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## Realizing quality assurance for product reliability – A case study of MSMEs of Ballari

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### ABSTRACT

*Quality assurance and control is the activity of providing the evidence needed to establish confidence among all concerned, that the quality-related activities are being performed effectively. Many quality assurance and control activities provide protection against quality problems through early warnings of troubles ahead. It establishes a system of policies, procedures, and guidelines that establishes and maintains specified standards of product quality. One of the crucial deterrent in the successful implementation of TQM is Quality assurance. MSMEs play a critical role in the economic development of a country. Quality management of these MSMEs is would be critical for their stability. The aim of the paper is to examine the level of Quality assurance against product reliability at MSMEs of Ballari, Karnataka. The universe comprised executive and a non-executive workforce of the firm. Sampling was carried out using a convenient sampling technique with a sample size of 50 in line with the Cochran formula. Data was collected using observation and informal interview methods. Descriptive statistics and the Chi-square test were used to analyse the data. The research envisaged that all the factors of Quality assurance are associated with product reliability at the MSMEs. The study revealed that the quality manual and job instruction manual at the MSMEs has a significant influence on product reliability.*

**Keywords:** *Quality Assurance, Factors of Quality Assurance, Product Reliability, etc.*

### 1. INTRODUCTION

Quality assurance and control is the activity of providing the evidence needed to establish confidence among all concerned, that the quality related activities are being performed effectively (Yong 2001). Many quality assurance and control activities provide protection against quality problems through early warnings of troubles ahead (Su Ken, 2003). It establishes system of policies, procedures and guidelines that establishes and maintains specified standards of product quality (Imai, 1986). Every organization should have a quality control system focussed on achieving defect free products and services that consistently meet specifications. A basic quality system includes well designed and documented procedures for product and process control, inspection and testing, calibration, etc (Jo and Reew, 2013). Management is responsible for defining, documenting, and supporting the quality policy of an organization. A quality system, which is defined as an assembly of components such as the organizational structure, responsibilities, procedures, processes and resources for implementing quality management must be documented in the form of quality manual and job instructions sheet. Each and every aspect of quality activities should be documented for future reference.

The study on quality management system of the firm would help the MSMEs of the region to know the findings and adopt necessary changes or practices in their quality management system. Based on the emphasised significance of Quality assurance in incepting TQM in the previous studies, the following practices were considered in the design of the questionnaire in order to examine the level of Quality assurance in the MSMEs under study.

**Table showing Quality assurance (QA) items used in the study**

A	<b>Quality manual:</b> Have effective Quality manuals at all the departments.
B	<b>Job instruction manual:</b> Have effective job instructions sheet at all the departments.
C	<b>Quality data sheets:</b> Maintain Quality check documents at all the departments regularly.

**Product reliability**

Organizational excellence is determined by measuring the holistic performance of an entity. But, when it comes to its measurement, performance has gradually gained more objectivity sense. Therefore new methods of reporting performance is gaining significance these days. Quality Performance is one such performance measure targeting quality in any processing systems of the organization. Therefore, major quality performance factor product reliability is used in the study.

**Problem Statement**

Quality and quality management are quite necessary elements any organization shall have to practice. As per the current and previous studies on quality management, among quality management practices, Quality assurance has been playing crucial role in influencing quality and other practices quality management in the organization. What would be in case of MSMEs? And how it would be in MSMEs? Especially at non metros, are the inquisitive corners need to be pondered. Therefore, the current study tries to explore and describe the nature of Quality assurance and its influence in terms of product reliability of the firms under the study.

**Hypotheses**

- H0: There is no association of Quality assurance on product reliability.
- H1: There is an association of Quality assurance on product reliability.

**2. METHODOLOGY**

**Type of the Study:** Descriptive-Survey research

**Population:** MSMEs of Ballari

**Sample Size:** 50 as per Cochran formula

**Sampling Technique:** Convenient Sampling

**Data Collection Instrument:** Visit observation, interaction, informal interview, etc.

**Data analysis and Hypothesis Testing:** Descriptive and Inferential statistics, Chi-square Test and Freedman test

**3. RESULTS**

As per central limit theorem, distribution of data is normal. In order to test research hypothesis, Chi-square - test was used.

**Table-1 Chi-square Test for association of Quality assurance with product reliability**

Association	P-Value	X <sup>2</sup>	Accept/Reject Ho
Quality assurance and Product reliability	0.000	25.6	Reject
<b>Sub Components of Quality assurance</b>			
Quality manual	0.00	24.3	Reject
Job instruction manual	0.00	21.2	Reject
Quality data sheets	0.04	17.0	Reject

The table indicates that, p value is less than 0.05. Therefore we reject null hypothesis that is it is found that there is an association of Quality assurance with product reliability at the firms.

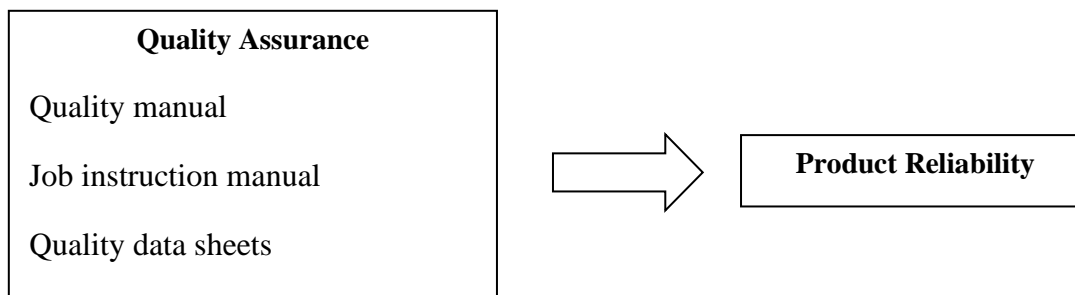
The following table ranks the factors of Quality assurance as per Friedman’s Test

**Table-2 Ranking of factors of Quality assurance**

Factors of Quality Assurance	Priorities
Quality manual	1 <sup>st</sup>
Job instruction manual	2 <sup>nd</sup>
Quality data sheets	3 <sup>rd</sup>

Table indicates that quality manual and job instruction manual at the MSMEs has significant influence on product reliability at the firms.

**4. DISCUSSION**



**Fig: Model representing the association of Quality assurance and Product reliability**

Significance of Quality assurance on Product reliability

In general, as per the past studies, Quality control and assurance is playing critical role in managing quality of any business processes. This study is also showing significant relationship with product reliability at the MSMEs. All the identified factors of Quality assurance are found critical with product reliability. However, Usage of quality and job instruction manual in business processes at the MSMEs has significant influence on their product reliability.

Significance of Quality manual on product reliability

The study identified that usage of effective Quality manuals at all the departments has significant influence on the product reliability at the firms. Therefore, the firms need to emphasize quality manual and its sustenance to realize product reliability.

Significance of Job instruction manual on product reliability

The study found out that having effective job instructions sheet at all the departments in all the internal processes has significant influence on the product reliability at the firms. Therefore, the firms need to have updated job instruction manual to ponder upon its improvement in order to realize product reliability.

## **5. CONCLUSION**

In general, as per the past studies, Quality control and assurance is playing critical role in managing quality of any business processes. This study is also showing significant relationship with product reliability at the MSMEs. However, Usage of QC tools in production process and examine defects in processes at the MSMEs has significant influence on product reliability. All in all, firms need to consider all the factors of Quality assurance for enhancing product reliability at the MSMEs.

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