# Building Resilient Disabled-Owned MSMEs: An Integrated Approach to Digital Archiving, Content Marketing, and Operations Management in Denpasar City

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**Abstract.** Denpasar City serves as Bali's capital and economic epicenter for cultural tourism. Beyond macro-economic activities at Badung and Kumbasari Markets, the city's economy is driven by Micro, Small, and Medium Enterprises (MSMEs) contributing to the creative sector. Digitally, technological adoption is an absolute prerequisite for designing market-oriented strategies, expanding communication reach, and boosting brand awareness. However, digital acceleration creates disparities for disabled-owned MSMEs. To foster an inclusive ecosystem, Denpasar's government enacted a Local Regulation guaranteeing their economic rights. Paradoxically, demographic mapping remains under the Social Affairs Agency rather than the Department of Cooperatives and MSMEs. Data shows the disabled population rose from 530 in 2023 to 612 in 2024. The Graha Nawasena inclusive center accommodates 100 active disabled-owned MSMEs in crafts, culinary, and services, who underutilize local market potentials. To address this, this community service program implemented three strategic interventions: digital marketing training, cloud-based digital archiving, and inclusive operations management. Attended by 30 participants including disabled entrepreneurs, assistants, and observers post-training evaluations showed a 75% increase in digital literacy and operational capabilities. Consequently, Graha Nawasena successfully transformed into an integrative creative economy incubator, stimulating financial independence and competitiveness for disabled-owned MSMEs in Denpasar.

**Keywords:** Community Service, Disabled, Graha Nawasena, Inclusive, MSMEs

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# 1 Introduction

Denpasar City, functioning as the capital of Bali Province, represents the primary epicenter of regional economic activity and cultural heritage tourism. While traditional macroeconomic drivers like Badung Market and Kumbasari Market anchor physical trade, contemporary urban commerce increasingly relies on a vibrant network of Micro, Small, and Medium Enterprises (MSMEs) operating within the creative and hospitality sectors. In the current digital landscape, technological adoption is no longer optional; it serves as a foundational prerequisite for designing market-oriented strategies, broadening communication channels, and amplifying brand equity across diverse consumer segment (Audrin et al., 2024; Gartner, 2020). Nevertheless, rapid digital acceleration frequently engenders structural disparities, notably marginalizing disabled-owned MSMEs who encounter profound digital and managerial literacy barriers (Adiningrat et al., 2023).

To mitigate these inequities, the local government of Denpasar City enacted regional frameworks such as Regional Regulation No. 11 of 2022 concerning the protection and fulfillment of the rights of persons with disabilities. Despite these progressive mandates, an administrative paradox persists: demographic tracking and empowerment initiatives for disabled entrepreneurs are predominantly coordinated via the Social Affairs Agency rather than integrated into the mainstream Department of Cooperatives and MSMEs (Bakker & McMullen, 2023).

Statistical tracking indicates an expanding populace of individuals with special needs, rising from 530 residents in 2023 to 612 residents in 2024 across Denpasar's sub-districts. The Graha Nawasena inclusive center currently hosts approximately 100 active disabled-owned enterprises specializing in crafts, culinary products, and localized services. Preliminary field observations and diagnostic evaluations reveal that despite possessing high artisanal competence, these micro-enterprises struggle with severe structural deficiencies: low production standardization, manual record-keeping susceptible to physical degradation, unstructured operational workflows causing resource wastage, and rudimentary digital promotion devoid of persuasive copywriting or optimized visual aesthetics (Jackson, 2019).

Grounded in prior empirical models addressing e-catalogue assimilation and digital marketing frameworks for vulnerable demographics (Duckworth et al., 2019), this community service initiative addresses the core gap between inclusive policy ideals and commercial realities by deploying structured interventions in mobile content creation, cloud archiving, and lean operations management (Santoso et al., 2024; Sari et al., 2023).

# 2 Methodology

The implementation framework relies on a Participatory Technology Development (PTD) methodology, positioning disabled entrepreneurs not as passive recipients of instruction, but as active co-creators of accessible technological solutions (Svendsen & Løber, 2020). The program execution unfolds across five chronological phases over an intensive engagement cycle:

1) Socialization and Perception Alignment: Establishing operational consensus between the institution service team and Graha Nawasena leadership regarding long-term digital integration and shared project goals.
2) Accessible In-Class Capacity Building: Conducting modular workshops focusing on mobile phone product photography, and persuasive copywriting frameworks tailored for cognitive and physical accessibility.
3) Technological and Structural Innovation Deployment: Introducing an "Inclusion Digital Hub" and QR Code-integrated smart catalogs (Smart Menu MSMEs).
4) On-Site and Online Mentoring & Evaluation: Providing direct, hands-on assistance at instructor-to-participant ratio to address distinct physical or sensory limitations, coupled with pre-test and post-test performance evaluations (Jammaers & Williams, 2023).
5) Sustainability and Peer Mentorship Transition: Cultivating local leadership circles among fast-adapting participants to ensure continuous peer-to-peer mentoring beyond the formal project timeline.

# 3 Result and Discussion

## 3.1 Result

Post-intervention evaluations, longitudinal monitoring, and comprehensive field audits confirmed profound quantitative and qualitative advancements across all targeted operational, administrative, and marketing dimensions for the micro-enterprises housed within Graha Nawasena. Successful migration to paperless cloud administration participating disabled entrepreneurs transitioned entirely away from legacy paper-based notebooks. Initial diagnostic assessments demonstrated that 100% of participating disabled-owned micro-enterprises maintained financial tracking, client directories, transactional notes, and legal documentation via vulnerable paper ledgers. These legacy manual recording techniques presented significant risks including physical damage, ink smudging, lost pages, and calculation mistakes.

Through iterative mentoring sessions, the facilitation team orchestrated an absolute migration to encrypted, cloud-anchored storage tools (such as accessible directory platforms). Participants learned to digitize paper files, rename folders systematically, and index operational logs by date and category (Julaihi et al., 2024; Putri et al., 2025). By project close, businesses achieved a paperless workflow, allowing secure multi-device retrieval of critical historical records and eliminating environmental record vulnerability Baseline evaluations highlighted severe operational inefficiencies, including sporadic task distribution, spontaneous supply shortages during active manufacturing, and fluctuating standard outputs across artisan units. To resolve these structural limitations, the team worked alongside partners to formulate simplified, highly visual "Inclusive Production Flowcharts" and structural job matrices acting as tailored standard workflows. These visual protocols mapped raw material management from acquisition through final packaging.

Post-intervention tracking indicated a 40% decrease in material waste alongside uniform improvements in product alignment and assembly consistency (Sahu et al.,

2022). Enterprise visibility was previously restricted due to dependence on external helpers for promotional content and minimal social media presence lacking clear brand identifiers. To foster self-sufficiency, targeted workshops were conducted on accessible graphic design applications, mobile illumination techniques, and structured promotional messaging. Trainees engaged in practical layout exercises reflecting actual market exchanges.

Evaluation metrics confirmed that participants gained full autonomy, producing a weekly average of five high-resolution, branded graphics and short instructional or promotional videos without ongoing external guidance (Adiningrat, 2025). To mitigate spatial and verbal constraints during buyer-vendor interactions, the program instituted cloud-hosted digital menus accessed via distinctive QR matrices. Printed at A6 dimensions for table presentation and compact scale for item labels, these interfaces utilized high-contrast color schemes (royal blue, sunny yellow, and clean white) together with screen-reader-compatible alt-text configurations. Consumers are thus empowered to examine real-time pricing and merchandise specs via personal smartphones independently, streamlining transaction workflows.

Transaction records, client details, financial bookkeeping, and institutional legal certificates were restructured and systematically indexed into encrypted, accessible cloud storage folders configured for multi-device retrieval. Institutionalization of Standardized Operational Procedures (SOPs), the execution team co-created inclusive, easy-to-follow visual production flowcharts and granular job-description matrices. This intervention enabled participants to align their daily tasks, resulting in a marked 40% reduction in material waste and a consistent baseline quality across diverse product output units. Proficiency in accessible visual content creation through intensive practical workshops utilizing applications such as Canva, CapCut, partners independently mastered mobile phone studio lighting configurations, product angle framing, and short-form video assembly.

Participants demonstrated the capacity to generate an average of high-resolution, branded media assets weekly. Deployment and adoption of smart *QR Code* catalogs, web-view landing pages embedded within standardized *QR codes* were fully launched. Customers visiting Graha Nawasena or scanning product packaging can seamlessly navigate high-contrast, screen-reader-friendly digital item lists and real-time pricing grids independently. Tangible literacy and capability growth, post-test performance audits revealed a 75% aggregate upward shift in technical digital literacy and operational execution confidence among all active trainees, cementing Graha Nawasena's transition into an active creative economy incubator Pre-test and post-test analytical audits revealed an overall 75% rise in technical confidence, digital capability, and administrative organization among active beneficiaries. Graha Nawasena successfully transitioned into a functional creative economy incubator, driving long-term independence for local disabled entrepreneurs.

### 3.2 Discussion

The transition from vulnerable manual record-keeping to structured cloud archiving directly resolves the administrative instability extensively documented in

organizational and micro-cooperative literature (Kotler & Keller, 2016). Establishing centralized, searchable digital logs not only mitigates the physical degradation of historical business data but also empowers disabled business owners to run objective, data-supported financial performance evaluations (Duckworth et al., 2019). By replacing legacy paper notebooks with multi-device accessible cloud storage directories, the program addresses the core administrative vulnerabilities that traditionally impede small-scale artisans and vulnerable micro-enterprises (Adiningrat et al., 2024).

Furthermore, deploying QR-code smart menus and structured digital content pillars bridges the communication chasm between producers and consumers, effectively neutralizing traditional verbal or physical transaction hurdles that often obstruct marginalized vendors during direct commercial exchanges (Afrilia, 2018). These outcomes robustly corroborate prior scholarly inquiries demonstrating that targeted, accessible digital literacy interventions substantially elevate market competitiveness and foster structural economic autonomy among vulnerable micro-enterprises (Fakhrurozi et al., 2025).

The integration of accessible graphic design tools and tailored workflow protocols proves that digital equity is achievable when technological frameworks are designed with sensory and physical accommodations in mind (Svendsen & Løber, 2020). Embedding these technologies directly operationalizes regional equity mandates under local legislation, specifically aligning with Peraturan Daerah Nomor 11 Tahun 2022 concerning the protection and fulfillment of the rights of persons with disabilities (*Peraturan Daerah Nomor 11 Tahun 2022: Pengaturan Perlindungan Dan Pemenuhan Hak Penyandang Disabilitas*, 2022). From a broader developmental perspective, these findings advance global sustainability targets, explicitly reinforcing Sustainable Development Goal 8 regarding decent work and economic growth, and Sustainable Development Goal 10 focused on reducing inequalities by securing equitable commercial agency for disabled citizens. Additional empirical observations reinforce that collaborative peer support architectures amplify knowledge retention within micro-enterprises, confirming that participatory technology development models yield superior adoption rates compared to top-down instructional frameworks (Duckworth et al., 2019).

By actively involving disabled entrepreneurs as co-creators of their digital environment rather than passive recipients of aid, the intervention successfully bridges the persistent gap between inclusive policy ideals and daily business execution. Ultimately, maintaining these adaptive digital networks, tracking demographic distributions through channels like the Dinas Sosial Kota Denpasar (Dinas Sosial Kota Denpasar, 2023), and fostering inter-institutional market linkages are vital for ensuring long-term commercial viability and self-reliance in urban economic centers.

## 4 Conclusion

The comprehensive community service intervention executed at the Graha Nawasena inclusive center conclusively demonstrates that structured, highly accessible technological training serves as a profound catalyst for converting traditional welfare-

oriented facilities into dynamic, self-sustaining creative economy incubators. For an extended period, disabled-owned micro, small, and medium enterprises (MSMEs) in Denpasar City have encountered acute structural marginalization, characterized by an administrative disconnect where empowerment initiatives remain sequestered under the Social Affairs Agency rather than integrated into mainstream economic development frameworks. Despite regional legislative mandates designed to protect the rights of persons with disabilities, these enterprises have historically suffered from operational inefficiencies, manual paper-based record-keeping susceptible to physical degradation, and limited digital visibility To systematically address these complex challenges, this initiative implemented an integrated, multi-pronged intervention model combining secure cloud-based administrative archiving, inclusive production flowcharts for lean resource governance, autonomous visual asset generation using accessible mobile tools, and screen-reader-compatible QR-code smart catalogs.

The empirical results and longitudinal evaluations substantiate that these customized interventions generated extraordinary quantitative and qualitative gains. Specifically, participants achieved complete migration from vulnerable physical notebooks to encrypted, multi-device accessible cloud repositories, established standardized operational routines that reduced raw material wastage by 40%, and acquired full autonomy in producing professional digital marketing content on a weekly basis. Furthermore, the deployment of smart QR-code catalogs successfully neutralized spatial and verbal communication barriers during consumer interactions, enabling independent buyer navigation and streamlining transaction workflows.

Quantitatively, diagnostic performance audits registered a remarkable 75% aggregate upward shift in technical digital literacy, administrative organization, and operational confidence among all active beneficiaries. These outcomes robustly validate the efficacy of Participatory Technology Development frameworks, proving that positioning disabled entrepreneurs as active co-creators rather than passive recipients yields superior technological adoption and long-term capability retention. By bridging the persistent chasm between progressive inclusive policies and daily commercial execution, the program directly reinforces global developmental objectives, aligning seamlessly with Sustainable Development Goal 8 for decent work and economic growth, as well as Sustainable Development Goal 10 focused on reducing inequalities.

Looking forward, the long-term viability and resilience of vulnerable micro-enterprises cannot rely on isolated capacity-building events alone. Future developmental trajectories must prioritize the systematic scaling of these adaptive digital networks across broader regional territories, the formalization of inter-institutional market linkages between inclusive centers and mainstream commercial sectors, and the institutionalization of localized peer-mentorship circles. Such comprehensive, continuous collaborative networks are essential to safeguard permanent financial self-reliance, foster true market competitiveness, and ensure that disabled-owned MSMEs evolve into resilient, empowered pillars of the modern urban economy in Denpasar City and the wider regional landscape

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