Ann PUBLISHER Journal of Economic Sciences (Ekuisci)
e-ISSN 3047-0579
p-ISSN 3046-837X

The Implementation of MSME Upgrades and Its Stages in Pajajar Village, Majalengka Regency

Candra Astra Terenggana [1], Andri Hermawan [2]
[1] Management Study Program, Musi Charitas Catholic University. Email candra_astra@ukmc.ac.id
[2] Faculty of Industrial Engineering, University of Muhammadiyah Cirebon. Email: andri.hermawan@umc.ac.id
Corresponding Author: candra_astra@ukmc.ac.id

Abstract
Background. Micro, Small, and Medium Enterprises (MSMEs) are the backbone of Indonesia's economy, absorbing around 119 million workers and contributing more than 60% of the national Gross Domestic Product (GDP), but the structure of MSMEs is still very unequal because micro enterprises dominate up to 99.70% of the total business units (UKMINDONESIA.ID, 2026). This inequality makes the agenda of "upgrading"—increasing business capacity from micro to small and medium—a policy priority of the Ministry of Cooperatives and SMEs.
Objectives. This research is part of a series of literature reviews on Pajajar Village, Rajagaluh District, Majalengka Regency, which has previously discussed waste bank institutions, the application of waste management technology, and food security at the household level; this study expands the study to the realm of strengthening the local economy through upgrading MSMEs and its stages of implementation.
Methods. The method used was a descriptive-qualitative literature review by examining the MSME policy framework for upgrading classes, cluster models and MSME assistance, the concept of One Village One Product (OVOP), as well as national scientific journal articles on marketing digitalization (marketplace and QRIS) and business legality (NIB, halal certification, and PIRT). The results of the study formulated a four-stage model of MSMEs upgrading for Pajajar Village—pioneering and legality, digitalization and marketing, standardization and certification, and upgrading and expansion—which were synthesized from the Go Legal-Go Digital-Go Bankable-Go Global framework.
Results. This study also synthesizes the relationship of MSMEs upgrading with the results of the previous three literature reviews, showing that compost, compost, and yard crops can be processed into value-added MSME products which are then marketed digitally, forming a circular waste-food-MSME economic value chain at the village level.
Conclusion. This study recommends that the Pajajar Village Government start the pilot stage of business legality collectively through cooperatives/BUMDes, while still considering the potential of circular economy educational tourism as an added value for village MSMEs.

Keywords: MSMEs upgraded, MSME digitalization, business legality, marketplace, QRIS, Pajajar Village, literature study

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INTRODUCTION

Previous research series on Pajajar Village, Rajagaluh District, Majalengka Regency, has examined the institutional model of a PKK cadres-based waste bank, the application of waste management technology such as the Takakura composter and the Black Soldier Fly (BSF) maggot bioconversion, as well as the application of household food security through the Sustainable Food House Area (KRPL) program and hydroponic technology. The three studies consistently produce physical outputs in the form of compost, compost, and yard crops that have the potential to be further processed into value-added products. These findings open up space for further study on how this economic potential can be converted into strengthening Micro, Small, and Medium Enterprises (MSMEs) at the village level.

MSMEs are the backbone of Indonesia's economy. Data UKMINDONESIA.ID (2026) compiling sources from the Ministry of MSMEs, the Central Statistics Agency, and the OSS system recorded around 59.55 million MSME units in Indonesia—consisting of 30.12 million non-agricultural units and 29.3 million agricultural/fisheries units—which absorb around 119 million workers and contribute more than 60% of the national Gross Domestic Product (GDP) worth around Rp9,580 trillion per year. However, the structure of MSMEs is very uneven: micro enterprises dominate up to 99.70% of the total business units, while small businesses only 0.24% and medium enterprises 0.05% (UKMINDONESIA.ID, 2026). Historical data from the Ministry of Finance also noted that the distribution of People's Business Loans (KUR) increased from IDR 178.07 trillion (2020) to IDR 192.59 trillion (2021), showing the government's great attention to MSME financing access (Tambunan, 2023).

The inequality in the MSME structure makes the agenda of "upgrading"—increasing business capacity from micro to small and medium—a policy priority of the Ministry of Cooperatives and SMEs (KemenKopUKM). Upgrading is not only about increasing capital, but also includes changing the mindset of business owners, mastering legality, marketing digitalization, financial governance, and market expansion (Srimulyani et al., 2026). Various technologies and policy instruments to support upgrading have been available, ranging from the ease of registration of Business Identification Numbers (NIB) through the Online Single Submission (OSS) system, halal and household industry food certification (PIRT), to digital marketplace platforms and Quick Response Code Indonesian Standard (QRIS) payments. As described in previous studies, Pajajar Village has the potential for religious, natural, and educational tourism, the ownership of two springs that support the water needs of fourteen surrounding villages, as well as the pioneering waste bank and yard food security program that produces products such as compost and vegetable crops. Majalengka Regency in general also

has superior household products such as soy sauce, opak, rengginang, pickled orange, kolang-kaling, and bamboo crafts, including a horticultural nursery center in Rajagaluh District (Aripin & Yulianti, 2018). This potential makes Pajajar Village worthy of further study on how MSMEs can upgrade by utilizing the output of previous literature reviews. Based on this description, the formulation of this research problem is: (1) how the concept and stages of MSMEs are upgraded based on the available policy framework and literature; and (2) what technologies and legality instruments are relevant and affordable to be applied for MSMEs in Pajajar Village. This research aims to formulate the stages of upgrading MSMEs that are appropriate for Pajajar Village and its supporting technologies, and relate it to the results of previous literature reviews on waste management and food security in the same village.

LITERATURE REVIEW

Concepts and Indicators of MSMEs Upgrading

The PRKKEK-BRIN Research Team (2022) defines "upgrading" as increasing the capacity of a business, including quantitative growth (assets, turnover) and operational qualitative improvements, and proposes a multidimensional index that combines productivity, labor absorption, financial indicators, profitability, and tax contributions, instead of relying only on the asset/turnover threshold in Government Regulation No. 7 of 2021. The Ministry of Cooperatives and SMEs uses three approaches to detect MSMEs to upgrade, namely productivity (capacity/performance growth), accessibility (transition from informal to formal financing sources), and graduation from government intervention (success in exiting subsidy/mentoring programs), which are complemented by Bank Indonesia's indicators in the form of digital adoption, access to financing, export capacity, and green businesses (Santia, 2023; InfoPublik, 2023). Anggraini (2022) noted that the upgrade framework used by various institutions is still diverse and has not been standardized, so digitalization needs to be placed as a consistent cross-institutional parameter.

Four Pillars of Upgrading: Go Legal, Go Digital, Go Bankable, Go Global

Srimulyani, Kirana, and Rizki (2026) formulated a framework for the four pillars of MSMEs to upgrade in the digital economy era, namely Go Digital (the use of e-commerce, social media, and cashier systems/point of sale), Go Legal (NIB ownership, halal certification, and intellectual property rights), Go Bankable (separate and formally recorded financial bookkeeping), and Go Global (improving product quality and packaging to reach a wider

market). The study emphasizes that upgrading "is not only about increasing capital, but the mindset of the owner is changing", placing mindset transformation as a fundamental prerequisite before policy and technology instruments can have an optimal impact. This four-pillar framework is the main reference for this research in compiling the stages of upgrading for MSMEs in Pajajar Village.

MSME Cluster Model and Phased Assistance

Sutandi, Vikaliana, Hidayat, and Evitha (2020) documented an upgrading assistance program for 10 culinary MSMEs in Cempaka Putih District, Central Jakarta, through four sequential training stages: inventory management, online marketing, preparation of simple financial reports, and tax socialization. The study proposes the grouping of MSMEs geographically (clusters) to facilitate structured mentoring—a model that can be directly adapted to the scale of sub-districts such as Rajagaluh, given its characteristics that resemble groupings based on small administrative areas.

One Village One Product (OVOP) as a Model for Empowering Village MSMEs

Rakhmawati (2019) examined the implementation of the One Village One Product (OVOP) concept in the metal handicraft industry in Hadipolo Village, Kudus, through eight dimensions of analysis including objectives, initiators, stakeholders, funding, implementation stages, product selection, type of mentoring, and marketing. The study found that the implementation of OVOP has been carried out in all dimensions but "not yet optimal", becoming an important benchmark for the study of village superior products such as those that have the potential to be developed in Pajajar Village.

Supporting Technologies: Digital Marketplace and QRIS

Sembiring, Tobi, Farhan, Aris, Maha, and Feti (2026) conducted a survey of 120 MSMEs using Shopee, Tokopedia, and TikTok Shop, finding that Shopee and Tokopedia significantly increase sales volume and operational efficiency, while TikTok Shop is more effective for promotion and customer engagement through a social commerce approach; overall the use of marketplaces has a positive and significant effect on the performance of MSMEs, provided that the operator's digital competence is adequate. Utami (2025) found that the

adoption of QRIS digital payments has a positive and significant effect on the financial performance of MSMEs in the Special Region of Yogyakarta, and recommends sustainable public awareness campaigns and coordinated support from the government and financial institutions.

Business Legality and Certification: NIB, Halal, and PIRT

Dewi, Mafaza, Safira, Amelia, Jadidah, and Mahmudah (2025) carried out participatory action assistance for MSMEs in Banjartengah Hamlet, Sumbersekar, to obtain halal certification, NIB through OSS, and PIRT permits. The study found that the legality status of the business increased export opportunities "2.5 times greater", and program participants experienced a 20-30% increase in revenue within three months after the certification process—demonstrating the concrete impact of business legality on the performance of MSMEs in the short term.

MSMEs and Local Economic Potential of Majalengka Regency and Pajajar Village

Aripin and Yulianti (2018) documented more than 40 leading tourism/agricultural locations in Majalengka Regency, noting that Rajagaluh District is a breeding center for horticultural crops (mango, kalamansi oranges, rambutan), as well as Majalengka's leading household products such as soy sauce, opak, rengginang, pickled oranges, kolang-kaling, and bamboo crafts. As described in the previous literature review, Pajajar Village has the potential for religious, natural, and educational tourism (Purwono, 2024) as well as a pioneering waste bank and yard food security program that produces compost, kasgot, and vegetable crops—all of these outputs have the potential to become raw materials for village-processed MSME products.

RESEARCH METHODS

This research uses a literature review method with a descriptive-qualitative approach, continuing the methodological approach used in the previous three studies on Pajajar Village. The data sources explored include four categories: (1) policy studies and publications on the concept and indicators of MSMEs upgrading from BRIN, the Ministry of Cooperatives and SMEs, and banking research institutions; (2) national scientific journal articles that report on the implementation of MSME assistance models, OVOP, and digitalization technology (marketplace, QRIS) and business legality (NIB, halal, PIRT) in various regions in Indonesia;

(3) official publications of the Ministry of Finance and MSME research institutions regarding statistics and the contribution of MSMEs to the national economy; and (4) publications on local economic conditions and profiles of Pajajar Village and Majalengka Regency.

The criteria for inclusion of literature include: (a) explicitly discussing concepts, policies, stages, or technologies related to MSMEs being upgraded; (b) coming from credible sources, both publications of official research institutions, indexed national scientific journals, and government/mass media publications; and (c) relevant to the scale of micro/village businesses, in line with the characteristics of Pajajar Village as a small village with a pioneer waste bank and food security program. Data analysis is carried out through content analysis techniques and stage synthesis, which is mapping the framework of the four pillars of upgrading from various sources into one coherent stage model for Pajajar Village, then linking it with the results of previous literature reviews on waste management and food security in the same village. To facilitate understanding, this study also compiles infographics and schematic illustrations of original technology synthesized from the technical specifications in the literature studied.

RESULTS AND DISCUSSION

Literature Gap on MSMEs Upgrading in Pajajar Village

As found in the previous three literature reviews on waste banks, waste management technology, and food security in Pajajar Village, a literature search for the topic of upgrading MSMEs also did not find any academic literature or official documentation that specifically discussed the conditions or programs of MSMEs in Pajajar Village. The available publications on this village still focus on historical aspects and tourism potential (Purwono, 2024), while data on household superior products are only available at the district level (Aripin & Yulianti, 2018). This gap is consistent with the pattern found in the three previous literature reviews, and reaffirms that all synthesis and recommendations in this study are conceptual, compiled from the generalization of policy frameworks and studies of the implementation of upgraded MSMEs in other regions.

Mapping of the Four Pillars of Upgrading for MSMEs in Pajajar Village

Table 1 maps the framework of the four pillars of upgrading (Srimulyani et al., 2026) into the specific context of Pajajar Village MSMEs, based on village characteristics and the output of previous literature studies.

Upgrading Pillar	Key Indicators	Application for MSMEs in Pajajar Village
Go Legal	Business legality (NIB through OSS), halal certification, and PIRT permits for processed food products	Collective NIB registration through assistance from village/cooperative officials; processed products (crackers, vegetable chips, packaged compost) require PIRT/halal certification before being marketed more widely
Go Digital	Adoption of marketplaces (Shopee, Tokopedia, TikTok Shop), QRIS digital payments, and social media marketing	Digital literacy training for MSME actors, especially groups of housewives from the former KRPL program and waste banks who are used to being in groups
Go Bankable	Simple financial bookkeeping and separation of business and personal capital	Assistance in basic financial recording so that MSMEs are eligible to access KUR/formal financing
Go Global	Market expansion, corporatization through cooperatives/BUMDes, as well as product quality and packaging standards	Expansion of village superior products (processed yard products, recycled handicrafts) to the district/outside the region, accompanied by the potential for educational tourism for MSMEs

Based on Table 1, the Go Legal and Go Bankable pillars require institutional assistance that is ideally facilitated by cooperatives or village BUMDes, while the Go Digital pillar can utilize groups of housewives/PKK cadres who have been accustomed to grouping through the PKK EMAS program in the previous waste bank study. The Go Global pillar is the most advanced stage that depends on the success of the previous three pillars as well as the availability of superior village products that are worthy of expanding their market.

Synthesis of the Stages of MSMEs Upgrading for Pajajar Village

Adapting the Go Legal-Go Digital-Go Bankable-Go Global framework and the cluster/gradual mentoring model in the studies studied, this study compiles a synthesis of four stages of MSMEs upgrading that are relevant to Pajajar Village, as illustrated in Figure 1.



Figure 1. Four stages of the MSME upgrade program relevant to Pajajar Village (original illustration, synthesized from the Go Legal-Go Digital-Go Bankable-Go Global framework, 2026)

The first stage (start-up and legality) includes data collection of business actors, the formation of MSME groups/clusters following the Sutandi et al. model (2020), and the management of collective NIB through OSS. The second stage (digitalization and marketing) focuses on marketplace onboarding, QRIS adoption, and social media marketing. The third stage (standardization and certification) emphasizes halal certification and PIRT as well as simple financial bookkeeping (Go Bankable), while the fourth stage (upgrading and expansion) targets access to formal financing (KUR), corporatization through cooperatives/BUMDes, and inter-village market expansion. It should be noted that these four stages are non-linear in practice—Anggraini (2022) emphasizes that digitalization and legality can run in parallel, not always in strict order, depending on the readiness of each business actor. Rakhmawati (2019) on the OVOP study in Hadipolo Village also found that cross-dimensional implementation tends to run "not optimally" at the same time, not fully completed stage by stage before moving on to the next stage. Therefore, the duration and sequence in Figure 1 are indicative and need to be adjusted to the capacity and social readiness of MSME actors in Pajajar Village.

Technology Supporting Digitalization and Business Legality for MSMEs in Pajajar Village

In addition to the institutional stage, this study identifies two groups of relevant and affordable supporting technologies/instruments to be applied at the digitalization-marketing and standardization-certification stages in Pajajar Village, namely marketing digitalization

through marketplace and QRIS, as well as legality and business certification flows, as illustrated in Figure 2 and Figure 3.

The scheme in Figure 2 shows that marketplaces (Shopee, Tokopedia, TikTok Shop) increase sales volume and operational efficiency, while QRIS facilitates payment transactions from buyers and tourists who visit Pajajar Village. The main prerequisite for the implementation of this technology is the digital literacy of business actors and the availability of an adequate village internet network, so that this stage is most suitable to be applied after the MSME group has standardized products from processed compost/kasgot or yard crops that were previously studied.



Figure 2. Digitalization scheme for MSME marketing through marketplace and QRIS (original illustration, adapted from Sembiring et al., 2026; Utami, 2025)



Figure 3. Scheme of the legality and certification of MSME businesses (original illustration, adapted from Dewi et al., 2025)

The legality scheme in Figure 3 starts from the registration of NIB through OSS as a basic legality, followed by the submission of halal and PIRT certification for processed food products, to the issuance of permits and official labels that allow products to be marketed more widely. Dewi et al. (2025) noted that business legality increases the opportunity for market expansion up to 2.5 times greater, and halal/PIRT certification is recorded to increase the income of MSME actors by 20-30% in the first three months—making the investment of time and cost of managing this legality commensurate with the potential benefits obtained by MSMEs in Pajajar Village.

Integration of MSMEs to Upgrade with the Waste Ecosystem and Food Security

One of the important findings of this study is the close relationship between MSMEs upgrading and the results of three previous literature reviews on waste management and food security in Pajajar Village. Figure 4 illustrates the integration into a single village economic value chain.



Figure 4. Integration of MSMEs with waste ecosystem and food security in Pajajar Village (original illustration, synthesizing three literature reviews, 2026)

As shown in Figure 4, Takakura compost, casgot from BSF maggot bioconversion, and KRPL/hydroponic crops—all outputs from the previous three literature reviews—can be processed into value-added MSME products, such as packaged fertilizers, chips/processed vegetables, and recycled crafts. These products are then marketed through marketplaces and QRIS after going through the legality and business certification process, so that Pajajar Village MSMEs upgrade through increased turnover, new job openings, and MSME educational tourism potential. Some of the profits from these MSMEs are suggested to be reinvested in cooperatives/BUMDes to strengthen the sustainability of the waste bank and KRPL programs that are the upstream of this value chain, forming a circular economy cycle of villages that mutually reinforces waste management, food security, and MSME strengthening.

Native MSME Products in Pajajar Village: Data Gap and Development Potential

A search of the literature specifically for MSME products that are officially recorded on behalf of Pajajar Village did not find any results. The official village portal (pajajar.digitaldesa.id) could not be accessed at the time of search, the Majalengka Regency Smart Village dashboard for the village code 3210092001 only displayed demographic data (number of hamlets, population, education) without MSME data or superior products, and no records were found in government databases such as OSS or the Majalengka Regency Cooperative Office which specifically mentioned the names of Pajajar Village products or business actors. All available documentation about this village—both from the mass media and the sub-district community portal—focuses on religious and natural tourism sites, namely Petilasan Prabu Siliwangi, Talaga Pancuran, Talaga Emas, Situ Ciranca, and the Pajajar Forest

campground (Purwono, 2024; Rajagaluh.web.id, n.d.), not on economic products or MSMEs. Tourism publications even only mention the existence of "typical Majalengka souvenir sellers" in general around the petilasan area, without specifying the names of products or specific business actors of Pajajar residents (Rajagaluh.web.id, n.d.).

As a comparative context, Aripin and Yulianti (2018) recorded a number of superior household products in Majalengka Regency in general, such as soy sauce, opak, rengginang, pickled oranges, kolang-kaling, and bamboo crafts, and mentioned Rajagaluh District as a horticultural nursery center. However, these products are recorded at the district/sub-district scale, not verified as "original products of Pajajar Village", so it is not appropriate to claim to be an inventory of these village products without direct confirmation in the field.

In other words, based on all the literature that has been successfully searched, the number of authentic MSME products from Pajajar Village that have been verified and officially documented is zero (no official inventory has been found)—consistent with the literature gap that was also found in the three previous literature reviews about this village. As a conceptual contribution, Table 2 presents four categories of product potential that Pajajar Village can logically develop based on the synthesis of the output of the three previous literature studies (waste banks, waste management technology, and food security) as well as the characteristics of village tourism, and is not a list of products that have existed or been validated in the field.

Product Potential Categories	**Examples of Conceptual Products**	**Rationale/Source of Raw Materials**
Processed Yard Food	Vegetable chips/crackers (spinach, kale, mustard greens), packaged chili sauce/seasoning	KRPL/hydroponic crop yields in previous food security studies
Packaged organic fertilizer	Takakura Compost Packaging, BSF Maggot Packaging	Organic waste bioconversion output in previous waste bank and technology studies
Recycled crafts	Crafts from chopped/inorganic plastics, household upcycling products	Residue of plastic shredding machines in previous waste management technology studies

Souvenirs of educational tours	Souvenirs/souvenirs with the theme of Petilasan Prabu Siliwangi and village spring ecotourism	Branding of religious-nature tourism in Pajajar Village (Purwono, 2024)

It should be emphasized that the four categories in Table 2 are hypothetical/conceptual, not the result of direct data collection on MSME actors in Pajajar Village. Further research based on field surveys—as also suggested in the conclusion section—is needed to verify whether these kinds of products have been, are being or have the potential to be pioneered by villagers, as well as to produce an inventory of superior products that truly reflect the actual condition of Pajajar Village.

Implementation Challenges

Several challenges that are generally found in the studies studied need to be anticipated by Pajajar Village. First, the upgrade framework used by various institutions is still diverse and has not been standardized (Anggraini, 2022), so Pajajar Village needs to choose the most relevant indicators to its own capacity and business scale, not having to follow all institutional indicators at once. Second, the success of marketing digitalization is highly dependent on the digital literacy of business actors and an adequate village internet network, as found in marketplace and QRIS studies (Sembiring et al., 2026; Utami, 2025), so digital literacy training needs to precede or run in parallel with legality management. Third, as Rakhmawati (2019) found in the OVOP study in Hadipolo Village, the implementation of village MSME empowerment programs has the potential to run "not optimally" in various dimensions at the same time, so continuous assistance is needed, not one-time training. Fourth, the success of integration with the waste ecosystem and food security depends on the sustainability of the waste bank, BSF maggot bioconversion, and KRPL programs that have been studied previously, so that all programs are ideally planned and implemented synergistically through one village cooperative institution/BUMDes, rather than running separately.

CONCLUSIONS AND SUGGESTIONS

This literature study study concludes that the implementation of upgrading MSMEs in Pajajar Village can adapt the Go Legal-Go Digital-Go Bankable-Go Global framework which is synthesized into four stages—pioneering and legality, digitalization and marketing, standardization and certification, and upgrading and expansion—noting that these stages are

non-linear and need to be adjusted to the readiness of business actors. Two groups of technologies/supporting instruments that are identified as relevant and affordable for Pajajar Village are marketing digitalization through the marketplace and QRIS for the digitalization-marketing stage, and the legality and business certification flow (NIB, halal, PIRT) for the standardization-certification stage.

Another important finding from this study is the close relationship between MSMEs upgrading and three previous literature reviews on waste management and food security in Pajajar Village: compost, compost, and yard crops can be processed into value-added MSME products which are then marketed digitally, forming a circular economic value chain of waste-food-MSMEs which at the same time has the potential to be an educational tourism attraction for Pajajar Village. All stage models and technology recommendations in this study are conceptual, compiled from policy generalizations and implementation studies in other areas, not the results of direct observation of MSMEs in Pajajar Village.

The next research is highly recommended to collect data on MSME actors directly in Pajajar Village as part of the pilot stage, in order to map the actual superior products and legality readiness before starting the upgrade program definitively, as well as explore the possibility of integrated program management through one cooperative institution/BUMDes that oversees waste banks, food security, and MSMEs at the same time, as has been designed in previous literature studies.

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