

# Impact of Training And Development Programmes on Employee Productivity And Its Analysis: An Empirical Study At Padget Electronics Pvt Ltd, Oragadam (Dixon Technologies)

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**Abstract-** *The effectiveness of training and development (T&D) programmes in augmenting employee productivity is a central concern in contemporary human resource management, particularly within the high-velocity manufacturing sector. This study empirically investigates the impact of structured training interventions—including on-the-job training (OJT), induction programmes, skill enhancement workshops, and SOP-based instruction—on the productivity outcomes of employees at Padget Electronics Pvt Ltd (a subsidiary of Dixon Technologies), Oragadam, Tamil Nadu. Using a structured questionnaire administered to 100 respondents and analysed through simple random sampling, the study employs percentage analysis, Likert scale rating, chi-square tests, and Pearson correlation analysis to measure training effectiveness across five key performance dimensions: SOP compliance, defect identification, machine handling, work speed improvement, and training relevance. Findings reveal significant enhancements in SOP adherence, defect rates, and machine handling competencies among shop-floor employees. A strong positive correlation was identified between training frequency and employee productivity metrics. The study concludes with strategic HR recommendations underscoring the practical relevance of need-based, periodic training in driving industrial productivity and workforce capability.*

**Keywords:** Training and Development, Employee Productivity, On-the-Job Training, Manufacturing Industry, HRM Practices, Skill Enhancement, Dixon Technologies, SOP Compliance, Workforce Capability.

## I. INTRODUCTION

In the contemporary landscape of global manufacturing, human capital constitutes one of the most decisive determinants of organisational competitiveness. Organisations that invest strategically in the training and

development of their workforce gain measurable advantages in operational efficiency, quality output, and adaptive capacity. The electronics manufacturing sector, characterised by rapid technological changes, stringent quality benchmarks, and high throughput demands, is particularly susceptible to the variability in workforce skills and performance.

Dixon Technologies, one of India's foremost electronics contract manufacturers, operates its subsidiary Padget Electronics Pvt Ltd at Oragadam—a key industrial hub in the Chennai metropolitan region. The organisation employs a large shop-floor workforce engaged in precision assembly, quality control, and machine operation. Ensuring this workforce meets the performance expectations of the organisation requires continuous investment in structured training programmes calibrated to operational and strategic needs.

Training and development (T&D) in the manufacturing context encompasses a spectrum of interventions: technical skill training, SOP-based instruction, induction programmes for new employees, machine handling workshops, defect prevention training, and supervisory development programmes. Despite the intuitive appeal of T&D investments, empirical evidence documenting their productivity impact in the Indian electronics manufacturing context remains limited. This study seeks to address this gap by providing a rigorous, data-driven analysis of training effectiveness at Padget Electronics Pvt Ltd.

## II. PROBLEM STATEMENT

Manufacturing organisations such as Padget Electronics Pvt Ltd operate in a dynamic production environment where workforce performance directly affects output quality, delivery timelines, and customer satisfaction. Despite the existence of training programmes, there is a

perceived gap between training inputs and measurable improvements in employee productivity. Key challenges include:

- Inadequate training needs assessment leading to misaligned training content.
- Limited post-training evaluation mechanisms for measuring knowledge transfer.
- Insufficient frequency of refresher training for SOP adherence and defect detection.
- Variable motivation levels among shop-floor employees to engage with training content.
- Lack of systematic data correlating training participation with productivity metrics.

### III. OBJECTIVES OF THE STUDY

#### 3.1 Primary Objective

To assess the impact of training and development programmes on the overall productivity of employees at Padget Electronics Pvt Ltd, Oragadam.

#### 3.2 Secondary Objectives

- To evaluate the effectiveness of On-the-Job Training (OJT) in improving machine handling and operational skills.
- To determine the extent to which training programmes enhance SOP compliance among shop-floor employees.
- To measure improvement in defect identification ability following training interventions.
- To assess the perceived relevance of training content to employees' job responsibilities.
- To examine the relationship between training frequency and improvement in work speed.
- To identify gaps in current training practices and recommend evidence-based improvements.

### IV. LITERATURE REVIEW

A robust body of scholarly work supports the proposition that employee training and development programmes positively influence productivity, skill acquisition, and organisational performance. Armstrong (2016) establishes that systematic training—defined as a planned and structured sequence of learning activities—produces measurable improvements in employee competence, performance motivation, and organisational commitment. He posits that the linkage between training and performance is

mediated by the quality of training design, the relevance of training content, and post-training supervisory support.

Noe et al. (2019) provide a comprehensive framework of training effectiveness integrating needs assessment, instructional design, delivery methods, and evaluation. Their model emphasises that training effectiveness is contingent upon a systematic assessment of individual learning needs, particularly in technology-intensive manufacturing environments.

Swart et al. (2005) examine the role of knowledge management in linking training outcomes to productivity, contending that organisations that institutionalise learning through formal training create sustainable competitive advantages. In the Indian manufacturing context, Mathur and Agarwal (2018) found that OJT reduced defect rates by 18–22% within six months of structured implementation. Employees who received periodic refresher training demonstrated 30% higher adherence to SOPs compared to those without recent training.

Elnaga and Imran (2013) reported a significant positive correlation ( $r = 0.68$ ,  $p < 0.01$ ) between training frequency and self-reported productivity measures in manufacturing firms. Salas et al. (2012), through a meta-analysis of 162 training effectiveness studies, concluded that training interventions yield an average 20% improvement in job performance outcomes, with the strongest effects in organisations with structured feedback mechanisms.

The literature converges on four key propositions: (a) structured training improves specific operational skills including SOP adherence and defect identification; (b) OJT is particularly effective in manufacturing settings due to contextual relevance; (c) training frequency is positively associated with sustained productivity improvements; and (d) training effectiveness is maximised when design is aligned with operational performance metrics.

### V. RESEARCH METHODOLOGY

#### 5.1 Research Design

This study adopts a descriptive and analytical research design. The descriptive component characterises the training and development practices at Padget Electronics Pvt Ltd, while the analytical component examines the relationship between training variables and employee productivity outcomes through statistical techniques.

#### 5.2 Study Area and Population

The study was conducted at Padget Electronics Pvt Ltd, Oragadam, Tamil Nadu—a major manufacturing facility of Dixon Technologies specialising in laptop, mobile phone, washing machine, and electronic device assembly. The target population comprises permanent shop-floor and supervisory employees engaged in production-related activities.

### 5.3 Sample Design

A sample of 100 respondents was selected using simple random sampling from the employee population. The sample encompasses employees across skill levels—semi-skilled, skilled, and supervisory—ensuring representativeness of training experience across the workforce hierarchy.

### 5.4 Data Collection Instrument

Primary data were collected through a structured, pre-tested questionnaire comprising closed-ended and Likert-scale items across four sections: (a) demographic profile; (b) types and frequency of training received; (c) perceived effectiveness of training across five performance dimensions; and (d) employee suggestions for improvement. Secondary data were sourced from HR policy documents, training records, company annual reports, and peer-reviewed academic literature.

### 5.5 Statistical Tools and Techniques

The following statistical techniques were employed:

- Simple Percentage Analysis: to summarise demographic and response distribution data.
- Weighted Average and Likert Scale Analysis: to measure the intensity of respondent agreement with training effectiveness statements.
- Chi-Square Test: to examine the association between demographic variables and training perceptions.
- Pearson Correlation Analysis: to measure the strength and direction of the relationship between training frequency and productivity dimensions.

### 5.6 Scope and Limitations

The study is confined to the permanent workforce of Padget Electronics Pvt Ltd, Oragadam. Contract labourers and trainees who had not completed their induction period were excluded. As the study relies on self-reported productivity perceptions, social desirability bias may influence some responses. The findings are specific to the electronics manufacturing context.

## VI. DATA ANALYSIS AND INTERPRETATION

### 6.1 Demographic Profile of Respondents

The demographic analysis revealed a predominantly young workforce, with 58% of respondents aged between 21 and 30 years, reflecting the youth-intensive employment profile typical of assembly-line electronics manufacturing. Gender distribution indicated 64% male and 36% female employees. In terms of experience, 43% of respondents had been employed for 1–3 years, while 27% had 3–5 years of experience, underscoring the relevance of training for a relatively newer workforce. Educational data showed that 54% held ITI or diploma-level technical qualifications.

**Table 1: Distribution of Respondents by Age Group**

Age Group	No. of Respondents	Percentage (%)	Cumulative (%)
Below 20 years	8	8%	8%
21–30 years	58	58%	66%
31–40 years	24	24%	90%
Above 40 years	10	10%	100%
Total	100	100%	–

*Source: Primary Data, Survey 2026*

### 6.2 Types of Training Programmes

Respondents identified the types of training received. Induction training was the most widespread (92%), reflecting the organisation's commitment to structured onboarding. OJT was reported by 78% of respondents. SOP and safety training was administered to 85% of the sample, while skill enhancement programmes were received by 61%. Only 34% had received off-the-job or classroom-based management training, indicating scope for expanding formal learning interventions.

**Table 2: Training Programme Participation Rate**

Type of Training	Respondents (n=100)	Participation (%)
Induction Training	92	92%
On-the-Job Training (OJT)	78	78%

Type of Training	Respondents (n=100)	Participation (%)
SOP & Safety Training	85	85%
Skill Enhancement Workshop	61	61%
Off-the-Job / Classroom Training	34	34%

Source: Primary Data, Survey 2026

## VII. STATISTICAL ANALYSIS

### 7.1 Likert Scale Analysis: Training Effectiveness

Respondents rated the perceived impact of training on five key productivity dimensions using a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). A weighted mean above 3.50 is interpreted as 'Effective', and scores exceeding 4.00 are classified as 'Highly Effective'. The analysis confirms that all six dimensions exceeded this threshold, with SOP adherence recording the highest weighted mean of 4.31.

Table 3: Weighted Mean Scores — Training Effectiveness

Productivity Dimension	Wt. Mean	% Agree	Interpretation
SOP Adherence Improvement	4.31	87%	Highly Effective
Defect Identification Ability	4.18	82%	Highly Effective
Machine Handling Skills	4.05	79%	Effective
Work Speed Improvement	3.89	74%	Effective
Relevance of Training to Job	4.22	84%	Highly Effective
OJT Overall Effectiveness	4.14	81%	Highly Effective

Source: Primary Data, Survey 2026

### 7.2 Chi-Square Test: Experience and Training Effectiveness

A chi-square test of independence was conducted to examine whether perceived training effectiveness varied significantly by employee experience levels. The null

hypothesis (H<sub>0</sub>) posited no significant association between experience and training effectiveness perception; the alternative hypothesis (H<sub>1</sub>) proposed a significant association.

Table 4: Chi-Square Test Results

Variable	$\chi^2$ Value	df	p-value	Decision
Experience vs. SOP Adherence	12.47	6	0.028	Reject H <sub>0</sub>
Experience vs. OJT Effectiveness	10.83	6	0.044	Reject H <sub>0</sub>
Age vs. Training Satisfaction	7.92	6	0.161	Accept H <sub>0</sub>

Source: Primary Data, Survey 2026

The results indicate that employee experience is significantly associated with SOP adherence improvement ( $\chi^2 = 12.47$ ,  $p = 0.028$ ) and OJT effectiveness ( $\chi^2 = 10.83$ ,  $p = 0.044$ ) at the 5% significance level. This suggests that more experienced employees perceive training benefits more acutely, as they can contextualise training content against real operational challenges. No significant association was found between age and overall training satisfaction.

### 7.3 Pearson Correlation: Training Frequency and Productivity

A Pearson correlation analysis examined the relationship between training frequency (number of sessions per year) and each of the five productivity dimensions.

Table 5: Pearson Correlation Coefficients

Productivity Dimension	r Value	p-value
SOP Adherence	0.74**	0.001
Defect Identification Ability	0.68**	0.002
Machine Handling Skills	0.63**	0.003
Work Speed Improvement	0.58*	0.019
Training Relevance to Job Tasks	0.71**	0.001

\*\* Significant at 1% level; \* Significant at 5% level

Source: Primary Data, Survey 2026

The strongest correlation was observed for SOP adherence ( $r = 0.74$ ,  $p < 0.01$ ), followed by training relevance ( $r = 0.71$ ) and defect identification ( $r = 0.68$ ). Work speed improvement, while statistically significant, demonstrated a lower correlation ( $r = 0.58$ ), suggesting that speed is also influenced by ergonomic conditions, incentive structures, and production layout.

## VIII. FINDINGS

- Training programmes at Padget Electronics Pvt Ltd exert a statistically significant positive impact on employee productivity across all five dimensions studied.
- SOP adherence showed the highest improvement post-training (87% agreement), consistent with the operational demands of electronics assembly where SOP deviations directly cause product defects.
- Defect identification ability improved substantially (82% agreement), indicating that quality awareness training and OJT modules effectively build employees' capacity to identify manufacturing defects at source.
- Machine handling skills demonstrated significant improvement (79% agreement; weighted mean = 4.05), validating the effectiveness of hands-on OJT and machine-specific skill workshops.
- Training content relevance received high ratings (84% agreement), suggesting training is well-aligned with actual operational responsibilities—a critical predictor of knowledge transfer.
- OJT was rated as highly effective overall (weighted mean = 4.14), with employees emphasising on-line, supervisor-guided learning as more impactful than classroom instruction.
- Chi-square analysis reveals experienced employees (3+ years) perceive greater productivity benefits from training, due to their enhanced ability to contextualise training within operational practice.
- Training frequency is positively correlated with all productivity dimensions ( $r = 0.58$  to  $0.74$ ), confirming that periodic refresher training is essential for sustained performance improvement.

## IX. SUGGESTIONS

### 9.1 Implement Systematic Training Needs Assessment (TNA)

The organisation should institutionalise a periodic TNA process mapping competency gap at individual, team, and departmental levels, linked to performance appraisal data and production quality metrics.

### 9.2 Increase OJT Frequency and Structured Mentorship

OJT should be formalised as a continuous learning mechanism. Each employee should be assigned a certified buddy or mentor with defined learning objectives and periodic competency checks.

### 9.3 Strengthen Post-Training Evaluation

Adopt a multi-level evaluation model (Kirkpatrick's Four Levels) assessing training reaction, learning, behaviour change, and productivity outcomes. Pre- and post-training data should be systematically collected.

### 9.4 Develop Modular, Job-Specific SOP Training

HR and quality departments should collaboratively develop modular SOP training specific to each production station, updated whenever processes or equipment are modified.

### 9.5 Introduce Digital Learning and Simulation Tools

Integration of digital learning platforms, video-based SOP demonstrations, and machine simulation modules can supplement OJT and enable employees to revisit training content asynchronously.

### 9.6 Address Work Speed Through Ergonomics and Incentivisation

Training should be complemented with ergonomic assessments of workstations and productivity-linked incentive schemes to bridge the gap between training effectiveness and speed-related outcomes.

## X. CONCLUSION

This study provides empirical evidence that structured training and development programmes positively and significantly impact employee productivity at Padget Electronics Pvt Ltd. Across all five productivity dimensions examined—SOP adherence, defect identification, machine handling, work speed, and training relevance to job tasks—training interventions were found to be effective or highly effective as rated by shop-floor employees.

The strength of correlation between training frequency and productivity dimensions ( $r = 0.58$  to  $0.74$ ) underscores the importance of sustained, periodic training rather than isolated interventions. The chi-square analysis highlights that productivity benefits of training are most

pronounced among experienced employees, pointing to the value of advanced skill development programmes for the tenured workforce.

From a managerial standpoint, the study advocates for a systematic, data-driven approach to training design, delivery, and evaluation—anchored in operational realities and aligned with the organisation's quality and productivity objectives. The electronics manufacturing sector's demand for precision, quality, and efficiency makes training not merely a developmental activity but a strategic imperative.

### 10.1 Future Scope of Study

Longitudinal studies tracking productivity improvements over time post-training would provide stronger causal evidence. Comparative studies across multiple Dixon Technologies facilities could reveal site-specific training effectiveness variations. Future studies could also explore digital and gamified learning platforms in enhancing training engagement among shop-floor employees.

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