection of digital content themes	Helps MSMEs plan regular promotion

The outputs show that AI-based market intelligence can be translated into simple and practical marketing materials. Participants did not need complex data systems to begin applying market intelligence. Instead, they could use AI tools to organize business ideas, understand customer perspectives, and improve promotional communication.

Examples of AI-Assisted Marketing Outputs

To make the mentoring more applicable, participants were guided to create sample marketing outputs for ceramic products. The examples below represent normative outputs that can be adapted by MSMEs after the program.

Table 3. Sample Customer Segments for Ceramic Products

Customer Segment	Main Need	Suitable Product Message
Household consumers	Functional and aesthetic home products	Ceramic products for daily use with elegant design
Souvenir buyers	Unique gifts with local identity	Handmade ceramic souvenirs from Purwakarta
Interior decoration customers	Aesthetic room accessories	Artistic ceramics to enhance room atmosphere
Cafés and restaurants	Durable and attractive tableware	Ceramic tableware for unique dining experiences
Corporate or event buyers	Customized gifts	Personalized ceramic gifts for special occasions

Table 4. Sample AI-Assisted Product Positioning

Product Type	Positioning Message
Ceramic cup	A functional and artistic cup that brings local craftsmanship into everyday moments
Ceramic plate	A handmade ceramic plate designed to enrich dining experiences with aesthetic value
Ceramic vase	A decorative ceramic product that combines local creativity and modern interior style
Ceramic souvenir	A unique gift product that represents Purwakarta's creative identity
Ceramic set	A practical and elegant ceramic collection for homes, cafés, and special gifts

These examples show how AI can help MSME actors convert basic product information into more attractive and customer-oriented messages. This is important for ceramic MSMEs because customers often respond not only to product function but also to design, story, and emotional value.

Empowerment Outcomes

The empowerment outcomes of the program can be observed from participants' increased confidence, market understanding, and ability to use AI tools for marketing purposes. Participants became more aware that market information can be used to improve business decisions. They also understood that AI is not intended to replace their creativity, but to support them in generating ideas, organizing messages, and identifying market opportunities.

Table 5. Empowerment Outcomes of the Program

Empowerment Aspect	Observed Outcome
Digital confidence	Participants became more confident in trying AI tools
Market orientation	Participants began to think based on customer needs
Product value awareness	Participants could identify uniqueness and selling points
Communication skill	Participants improved product descriptions and promotional messages
Strategic thinking	Participants understood the importance of segmentation and positioning
Collaboration	Participants actively discussed and shared experiences with the team

The findings indicate that empowerment should be understood as a process of improving capability, confidence, and decision-making readiness. In this program, AI-based market intelligence became an instrument to stimulate new ways of thinking among MSME actors.

Program Evaluation

Program evaluation was conducted through observation, discussion, participant feedback, and review of practical outputs. The evaluation focused on the relevance of the materials, clarity of explanation, usefulness of AI tools, applicability to ceramic MSME marketing, and need for further mentoring.

Table 6. Summary of Program Evaluation

Evaluation Indicator	Result
Relevance of materials to MSME needs	Very relevant
Clarity of explanation	Good
Practicality of AI tools	Very practical
Usefulness for product promotion	Very useful
Applicability for ceramic products	Applicable
Participant enthusiasm	High
Need for further mentoring	High

The evaluation results show that participants responded positively to the program. They considered AI-based market intelligence relevant because it helped them understand customers and improve promotional content. Participants also expressed interest in continuing the mentoring process, especially in the areas of social media management, digital catalogue development, product photography, branding, and marketplace optimization.

Discussion

The results of this program confirm that AI-based market intelligence can be used as an effective empowerment tool for local MSMEs. The program did not merely introduce technology but helped participants develop a more market-oriented mindset. This is important because many MSMEs already have strong products but still face difficulties in translating product value into effective marketing communication.

For ceramic MSMEs, market intelligence is essential because ceramic products have multiple market meanings. They can be functional, decorative, cultural, artistic, and emotional products at the same time. Therefore, ceramic MSMEs need to understand different customer segments and adjust promotional messages accordingly. AI tools can assist MSMEs in identifying these segments and creating more relevant product narratives.

The activity also shows that AI adoption among MSMEs should be introduced gradually. Participants need simple explanations, direct examples, and guided practice. Without mentoring, AI tools may be perceived as difficult or irrelevant. However, when introduced through real product examples, participants can see the practical benefits of AI for their business.

Another important finding is that empowerment requires collaboration. Lecturers contributed conceptual and strategic guidance, students assisted with technical practice, and international academic partners provided broader perspectives on MSME development. This collaborative model made the program more comprehensive and strengthened the connection between academic knowledge and local business needs.

Overall, the program successfully improved participants' market awareness, digital confidence, and ability to create AI-assisted marketing outputs. Although further assistance is still needed, this activity has provided a strong foundation for ceramic MSMEs in Purwakarta to develop more adaptive, customer-oriented, and competitive marketing practices.

Fig 3. Mentoring and discussion with ceramic MSME participants

Fig 4. Group photo of lecturers, students, international partner, and MSME participants

IV. CONCLUSION

This international community service program demonstrated that AI-based market intelligence can be used as an effective empowerment approach for local ceramic MSMEs in Purwakarta. The program helped participants improve their market awareness, customer understanding, product positioning, and digital promotional capability through practical training and mentoring. The results show that MSME actors were able to use AI tools to develop customer personas, product narratives, promotional captions, competitor observation notes, and simple content ideas. These outputs indicate that AI can support MSMEs in transforming product information into more attractive and customer-oriented marketing messages.

The program also confirmed that MSME empowerment requires more than technology introduction. It requires contextual guidance, direct practice, confidence building, and continuous assistance. Through collaboration between lecturers, students, international academic partners, and local MSME actors, this activity strengthened the connection between academic knowledge and community needs.

In conclusion, AI-based market intelligence can help ceramic MSMEs become more adaptive, market-oriented, and competitive. Future programs should focus on continuous mentoring in branding, product photography, social media management, digital catalogue development, and marketplace optimization to ensure sustainable MSME growth.

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