

LEVERAGING ASSISTIVE DIGITAL TOOLS AND E-COMMERCE PLATFORMS TO ENHANCE SKILLS, PRODUCTIVITY, AND MARKET ACCESS OF DIVYANGJAN IN RURAL HANDICRAFT CLUSTERS

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College : M.S. Ramaiah University of Applied Sciences, Bengaluru
Branch : Department of Faculty of Management and Commerce
Guide(s) : Mr. P Rajeev Prasad
Dr. KM Sharath Kumar
Student(s) : Ms. Harshitha J
Mr. R Kaushik
Ms. Chandana P
Ms. Nikitha L

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Introduction:

The rural handicraft sector supports India's economy. However, systemic barriers limit access for Divyangjan. Urban areas see rapid digital growth. Rural clusters face a sharp digital divide. This divide restricts productivity and market access. Assistive tools can empower these rural artisans. These include screen readers and AI tools. E-commerce integration expands global market reach. This project transforms crafts into sustainable livelihoods. Digital tools bridge existing accessibility gaps. The initiative supports a digitally empowered ecosystem. It aligns with goals like Digital India. Skill India and Atmanirbhar Bharat guide this. Inclusion is a structural, not technical, issue. Rural clusters must evolve to remain competitive. Digital literacy remains a significant challenge. Limited infrastructure hinders rural handicraft progress. Grassroots creativity meets modern technology here. Holistic approaches address social and environmental dimensions. Field research uncovers practical barriers for artisans.

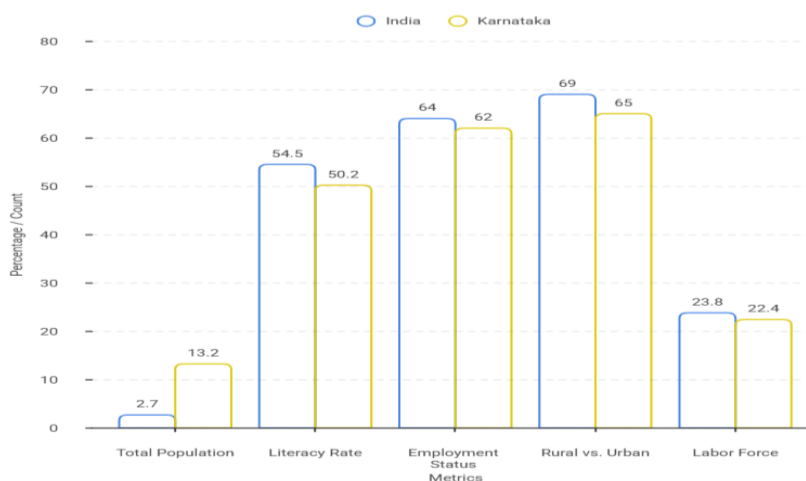


Figure 1 Comparison of Disability Metrics: India vs. Karnataka

Objectives:

1. To understand the current awareness, usage patterns, and impact of assistive digital tools and e-commerce platforms on Divyangjan artisans in rural handicraft clusters
2. To identify and analyze the major challenges faced by Divyangjan artisans in adopting these digital solutions
3. To recommend simple digital interventions for better skills, productivity, and market access

Methodology:**Phase I: Exploratory Research & Secondary Data Synthesis (Objective 1)**

Research Design: A Qualitative Exploratory Design utilizing a systematic literature review (SLR) approach.

Data Sources: This phase involves the extraction of high quality secondary data from Scopus-indexed journals

Methodological Terms: The goal is to establish a theoretical baseline for "Digital Maturity" within rural handicraft clusters. Content Analysis on existing reports to identify recurring "Awareness Gaps" and "Usage Obstacles" that have been historically documented for Divyangjan artisans.

Output: A conceptual map of the current socio technical landscape.

Phase II: Descriptive Research & Primary Empirical Investigation (Objective 2)

Research Design: A Cross-Sectional Descriptive Design using a quantitative survey methodology.

Data Collection Tool: A Structured Survey Instrument (Questionnaire) designed with Likert-scale items to measure "Perceived Ease of Use" and "Perceived Usefulness" of digital tools.

Sampling Strategy: Purposive Sampling of Divyangjan artisans within rural handicraft clusters to ensure representative data across different disability.

Data Analysis (SPSS/JMP): Descriptive Statistics: To profile the demographic and skill distribution.

Inferential Statistics: Utilizing Correlation Analysis or Chi-Square Tests to identify significant relationships between the type of disability and the specific adoption barriers faced.

Methodological Terms: This phase focuses on Empirical Validation of the challenges identified in Phase I.

Phase III: Integrative Analysis & Evaluative Framework (Objective 3)

Research Design: An Evaluative Mixed Methods Synthesis.

Methodological Terms: This phase involves Data Triangulation, where the quantitative results from the primary survey are "cross verified" against the best practices found in the literature.

Analytical Framework: A Gap Analysis (Actual vs. Potential) to determine where digital interventions—such as assistive e-commerce onboarding can provide the highest "Return on Inclusion" (ROI).

Output: The development of an Actionable Strategy Roadmap. These recommendations are linked to Sustainable Development Goal (SDG) 8.5, ensuring the proposed solutions are both technically feasible and globally aligned with inclusive growth standards.

Result and Conclusion:

- **Literature Synthesis:** A systematic secondary analysis has been conducted to establish the "Digital Maturity" baseline within rural handicraft clusters. By synthesizing findings from Scopus-indexed journals and government reports, the study identifies that while artistic potential is high, a "digital isolation" exists due to a lack of accessible interfaces (Mishra and Singh, 2021). The review confirms that shifting from a medical to a social model of disability is the primary requirement for successful policy integration (WHO, 2024).
- **Instrument Design (Questionnaire):** A structured questionnaire has been developed to capture primary data from Divyangjan artisans. The instrument is meticulously designed to measure "Perceived Ease of Use" regarding e-commerce onboarding and to identify specific "Meso-level" organizational barriers faced by rural SHGs.
- **Data Collection Status:** The primary survey and field data collection are yet to commence. The project is currently in the preparatory phase, with fieldwork scheduled to begin following the finalization of the survey instrument. Once initiated, data collection is expected to be completed by April 2026. Preliminary observations from pilot literature indicate that targeted assistive interventions such as AI-driven design aids could enhance productivity by up to 30% (Sharma et al., 2022).
- **Anticipated Productivity Gains:** Upon completion, the integration of assistive digital tools and e-commerce platforms is expected to create a direct-to-consumer (D2C) pathway, allowing Divyangjan artisans to retain significantly higher profit margins. This alignment with SDG Goal 8.5 ensures that rural handicraft clusters move toward salary parity and full productive employment.
- **Digital Empowerment:** Targeted training initiatives are anticipated to reduce the "technological anxiety" prevalent in rural clusters. By applying Universal Design for Learning (UDL) principles, the project aims to empower artisans to independently manage production, marketing, and digital transactions (Kokko and Harjula, 2023).

Project Outcome & Industry Relevance:

The project delivers a practical sustainability framework. Digital tools improve operational efficiency. PwD participation in the value chain increases. These outcomes align with Accessible India priorities. Research is relevant to NGOs and social enterprises. Government agencies benefit from skill-building strategies. Actionable strategies improve productivity and market reach. Findings inform future policy recommendations. Capacity building programs will promote equitable growth. Scalable interventions support inclusive rural development.

Project Outcomes and Learnings:

The team identifies systemic and operational barriers. Insights focus on Divyangjan inclusion through technology. Research reveals inadequate infrastructure and digital illiteracy. Socio-economic constraints hinder rural digital integration. A structured framework enhances sustainability. The team gains practical research design skills. Statistical analysis using

SPSS/JMP is learned. Stakeholder engagement provides experiential learning. Problem-solving skills are applied to real-world data. Interdisciplinary collaboration strengthens the final model.

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Future Scope:

1. **Cross-Sectoral Scalability:** The "Purple Economy" framework developed for handicrafts can be adapted for other rural industries such as agro processing and textiles to evaluate its broader applicability
2. **Collaborative Pilot Programs:** Future phases will explore partnerships with industry bodies and NGOs to pilot the recommended e-commerce onboarding strategies in real world settings
3. **Dedicated Assistive Application:** A long-term goal is the development of a low-bandwidth, voice-activated mobile application tailored specifically for Divyangjan artisans, incorporating local language support and simplified navigation
4. **Long-Term Impact Assessment:** A follow-up longitudinal study is envisioned to monitor the career progression and social integration of participants over a two year period following the implementation of digital tools
5. **Policy Advocacy and IPR:** The empirical insights regarding the 5% private sector quota (as per the Karnataka PwD Employment Bill 2025) could inform state-level policy recommendations. There is also potential to seek intellectual property protection (IPR) for the unique digital intervention model developed.