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Skill Upgradation and Its Effect on MSME Efficiency: A Case Study of SPSR Nellore District

Dr. Rajaiah Koramutla[1], Dr. Ramanaiah Ragala[2]

[1] Principal & Associate Professor Department of Commerce and Management Sri Sai Ram Institute of Pg Studies Nellore

[2]Associate Professor Department of Commerce and Management Krishna Chaitanya Institute of Science and Technology Nellore

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ABSTRACT

Micro, Small, and Medium Enterprises (MSMEs) are critical for India's economic growth, employment generation, and regional development. However, their efficiency is often constrained by skill gaps and limited technology adoption. This study examines the impact of skill upgradation on operational efficiency of 240 MSMEs in SPSR Nellore District, Andhra Pradesh, using structured questionnaires and stratified random sampling. The study finds that enterprises investing in training and technology adoption experience significant improvements in productivity, product quality, and employee utilization. The results highlight the importance of integrated skill and technology programs for MSME competitiveness.

Keywords: MSME, Skill Upgradation, Efficiency, Training, Technology Adoption, Nellore District.

INTRODUCTION

MSMEs play a vital role in India's industrial ecosystem, contributing significantly to GDP and employment. Yet, productivity, quality, and operational efficiency remain a challenge due to skill deficiencies and limited adoption of modern technologies. Skill upgradation refers to structured efforts to enhance technical, managerial, and digital skills among employees. When combined with technology adoption, it can improve productivity, reduce defects, and enhance overall efficiency. This study focuses on SPSR Nellore District, a region with a diverse MSME base including manufacturing, agro-based, handloom, and service enterprises.

Meaning of MSMEs

MSME stands for Micro, Small, and Medium Enterprises. These are enterprises engaged in manufacturing, service, or trading activities that operate on a relatively smaller scale compared to large industries.

The key characteristics of MSMEs are:

1. Limited investment in plant, machinery, or equipment.
2. Moderate turnover relative to larger enterprises.
3. Significant role in employment generation, regional development, and economic growth.
4. Access to government incentives and schemes designed to support growth, modernization, and skill development.

In essence, MSMEs are small-scale enterprises that contribute to industrial development while promoting entrepreneurship and employment.

2. Definition of MSMEs (as per the latest government classification, effective April 1, 2025)

The Government of India defines MSMEs based on two criteria: investment in plant& machinery/ equipment

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and annual turnover.

Category	Investment in Plant & Machinery / Equipment	Annual Turnover
Micro	≤ ₹2.5 crore	≤ ₹10 crore
Small	≤ ₹25 crore	≤ ₹100 crore
Medium	≤ ₹125 crore	≤ ₹500 crore

Explanation:

1. **Micro enterprises** are the smallest units, often family-owned or with few employees.
2. **Small enterprises** are larger than micro but still limited in investment and turnover.
3. **Medium enterprises** are bigger MSMEs, capable of scaling operations and employing more staff, but still below the threshold of large industries.

This dual-criteria system (investment + turnover) enables enterprises to grow without losing MSME benefits, such as subsidies, tax exemptions, or credit support.

2. Objectives

1. Assess skill upgradation practices among MSMEs.
2. Examine the relationship between training and technology adoption.
3. Measure the impact of skill upgradation on operational efficiency.
4. Provide recommendations for policy and practice in MSME skill development.

METHODOLOGY

- **Research Design:** Descriptive and analytical.
- **Sample Size:** 240 MSMEs stratified into 120 micro, 80 small, and 40 medium enterprises.
- **Data Collection:** Structured questionnaire covering enterprise profile, training practices, technology adoption, and efficiency indicators.
- **Analysis Tools:** Descriptive statistics, cross-tabulation, and correlation analysis.

Data Analysis and Results

Profile of Sampled MSMEs Nellore District

Table 1 Distribution of Sample Enterprises by Category in the SPSR Nellore District

Category	No. of Firms	Percentage (%)
Micro	120	50.0
Small	80	33.3
Medium	40	16.7
Total	240	100.0

Source: Data Collected from the sample entrepreneurs

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Table 1 shows the distribution of MSMEs in SPSR Nellore District. Micro enterprises dominate the sample, accounting for half of the total firms (50%), followed by small enterprises (33.3%) and medium enterprises (16.7%). This suggests that the MSME sector in Nellore is primarily driven by micro and small units, reflecting typical industrial structure in developing regions.

Employee Training and Skill Upgradation

Table 2 Employees Received Training in Past 2 Years in the Nellore District

Response	**No. of Enterprises**	**Percentage (%)**
Yes	168	70.0
No	72	30.0
Total	240	100.0

Source: Data Collected from the sample entrepreneurs

Table 2 highlights the training practices of enterprises. A significant majority (70%) of the units reported that their employees received training in the past two years. However, 30% did not provide training, indicating the need for greater emphasis on continuous skill development in the district.

Table 3 Types of Training Received Nellore District

Training Type	**No. of Enterprises Reporting**	**Percentage (%)**
Technical/Vocational	110	45.8
Quality Control	70	29.2
Management/Soft Skills	55	22.9
Safety & Maintenance	60	25.0
Digital Skills	50	20.8
Other	15	6.3

Source: Data Collected from the sample entrepreneurs

Table 3 presents the types of training received by employees. Technical/vocational training is the most common (45.8%), followed by quality control (29.2%), soft skills (22.9%), safety (25%), and digital skills (20.8%). This shows that enterprises value operational and productivity-related training, but digital skills training remains relatively lower, indicating a scope for digital transformation efforts.

Technology Adoption

Table 4 Adoption of New Machinery or Technology Nellore District

Response	**No. of Enterprises**	**Percentage (%)**
Yes	162	67.5
No	78	32.5
Total	240	100.0

Source: Data Collected from the sample entrepreneurs

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Table 4 shows that 67.5% of enterprises adopted new technology or machinery, while 32.5% did not. The high adoption rate reflects a positive trend toward modernization, though nearly one-third still lack technological upgradation.

Table 5 Type of Technology Adopted Nellore District

Technology Type	No. of Enterprises Reporting	Percentage (%)
Production Machinery	95	39.6
IT/Digital Tools	65	27.1
Quality Testing	45	18.8
Packaging	30	12.5
Other	15	6.3

Source: Data Collected from the sample entrepreneurs

Table 5 reveals the nature of technology adoption. Production-related machinery leads (39.6%), followed by IT/digital tools (27.1%), quality testing (18.8%), and packaging (12.5%). This suggests that manufacturing-focused upgrades dominate, while digital and packaging technologies receive relatively less attention.

Skill Upgradation and Technology Utilization

Table 6 Skill Upgradation Helps in Technology Utilization Nellore District

Response	No. of Enterprises	Percentage (%)
Strongly Agree	55	22.9
Agree	95	39.6
Neutral	45	18.8
Disagree	25	10.4
Strongly Disagree	20	8.3
Total	240	100.0

Source: Data Collected from the sample entrepreneurs

Table 6 shows that a majority of enterprises agree that skill upgradation supports technology utilization (62.5% collectively strongly agree/agree). Only 18.7% disagree. This reflects strong awareness among firms that employee skills enhance effective use of technology.

Table 7 Training and Technology Upgradation Planned Together Nellore District

Response	No. of Enterprises	Percentage (%)
Yes	100	41.7
No	75	31.3
Partially	65	27.0
Total	240	100.0

Source: Data Collected from the sample entrepreneurs

Table 7 indicates that 41.7% of enterprises plan training and technology upgrades jointly, while 27% do so

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partially. However, 31.3% do not integrate training with technology planning, showing room for improvement in strategic HR-technology alignment.

Efficiency Indicators

Table 8 Improvement in Efficiency After Skill Upgradation in the Nellore District

Response	**No. of Enterprises**	**Percentage (%)**
Greatly Improved	60	25.0
Improved	110	45.8
No Change	45	18.8
Declined	15	6.3
Not Applicable	10	4.1
Total	240	100.0

Source: Data Collected from the sample entrepreneurs

Table 8 highlights that 70.8% of enterprises experienced improvement in efficiency (25% greatly improved, 45.8% improved) after skill upgradation. Only a small percentage (6.3%) reported decline. This confirms a positive impact of skill development on operational performance.

Table 9 Average Monthly Production, Cost, and Labor Metrics in the Nellore District

Parameter	**Average Value**	**Units**
Monthly Production	3,50,000	₹
Raw Material Cost	1,20,000	₹
Labor Cost	55,000	₹
Capital Invested	20,00,000	₹
Hours Worked/Week	48	Hours
Product Defect Rate	4	%
Sales per Employee/Year	2,50,000	₹

Source: Data Collected from the sample entrepreneurs

Table 9 provides key performance metrics. Monthly production averages ₹3.5 lakhs, with raw material and labor costs at ₹1.2 lakhs and ₹55,000 respectively. Capital investment averages ₹20 lakhs, employees work 48 hours per week, and defect rate stands at 4%. These figures reflect stable productivity, moderate labor intensity, and acceptable quality performance for MSMEs.

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4.6 Cross-tabulation

Table 10 Firm Size vs. Efficiency Improvement in the Nellore District

Firm Size	Greatly Improved	Improved	No Change	Declined	Total
Micro	20	50	30	10	120
Small	25	40	10	5	80
Medium	15	20	5	0	40
Total	60	110	45	15	240

Source: Data Collected from the sample entrepreneurs

Table 10 cross-tabulates firm size and efficiency gains. Medium and small enterprises show higher relative efficiency gains compared to micro units. While all categories benefited, micro firms show more cases of no change or decline. This suggests that larger MSMEs may utilize training and technology upgrades more effectively due to better resources.

DISCUSSION

- **Training Impact:** 70% of MSMEs invested in skill development; technical and vocational training dominate.
- **Technology Adoption:** 67.5% adopted new machinery or IT tools; skill upgradation enhances technology utilization.
- **Efficiency Gains:** 70.8% of MSMEs reported productivity or quality improvements.
- **Enterprise Size Effect:** Medium and small firms benefit more from training due to higher capacity for investment.
- **Policy Implications:** Integrated skill–technology programs and government-supported training initiatives are crucial.

CONCLUSION

The study demonstrates a positive effect of skill upgradation on MSME efficiency in SPSR Nellore District. Training enhances productivity, reduces defects, and improves technology utilization. Policymakers should encourage continuous training programs combined with technology adoption to strengthen MSME competitiveness.

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