Analysis of Quality Management Practices in SMEs in Bangalore City

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Abstract:- **The concept of quality has existed for many years, though its meaning has been changed and evolved over time. The quality management practices are considered as universal remedies for a range of organizational problems including organizational performance. Quality management practices differ depending on the size of organization. Research findings shows that the quality management practices are implemented well in the newly established firms, with high investment on infrastructure facilities and the number of workers. The educational background of the entrepreneur also has an influence on quality management practices.**

Keywords: Quality management, Quality control, SMEs (Small and Medium Enterprises).

I. INTRODUCTION

Although there are many ways to define quality, there is a worldwide acceptable definition stated in ANSI, where "quality is the totality of features and characteristics of a product or service that bear on its ability to satisfy implied or stated needs". Despite the divergence of views on what quality is, it may be summed up as "doing things properly" for enhancing competitiveness and profitability within the context of quality culture.

Quality management has been defined as: "The organization measures to ensure that the needs are met. All activities of management that determine quality policy, objectives and responsibilities, and implement them by means of a quality plan, quality control, and quality assurance within a quality system".

Quality management provides the principles and the methodological frame for operations, and coordinates to manage and control an organization with regard to quality. Quality assurance and quality control are the parts of any successful quality management system.
Quality assurance focuses on providing confidence that quality requirements will be fulfilled and includes all the planned and systematic activities implemented in a quality system so that quality requirements for a product or service will be fulfilled. Quality control is associated with those components used to ensure that the quality requirements are fulfilled and includes all the operational techniques and activities used to fulfill quality requirement.

The founder of modern quality management is W. Edwards Deming. A contemporary of Deming was J.M. Juran. He devised the following key definition of quality: quality is fitness for use.

A. *Need for Quality Management*

Quality management is for many companies a thing of recent years. But that does not mean that they did nothing about it before. The organization was already working in a way that was known to be largely satisfactory - otherwise the company would have got into difficulties long ago. But methods may of course be incomplete and open to improvement. Once organizations systematically set to work on this improvement, this is called a quality management project. If a consistent package of quality measures is introduced, this is called a quality management system. Primarily it is the customers of a company who lay down requirements for the quality of the product (or service) supplied. It is therefore necessary for many companies to have a (certified) quality system to maintain their place in the market. The quality system ensures in particular that the quality level for products and services demanded by the customer is reached and maintained.

B. *Definition of TQM*

Besterfield (1995) defined TQM as both a philosophy and a set of guiding principles that represents the foundation of continuously improving organization. It integrates fundamental management techniques, existing improvement efforts and technical tools under a discipline and approach.Using a three-word definition, Wilkinson and Wither (1990) defines TQM as:
Total: Every person is involved (customers and suppliers)
Quality: customer requirement are met exactly.
Management: Senior Executives are fully committed

C. TQM Basic Principles

TQM calls for a cultural transformation that requires employee involvement at all levels and spirit of teamwork among customers, suppliers, employees, and managers. Employee involvement, participation, and empowerment form the cornerstones of TQM. There are certain essential principles, which can be implemented to secure greater market share, increase profits, and reduce cost.

- Management Commitment and Leadership
- Training And Education
- Employee Involvement/Participation
- Quality Assurance
- Strategic Planning Process
- Customer Focus And Satisfaction
- Total Quality Management
- Benchmarking
- Quality Control
- Continuous Improvement
- Reward and Recognition

D. Quality Management Tools

Quality is widely recognized as one of the most important disciplines/strategies or competitive priority for an organizational development. Quality management tools and techniques are practical methods, skills, means, or mechanisms that can be applied to particular tasks to facilitate positive changes and improvements. Examples of them are: benchmarking, cross functional team, statistical process control (SPC), brainstorming, quality function deployment, and design of experiment (DOE).

E. Quality Control

Past studies have reported that the application of Quality Management (QM) practices in small and medium enterprises, improved their overall performance by a combination of "hard" QM factors such as benchmarking and quality measurement, continuous improvement, and efficiency improvement; and the "soft" QM factors consisting of top management philosophy and supplier s.

Quality Control is an iterative process that should be performed throughout the products life and involves monitoring and controlling product results to determine whether they comply with defined quality standards outline in the QMP and then identifying was to eliminate causes of unsatisfactory results. To more easily manage quality within a product, especially large complex products, it is a common practice to define quality measurements thresholds that identify when and what corrective action may be needed to eliminate causes of unsatisfactory performance Quality standards for the products are defined in the QMP and should include standards for product process, product functionality, regulatory compliance requirements, product deliverables or product management performance. The practice of QC focuses on areas such as:

Prevention: keeping errors out of the process
Inspection: keeping errors out of the hands of the customer
Tolerance: the degree to which results are within an acceptable range
The main outcomes of quality control activities include
Acceptance decision: decisions as to whether the products or services are accepted or rejected.
Rework: actions taken to correct rejected products or services.

F. Definition of SMEs (Small and Medium Enterprises)

SMEs are defined in different ways in different parts of the world. Some define them in terms of assets, while others use employment, shareholder funds, or sales as criteria. Some others use a combination of revenue and employment as a hybrid criterion. The definition of SME has been a contentious issue in India. In fact, the term, the term SSI (Small Scale Industry) is more commonly used to refer to SMEs. In recent years, the Government of India has sought to provide greater clarity in this sector by specifying a clear definition.

In 2005, the definition of a Small enterprise was expanded to include a two category classification a. Enterprises engaged in production/Manufacturing of goods for any industry b. Enterprises engaged in rendering/providing of services Enterprises in the manufacturing sector are defined in terms of Investment in plant and machinery (excluding land & buildings) and further classified into.

TABLE: 1SMEs Classification Based on Investment

Micro Enterprises	Investment up to Rupees. 2.5 Million
Small Enterprises	Investment Between 2.5 Millionand 50 Million
Medium Enterprise	Investment Between 50 Million and 100 Million

II. LITERATURE REVIEW

Extensive literature survey indicates that TQM practices are formal, programmatic, and behavioral. Further, Ross defined TQM as set of practices such as continuous improvement, meeting customer's requirement, reducing rework, long-range thinking, increased employee involvement and team work, process redesign, competitive benchmarking, team-based problem-solving, constant measurement of results and closer suppliers'relationship. This section reviews the relevant literature revolving around QMP and its implementation in SMEs. The review of literature supports the present research and describes how this research relates to existing work on quality management practices in SMEs. It also focuses on reviewing the current state of QMP, critical components of QMP used by different researchers for analysis along with its implications, and the effect of demographical profile of SMEs on QMP in different sectors. Basically literature review connects with the stated research objectives.

A. Quality Management Practices (QMP)

Quality Management is the principle of management which emphasizes that customer requirements are met and every person in the organization is involved with the full commitment of the top management. The QMP is driven by the constant attainment of customer satisfaction through the continuous improvement of all organizational process.

QMP calls for total participation of all in the organization along with top management. QMP involves the continuous improvement in quality, productivity and effectiveness obtained by establishing management responsibility for process as well as output. QMP assists business for product differentiation, fulfillment of customer requirement, and reduction of costs by preventing waste in process. QMP is a chain reaction since it involves not only the organization staff but suppliers and customers as well.

B. ProblemDefinition:

Research on QMP in SMEs has captured increased attention in recent years. However, shortcomings in measurement of level of QMP implementation in manufacturing SMEs, in current and past research suggest the need for critical evaluation of QMP in manufacturing SMEs. The present study will critically evaluate the QMP implementation in rural and urban manufacturing SMEs. Considering this background, research was designed.

C. Objectives:

- To study the existing Quality Management Practices in SMEs.
- To identify the effect of demographical factors on Quality Management Practices.

III. METHODOLOGY

Quality has become a primary issue in making corporate issue in making corporate strategies and many of them have started implementing TQM to strengthen their competitive positions and to fulfill the needs of both local and foreign customers, to facilitate their drive towards higher quality levels, it is important to identify the degree to which quality management practices are present in SMEs of Bangalore city. So the goals of this research are to define the levels of quality management practices in SMEs of Bangalore city and to find the most significant factors influence the quality management. The results of this research can be used to study the existing practices and compare these practices with the demographical factors like Age of The Firm. Education of the owner, Investment of the firm, number of workers.

IV. HYPOTHESIS

Hypothesis H_{01}: There is no significant association between age of firm and QMP.

Hypothesis H_{02}: There is no significant association between Costs of the Project and QMP.

Hypothesis H_{03}: There is no significant association between Size of the firm and QMP.

Hypothesis H_{04}: There is no significant association between Level of Education qualifications of Entrepreneur and QMP.

V. RESEARCH FINDINGS

A. Status of Quality Management Practices in SMEs:

To explore the status of QMP in SMEs, Firms were divided into two groups namely, implemented and not implemented, based on their QMP score. The QMP score for each firm is determined by summing score for each of the nine components of QMP (Q1– Q50) and then dividing by 50. The individual response choices were ranged between 1 to 5. The maximum QMP score for an individual firm is 5, while minimum score is 1. The two categories of QMP level were determined by dividing the range of possible QMP scores (1-5) into two intervals. Those scoring more than the overall mean of QMP werecategorized as implemented and those scoring less than overall mean were categorized as not implemented. For the present study, overall mean is 4.08. Overall mean is estimated by taking the average of mean QMP scores of individual firms.

According to Likert and Rensis, (1932) resulting total score may be interpreted normatively, with reference to some comparison group or absolutely, with reference to theoretically or empirically chosen cut-off scores. According to Jerome (2013), Vijay Anand (2013), Rashmi S and Swamy D R (2013), Nanjundeswaraswamy T S and Swamy D R (2013), Nanjundeswaraswamy, T S and Swamy D R. (2015) score, above the overall mean were considered to be implemented while the score below the overall mean were considered to be not implemented QMP.

Table: 2 Status of QMP

Status of QMP	No of Employees	Percentage
Satisfied	26	49.06
Unsatisfied	27	50.94
Total	53	100.00

B. Status of QMP based on the Age of the SMEs

Based on Age of firm, SMEs are classified as shown in Table.2 along with status of QMP.

Table: 3 Age of firm and Status of QMP

Age of The Firm	No of employees	Status of QMP	
		Implemented	Not Implemented
Less than 10 years	31	17	14
Between 10 to 20 years	13	06	07
More than 20 years	09	03	06
Total	53	26	27

It is observed thatthe implementation is higher in the firms that have been established within ten years whereas the least implementation is observed in firms that have a long root standing of more than 20 years.

C. Status of QMP based on the Size of the SMEs

Firms are categorized into four groups, and the Table 3 shows the present status of QMP in these four groups.

Table 3: Average number of employees and Status of QMP

Average number of Employees	No of employees	Status of QMP	
		Implemented	Not Implemented
Less than 10	23	15	08
10 to 25	23	09	14
25 to 50	04	02	02
50 to 100	03	00	03
Total	53	26	27

It is observed that the implementation is higher in the firms that have the average number of employees ranging within 25 whereas the least implementation is observed in firms that have their average number of employees in the range of 50 to 100.

D.Status of QMP based on the Cost of the project

Firms are categorized into four groups based on their size and the Table 4 shows the present status of QMP in these four groups.

Table 4: Size of firm and Status of QMP

Size of the Firm	No of employees	Status of QMP	
		Implemented	Not Implemented
1 to 10 lakhs	08	03	05
10 to 25 lakhs	18	10	08
25 to 50 lakhs	12	06	06
Above 50 lakhs	15	07	08
Total	53	26	27

It is observed that the implementation is higher in the firms that have a capital investment between 10 to 25 lakhs whereas the least implementation is observed in firms that have a capital investment within 10 lakhs.

E. Status of QMP based on the education qualification of entrepreneur

Firms are categorized into four groups based on the educational qualification of the entrepreneur and the Table 5 shows the present status of QMP in these four groups.

Table 5: Education Qualification of Entrepreneur and Status of QMP

Level of Education	No of employees	Status of QMP	
		Implemented	Not Implemented
ITI	02	01	01
Diploma	23	12	11
Under duate	22	10	12
Post Graduate	06	05	05
Total	53	26	27

It is observed that the implementation is higher in the firms whose entrepreneur has Diploma holder or an under Graduate whereas the least implementation is observed in firms whose entrepreneur is an ITI holder.

F. Effect of Demographical factors of SMEs and QMP

To know the association between demographical factors and QMP, four hypotheses H_{01}, H_{02}, H_{03} and H_{04} are established. Using Chi Square analyses, hypotheses were tested for independency. The SMEs are classified into implemented and not implemented on the basis of rated scale. It is shown in the Table 6.

Sl No	Demographical Factors of SMEs		Status of QWL		χ^2 Table Value	χ^2 Calculated Value	P value	Significance Level
			Satisfied	Unsatisfied				
1	Age of the firm	Less than 10 years	17	14	5.991	1.349	0.509	Not Significant
		10 to 20 years	06	07				
		Above 20 years	03	06				
2	Cost of the project	1 to 10 lakhs	03	05	7.81	0.77	0.857	Not Significant
		10 to 25 lakhs	10	08				
		25 to 50 lakhs	06	06				
		Above 50 lakhs	07	08				
3	Size of the firm	Less than 10	15	08	7.815	6.201	0.102	Not Significant
		10 to 25	09	14				
		25 to 50	02	02				
		51 to 100	00	03				
4	Level of Education	ITI	01	01	0.164	3.841	0.685	Significant
		Diploma	12	11				
		Under Graduate	10	12				
		Post Graduate	03	03				

Table 6: Effect of Demographical factors of SMEs & QMP

Age of the firm, Size of the firm and Cost of the project ($p>0.05$, $\chi^2_{calculated} < \chi^2_{Table}$) has no significant association with QMP, while education qualification has a significant effect on QMP. Quality Management Practices is independent with respect to Age of the firms, Size of the firm, and Cost of the project and education qualification.

VI. CONCLUSION

The demographical factors play a significant role in QMP implementation in SMEs. From the current research analysis, it can be concluded that Quality

Management Practices are independent with rest to the considered demographic factors-age of the firm, size of the firm, cost of the project and the educational qualification of the entrepreneur. It is also observed that the implementation of Quality Management Practices is more in the firms established recently (within ten years), the average number of employees ranging within 25, that have a capital investment between 10 to 25 lakhs and the entrepreneur is a Diploma holder or an Under Graduate.

REFERENCES:

[1] Vijay Anand (2013) "Quality of Work Life among Employees in Indian Textile Industry – A Pragmatic Approach". Global research analysis, Vol. 2(5), pp. 153-154

[2] Rashmi S and Swamy D R (2013) "Quality Management Practices In Rural And Urban SMEs– A Comparative Study", International Journal for Quality Research, Volume: 7,Issue: 4, Pages: 479-492

[3] Nanjundeswaraswamy T S and Swamy D R (2013) "Quality of work life of employees in private technical institutions", International Journal for Quality Research Vol. 7(3) , pp. 431-441

[4] Nanjundeswaraswamy, T S and Swamy D R. (2015). Leadership styles and quality of work life in SMEs. Management Science Letters, 5(1), 65-78.

[5] Likert, Rensis. (1932) "A technique for the measurement of attitudes." Archives of psychology. 140:1-55.

[6] Jerome (2013) "A Study on Quality of Work Life of Employees at Jeppiaar Cement Private Ltd: Perambalur". International Journal of Advance Research in Computer Science and Management Studies,www.ijarcsms.com, Vol.1 (4), pp. 49-57.