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## Process management and competitiveness in a quality perspective in small and medium enterprises (SMEs) of Bihar

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### Abstract

The Small and Medium Enterprises (SMEs) industry is the backbone of Bihar's economic growth, providing employment, fostering innovation, and playing a key role in local development. Yet the competitiveness of SMEs is usually hindered by issues of process management, quality management, and resource maximization. The present study tries to discover the link between process management practices and the competitiveness of SMEs in Bihar from the perspective of quality management. Based on both qualitative and quantitative data gathered from SME owners, managers, and workers in major districts of Bihar, the study assesses the adoption of process standardization, quality assurance practices, and continuous improvement. It identifies major drivers and obstacles to quality-focused process management and measures how these drivers and obstacles affect productivity, customer satisfaction, and market performance. The research determines that SMEs adopting structured process management frameworks, like Total Quality Management (TQM) and lean practices, have greater competitiveness and flexibility within a dynamic business environment.

**Keyword:** SMEs, Bihar, process management, competitiveness, quality outlook, TQM, continuous improvement, lean practices

### Introduction

Bihar is deprived of proper industrialization, though the land of Bihar is highly fertile. There is lots of scope of Agriculture based industries but due to various reasons it is not up to the mark. Instead, many other industries like agriculture based industries (fertilizer industry, rice processing mills, sugar mills, bakery and flour mills etc.), tobacco, cement, garment, handloom, lac bangles and many other Small & Medium Enterprises (SMEs) are there in Bihar. Apart from these, few big players are also present in Bihar like Hero cycle, Bata, Coca-Cola, Sudha Dairy, Britannia etc. It has been also found that very few SMEs of Bihar is trading with other states of India. The fundamental reason is the inferior quality of products in comparison to products of other states. Those fundamental reasons are unorganized business structure, lack of use of modern technology, lack of required tools and technology in manufacturing for quality improvement etc. The main concern is about the quality production process and competitiveness. This synopsis aims to enrich the knowledge about the process management and competitive performance of these SMEs of Bihar. Since long past it has been found that, other states of India and global SMEs are becoming friendly along with big business houses of India and multinationals in the use of modern industrial tools, techniques, methodologies etc. to focus on the quality improvement to gain competitive mileage. Since last two decades' customer expectation towards the quality of product and its availability at cheaper price is increasing day by day. Their main focus is on high quality product at lowest available price. This situation created a more complex competitive market globally and in India as well. This particular study is about the industries of Bihar because this state is situated almost centrally in the northern region of India which has to face difficulties in trans-border trade across the world. Along with good quality of raw material as well as unavailability and awareness of manufacturing techniques and tools, therefore, the products produced are of substandard quality. Most of the produced products are being consumed within the state.

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Very few companies who have adopted and started implementing new innovative tools and techniques in their manufacturing facility are in position to lower down the price by various ways of cost savings to lure their customers. They are continuously redefining their process management to improve the quality of their products to establish themselves in the competitive market in Bihar. To find out the basic problem of low quality and non-competitive products produced by industries of Bihar, the proposed synopsis for the Ph.D. thesis has been structurally divided into three following research categories based on secondary and primary data i.e. (a) study the practices of application of process management (b) exploration of application of statistically designed experiment and (c) develop a concept based on (a) & (b) to enhance competitiveness for business excellence. It is evident from the past research works that the process management and various quality improvement tools like Total Quality Management (TQM), Six Sigma ( $6\sigma$ ), Plan-Do-Check-Act (PDCA) cycle, Quality Function Deployment (QFD), Statistical Process Control (SPC), Quality Standards like ISO, Business Process Reengineering (BPR) etc. are generally being developed and utilized by the big organizations since long past. But, in twenty first century many SMEs are also started to utilize these quality improvement tools to get competitive leverage to establish their strong presence in the market.

### Review of Literature

The statistical method is not only the backbone rather has a central position within TQM. This message was emphasized by Shewhart (1931)<sup>[10]</sup> and by Deming (1986; 1993)<sup>[11, 12]</sup>. The three steps Shewhart cycle was focussed only on 1. Specification, 2. Production, & 3. Inspection i.e. while later on Deming added the fourth dimension i.e. Research. The Deming's model finally took the shape of Specification = Plan, Production = Do, Inspection = Check & Research = Act.

Competition is the main feature of the success or failure of an organization. It determines the suitability of an organization's activities that can enhance its performance like innovations, cohesive culture, implementation of strategies etc. Porter, M.E. (1985) +.

The reengineering of business processes is related with fundamental rethinking and redesigning of business processes to get vivid and sustainable enhancement in quality, cost, service and competitiveness as well. Hammer, M. and Champy, J. (1993)<sup>[14]</sup> discussed that an increase in consumer demand for goods and services effectiveness has resulted in Business Process Re-engineering (BPR).

Bergman, B. & Klefsjö, B. (1994)<sup>[15]</sup>, Quality describes to satisfy or exceed the requirements and expectations of the customers. An increased customer needs, new technological enhancements and the continuing globalization again describes that a focus on quality improvements is necessary for all organizations, both manufacturers of goods and services, who want to maintain their competitiveness in the market.

TQM is a significant instrument and earlier study suggests that performance of TQM leads to enhance business efficiencies like cost reductions, better productivity, quality enhancements, and timely delivery while facilitating

businesses to increase competitiveness, Boaden, R.J. (1997)<sup>[16]</sup>.

The use of process capability and the use of design of experiments are more important for higher performance of organization Garvare, R. & Wiklund, H. (1997)<sup>[17]</sup>.

Business Excellence is an overall way of working that balances stakeholder interests and increases the likelihood of sustainable competitive advantage and hence long-term organizational success through operational, customer-related, financial, and marketplace performance. Edgeman *et al.*, (1999)<sup>[18]</sup>

Al-Mashari, M., Irani, Z. & Zairi, M. (2001)<sup>[19]</sup> define holistic BPR as "a continuum of change initiatives with varying degrees of radical supported by IT means, at the heart of which is to deliver superior performance standards through establishing process sustainable capability"

Basu (2004)<sup>[20]</sup> and Foster (2007) + described TQM as "soft" approach. According to Basu (2004)<sup>[20]</sup> TQM is based on the principles like leadership, continual training, planning of quality improvement and cost reduction.

The Business Process Modeling Notation (BPMN) transform into Yet Another Workflow Language (YAWL) which can be used as a tool to implement process-oriented applications because YAWL requires processes to have only one start and one end condition while in BPMN, multiple start and end events are allowed, G. Decker, R. Dijkman, and M. Dumas (2008)<sup>[22]</sup>.

Many business organizations especially SMEs are now adopting the different tools to redefine their manufacturing process to improve the quality of products to be in the competitive market across the world. Luis Fonseca (2015)<sup>[23]</sup> found the results of his investigation which also bring further knowledge on the application of Quality Tools in companies other than SMEs.

Globally organizations have been exploring different ways to enhance business models to gain competitive advantage. Farhana Rashid, Che Azlan Taibb (2016)<sup>[24]</sup> has found while working on Ready Made Garment (RMG) that Total Quality Management (TQM) among SMEs has positive and significant result in organizational sustainable competitive advantage.

ISO 9001:2008 is designed on the basis of PDCA (Plan-Do-Check-Act, Edwards Deming) cycle and another eight quality management concepts to be used by top managers to lead the companies along improved performance i.e. ISO 9000:2005.

### Research Gap

Though the specific research on the SMEs of Bihar is in scarce and not available that much as secondary information in the area of proposed research. Even, based on the past research of other states of India and abroad as mentioned in the literature review, it could be analysed that the Process Management in the SMEs of Bihar certainly helps in improving the productivity and shall be proved competitive in the market. The proposed study shall focus on this specific gap of implementation proper Process Management in Quality Perspective.

### Relevance of the study

Based on global innovation index India is ranked at pathetic position which shows the low innovation capability of

Indian organizations and specially SMEs. SMEs are one category of MSME department of government of India. There are approx. 3.36 lakhs firms in the SME sector that employed approx. 33.70 Lakhs of people in India. During FY2016 the estimated total manufacturing output of SME was 33% total MSME contribution at GVO (Gross Value Output) while its total export during FY 2016 was 42.4% of MSME contribution. (Source: AR 2017-18, Ministry of MSME)

**Table 1:** Total number of firm category wise in MSME sector (Rs in Lakh)

Sector	Micro	Small	Medium	Total	% of SMEs
India	630.52	3.31	0.05	633.88	0.53
Bihar	34.41	0.04	0.00	34.45	0.11

**Table 2:** Total employment in MSME sector (Rs in Lakh)

Sector	Micro	Small	Medium	Total	% of SMEs
India	1076.19	31.95	1.75	1109.89	3.03
Bihar	N/A	N/A	N/A	53.07	N/A

Bihar has less number of SMEs in comparison to national percentage. The manufacturing exports from Bihar were 0.1% of total MSME contribution between 2000 to 2008 and ranked second from the bottom among all states of India. (Source: SPIESR-GIDR locational dataset of Prowess manufacturing firms-2010). This clearly shows how the enterprises of Bihar are lagging behind to the country's industrial and economic growth at GVO (Gross Value Output).

The proposed study is focused on how SMEs of Bihar will become competitive and how they would increase their performance with the help of implementation of process management and statistical design experiment to gain competitive advantage to establish their strong presence in the market through increasing the productivity at GVO. Depending upon the different domains and areas of business, the firms of Bihar may adopt the need based transformation process to achieve their goal.

#### Scope of the study

1. Paper 1: The Practice of applying statistical methods by SMEs of Bihar
2. Paper 2: The effect of Implementing ISO 9000 among Small Enterprises of Bihar
3. Paper 3: Process Management in Small Enterprises-Bihar perspective
4. Paper 4: Case studies of Process Management in Coca-Cola Patna
5. Paper 5: Measuring competitiveness using Process Models

#### Objectives of the study

Based on the previously presented problem area and the themes of the thesis main research objectives have been formulated. The objectives are as follows.

1. Implementation of statistically designed experiment among SMEs
2. To study the practices of application of process management by SMEs
3. Development of concept based on (1) & (2) to enhance competitiveness and business excellence

#### Research methodology

There are different ways to carry over research and which method will be suitable should be judged with regards to the description of the research problem. Research Design: Proposed synopsis would be carried over by Exploratory and Empirical research design based on Secondary and Primary data. The general research approach of the first theme as a continuous development of knowledge has been initiated by the research interest, iterating between empirical data and tentative theories, ending with the resulting implementation model. Number of observations versus numbers of variables in the different parts of the second research theme has been focussed. The general research approach of the third theme as a continuous development of knowledge has been initiated by the research interest, iterating between literature studies and tentative theories, ending with the resulting models and conceptualisations. Sampling frame: For the study purpose employees of the SMEs of Bihar will be randomly identified.

**Sample size:** 100 respondents

**Sampling Method:** Primary data will be collected through stratified random sampling.

**Sources of Data Collection:** The Secondary data and relevant literature will also be compiled from published and documented sources. Such sources are articles, case, Conference proceedings, Annual Reports etc.

**Design of Questionnaire:** Different sets of questionnaires will be prepared. The questionnaire will be consisting of open & close ended questions and likert scale questionnaires as well. Reliability and Validity: The questionnaire will further test for reliability. This will be performed to test the internal consistency of the variables used in the questionnaire. Period of the Study: The data will be analysed for period of 10 years including 1 year of forecasting.

**Data analysis and interpretation:** Analysis will be done after tabulating and coding the primary data collected with the help of MS excel or SPSS. Hypothesis will be tested with the help of statistical tools like Mean, Standard Deviation, Correlation, Regression and ANOVA. Further, other statistical tools, if required, will be used to justify the hypothesis.

#### Limitations of the study

1. The study is limited to Bihar state.
2. The sample size is relatively small as compared to the total population
3. The study focuses mainly on process management.
4. There could be biases, perceptions and attitudes of respondents

#### Conclusion

This study brings out the pivotal contribution of effective process management to the competitiveness of Small and Medium Enterprises (SMEs) in Bihar from a quality point of view. The results unequivocally show that SMEs embracing orderly quality management practices—namely Total

Quality Management (TQM), lean practices, and continuous process improvement—are likely to achieve improved operational efficiency, enhanced product and service quality, increased customer satisfaction, and increased market robustness. Analysis will be done after tabulating and coding the primary data collected with the help of MS excel or SPSS. Hypothesis will be tested with the help of statistical tools like Mean, Standard Deviation, Correlation, Regression and ANOVA. Further, other statistical tools, if required, will be used to justify the hypothesis. Notwithstanding infrastructural and financial constraints, a large number of SMEs in Bihar indicate an inclination towards process innovation and enhancing their in-house processes. Nevertheless, the absence of awareness, trained manpower, and exposure to advanced technologies remains a significant bottleneck toward the large-scale adoption of quality-focused process management. Closing this gap calls for serious efforts by both government and non-governmental institutions through policy interventions, training programs, financial support, and knowledge sharing.

Lastly, ensuring competitiveness via process management focusing on quality is not only within reach for Bihar's SMEs but also is something they desperately need to foster growth and longevity in the business. Focusing on quality and efficiency as strategic business goals has the potential to revamp such companies into the strength of Bihar and India's economy.

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