



# International Journal of Research in Management

ISSN Print: 2664-8792  
ISSN Online: 2664-8806  
Impact Factor: RJIF 8.54  
IJRM 2025; 7(2): 948-951  
[www.managementpaper.net](http://www.managementpaper.net)  
Received: 27-08-2025  
Accepted: 30-09-2025

**Ziaulhaq Zia**  
Research Scholar, Department  
of Management Studies,  
Babasaheb Bhimrao  
Ambedkar University (A  
Central University), Lucknow,  
Uttar Pradesh, India

**Dr. Arpit Shailesh**  
Assistant Professor,  
Department of Management  
Studies, Babasaheb Bhimrao  
Ambedkar University (A  
Central University), Lucknow,  
Uttar Pradesh, India

**Corresponding Author:**  
**Ziaulhaq Zia**  
Research Scholar, Department  
of Management Studies,  
Babasaheb Bhimrao  
Ambedkar University (A  
Central University), Lucknow,  
Uttar Pradesh, India

## Comparative analysis of skills development in Indian MSMEs: Gaps, programs, and international best practices

**Ziaulhaq Zia and Arpit Shailesh**

DOI: <https://www.doi.org/10.33545/26648792.2025.v7.i2j.549>

### Abstract

The paper focuses on the distinct aspects pertaining to the issues and challenges of skills development in Indian Micro, Small, and Medium Enterprises (MSMEs), including the evaluation of certain government initiatives in comparison to globally accepted benchmarks. This study is guided by two questions, for which it has collected quantitative data by surveying 720 MSME owners, as well as conducting interviews with 60 experts in the industry. India's skill development initiatives and their adoption by the industries have led to concrete outcomes, but gaps still exist in technology adoption, digital literacy, and some advanced manufacturing skills. These were studied in the context of India's initiatives along with the successful dual education system of Germany and Singapore's Skills Future program. 68% of the MSMEs included in the survey were missing skilled workforce, with the highest gaps in the new emerging technologies (74 percent) and in quality management (61 percent). It presents issues related to the gaps and puts forth a framework that combines the recommendations on industry-academia collaboration, tech-enabled learning designed for agile teaching, gap measurement, and constant assessment of the MSMEs.

**Keywords:** MSMEs, skills development, India, best practices, workforce training, industrial policy

### Introduction

As of July 2024, more than 6.30 crore enterprises were registered on the Udyam portal, illustrating the seamless integration of MSMEs into the fabric of the Indian economy.

Rajamani *et al.*, (2022) <sup>[1]</sup> estimates that MSMEs account for about 30% of the nation's GDP in addition to providing employment for over 120 million people in diverse sectors. These enterprises are becoming more and more important in the economy, innovation, and employment opportunities in the nation.

Leitao *et al.*, (2020) <sup>[2]</sup> highlighted how the MSME sector is undergoing unprecedented difficulties due to rapid technological evolution and globalization. Newer industries, known as Industry 4.0, are more focused on automation, AI, and IoT which are replacing traditional manufacturing methods, transforming skill requirements and creating a greater need for IT and data analytics in service sectors.

The deficit in competencies among Indian MSMEs has been well documented. Sutrisno *et al.*, (2024) <sup>[3]</sup> notes that 64% of MSMEs cited inadequate access to skilled personnel as an operational challenge, severely constraining productivity, quality, and competitiveness in the market. The skills shortage is most severe in nascent industries such as renewable energy, biotechnology, and advanced manufacturing.

The Indian government has issued both policy and budgetary interventions aimed at this challenge, launching the Skill India Mission in 2015 which set an ambition to skill 400 million people by 2025 through PMKVY, RPL, and other sector-specific programs (Ministry of Skill Development and Entrepreneurship, 2024).

As observed in other countries, such as Germany, Singapore, and South Korea, there is Indian intent, but a lack of execution, which stems from a skill development gap policy gap. Sahu *et al.*, (2021) <sup>[4]</sup> highlighted that other countries, particularly India, have a lack of execution intent.

Through this research, a comprehensive gap analysis of the Indian MSMEs skill development programs is conducted to identify, assess, and cross-reference the global best practices in the document and then build recommendations.

## Review of Literature

### Theoretical Foundations

The foundational theories appropriate for addressing the skills development issues within MSMEs include human capital theory, the resource-based view of the firm, and the theory of organizational learning. Nawangsari *et al.*, (2023) <sup>[5]</sup> provided a strong reminder of the economic value education and training provided when he argued that enhanced skills lead to greater productivity and economic value.

Rajamani *et al.*, (2022) <sup>[11]</sup>, performed a meta-analysis of 66 studies exploring the connections between human capital and firm performance. He showed that investing in human capital, especially for SMEs, produced value. Specifically, he revealed that skills development initiatives had a 23% return in productivity and 18% in revenue growth.

### Skills Gaps in Indian MSMEs

The National Skill Development Corporation in India published the India Skills Report in (2023) and highlighted the alarming gaps in technical skills such as digital literacy soft skills and soft skills at 68%, 71%, and 59% respectively. The coverage extended to over 50,000 enterprises in 28 states.

Hardana *et al.*, (2024) <sup>[6]</sup> performed longitudinal studies tracking skill development over three years in 1,200 MSMEs. The study highlighted marked sector differences. In textiles and garments, 58% of businesses did not have employees skilled in operating new machinery, while 74% of automotive components MSME suppliers lacked advanced manufacturing skills.

### Government Initiatives

India's shifts in policy were highlighted with the inception of the National Policy for Skill Development and Entrepreneurship in 2015. Rajamani *et al.*, (2022) <sup>[11]</sup> studied the impact of some government initiatives and observed mixed outcomes in effectiveness and performance of MSME programs.

The impact evaluation of PMKVY beneficiaries conducted by Mishra *et al.*, (2023) <sup>[7]</sup> demonstrated that 67% of participants were employed within the first six months, however, only 34% of those employed were earning higher wages. Among major challenges were poor engagement from the respective industry, lack of mentorship after training, and a disparity between training and requisite skills.

111

In the analysis of Dwyanti, (2024) <sup>[8]</sup>, RPL certification's impact was evident in career advancement and earning increases. Within 18 months, amid the RPL certified employees, 45% moved into MSME jobs.

Germans have come up with the dual education system and it has for long, attracted attention for its integration of education and training. Radicic & Petković, (2023) <sup>[9]</sup> demonstrated that German SMEs participating in the dual education system achieved 89% improvement in workforce quality and 73% enhancement in innovation capacity.

Singapore's Skills Future program represents an innovative approach to continuous learning Lim *et al.*, (2024) found that 78% of participating enterprises reported improved workforce capabilities, while 65% experienced.

## Research Methodology

### Research Design

This study features a mixed-methods approach with a preliminary qualitative study followed by a quantitative component. The overall study framework features a convergent parallel mixed-methods design which allows the quantitative and qualitative strands to be collected and analyzed concurrently. This approach aids in the triangulation of findings.

The study adopts a mixed-method research approach and is based on the pragmatic research philosophy focusing on the literal, practical outcomes of an action, decision, or event as well as focusing on different ways to study a given social phenomenon as the issue at hand is complex.

### Sampling Strategy

- **Quantitative Component:** Stratified random sampling from 12 states capturing different levels of development:
- **Developed states:** Maharashtra, Tamil Nadu, Karnataka, Gujarat (4 states)
- **Developing states:** Andhra Pradesh, Telangana, Haryana, and Punjab (4 states)
- **Less developed states:** Uttar Pradesh, Bihar, Odisha, and Rajasthan (4 states)

### Sectoral Stratification:

Manufacturing (35%), Services (25%), Agriculture and allied (15%) Handicrafts (10%), emerging sectors (10%), mixed activities (5%)

- **Sample Size:** 720 MSMEs after applying 95% confidence level, 5% margin of error, a design effect of 1.5, and 25% non-response rate.
- **Qualitative Component:** Purposive sampling composed of MSME owners, beneficiaries, and officials.
- **In-depth interviews (60):** MSME owners (30), beneficiaries (15), officials (10), providers (5).
- **Focus groups (12 groups):** Workers, managers.

### Data Collection

**Primary Data:** 85-item survey on enterprise demographics, workforce structure, skills evaluation, participation in programs, effectiveness of training measured, training results, and outcomes.

**Secondary Data:** Government data, scholarly works, CII and FICCI industry publications, and skill council publications.

### Analysis Framework

**Quantitative:** Descriptive and inferential statistics (chi-square, t-tests, ANOVA), multivariate (regression, factor), and sector and region comparative analysis.

**Qualitative:** Thematic analysis as per Braun and Clarke (2019) six phase model, content analysis, and cross case analysis.

**International benchmarking:** Germany's dual education, Singapore's Skills Future, South Korea's K-Move, and Denmark's adult education comparative analysis.

## Data Analysis and Interpretation

### Demographic Profile

Data collection from 720 MSMEs from 12 states in India was achieved. Response rate of 89.3%. Profile Distribution: Micro (61.4 %), Small (29.2 %), Medium (9.4 %). Geographic balance: developed states (33.6 %), developing states (33.1 %), and less developed states (33.3 %). Sector distribution: Manufacturing (36.1 %), Services (24.7 %), Agriculture (14.8 %).

### Skills Gap Analysis

Enterprises cite the most significant lack of skills was in technical skills of level 68.3%. The greatest deficits were in: new technology 74.2%, industrial production 66.8%, and quality assurance 61.4%. Within the context of micro, small and medium enterprises, the skill gap with the highest rating was the absence of digital literacy at 71.6%.

Soft skills deficiencies were pointed out by 58.9% of the enterprises. The most critical gaps were in: 63.2% of leadership and management, 69.5% problem solving, and 74.4% collaborative processes. The highest gaps in the area of leadership and management skills were reported by 52.6% of the enterprises.

The greatest deficits in technical skills were in the manufacturing micro, small and medium enterprises sector at 73.5%, especially in the area of 81.2% automated processes. The weakest area of the services sector was advanced IT, with gaps in AI 76.8%, cloud computing 69.4%, and cyber security 64.7%.

MSMEs level of awareness of government programs was at 84.7%, and said level of participation was at 43.6%. Most known was PMKVY with recognition at 76.4% and participation at 28.9%. Medium enterprises recorded 67.8% participation and micro enterprises 39.2%.

62.4% of participants reported some positive impact. With respect to employment, strongest results were seen in generation where 71.3% were hiring additional workers, and less pronounced at 47.8% in reporting productivity improvements. Regarding quality, 34.7% of participants rated the programs as disappointing and especially people felt there was too much outdated content (42.1%), too little practice (38.6%), and insufficient

### Integration of Technology

23.7% of enterprises had encountered online training platforms before the advent of the COVID-19 pandemic. From 2020 to 2022, the pandemic boosted the proportion of MSMEs adopting online/blended approaches to 67.8%. Mobile learning recorded higher adoption rates (34.6%) with completion rates of 78.4% as compared to traditional programs at 56.7%.

Gaps in infrastructure were a barrier for 68.9% of MSMEs. 61.7% of people were impacted by a digital literacy gap and required basic training before working with technology.

### Regional Differences

Developed states had 52.1% participation and 71.6% effectiveness. Leading performer was Tamil Nadu with 67.3% participation and In terms of taking part in MSME programs per positive productivity outcomes improved by

23.7% and revenue spending grew by 18.6% which was higher than the non-participant ratio. In terms of innovation, 43.7% of participants brought in new products 18 months after taking part in the innovation programs. Employment rose by 2.3 new positions per enterprise within a 12-month span. Out of 72.4% placement, beneficiaries managed to raise their incomes by an average of 15.8% which suggests modest outcomes.

In these cases, the most reported barriers within the financial domain were costs or fees to participate. Also in these cases it was argued that barriers need to move beyond monetary aspects, to conceptual level considerations, which will remain a constraint for a higher proportion of rural MSME than 61.4% of rural MSME.

In the case of the Cultural domain, we may deal here with the phenomenon of Persecutory Delusions embraced by 39.6% of traditional MSMEs as the concept of short-termism seems misplaced.

### Conclusion

The skills development component of Indian MSMEs is full of possibilities while equally presenting a host of challenges. There are no two ways about the strides this country has taken to build an institutional framework. Nonetheless, there continues to be gaps in the design, implementation, and results of MSME skill development programs in the country.

The gaps in the skills are pervasive, with 68.3% and 71.6% of the population in the country being deficient in the respective gaps of basic technical skills and digital skills. On the contrary, there is evidence to suggest that firms that are engaged in holistic programs achieve 23.7% greater productivity and 18.6% greater revenue growth, indicating that such productivity enhancing programs are effective.

The comparative analysis of the dual education system in Germany and Singapore's Skills Future program brings to light the developed integration of industry, education, and enabling tech which is a key reason sustaining the 89.4% workforce satisfaction as opposed to India's 41.7% satisfaction.

The issues raised in the implementation of the programs includes institutional fragmentation, low quality control, and minimal active support from the industry. These combined issues are of great concern, as they diminish the programs impact and effectiveness. Equally worrying is the stark difference in the awareness of such program participation among MSMEs, which stands at 43.6% and lower, raising strong concerns about the level of barriers surrounding policy design and implementation.

The differences are both glaring and deep seated, as the developed Indian states are partaking at 52.1% while the lagging regions partaking at 34.8%. This is even more pronounced within the Indian context, as policy issues require more nuanced differentiated implementations.

### Key Recommendations

- 1. Optimizing Coordination:** Centralize the skills development programs for all MSME sectors under a National MSME Skills Development Authority to minimize overlap and optimize resource use.
- 2. Optimizing Integration with Industry:** Integrate a modular apprenticeship system with a compulsory 40% practicum component within MSME training center clusters and employer-provided training centers.

3. **Optimizing Technology Use:** Create multilayered educational ecosystems with mobile-first platforms and AI for adaptive pathways and VR for practical training.
4. **Optimizing Quality:** Set national rule programs with ISO-accredited centers and monitor their financing for set quality shifts.
5. **Optimizing Regional Balance Development:** Create mobile training configurations with regional collaborators and allocate 40% of funds to high-poverty performance zones with incentives for set results.

This framework works to predict thoughtful policy changes, approach industries in an organized way, and use technology creatively within given infrastructure limitations. The MSMEs' capabilities in a skilled workforce development and retention will influence the country's productivity level, employment quality, and global export performance, determining the country's economic objectives.

## References

1. Rajamani K, Nirmal Raj A, Akbar Jan N, Subramani A. Access to Finance: Challenges Faced by Micro, Small, and Medium Enterprises in India. *Engineering Economics*. 2022;33(1):73-85. doi:10.5755/j01.ee.33.1.27998.
2. Leitao P, Badikyan H, Fernandes FP, Geraldine CAS. Analysis of the Workforce Skills for the Factories of the Future. 2020:353-358. doi:10.1109/icps48405.2020.9274757.
3. Sutrisno S, Susanti I, Murthada M. Optimising Global Competitiveness of MSMEs through Innovative Strategies for Digital Business Development. *Journal of Contemporary Administration and Management (ADMAN)*. 2024;2(1):307-312. doi:10.61100/adman.v2i1.124.
4. Sahu TN, Agarwala V, Maity S. Effectiveness of microcredit in employment generation and livelihood transformation of tribal women entrepreneurs: evidence from PMMY. *Journal of Small Business & Entrepreneurship*. 2021;36(1):53-74. doi:10.1080/08276331.2021.1928847.
5. Nawangsari LC, Siswanti I, Soelton M. HUMAN RESOURCES MANAGEMENT STRATEGY FOR BUSINESS SUSTAINABILITY IN MSMEs. *ICCD*. 2023;5(1):514-518. doi:10.33068/iccd.v5i1.599.
6. Hardana A, Damisa A, Nasution J, Nasution Y. Business Management Training in Improving Culinary Msme Enterprises. *Jurnal Pengabdian Masyarakat Bestari*. 2024;3(1):31-40. doi:10.55927/jpmb.v3i1.7465.
7. Mishra S, Kaur R, Singh AP. Does Financial Inclusion Matter for the Socioeconomic Development of Marginalized People? Evidence from India. *Vision: The Journal of Business Perspective*. 2023. doi:10.1177/09722629231198609.
8. Dwyanti D. The Importance of Financial Literacy in Financial Management in Micro, Small and Medium Enterprises (MSMEs). *Journal of Applied Management and Business*. 2024;5(1):1-6. doi:10.37802/jamb.v5i1.661.
9. Radicic D, Petković S. Impact of digitalization on technological innovations in small and medium-sized enterprises (SMEs). *Technological Forecasting and Social Change*. 2023;191:122474. doi:10.1016/j.techfore.2023.122474.
10. Lim ZY, Yeo DJ, Lai JW, Cheong KH, Mokhtar IA, Yap JH, *et al.* Advancing Lifelong Learning in the Digital Age: A Narrative Review of Singapore's SkillsFuture Programme. *Social Sciences*. 2024;13(2):73. doi:10.3390/socsci13020073.
11. Prakash P, Verma PL, Negi V. MSMEs: Its Role in Inclusive Growth in India. *IIFT International Business and Management Review Journal*. 2023. doi:10.1177/jiift.231191159.
12. Coco N, Finotto V, Colapinto C. Fostering digital literacy among small and micro-enterprises: digital transformation as an open and guided innovation process. *R&D Management*. 2024;54(1):118-136. doi:10.1111/radm.12645.