

Digital Literacy and Online Marketing Empowerment for PKK Women in Teluk Kecapi

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Abstract

This community service article presents the baseline mapping and evidence-informed implementation design of a six-month empowerment program for women members of the Family Welfare Empowerment organization (PKK) in Teluk Kecapi Village, Ogan Ilir, South Sumatra. The partner community manages local food and textile products but faces limited digital confidence, weak brand identity, informal social-media use, and minimal marketplace participation. A participatory approach was designed through needs assessment, socialization, hands-on digital-literacy training, online-marketing practice, branding and packaging improvement, responsible artificial-intelligence education, mentoring, and monitoring. The program uses performance demonstrations, participant portfolios, account-operation checklists, and pre/post instruments. Verified baseline information indicates approximately 60 active PKK members organized in six groups and a product portfolio including crackers, kemplang, banana chips, meatballs, woven fabrics, and jumputan textiles. Because a finalized post-intervention dataset was not available at manuscript preparation, target thresholds are reported transparently as program benchmarks rather than observed effects. The intervention is expected to produce business accounts, improved product identities, promotional content, and a PKK Digital Mobilizer Group. The model offers a practical, measurable pathway for integrating women-led microbusiness development into an inclusive Smart Village agenda.

Keywords: digital literacy; online marketing; PKK women; microenterprises; Smart Village

1. INTRODUCTION

Digital transformation has altered how micro, small, and medium-sized enterprises identify customers, communicate value, process transactions, and learn from markets. However, the benefits of digitalization are not generated by access to devices alone. They depend on human capability, organizational readiness, relevant content, affordable connectivity, and the ability to translate technology into routine business practices. The Organisation for Economic Co-operation and Development emphasizes that smaller firms often experience persistent gaps in skills, finance, managerial capacity, and technology adoption, even when digital tools are widely available [1]. In Indonesia, the expansion of platforms, digital payments, and mobile connectivity has created substantial opportunities, but unequal capability and uneven infrastructure continue to shape who can participate and benefit [2]. National digital-society measurement likewise treats empowerment and capability as essential dimensions of digital maturity rather than viewing connectivity as the sole indicator [3]. These challenges are especially important for women-led microenterprises. Women entrepreneurs frequently combine production activities with household and community responsibilities, work with limited capital, and rely on informal networks. The World Bank's assessment of women entrepreneurs in Indonesia shows that women-owned businesses are heterogeneous and require support tailored to their scale, ambition, resources, and constraints [4]. Regional evidence on women and e-commerce further shows that online platforms can widen market access, yet participation does not automatically eliminate gender-related differences in business size, sales, skills, or platform performance [5]. Consequently, community service programs should not assume that opening an account is equivalent to digital empowerment. Sustainable adoption requires confidence, repeated practice,

locally relevant mentoring, and institutional support after formal training ends. Digital literacy provides the foundation for such empowerment. It includes the ability to operate devices, locate and assess information, protect personal and business data, communicate ethically, create digital content, solve routine problems, and make informed decisions. Community-led training is more effective when the learning process is grounded in local priorities, uses practical activities, and recognizes participants as active contributors rather than passive recipients [6]. Evidence from rural Indonesian communities also indicates that digital literacy can strengthen confidence, access to information, and productive participation when training is connected to participants' lived experience and economic activities [7]. For PKK women, this connection is critical because learning must be immediately applicable to product documentation, customer communication, order management, and household-scale enterprise operations. Digital transformation also has a gendered and organizational dimension. Research on small and medium-sized enterprises shows that owner or manager characteristics, perceived benefits, organizational capability, and social context influence digital-transformation experiences, while gender can moderate some adoption relationships [8]. Mobile applications can support business continuity and sustainability for women entrepreneurs when the applications are perceived as useful, accessible, and compatible with everyday work [9]. These findings justify an intervention that begins with simple and familiar tools—such as smartphones, messaging applications, social media, and basic marketplace features—before progressing to more complex analytics or automation. Online marketing is relevant because it enables small producers to communicate directly with consumers and reduce exclusive dependence on intermediaries. Empirical studies have linked digital-marketing adoption with customer engagement, market reach, and sustainable growth, although performance depends on the quality of implementation and the business context [10]. Social-media marketing can improve visibility and interaction when firms have clear objectives, relevant content, and consistent management [11]. Adoption can also mediate the relationship between organizational resources and small-business performance [12]. Nevertheless, merely publishing occasional posts from personal accounts is unlikely to create a coherent market presence. Business profiles, product information, visual consistency, response procedures, and simple content calendars are required to convert online activity into an operational marketing system. The adoption process is affected by internal and external conditions. Prior studies identify perceived usefulness, cost, management support, employee skills, competitive pressure, and compatibility with existing practices as recurring factors [13], [14]. Behavioral intention is also influenced by performance expectations, social influence, and facilitating conditions [15]. Evidence from developing-country SMEs similarly shows that technological, organizational, environmental, and personal factors interact in shaping digital-marketing adoption [16]. More recent research confirms that digital marketing is most valuable when it is integrated into broader business processes and digital transformation rather than treated as an isolated promotional activity [17]. Therefore, the community program described in this article combines digital literacy, branding, content creation, account management, and mentoring instead of delivering a single lecture on social media. The intervention is situated in Teluk Kecapi Village, Pemulutan District, Ogan Ilir Regency, South Sumatra. Verified village-level program documents report a population of approximately 2,272 people or about 770 households. The village is located around 21.9 km from Politeknik Negeri Sriwijaya, with an estimated travel time of 33 minutes. Local economic potential includes food products such as crackers, kemplang, banana chips, and meatballs, as well as woven and jumputan textiles. Approximately 60 active PKK members are organized into six groups of around ten members. Their production skills and local product knowledge provide a strong basis for enterprise development, yet the initial assessment identified low digital confidence, limited understanding of branding and online marketing, simple packaging, dependence on conventional distribution, and nonprofessional use of social media. A Smart Village perspective provides a broader framework for responding to these conditions. Smart Village development should not be reduced to installing technology; it requires community participation, local problem solving, human capability, institutional coordination, and the use of

digital tools to improve social and economic outcomes. Reviews of Smart Village initiatives emphasize the integration of technology with governance, services, entrepreneurship, sustainability, and community agency [18]. A systematic review of rural smartness similarly highlights that context, local assets, and stakeholder collaboration determine whether digital initiatives create meaningful impact [19]. In Teluk Kecapi, empowering PKK women as local economic actors can connect household enterprises with a village-level digital transformation agenda. Responsible use of artificial intelligence (AI) is included as a supporting component rather than the central solution. AI literacy involves understanding what AI can and cannot do, how to formulate appropriate tasks, how to verify outputs, and how to consider privacy, bias, ownership, and accountability [20]. Competency-oriented AI-literacy frameworks also emphasize critical evaluation and ethical use, not only technical operation [21]. For microenterprises, generative AI may assist with caption drafts, product-description ideas, content schedules, and translation, but every output must be checked against product facts, local language, cultural appropriateness, and consumer-protection requirements. Branding and packaging are equally important because online promotion magnifies the visual presentation of a product. Packaging elements can influence attention, perceived quality, brand experience, and purchase intention [22]. Yet visual features do not always produce the same response across products and contexts, and design choices should be tested rather than copied mechanically [23]. For the partner community, the practical objective is not expensive packaging. It is a feasible improvement in identity and information: a recognizable name, readable label, consistent visual elements, product and contact information, and photographs that represent the actual product accurately. Finally, digital leadership, innovation capability, and organizational learning affect whether technology use becomes sustainable [24]. Organizational studies also show that social-media benefits depend on strategic utilization and the capacity to interpret and act on digital information [25]. These insights support the establishment of a PKK Digital Mobilizer Group that can maintain accounts, help members, document activities, and coordinate with the village government. Accordingly, this article aims to: (1) describe the partner profile and verified baseline constraints; (2) present a participatory, measurable empowerment method; (3) explain the expected outputs and evaluation benchmarks without presenting targets as completed outcomes; and (4) formulate a three-year pathway linking women-led microenterprise development to the Smart Village agenda.

2. METHOD

2.1 Community and Participant Profile

The program was designed as a six-month, on-off community empowerment activity conducted from June to December 2026. The primary partner was the PKK organization of Teluk Kecapi Village. The intended participants were active PKK members involved in household-scale food processing, handicrafts, or support activities for village enterprises. The initial profile used information from field observation, interviews with village representatives and PKK members, and the verified program proposal. The partner profile is summarized in Table 1. The figures describe the baseline setting used for intervention planning; they are not post-program performance data.

Table 1. Partner profile and verified baseline constraints

Dimension	Verified baseline condition	Implication for the program
Community scale	Approximately 2,272 residents and 770 households.	Use a group-based model that can be expanded through local facilitators.
PKK organization	Approximately 60 active members in six groups of about ten.	Train representatives while maintaining peer-learning activities within each group.

Local products	Crackers, kemplang, banana chips, meatballs, woven fabrics, and jumputan textiles.	Use actual products as training objects for branding, photography, descriptions, and online listings.
Current marketing	Conventional distribution and reliance on agents; limited direct online selling.	Introducing direct customer communication, business profiles, and marketplace workflows.
Digital practices	Smartphones and personal social-media use exist, but business use is inconsistent.	Start from familiar applications and convert informal use into structured business routines.
Branding and packaging	Simple packaging and weak or inconsistent brand identity.	Develop feasible labels, product information, visual consistency, and accurate product photographs.
Institutional opportunity	Village government supports facilities, coordination, and Smart Village continuation.	Establish a local group and shared monitoring process for continuity after the program.

2.2 Participatory Implementation Stages

The method followed a participatory action-oriented sequence. First, the team identified needs and local assets through observation, interviews, product review, and discussion. Second, socialization sessions clarified program objectives, participant roles, the activity schedule, ethical documentation, and expected outputs. Third, hands-on training was delivered in small groups. Fourth, mentoring supported participants while they applied the skills to their own products and accounts. Fifth, monitoring and evaluation used demonstrations, checklists, portfolios, and pre/post instruments. Sixth, sustainability was addressed through the formation and strengthening of a PKK Digital Mobilizer Group. Figure 1 presents the implementation cycle.

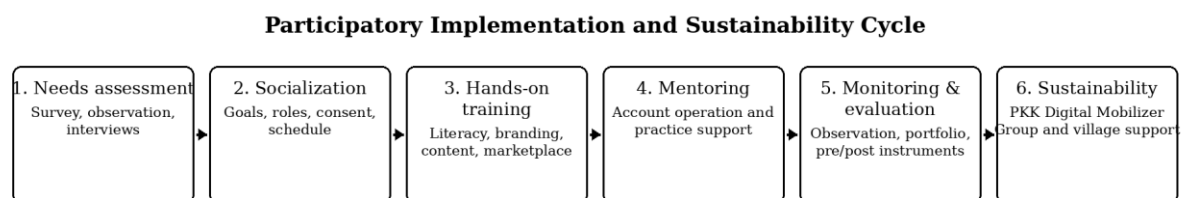


Figure 1. Participatory implementation and sustainability cycle

Participation was embedded in each stage. Product owners selected the products used in practice, explained production characteristics, checked the accuracy of product descriptions, and assessed whether proposed designs were affordable and appropriate. Village and PKK representatives contributed to scheduling and local coordination. The university team acted as facilitator, trainer, mentor, documenter, and evaluator. This distribution of roles was intended to prevent technology-centered solutions that could not be maintained by the community.

2.3 Training Modules and Practice Outputs

The learning design used short explanations followed by guided practice, peer feedback, revision, and independent demonstration. Each module produced a tangible artifact so that learning could be assessed through performance rather than attendance alone. Participants were not required to master every platform. They were encouraged to select tools compatible with their products, devices, time, and customer segments. Table 2 summarizes the modules and outputs.

Table 2. Training modules, practice tasks, and measurable outputs

Module	Core practice activities	Immediate evidence/output	Assessment approach
Digital foundations and safety	Device settings, file organization, search, verification, passwords, privacy, scam recognition, and ethical communication.	Organized product folder, secure account settings, and completed safety checklist.	Direct demonstration and checklist.
Business identity	Define product value, target buyers, brand name, logo direction, label information, and consistent visual elements.	Draft brand sheet and revised label/packaging mock-up.	Portfolio review against feasibility and information criteria.
Product photography and video	Lighting, background, framing, scale, product accuracy, short video sequence, and basic editing.	A set of usable product photographs and one short product video.	Rubric for clarity, accuracy, composition, and suitability.
Content and copywriting	Product description, benefit statement, caption structure, call to action, price and order information, and content calendar.	Five to eight promotional content items per participating business/group.	Content portfolio and peer review.
Social-media business operation	Create or optimize business profile, biography, highlights, posting workflow, response templates, and basic insights.	Operational business profile with consistent information.	Account-operation checklist.
Marketplace readiness	Product listing, category, title, description, photographs, stock, price, delivery information, and customer response.	Draft or active marketplace listing, depending on participant readiness.	Listing-completeness checklist and simulation.
Responsible AI support	Prompting for caption ideas and descriptions, fact checking, editing, privacy protection, and disclosure considerations.	Verified AI-assisted draft with a documented human review step.	Scenario task and output-verification checklist.
Business continuity	Simple order log, content schedule, role allocation, mentoring plan, and escalation of account problems.	Shared work plan and PKK Digital Mobilizer Group activity log.	Review of responsibilities and follow-up schedule.

2.4 Monitoring, Measurement, and Analysis

Monitoring was designed at four levels. The first level measured participation through attendance, completion of practice tasks, and mentoring contact. The second level measured learning through a short pre/post knowledge instrument and direct demonstrations. The third level assessed outputs through a portfolio containing photographs, captions, profile screenshots, listings, and packaging drafts. The fourth level examined early adoption through account activity, response routines, and the ability to repeat tasks without step-by-step assistance. Quantitative data were to be summarized using counts, percentages, and pre/post score differences. Qualitative data from observation notes, participant reflections, and interviews were to be coded into recurring themes such as confidence, usability, barriers, peer support, and perceived business relevance. The evaluation logic distinguishes outputs from outcomes. An account, label, or content item is an output. Consistent use, wider customer interaction, repeat orders, or increased sales are outcomes that require longer observation and reliable transaction records. Because the verified materials available at manuscript preparation contained baseline findings, implementation plans, and target thresholds but not a finalized post-intervention dataset, this article does not manufacture effect sizes, sales growth, or post-test results. It reports the evidence-informed design, verified baseline, planned outputs, and evaluation benchmarks. Any future

publication of impact results should use the completed instruments and transaction evidence and should separate attribution from simple temporal change.

2.5 Ethical and Data-Integrity Considerations

Participants were to be informed about the purpose of data collection, documentation, and account creation. Personal phone numbers, identity documents, passwords, payment credentials, and private customer information were not to be recorded in research files or shared during group sessions. Demonstrations used sample data where possible. Photographs and screenshots intended for publication required permission and removal of sensitive information. AI-assisted content was treated as a draft that required human verification. Product claims, ingredients, prices, availability, and delivery promises had to be confirmed by the business owner before publication. These procedures were included to ensure that digital empowerment did not introduce avoidable privacy, security, or consumer-trust risks.

3. RESULTS AND DISCUSSION

3.1 Baseline Needs and Local Economic Potential

The baseline mapping identified a productive community with marketable local assets but an incomplete digital-business system. PKK members already possessed product knowledge, production experience, and social networks. Several products had circulated beyond the village through agents, indicating that demand was not entirely local. The central constraint was therefore not the absence of products. It was the limited ability of producers to represent products consistently, communicate directly with customers, control digital storefront information, and retain market knowledge. This distinction is important because an empowerment program should build on existing capability rather than treating participants as having no entrepreneurial experience. The diversity of products creates both opportunity and complexity. Food products require attention to ingredients, shelf life, hygiene information, packaging integrity, price, stock, and delivery conditions. Textile products require accurate presentation of color, pattern, dimensions, production process, and care instructions. A single generic template is therefore insufficient. The training model uses shared principles—clarity, accuracy, consistency, customer orientation, and ethical communication—while allowing product-specific content. This approach aligns with evidence that digital adoption is shaped by compatibility with existing routines and by the perceived usefulness of the tool [13]–[16]. The baseline also suggests that personal use of digital media can be converted into business capability. Participants do not begin from zero: many are familiar with messaging applications and social platforms. The learning challenge is to transform informal behavior into repeatable business procedures. Examples include separating personal and business information, storing photographs systematically, using a standard order format, responding consistently, recording customer questions, and posting according to a manageable schedule. Starting with familiar devices reduces complexity and supports the gradual adoption pathway described in research on women entrepreneurs and mobile applications [8], [9].

3.2 Digital Literacy and Safe Technology Use

The digital-literacy component is designed to increase agency rather than merely teach button sequences. Participants practice how to recognize a trustworthy source, compare information, verify suspicious messages, manage passwords, control account recovery, and protect personal data. These skills are directly related to business continuity because account loss, fraud, and exposure of customer information can damage trust and discourage future technology use. Community-led learning principles support the use of local examples, peer explanation, and repeated practice [6], [7]. Accordingly, training scenarios use realistic cases: a false payment confirmation, a request for a one-time password, an unknown link, an edited product image, and a customer complaint received through a public comment. The program treats confidence as

observable task independence. A participant is considered more digitally capable when she can repeat a task, explain why a safety step matters, and assist another member—not simply when she has watched a demonstration. The Digital Mobilizer Group provides a peer-support mechanism for members who require more time. This is particularly important because a uniform training pace may exclude participants with older devices, lower prior exposure, visual limitations, or competing household responsibilities. Flexible mentoring and printed step guides are therefore included as accessibility measures.

3.3 Online Marketing and Marketplace Readiness

Online marketing training focuses on the customer journey from awareness to inquiry, order, payment, delivery, and after-sales communication. Social media is used for visibility, storytelling, and interaction, while marketplace tools are introduced for structured listings and transaction support. The program does not require every participant to use every channel. Instead, each group selects a primary channel and establishes a minimum viable routine. This responds to the literature showing that performance benefits emerge when social-media adoption is purposeful and integrated with organizational practices [10]–[12], [25]. A business profile is considered ready when its name, description, contact method, location or service area, product category, ordering procedure, and visual identity are consistent. A marketplace listing is considered ready when it contains an accurate title, category, photographs, description, price, stock information, variations where relevant, shipping information, and customer-response responsibility. This completeness standard prevents the common situation in which an account is technically created but not usable. It also creates an auditable portfolio for monitoring. Content planning is organized around four themes: product information, production and local story, customer guidance, and promotional offers. Participants develop a manageable calendar rather than an unrealistic daily posting obligation. Caption practice includes a clear opening, accurate product benefits, essential details, a call to action, and ordering information. The emphasis on consistency and customer relevance reflects empirical evidence that digital marketing can support reach and performance, but that results depend on implementation quality and organizational readiness [10], [17].

3.4 Branding, Packaging, and Promotional Content

The branding component begins with product meaning rather than graphic decoration. Participants identify what the product is, who buys it, why it is distinctive, what information customers need, and what promises can be supported consistently. This process produces a short brand statement, a name or naming direction, basic visual rules, and label content. Packaging improvement is constrained by affordability, availability, food safety, handling, and the production scale of each business. The objective is an achievable improvement, not a high-cost redesign that cannot be maintained. Product photography is taught as accurate visual communication. Participants use available smartphones, natural or simple artificial lighting, stable positioning, neutral backgrounds, and several views. Editing is limited to clarity and composition; it must not misrepresent size, color, quantity, or condition. This principle is important because packaging and visual presentation can influence brand experience and purchase intention [22], while the effect of specific visual elements varies by context and should not be treated as universal [23]. The portfolio rubric therefore assesses accuracy together with attractiveness. The expected content output of five to eight items per participating business or group is intentionally modest. It is sufficient to demonstrate several formats while remaining feasible for participants with limited time. The content portfolio may include a product photograph with caption, a short process video, an ingredient or material explanation, an ordering guide, a local-story post, and a customer-care message. Revisions are retained in the portfolio to show learning progression and to help mentors identify recurring needs.

3.5 Responsible AI for Microbusiness Support

AI is positioned as an optional assistant for ideation and drafting. Example tasks include generating several caption angles, simplifying a product description, organizing a weekly content plan, or translating a verified description into another language. Participants are taught that AI outputs may contain incorrect facts, inappropriate claims, generic language, or content that does not reflect local identity. The human owner remains responsible for every published statement. This approach follows AI-literacy frameworks that combine functional use with critical evaluation, ethics, and accountability [20], [21]. A five-step review protocol is used: remove confidential information before prompting; request a specific, limited task; compare the output with known product facts; edit the language to match the business and community; and obtain owner approval before publication. Participants are also advised not to upload identity documents, passwords, private customer conversations, unreleased designs, or sensitive financial information. The intended outcome is not dependence on AI but improved confidence in using it selectively and responsibly.

3.6 Institutional Sustainability and the Smart Village Pathway

The PKK Digital Mobilizer Group is the primary sustainability mechanism. Its proposed functions include maintaining shared guidance, assisting with account recovery and routine operation, coordinating content days, checking basic listing quality, documenting mentoring issues, and communicating with village representatives. Roles can be rotated to avoid dependence on a single technically confident person. A simple activity log records support requests, content produced, accounts maintained, and unresolved problems. This organizational layer reflects evidence that digital leadership and innovation capability influence the sustainability of technology use [24]. The intervention also supports a three-year Smart Village pathway. The first year builds foundations through assessment, basic literacy, initial business accounts, and the formation of the mobilizer group. The second year strengthens branding, content quality, marketplace operation, simple analytics, and institutional routines. The third year focuses on independent management and integration through a village promotional account or e-catalogue, stronger links with local government, and continued evaluation. This gradual model is consistent with Smart Village literature that emphasizes local capability, multi-actor collaboration, and place-based development rather than a one-time technology installation [18], [19].

Table 3. Three-year sustainability roadmap

Year and phase	Primary focus	Key activities	Expected institutional condition
2026: initiation and foundation	Needs assessment, basic digital literacy, and basic online marketing.	Training, initial accounts, packaging drafts, content portfolio, mentoring, and formation of the PKK Digital Mobilizer Group.	Local facilitators identified; basic routines and documentation established.
2027: incubation and optimization	Advanced branding, content, marketplace management, and simple performance review.	Improved storefronts, scheduled content, customer-response standards, mentoring of additional members, and periodic analytics review.	The mobilizer group operates with defined roles and village coordination.
2028: independence and Smart Village integration	Sustained community management and village-level digital promotion.	Official village promotion or e-catalogue, final brand consolidation, cross-group collaboration, and independent monitoring.	Digital activities continue without intensive external facilitation.

3.7 Evaluation Benchmarks, Risks, and Replicability

Table 4 presents the program's measurable thresholds. These values are benchmarks derived from the verified program design. They must not be interpreted as completed achievements until the final instruments and portfolios have been analyzed. Reporting this distinction is essential for research integrity. A future results manuscript should present participant numbers, missing data, instrument scoring, pre/post distributions, portfolio completion, and the observation period for business outcomes.

Table 4. Evaluation indicators and target thresholds (targets, not observed outcomes)

Indicator	Evidence source	Target threshold	Status at manuscript preparation
Use of a digital business application	Direct demonstration and checklist.	At least 85% of evaluated participants can independently use at least one relevant application.	Target; final measurement pending.
Business social-media or marketplace readiness	Profile/listing completeness checklist and screenshots.	At least 85% create or operate a business profile or marketplace listing appropriate to their readiness.	Target; final measurement pending.
Brand and packaging improvement	Before/after portfolio and feasibility rubric.	At least 85% produce a revised product identity or packaging/label design.	Target; final measurement pending.
Promotional content production	Content portfolio.	At least 85% produce five to eight accurate promotional items.	Target; final measurement pending.
Responsible AI understanding	Scenario task and verification checklist.	At least 85% demonstrate a safe, verified, and human-reviewed AI-assisted task.	Target; final measurement pending.
Local sustainability structure	Group decree/record, role list, and activity log.	A PKK Digital Mobilizer Group is established and conducts documented follow-up activity.	Planned institutional output.

The principal implementation risks are uneven attendance, device limitations, unstable connectivity, account-verification problems, limited time for content creation, fear of online fraud, and overreliance on one facilitator. Risk mitigation includes modular sessions, offline practice materials, shared equipment during training, repeated mentoring, backup account-recovery procedures, simple templates, and rotating group roles. A further risk is measuring success too early. Online presence can be established within weeks, but sales patterns, customer retention, and income effects require a longer and more controlled observation period. The model is replicable when four conditions are preserved. First, the intervention must begin with verified local products and needs. Second, training must produce assessable artifacts and independent demonstrations. Third, target values must be separated from observed outcomes. Fourth, a local support structure must remain after the university team reduces its involvement. The precise platforms, content formats, and thresholds may be adapted to the community. What should remain constant is the participatory logic, data integrity, and alignment between technology and the economic practices of the partner group.

4. CONCLUSION

The Teluk Kecapi empowerment program responds to a clear development opportunity: PKK women possess productive skills and local products, but their digital-business practices,

brand identity, direct market communication, and marketplace readiness remain limited. The proposed six-month intervention integrates foundational digital literacy, online marketing, branding and packaging, product content, business-account operation, responsible AI use, mentoring, and evaluation. Its central contribution is a practical progression from individual skill development to an institutional sustainability mechanism through the PKK Digital Mobilizer Group. The Smart Village orientation is therefore expressed through community capability, local enterprise strengthening, and collaboration with village government rather than technology installation alone. The article deliberately distinguishes verified baseline information and planned outputs from post-intervention effects. The 85% thresholds and other indicators are program benchmarks and must be validated using completed instruments, portfolios, account evidence, and an adequate observation period. Future work should report actual pre/post results, account activity, customer interaction, and business outcomes while acknowledging external influences. With transparent measurement and continued local mentoring, the model can support inclusive, women-led digital transformation and can be adapted for other rural microenterprise communities.

ACKNOWLEDGMENT

The authors acknowledge the Teluk Kecapi Village Government, the PKK organization and participating community members, the student organization facilitators, and Politeknik Negeri Sriwijaya for their coordination and support.

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