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QUALITY MANAGEMENT PRACTICES IN RURAL AND URBAN SMEs – A COMPARATIVE STUDY

Abstract: The level of awareness on Quality Management Practices (QMP) has increased considerably over the last decade, but the literature findings reveal the lack of studies on QMP and its implementation in rural SMEs. The exploratory research focuses on identifying, analysing and comparing the level of QMP implementation in urban and rural Small and Medium Enterprises (SMEs) in Bangalore. The research hypothesis is that, urban and rural SMEs would differ significantly in implementation of different quality practices. Data was collected through structured questionnaire and analyzed using F-test and chi-square test, as appropriate, to detect the statistical significance of QMP implementation in urban and rural SMEs. The research findings suggest that research, rural firms are performing at a higher level of sophistication and experience in QMP, further, TQM is the major drive for QMP implementation.

***Keywords:** Quality Management Practices, Small and Medium Enterprises, TQM*

1. Introduction

In a globally changing landscape characterized by continuous structural changes and enhanced competitive pressure, the role of Small and Medium Enterprises (SMEs) in society has become even more important as providers of employment opportunities and key players for the well-being of local and regional communities. SMEs are fundamental part of the economy in developing countries, and they play a significant role in further growth, innovation and success. Globalization and liberalization has led to new opportunities as well as challenges for SMEs. It is very vital for

SMEs to identify and exploit these opportunities and deal with the challenges. Meanwhile, in order to compete and sustain competition at the global level it is essential for SMEs to emphasize on quality and ensure that quality is integrated into all aspects of products, processes, and services. Quality management practices have become widespread among the SMEs during the last decade. The aim being to adapt to new customer requirements on a global market is of vital importance for long term success. Hence Quality Management Practices (QMP) has become increasingly popular as one of the managerial tool in ensuring continuous improvement. In such a scenario there is need for SMEs, to implement QMP in order to compete with the larger firms and to sustain the fierce competition.

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2. Literature Review

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.

2.1 SMEs in India

According to Das, for long, Small – scale industries (SSIs), then for some time, small and medium enterprises (SMEs) and right now, Micro, Small and Medium Enterprise, (MSMEs) have emerged prominently in the glossary of relevant policy documents and statements (Das, 2008). The government of India enacted Micro, Small & Medium Enterprise Development Act 2006, facilitating the growth of MSME sector in the country. According to Annual Report of Industries & Commerce Dept. for 2011-12 there are around 414676 registered MSMEs in Karnataka. The concentration of MSMEs district wise Shows that Bangalore Urban district has the highest concentration of MEMEs of in 71647 units there are 665401 employees are working in Bangalore. It is further noted that the concentration of manufacturing industries is prominent as compared to other sectors in Bangalore. MSMEs not only play crucial role in providing large employment opportunities at comparatively lower capital cost than large industries, but also help in industrialization of rural & backward areas, thereby, reducing regional imbalances, assuring more equitable distribution of national income and wealth.

Over the years, the small scale sector in India has progressed from the production of simple consumer goods to the manufacture of many sophisticated and precision products like electronics control systems, microwave components, electro medical equipment's, etc. The process of economic liberalization and market reforms has further exposed these enterprises to increasing levels of domestic and global competition. (Online portal: State Directorate or Commissioner of Industries and Ministry of Micro, Small & Medium Enterprises, Government of India Govt. of India).

2.2 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, fulfilment 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 the suppliers and customers as well.

2.3 QMP in SMEs

From the literature it is evident that the application of QMP in SMEs, improved their overall performance by a combination of different critical factors of QMP such as top management commitment, customer focus, TQM, supplier support, strategic process planning, employee training, SQC, QA, QFD, benchmarking and other quality measurement techniques along with continuous improvement and total

participation of everyone in the organization. During the last three decades, QMP has been receiving widespread acceptance by the diverse sectors of the economy such as manufacturing: Fotopoulos and Psomas (2009), service: Feng *et al.,* (2008), government: Chen (2005), health care Kaplan *et al.*, (2010), banking: Irfan*et al.*, (2009) and education: Faganel (2010), Manivannan and Premila, (2011). Noronha (2002) provided that perhaps few would disagree that no other management issue since Frederick Taylor's, Scientific Management at the beginning of the century has created such a profound impact as what the quality management movement has achieved: Ross, (1993). Kanji (1990) rightly mentioned quality movement as bringing about a second industrial revolution (Noronha, 2002). Mile Terziovski& Danny Samson, (1999) argue that QMP tends to have mixed results when co-varied for company size and industry type. It can be concluded that there are significant differences in the relationship between QMP and organizational performance across industry sectors and different size companies, particularly on the effect of defect rates, warranty costs and innovation of new products.

2.4 Demographical Characteristics of SMEs

The general characteristics or demographical factors of SMEs have been recognized as an important parameter by diverse publications found in literature. Many researchers have argued that demographical profile of a firm has significant effect on QMP implementation. Davidson *et al*. (2002) examined the Australian, U.S., Scottish and German economies and explained that location, size, legal form, age and industry all affect SME growth. The research studies carried out by, (Beck, 2007; Fatoki*et al*., 2010; Pandula, 2011a; Pandula, 2011b), show that a firm's demographic factors, in particular its size, ownership type, age and

sector influence the access to finance. Therefore it is obligatory to analyze the effect of demographical profile of a firm on QMP implementation. The important demographical characteristics are: size of the firm, age of the firm, gender of an entrepreneur, educational qualification of an entrepreneur, nature of activities carried out by the firm, cost of projects undertaken, customer profile.

Based on literature review, it is acknowledged that demographical factors have a significant impact on QMP implementation, and this fact is often neglected in the previews research. By exploring SMEs characteristics using a firm-level survey of SMEs, one can identify the effect of demographical factors on QMP implementation. Hence, this contemporary research attempts to study effect of demographical characteristics of a firm on QMP implementation.

2.5 Components of QMP

The Malcolm Baldrige National Quality Award (MBNQA) defines a set of 23 contemporary high performance management practices within seven key categories: Leadership, Strategic planning, Customer& Market Focus, Human Resource Focus, Process Management and Business results. Saraph*et al*. (1989) defined the components or critical success factors of QMP as "critical areas of managerial planning and action that must be practiced to achieve effective quality management in business unit". Ahire*et al*. (1996) defined constructs or components as latent variables, which cannot be measured directly. However, critical factors or components can be measured indirectly from their manifestations. For example, customer focus is a critical factor that cannot be measured directly. However, when a company is customer-focused, manufacturing managers will be aware of the results of customer satisfaction surveys. Thus, manufacturing managers being aware of customer

satisfaction surveys can be one of the manifestations of the critical factor customer focus. From the literature it is evident that, frequently considered QMP components by various researchers were: Management Commitment and Leadership, Strategic Planning, Customer Focus, Human Resource Management, Supplier Management, Information and Analysis, and Process Management Practices. It is evident that, all these 7 components were found to be consistent with the components, which were proposed by the MBNQA. (Curkovic *et al.*, 2000; Sila, 2007). It is also identified that many researchers have considered seven major QMP components which are written and used by Saraph*et al.* (1989), Flynn *et al.* (1994), and Ahire*et al.* (1996), respectively. These three articles have been referenced and citied by various researchers. Ahire*et al.* (1996) strongly recommended that a combination of the three frameworks be undertaken for future research on QMP, in fact, the present study followed this suggestion. QMP components have been investigated extensively to generate distinct generic components. Then, each component was analyzed, whether it is different or similar to the components previously analyzed by different researcher. This process resulted in 8 important components of QMP for present research which appears to be more appropriate for Indian manufacturing Small and Medium Enterprises. From the extensive literature survey and on the basis of highest frequency, it is identified that following eight components were considered to be more appropriate for Indian manufacturing SMEs. The eight QMP components are: C1: Management Commitment and Leadership – MCL, C2: Education and Training – E&T, C3: Employee Participation – EP, C4: Quality Assurance – QA, C5: Strategic Planning Process – SPP, C6: Customer Focus and Satisfaction – CFS, C7: Total Quality Management – TQM, C8: Bench Marking – BM.

From the available literature it is concluded that, substantial research studies are carried out on QMP in the Indian manufacturing industries. Jagdeesh R. (1999) studied growth and spread of QMP in Indian industries. Similarly, Mandal (2000) empirically investigated the propagation of quality management practices among Indian manufacturing companies. The results of the study suggest that after the opening up of economy in 1991, Indian companies are fast moving towards implementing QMP. It is also revealed that, numerous research studies have been carried out on QMP implementation in large enterprises and SMEs in manufacturing sector. The demographical factors such as, age of the firm, size of the firm, gender of an entrepreneur, educational background of an entrepreneur, turnover along with technology adopted is also used to analyse the level of QMP implementation, since these factors differentiate SMEs with large enterprises on the basis of product quality and innovation. Taking into consideration the number of research publications written on QMP and its implementation, it is quite easy to conclude that QMP is one of the most explored topics in the history of QMP literature.However literature till date provides the information that, there is negligible research which inspects the QMP implementation in rural manufacturing SMEs. Therefore the present study focuses on measuring the level of QMP implementation in rural SMEs and compares the same with urban SMEs.

3. Problem definition

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.

4. Objectives of the research

The main thrust of this research is to provide insights about quality management practices in rural and urban manufacturing SMEs in and around Bangalore.

1) To develop a valid and reliable instrument for measuring QMP in manufacturing SMEs.
2) To compare and analyze the Quality Management Practice in rural and urban manufacturing SMEs.
3) To study and analyze the effect of demographical factors on QMP implementation in manufacturing SMEs.

5. Methodology of the research

In this study, the unit of analysis is Managers / Entrepreneurs of SMEs and population is rural and urban manufacturing SMEs in and around Bangalore. Considering the objectives of the research, a sample questionnaire was designed for pilot survey. To find out the reliability of the survey instrument, Cronbach's alpha value was calculated the Cronbach's alpha value was 0.93. With this, it was concluded that the questionnaire designed is adequate for exploring research. Based on the feedback of pilot survey, final questionnaire was fine-tuned and it was administered to the target group to gather the information regarding QMP in rural and urban SMEs. The data was collected, through structured questionnaires administrated to 300 managers/entrepreneurs of SMEs, who are responsible for quality. From the survey instrument, weights assigned for respondent's choices are summed across all 8 components which include 42 questions. Of 300 questionnaires only 116 filled questionnaire were collected out of which 16 questionnaire were rejected because of unfilled and invalid entries. Finally 100 questionnaires were considered for analysis. The questionnaire was developed based on stated objectives using 5 point Likert scale, by considering the eight components that were found to be

outstanding through the extensive literature review.

6. Results and discussion

This section presents the description of facts and figures, followed by discussion. This has been presented in three sections. The demographical characteristics of SMEs have been discussed first, followed by the descriptive statistics and inferential statistics. The sample presentations of each section are as follows.

6.1 SMEs and respondent characteristics

The demographical characteristics considered for the study were as follows: Size of the firm, Gender of an entrepreneur, Cost of the project, Educational Qualification of an entrepreneur, Nature of activities, Age of the firm, Customer profile, QMP implementation based on location of SMEs: Urban and Rural. Level of QMP implementation varies with respect to gender of an entrepreneur, experience, age of firm, size of firm, nature of activities carried out, customer profile and size of firm. Therefore it is necessary to study the effect of demographical factors on QMP implementation. The descriptive statistics of the SMEs and respondent characteristics is given below in the table 1.

6.2 QMP implementation in urban and rural SMEs

QMP embodies different components which are widely used by different researchers. Level of QMP implementation in rural and urban firms is shown in the Table 2. The resulting total score is interpreted normatively with reference to comparison group, or absolutely, with reference to theoretical or empirically chosen cut-off scores, Rensis (1932). According to T S Nanjundeswaraswamy and D R Swamy (2013), S. Jerome (2013) and Dr. N. Vijay

Anand (2013), the overall mean is considered as cut off ratio in case of five- point likert scale.

Table 1. SMEs and respondent characteristics

Sl. No	Characteristics	Description	Percentage
1	Size of the Firm	Less than 10	39
		Between 11 - 25	37
		Between 26-50	11
		51 & above	13
2	Gender of an Entrepreneur	Male	90
		Female	10
3	Cost of the project	1-10 lakhs	15
		11-25 lakhs	24
		26-50 lakhs	22
		51-1crore	23
		Others	5
4.	Educational Qualification of an Entrepreneur	Diploma	36
		Graduation	34
		Post-Graduation	10
		Under Graduation	14
		ITI	6
5	Nature of Activities	Production	54
		Design	20
		Job work	26
6	Age of the firm	Less than 10	42
		10-20 years	32
		More than 20 years	26
7	QMP Implementation in Rural & Urban SMEs	Rural	26
		Urban	74
8	Customer Profile	Local	84
		Global	16

Table 2. Level of QMP components implementation in urban and rural SMEs

COMPONENTS	URBAN		RURAL	
	IMPL (%)	NOT IMPL (%)	IMPL (%)	NOT IMPL (%)
MCL	31.08	68.91	19.23	80.76
CFS	28.37	71.62	19.23	80.76
QA	17.56	82.43	19.23	80.76
SPP	10.81	89.18	19.23	80.76
BM	5.40	94.59	7.69	92.30
E&T	2.70	97.29	3.84	96.15
E&P	2.70	97.29	3.84	96.15
TQM	1.35	98.64	7.69	92.30

For the present study, the overall mean is 4.15 and it is considered as a cut-off score for determining QMP implementation and non-implementation i.e. score above the overall mean, it is considered as implemented and scores below as not-implemented. In urban and rural firms MCL, CFS, QA and SPP are more predominantly implemented quality practices. MCL accounted for 31.08%, CFS - 28.37%, QA -

17.56% & SPP - 10.81% in urban firms, whereas in rural firms MCL, CFS, QA & SPP contributed 19.23% each to implementation level.

6.3 Overall QMP implementation in rural and urban SMEs

In terms of geographical location, most of the manufacturing units are operating in urban and rural Bangalore. The overall implementation of QMP in rural and urban SMEs of Bangalore is shown in the Table 3.

It is evident from the figure 1, that 69% of rural SMEs have implemented QMP when compared to urban SMEs with 51% implementation.

Table 3. QMP Implementation with respect to geographical location of firm

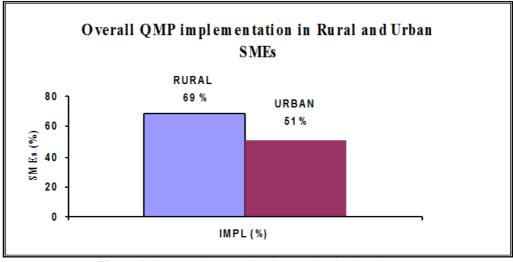|	IMPL (%)	NOT IMPL (%)
RURAL	69	31
URBAN	51	49

Figure 1. QMP Implementation in Rural and Urban SMEs

6.4 Inferential statistical analysis and discussions

Analysis is carried out with respect to demographic factors and components of QMP. This is done in order to know their association and the effect of their influence on SMEs. The respondent data was classified in order to enable comparison and to test the association of variable (Chi-Square Test). This section now presents the testing of hypothesis to obtain the empirical findings.

6.4.1 Demographical characteristics of SMEs and QMP implementation

The SMEs are classified into Urban and Rural firms for all the demographical characteristics and it is tabulated below. The table also includes the chi-square (χ^2) and their significance levels for testing the association between QMP and demographical characteristics. From the table 4, it can be concluded that educational qualification of an entrepreneur has a

significant effect on QMP implementation. Therefore educational background of an entrepreneur plays an important role. Education produces self-sufficient enterprising individuals. Education increases the formation of new ventures, the likelihood of self-employment, the likelihood of developing new products, and the likelihood of self-employed graduates owning a high-technology business.

Table 4. Test of Hypothesis between demographical characteristics and QMP implementation

SL. NO	DEMOGRAPHICAL FACTORS		QMP		χ^2 VALUE	SIGNIFICANCE LEVEL
			IMPL	NOT IMPL		
1	Gender	Male	53	37	3.084	Not significant
		Female	3	7		
2	Age of Firm	Less than 10 years	24	18	0.072	Not significant
		Between 10-20 years	18	14		
		More than 20 years	14	12		
3	Cost of the Projects	1-10 Lakhs	11	4	1.515	Not significant
		11-25 Lakhs	14	10		
		26-50 Lakhs	12	10		
		51 lakhs-1 Crore	13	10		
		Others	3	2		
4	Size of Firm	Less than 10	26	13	3.133	Not significant
		Between 11 - 25	18	19		
		Between 26-50	6	5		
		51 & Above	6	7		
5	Nature of Activities	Production	29	25	0.447	Not significant
		Design & Production	11	9		
		Job Work	16	10		
6	Customer profile	Local base	45	39	1.257	Not significant
		Global base	11	5		
7	Educational Qualification of an entrepreneur	Under-graduate	40	9	0.692	Significant
		Graduate	33	23		
		Diploma	30	38		
		Post-Graduation	9	7		
		ITI	8	3		
8	QMP	Urban	38	36	2.496	Not significant
		Rural	18	8		

6.4.2 Inferential statistical analysis and discussions

The research deals with the descriptive analysis of different variables and test of hypothesis. Descriptive analysis used for each hypothesis is assessed followed by the test of hypothesis. It was identified that, for the present research, some statistical tests would be supportive to justify further, the level of QMP implementation in SMEs. For this purpose F-test was carried out to find out if there are any significant differences between eight QMP components on level of QMP implementation. In order to conduct the tests, the following hypothesis was set up.

I	H_o	:	There is no association of urban and rural SMEs with MCL.
II	H_o	:	There is no association of urban and rural SMEs with E&T.
III	H_o	:	There is no association of urban and rural SMEs with EP.
IV	H_o	:	There is no association of urban and rural SMEs with QA.
V	H_o	:	There is no association of urban and rural SMEs with SPP.
VI	H_o	:	There is no association of urban and rural SMEs with CFS
VII	H_o	:	There is no association of urban and rural SMEs with BM.
VIII	H_o	:	There is no association of urban and rural SMEs with TQM.

Results of F-test are presented in table 5. The F-value was used to determine whether to accept or reject the null hypothesis. The F tests carried out shows that, TQM, BM, E&T and CFS have a significant association with QMP implementation. Out of these four QMP components CFS has high significance. This confirms that organisations that have implemented QMP will have competitive advantages in meeting customers and employees needs thereby enabling the organization to be effective in their daily operations. The results confirm the true situation of the rural and urban manufacturing SMEs in and around Bangalore.

Table 5. F-Test results of Hypothesis testing for QMP components

Components	Mean	F $_{Calculated}$	Significance
MCL	4.41	1.07	Not Significant
E&T	3.75	0.33	Significant
EP	3.71	2.26	Not Significant
CFS	4.37	36.79	Significant
SPP	4.29	1.98	Not Significant
TQM	3.96	0.74	Significant
QA	4.31	1.68	Not Significant
BM	4.16	0.62	Significant

6.4.3 Pearson's correlation analysis

Correlation is a measure of association between two variables. The variables are not designated as dependent or independent. Correlation analysis provides information about two variables or two sets of data in a research. This analysis reveals whether there is any relationship between two variables and if so, what are the direction of relationship and subsequently, the magnitude of the relationship. The Pearson's correlation coefficient for components of QMP is shown in the table 6. The correlation table below shows that all the variables are positively related. From the correlation analysis it is identified that the TQM (r=0.95) is more correlated and CFS (r=0.65) is less correlated towards QMP implementation.

Table 6. Pearson's Co-efficient of QMP components

Components	QMP	MCL	EP	CFS	SPP	QA	TQM	BM
MCL	0.762014	1						
E & T	0.671589	0.43756						
EP	0.907775	0.79819	1					
CFS	0.655608	0.41572	0.472752	1				
SPP	0.710205	0.46773	0.578711	0.5222	1			
QA	0.75213	0.57035	0.551187	0.61834	0.60193	1		
TQM	0.956867	0.77477	0.930063	0.70331	0.75061	0.75865	1	
BM	0.754162	0.53968	0.59398	0.50985	0.43142	0.52027	0.62829	1

6.4.3 Correlation analysis of QMP Component in rural and urban SMEs

Correlation analysis was carried out distinctly among rural and urban SMEs with respect to QMP components. This analysis was carried out to know the magnitude of relationship between QMP components in rural and urban SMEs. The table 7, shows that all the variables are positively related. From the correlation analysis it is identified that, in rural SMEs, MCL (r = 0.84) and TQM (r=0.78) are more correlated whereas SPP (r=0.54) is less correlated towards QMP implementation. However, in urban SMEs, BM (r=0.77) and MCL (r=0.76) are more correlated while EP (r=0.54) is less correlated towards QMP implementation.

Table 7. Pearson's Co-efficient

QMP COMPONENT	RURAL	URBAN
MCL	0.84715	0.761742
ET	0.665372	0.649217
EP	0.558578	0.547311
QA	0.750349	0.741808
SPP	0.549113	0.705348
CFS	0.624951	0.653556
TQM	0.782667	0.633194
BM	0.655414	0.771679

7. Methodology of the research

This section presents the conclusions drawn from the survey, data analysis and inferences of QMP implementation in rural and urban SMEs in Bangalore, Karnataka, India. Out of 300 SMEs approached 116 firms have responded, of which 100 SMEs have provided valid information. Therefore, 100 SMEs were used for analysis and interpretations. Information collected from these 100 SMEs were interesting and found to have significant variations that were brought out in response provided by the urban and rural SMEs. Using the information, some of the conclusions drawn are as follow.

7.1 Development of scale to measure QMP in rural and Urban SMEs

Based on the extensive literature survey on QMP, a valid and reliable scale was developed to measure and identify the level of QMP implementation in rural and urban anufacturing SMEs in and around Bangalore.

7.2 QMP and Demographical Factors

A study carried out in urban and rural manufacturing SMEs revealed that, the rural manufacturing SMEs represented high proportion of QMP implementation in the sample when compared to urban SMEs. Majority of the SMEs are into job work activities with cost of the projects undertaken were in the range of 1-10 Lakhs. From the study it was identified that newly established SMEs have implemented QMP to a greater extent when compare to old firms. Further the analysis revealed that majority of the entrepreneurs had educational background of either under graduation, graduation or diplomas running the firms with number of employees less than 10 have implemented QMP to a greater extent. It was also observed that male population had high tendency towards entrepreneurial skills.

7.3 Effect of Demographical Factors on QMP Implementation

The demographical characteristics play a significant role in QMP implementation in SMEs. From the current research analysis, it can be concluded that educational qualification of an entrepreneur has a significant effect on QMP implementation. Therefore educational background of an entrepreneur plays an important role. The F tests carried out shows that TQM, BM, E&T and CFS has a significant association with QMP implementation. Out of these four QMP components CFS has high significance. In rural SMEs, the MCL (r = 0.84) and TQM (r=0.78) are more correlated whereas SPP (r = 0.54) is less correlated towards QMP implementation. However, in urban SMEs, BM (r= 0.77) and MCL (r=0.76) are more correlated while EP (r = 0.54) is less correlated towards QMP implementation.

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