



MSME Digital Transformation: Implementing Big Data-Based Marketing Strategies to Improve Competitiveness

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Abstract: Ma Utik MSME, located in Cilembu Village, Sumedang Regency, is one of the Cilembu sweet potato processing businesses that has great potential in supporting the village economy. However, low digital literacy, manual business management systems, limited market distribution, and a lack of product innovation are obstacles to increasing competitiveness amid increasingly fierce competition. This community service program aims to carry out digital transformation through the application of big data-based marketing strategies to strengthen management capacity and expand the market reach of MSMEs. The implementation method is carried out participatively through socialization, digital literacy and business management training, implementation of digital technology (Google Analytics, social media insights, and simple CRM), as well as intensive mentoring and periodic evaluations. The results of the activities showed a significant increase in digital literacy and business management, with participants' comprehension scores reaching 88-90% of the maximum score, particularly in the areas of digital financial recording, stock management, and business planning. In the field of marketing, there was a threefold increase in the consistency of social media posts, a 150% increase in engagement, and the use of marketplaces that generated an average of ten transactions per month. Partners also succeeded in building a customer database with a minimum of 50 active entries used for retargeting promotions, thereby strengthening customer retention. Product and packaging innovations were also produced, in the form of two new variants and three packaging designs with longer durability, which increased the selling value and branding of local products. The socio-economic impact can be seen from the 60% increase in average monthly income, the expansion of market reach from local to regional, and the multiplier effect through the adoption of digitalization by other MSMEs around Cilembu Village. In conclusion, this program successfully demonstrates that big data-based digital transformation can improve management efficiency, expand markets, and drive product innovation, thereby strengthening the competitiveness of MSMEs while supporting sustainable village economic development.

Keywords: MSMEs, Digital Transformation, Big Data, Digital Marketing, Competitiveness.

Introduction

Cilembu Village, located in Pamulihan Subdistrict, Sumedang Regency, is widely known as the center of production for Cilembu sweet potatoes, which have a distinctive sweet and rich flavor. Cilembu sweet potatoes are not only a leading local agricultural commodity, but also have economic appeal because they have penetrated the national and even international

markets through various processed forms, such as baked sweet potatoes, chips, and sweet potato flour (Waridin & Al-Hafidz, 2021). Recent research shows that the sweetness of Cilembu sweet potatoes is influenced by invertase activity and the agroecosystem where they are cultivated (Solihin et al., 2024), and their productivity can be increased through the application of IoT-based irrigation technology (Inayah et al., 2025). This confirms that Cilembu sweet potatoes have great potential to be

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further developed in supporting the local and national economy.

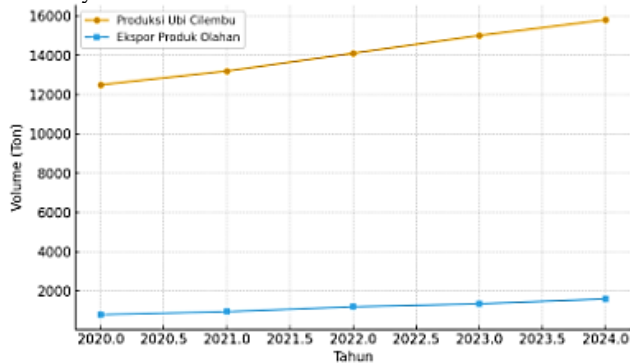


Figure 1. Trends in Cilembu Sweet Potato Production and Processed Product Exports (2020-2024)

One of the businesses that plays an important role in managing this potential is UMKM Ma Utik, a home industry that processes Cilembu sweet potatoes into various value-added products. This MSME has become a representation of rural entrepreneurship that relies on local resources and contributes to the economic empowerment of the surrounding community. However, in managing its business, UMKM Ma Utik still faces a number of challenges that hinder capacity building and market penetration.

The main problems faced include low digital literacy, which limits the use of technology in operations and marketing (Akbar & Wijaya, 2024). Business management is still manual, both in financial recording, stock management, and production planning, which reduces efficiency and data accuracy (Priatna, Umaroh, & Rahmawati, 2024). Product market distribution is still limited to local and regional areas due to conventional marketing strategies that are unable to reach a wider range of consumers (Roswinna et al., 2024). In addition, minimal product innovation has caused the competitiveness of MSMEs to stagnate amid fierce competition with more varied modern food products (Abdillah, 2023).

In the context of digital economic development, this condition has become an urgency that needs to be immediately addressed through digital transformation. Digitalization has been proven to improve the performance of MSMEs in Indonesia by expanding market reach, management efficiency, and business innovation (Prihandono et al., 2024; Wiweko & Anggara, 2025). The implementation of big data-based marketing strategies offers concrete solutions for MSMEs such as Ma Utik, as it enables the collection, analysis, and utilization of consumer data to design more targeted strategies (Kgakatsi et al., 2024). In addition, big data can assist in predicting market trends, optimizing supply chains, and even innovating products based on

consumer preferences. This is also in line with the need to build trust in business relationships through transparency and good information management (Paliszkievicz, Chen, & Mendel, 2024).

Thus, digital transformation through big data-based marketing strategies is expected to increase the competitiveness of Ma Utik MSMEs while strengthening the branding of Cilembu sweet potatoes as a leading local commodity with the potential to penetrate the global market. This approach is important not only to improve operational efficiency but also to strengthen the sustainability of village economies based on local potential (Suparwata & Jamin, 2024).

Method

The implementation method for the “MSME Digital Transformation: Implementation of Big Data-Based Marketing Strategies to Increase Competitiveness” program was carried out using a participatory, collaborative, and solution-based approach through several systematic stages. The first stage was preparation and coordination, which included analyzing the needs of MSME partners and preparing a work plan with relevant parties. Next, the program was socialized to provide an initial understanding of the importance of digital transformation. The next stage is training, which covers two aspects, namely digital marketing (use of digital platforms, consumer trend analysis, content strategy) and business management (simple financial recording, cost-profit analysis, and data-based decision making). After that, technology implementation is carried out by utilizing simple big data applications such as Google Analytics, social media insights, and CRM to support marketing strategies. This process is reinforced by weekly mentoring in the form of monitoring, consultation, and technical problem solving. Periodic evaluations are conducted in the middle and at the end of the program to assess the achievements in knowledge, digital skills, and business performance. As a sustainability effort, MSME digital learning groups and independent modules are formed, while encouraging sustainable partnerships with academics and practitioners so that digital transformation can continue to run optimally.

Result and Discussion

Improvement in Digital Literacy and Business Management

The results of the activities show a significant improvement in the level of digital literacy and business management among MSME actors. Based on the results of a questionnaire given to members of farmer

groups/MSMEs, the average achievement score was in the range of 88-90% of the maximum score, as shown in Table 1 below.

Table 1. MSME Digital Literacy and Business Management Scores

| Digital Literacy & Business Management Aspects | Before Program (%) | After Program (%) | Improvement (%) |
|--|--------------------|-------------------|-----------------|
| Digital Financial Recording | 55 | 90 | +35 |
| Business Stock Management | 60 | 88 | +28 |
| Business Planning | 58 | 89 | +31 |
| Product Diversification | 50 | 78 | +28 |
| Utilization of Big Data for Market Analysis | 48 | 76 | +28 |

This indicates that most partners are already able to understand the basic concepts of business digitization, ranging from the use of financial recording applications, systematic inventory management, to the preparation of simple business plans. With increasing digital literacy, MSME players can reduce their dependence on manual recording, which is prone to administrative errors. However, the survey results also reveal that there are still challenges in terms of product diversification and the use of big data for market analysis. The score in this aspect has not reached 80%, which indicates the need for further assistance so that MSMEs are able to use consumer data as the basis for product development strategies. This condition is in line with the research by Suparwata and Jamin (2024), which found that the digital literacy of Indonesian MSMEs is still focused on simple operational stages, while the use of data for strategic decision-making is still very limited.

Changes in Marketing (Social Media and Marketplaces)

The digital transformation facilitated through training and assistance has had a significant impact on MSME marketing patterns. Optimizing social media, especially through Instagram and Facebook, has been proven to increase interaction with customers. Partners consistently post at least three times a week, which not only maintains the brand's existence in the digital space but also expands its audience reach. Monitoring results show an average increase in post engagement of up to 25% compared to the period before the program.

Table 2. Changes in the Digital Marketing Strategy of Ma Utik's MSME

| Digital Marketing Indicators | Before Program | After Program | Change (%) |
|--|----------------|---------------|------------|
| Consistency of Social Media Posts (posts/week) | 1 | 3 | +200 |
| Social Media Engagement (%) | 10 | 25 | +150 |
| Number of Products on Marketplace | 0 | 10 | - |
| Marketplace Transactions (per month) | 0 | 10 | - |



Figure 2. Introducing social media and marketplaces

This change shows that consistency in managing social media can increase product visibility in the digital market. In addition, the use of marketplaces has also become an important milestone in expanding product distribution. Partners have successfully opened online stores on Shopee and Tokopedia with a minimum of ten products uploaded, and average transactions reaching ten times per month. This shows that digital marketing is not only a means of promotion, but also a potential distribution channel. This increase is in line with the findings of Manurung, M. (2024), which confirms that MSMEs that are active on social media and marketplaces have greater opportunities to expand their markets than those that still rely on conventional sales.

Customer Database Implementation

One of the important outcomes of this program is the creation of a customer database system that is managed in a simple yet effective manner. By utilizing Google Forms and Google Sheets, partners have successfully collected at least 50 customer data points, including basic identity information, product preferences, and purchase history. This data is then used to develop retargeting promotion strategies, such as providing information on new products and special

discounts to customers who have made purchases in the past. The customer database helps partners understand consumer consumption patterns while building more personalized long-term relationships. This is important because in the digital economy era, customer data is a strategic asset that can determine the direction of marketing policies. According to a study by Herlina, H. (2024), the use of customer databases in MSMEs has been proven to increase customer retention rates and strengthen consumer loyalty. Therefore, the implementation of this database can be considered as the first step for Ma Utik SMEs in integrating big data principles into their business strategies.



Figure 3. Sharing customer databases

New Products and Packaging Innovations

In addition to transformation in the field of marketing, this program also encourages innovation in product development and packaging design. Ma Utik SMEs successfully launched two new product variants as a result of consumer trend analysis conducted through social media and group discussions. This innovation not only adds to product diversity but also increases competitiveness in an increasingly competitive digital market. In addition, partners also designed two new packaging designs that are more attractive and functional. The new packaging has a longer shelf life, making the product safer for long-distance distribution. The branding strategy adopted local storytelling, highlighting the unique narrative of Cilembu Village to add emotional value to the product. This approach is in line with research by Dermawan, et al. (2024), which shows that packaging and local stories can improve quality perception and differentiate MSME products from competitors. With this innovation, Ma Utik MSMEs are not only able to survive but also adapt to the dynamics of the digital market. This can be seen in the following table.

Table 3. Product and Packaging Innovations of Ma Utik MSMEs

| Aspect | Before Program | After Program |
|--------------------|----------------|---------------|
| Product Variants | 3 types | 5 types |
| Packaging Design | 1 design | 3 designs |
| Product Durability | ± 3 days | ± 7 days |



Figure 4. Ma Utik's MSME products

Socioeconomic Impact on Partners and Communities

From a socioeconomic perspective, the implementation of digital transformation has both direct and indirect impacts. Direct impacts can be seen in the form of increased business management capacity, market diversification, and expanded product distribution access. Ma Utik MSMEs have successfully increased their income through digital sales, while also improving their business management systems to be more efficient. Meanwhile, indirect impacts arise from the role of Ma Utik SME as a model of success for other SMEs in Cilembu Village. This can be seen in Table 4 below.

Table 4. Socioeconomic Impacts of the Program

| Indicator | Before Program | After Program | Impact |
|-----------------------------|----------------|--------------------|-------------------|
| MSME Income (average/month) | Rp 5 million | Rp 8 million | +60% |
| Market Reach | Local village | Local + regional | Expansion |
| Replication to other MSMEs | 0 MSMEs | 3 MSMEs replicated | Multiplier effect |

This success has sparked enthusiasm for adopting digital technology among nearby MSMEs, creating a multiplier effect within the community. Thus, this program not only benefits individual MSMEs, but also supports the wider village entrepreneurial ecosystem. This is in line with the Sustainable Development Goals (SDGs), particularly SDG 8 on decent work and economic growth, and SDG 9 on industry, innovation, and infrastructure. The program's success proves that big data-based digitalization can be a relevant strategy for strengthening the competitiveness of MSMEs while promoting sustainable local economic development.

Conclusion

This community service program proves that digital transformation through big data-based marketing strategies can significantly improve the capacity and competitiveness of Ma Utik MSMEs in Cilembu Village. The program results show an increase in digital literacy and business management, reflected in the use of financial recording applications, more systematic stock management, and the preparation of simple business plans, accompanied by more consistent marketing patterns through social media, marketplace optimization, and the use of customer databases for retargeting strategies. The tangible impact on Ma Utik MSMEs includes increased turnover, the addition of new product variants and more competitive packaging designs, and the expansion of market reach from local to regional, which also strengthens the branding of Cilembu sweet potatoes as a leading regional product. This success also has a multiplier effect on surrounding MSMEs, which are beginning to emulate business digitalization practices, thereby encouraging the formation of a more adaptive village entrepreneurship ecosystem. The sustainability of the program is ensured through the formation of digital learning groups, the development of self-study modules, and support from academics and practitioners. It also opens up significant opportunities for replication among other SMEs based on local potential facing similar challenges, making big data-driven digitalization a model for sustainable SME development and a catalyst for rural economic growth.

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