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The Role of Total Quality Management in Small and Medium Enterprises

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ABSTRACT

All types of the businesses, be it of small or large nature, are needed to come forward to support them in performance and to achieve better result in the competitive, modern business world. Many countries around the world are economies where the small and medium enterprises are the backbone that must adopt effective management strategies if they are to survive and grow. One such strategy or strategy as it were, gaining importance in the last few years was Total Quality Management (TQM). There is one thing you must understand that majority of SME's have used this holistic approach towards the improvement of the quality that have become turning up of the trade and customer satisfaction of their operations and even been the reason of driving your business success.With market dynamics quickly moving, moving in the fast lane, SMEs have been experiencing increasing pressure of offering high quality products and services time and again. With this setting, the capacity of TQM as a weapon against accomplishing these enterprises' requirements in satisfying and surpassing customer demands as well as for optimizing internal processes is shown. TQM is a way in which SMEs can compete equally with the large organizations by establishing a culture of continuous improvement and employee participation.This article goes further in the role played by Total Quality Management in the performance improvement of SMEs; its origins, fundamental principles, challenges of implementation and conclusion on its advantages. We will finally invest in the philosophy and apply it to smaller enterprises the way quality management leader W. Edwards Deming describes. We desire to benefit smaller business leaders by analyzing TQM practices, causes, and effects since they can serve as reference for the little organization leader to utilize at the course of his quality administration run.

1. Total Quality Management

Total Quality Management is of an integrated approach to business management, where the concept of quality is the prevailing feature in the management of such organization. As compared to traditional quality control, TQM involves every minefield of an organization's activity from product design and production to customer service whereas the product itself is discarded.The key line from TQM is that quality control is not something that some dedicated quality control department does but it is a shared goal of the whole organization. The philosophy of the company stresses for continuous improvement, employee participation and deciding on the best quality results by supporting data.The quality management theorists from the post World War II period in W. Edwards Deming, Joseph Juran, and Philip Crosby can be traced as contributing to the 'post World War II phenomena' TQM. Different framework and methodology was devised by thought leaders who laid the foundation basis for the modern TQM practices [1]-[3].

1.1 Key Principles of TQM

1. Customer Focus: All organisational activities in TQMs center on customer, that is, on the understanding and interpreting and responding to the need and expectations of customers.
2. Kaizen, this principle, also called by Japanese as Continuous Improvement means organizations are always trying to improve their processes, products and services continuously.

3. Employee Involvement: In TQM, it is realized that all employees at all levels can contribute to the value added in quality improvement.
4. TQM is process centered approach and not outcome based management where the processes that lead to producing the desired outcomes are optimized.
5. TQM Integrated System: The organization is envisaged as a network system where information inputs from any of its functional or departments are fed into units that are to carry out processing and eventually output from them come from a grouped unit at different stages for the end product.
6. Quality Improvement: Should be built on an organization's strategy and how they work systematically towards all their instances of operation.
7. TQM refers to the implementation of data in statistical analysis for informational making and information giving whilst improving.
8. Quality goals and initiatives need to be understood and embraced across the organization as it is necessary that the communication is effective.

Creation of this culture is implemented through a form of creating a culture of quality, by the principles of which the organizations have an adherence in order to develop a culture of quality which is present in all organizational processes leading to effective performance, customer gratification and competitive existence [4]-[9].

2. The Relevance of TQM for SMEs

Total Quality Management has always been associated with big corporations but TQM is an ever green practise in the whole spectrum of small, medium enterprises. SME actually is agile and flexible frequently and is able for the implementation of TQM in a good way.

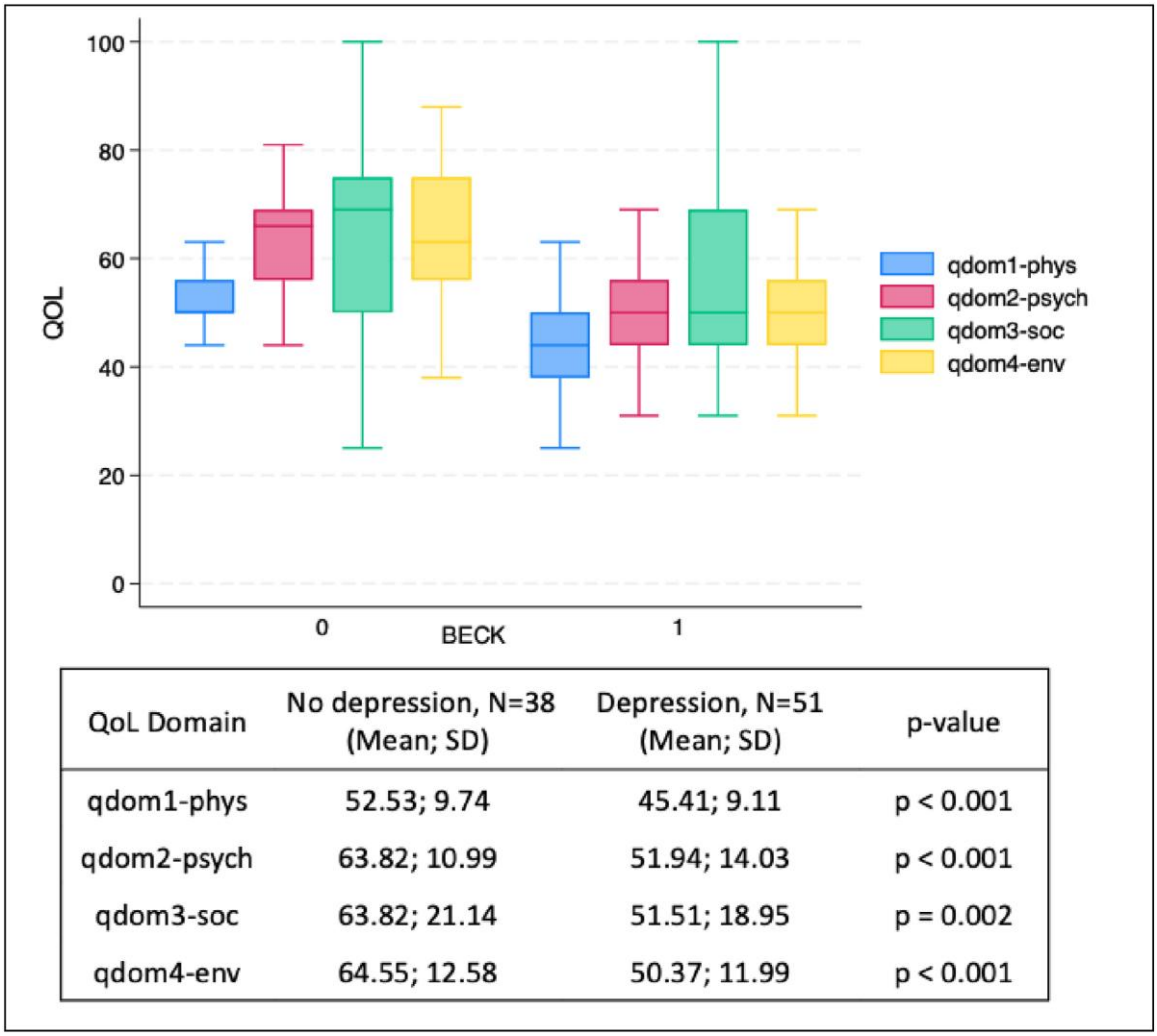
The advantages of adopting a TQM approach for SMEs in the business environment of today can be many as follows:

Table 1: Core TQM Principles Applied in SMEs

TQM Principle	Application in SMEs	Outcome in Practice
Customer Focus	Gathering feedback and aligning services with customer needs	Increased customer satisfaction and loyalty
Continuous Improvement	Encouraging small, consistent process enhancements	Enhanced operational efficiency
Employee Involvement	Empowering staff through training and team participation	Greater motivation and reduced turnover
Process Approach	Standardizing workflows and monitoring performance	Improved product/service consistency
Leadership Commitment	Direct involvement of SME leaders in quality initiatives	Stronger quality culture and goal alignment

Quality Improvement: An SME has an opportunity to differentiate itself from competitors and larger organizations by providing quality in all areas of operation.Process Optimization and Reduction of Wastes: Using TQM, the SMEs can experience improved efficiency, resulting in the reduction of cost and an increase in profitability of an organization.Stronger Relationship with Customers: Forgetting about the needs and expectations of their customers will create stronger relationship between their customers and increase their customers' loyalty.

Using TQM to Reliance on the Involvement and Empowerment of Employees of SME: To achieve higher jobs satisfaction and employee productivity in SME, it is relying on the involvement of and the empowerment of the employees of the SME.TQM culture leads to continuous improvement; this will continue to ensure products, services, processes remain on innovative track.Sticking to high quality products and services is good for enhancing reputation of an SME in form of attracting new customers and business opportunities.Data Driven Decision making: Based on emphasis given to TQM, Data driven decision making will yield SME leaders to make better decision with regard to the strategies they choose, as well as the way they go about the operations of the SME [10]-[14].



QoL Domain	No depression, N=38 (Mean; SD)	Depression, N=51 (Mean; SD)	p-value
qdom1-phys	52.53; 9.74	45.41; 9.11	p < 0.001
qdom2-psych	63.82; 10.99	51.94; 14.03	p < 0.001
qdom3-soc	63.82; 21.14	51.51; 18.95	p = 0.002
qdom4-env	64.55; 12.58	50.37; 11.99	p < 0.001

Fig 1. SME and TQM

Even though SMEs are to implement TQM, the effort and resources required are very high, but there is an enormous value for SMEs to implement TQM. By adopting these quality management principles, these enterprises can be put in a fit condition to win and grow sustainably with sustainable growth in a highly competitive business environment.

3. Applicability of Deming's Quality Philosophy to SMEs

W. Edwards Deming had been a founding father of the world's quality movement and spoke to modern TQM practices; this philosophy included an important part of it. However, most of the principles and principles of Deming's are applicable in large manufacturing and to various sectors if the SME, all his work was widely talked about in large manufacturing.Earlier, he lists the 14 points of management Deming suggests.

Deming largely spoke of his quality philosophy mostly, he translated and articulated this philosophy into 14 points for management. Both of these principles give organizations a guide to successfully implement TQM:Maintain leadership position in products and services and build constancy of purpose towards product and service improvement.

Therefore a new philosophy of quality and continuous improvement should be adopted.

Inspection based on quality can cease, we can use the product's quality as a parameter right from the get go.Stop with the requirement to award business on price only, drop the total cost.Improvement of the system of production and service, constantly and not ending.Capialize on gettings training from the Institut on the job.Institute leadership to help people and machines to do a better job.To bring about good two way communication you have to drive fear out.It makes it easier to lower barriers between departments and staff areas.Destroy your slogans, your exhortations, your targets.Throw out numerical quotas of the workforce and numerical objectives of management.Things that take away pride from workmanship are to be dislodged.

It required work to institute an aggressive education program of self education and

education.If everyone doesn't work to turn put the company transformation, we must do something instead.Most of these points are suitable for larger organizations, but can be modified and used very well in SME context. An example of some of these include: continuous improvement, leadership development, and deparmental barriers, which can be very useful to smaller companies applying their operations and quality culture [15]-[17].

4. Deming's Philosophy for SMEs

In the case of SMEs, quality philosophy of Deming (where waste is drastically reduced along with service quality improvement) must be cognizant towards the peculiarities and constraints of such organizations. Some of the ways in which SMEs can adapt and adopt Deming's principles can be outlined below.

Action to Create Constancy of Purpose: Deming's idea of focusing on a constancy of purpose can be applied to a creation of an action to make SMEs focus on a long term vision of quality improvement so they can adopt the idea that they should focus on having a constancy of purpose.

Table 2: TQM Impact Metrics in SMEs (Case-Based Examples)

SME Sector	Defect Rate Reduction (%)	Productivity Increase (%)	Customer Retention Growth (%)
Textile Manufacturing	40%	25%	18%
Food Processing	35%	30%	22%
Software Services	28%	20%	30%
Retail Operations	32%	18%	25%
Logistics	30%	24%	20%

Although SMEs do not have priority of formal training programs, they still have priority on employee skill development through on-the job learning, it is not impossible for SMEs to invest in Employee Development so that there will be quality output.Small size of many SMEs allows better direct management communication, conducive with Deming's plea to drive out fear and talk.Ensures process improvement: For the absence of the capacity to take large scale quality initiatives, it makes the SMEs focused on the continuing improvement in the key processes.Spotlight on Quality If your products or services made as a whole are of good quality, a good supplier relationship is one thing you can develop that will make your product or services more as a whole, quality.Improving and Innovating: The adoption of Deming's thinking can be used by SMEs to be more agile through continuous improvement in their culture.The principles of quality management can be personalised by SME Leaders, these leaders would then lead by example on an organisational level.Clever adaptation of Deming's quality philosophy for the context of SMEs will enable TQM to harness its power in leading significant performance and competitiveness improvements for SMEs [18]-[19].

5. Challenges and Strategies for Implementing TQM in SMEs

The potential that Total Quality Management offers to SME's is great, but also carrying a risk of implementation in small organizations. For SMEs that want to embark on a TQM journey, it is therefore important to deal with such challenges to due to which it is important.

Patient material	Isolated cell type and investigated phenotype
 Skin biopsy	 Fibroblasts • Respiratory chain enzyme activity[38] • Ca^{2+} activated K^{+} channels and pro-inflammatory cytokine expression[39] • Drug testing: recombinant enzymes[40] and chaperone[26, 41] and its potentiation[42, 51] • HIV-2 lentivirus vector for gene therapy[44]  Endothelial cells • hTERT immortalization and evaluation of Gb3 accumulation and clearance[50]
 Peripheral blood	 Hematopoietic Cells • Pro-inflammatory cytokines[45, 46, 47] • Relation of Gb3 accumulation to number and function of T-cells[48] • Scanning for new pathogenic variants and evaluation of treatment susceptibility[49]
 Urine Sample	 Renal Tubular Epithelial Cell • Immortalization and investigation of chaperone treatment efficiency[52]

Fig 2. TQM Implementation for SMEs: Common Challenges.

Financial Resources Constraints: It is limited to financial resources, human resources, and expertise, and thus the chasm is widening between the SMEs so that many do not spend enough in the comprehensive quality management initiatives.Resistance to Change: Small organization may be more ready to change set practice and process due to the reason that employees together with the management happen to be closer.Insufficient Quality Management Expertise: Many SMEs may not have staff with such a professional in terms of their quality management.SMEs tend to focus on short term whereas it becomes difficult for them to devote their time in long term quality improvement work. Less structured nature of many of SMEs: Thus formal quality management systems and processes can be implemented in many of the SMEs.SMEs have less limited Market Power: SMEs have less influence in determining what suppliers and customers will buy and sell in their supply and value chain, and therefore in a way of putting in quality improvement throughout the chain.Less Sophisticated Tools: Since not all organizations possess the sophisticated data collection and analysis systems needed to measure the results of quality initiatives, smaller organizations may not have these data collection and analysis systems, either [20]-[24].

6. Successful TQM Implementation for SMEs!!!

In spite of these challenges, SME's can successfully implement TQM by using available tailored strategies that fit to their particular situation.

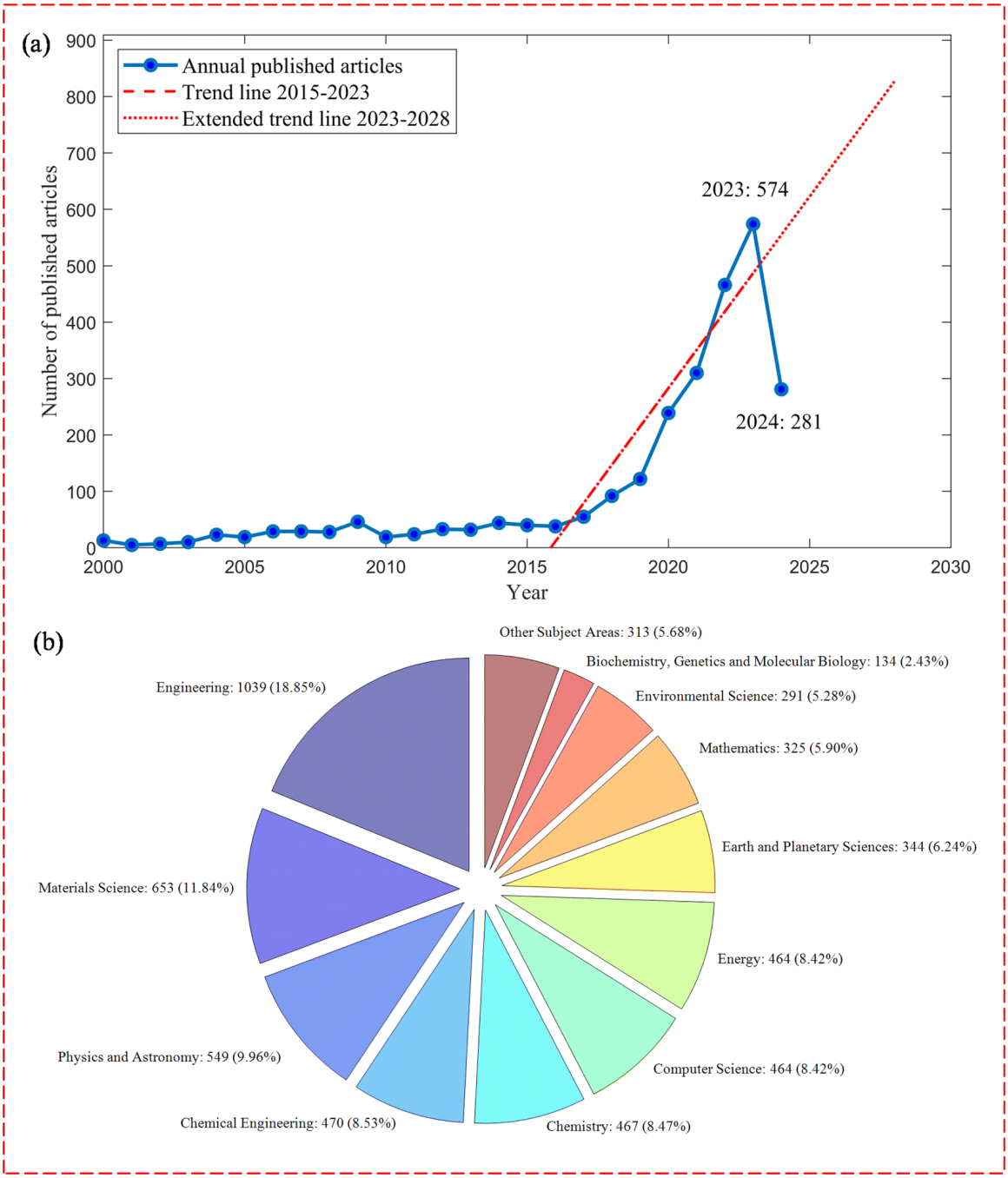


Fig 3. TQM – pilot projects or focus improvement initiatives in strategic areas are where to begin.

If you elect this route, you can work with quality management consultants or if your sector is an industry association, then they will be of interest to you, as they are knowledgeable about your sector and have the ability to offer the assurance you are looking for.Clearly communicating the benefits of TQM and involving the frontline people at all levels in all Quality efforts.

Apply TQM Tools and Techniques: Implement quality management tools and techniques in a simplest, easiest way suitable for the SME context.Devote Resources Towards Training and Education: Allocate time and money into training programs designed to build internal quality management abilities and sharing of knowledge.Highlight Customer Focus: Take advantage of the SME's ability to develop close relationships with customers, for customer needs feedback and fast fix quality problem.Many of the software solutions that support quality management can be obtained for very low cost and technology is definitely an area to focus on.Sharing material on resource on quality improvement, and working with other SMEs, suppliers and industry partners to build Quality Networks.

and establish the potential quality objectives that should be achievable by giving consideration to SME resources and capabilities on an ongoing and incremental basis.Reward quality improvement efforts and continue the motivation and momentum for TQM implementation.If the SME holds these strategies and designed to their own context, then they can overcome challenges in implementation of TQM and benefit from the quality management practices.Measuring the impact of Technical Quality Management (TQM) on the performance of Small and Medium Enterprise (SME)The objective of SMEs to justify the investment into TQM and their involvement into TQM projects requires a measurement of TQM impact on overall performance of the organization. It is difficult to determine the results of quality improvement efforts in a small business (SME), but there are many special KPIs and tools companies for its TQM can use in the need of a quality improvement.Normally, SMEs have to ensure that the investment made in Total Quality Management initiatives can justify the spend. To this end, they need to assess and record the impact of TQM on their overall performance. Although it is difficult to quantify the results of a quality improvement effort, especially in a small organization, there are several key performance indicators (KPIs) and methods for assessing the effectiveness of a TQM program for SMEs.

7. Assessing TQM Impact Methodologies

Data on test resulted to Balanced Scorecard Approach: Create a balanced scorecard from a set of metrics that are related to quality in terms of financial dimension of customer, internal processes and learning & growth dimensions to comprehend how TQM impact.Quantify the improvements before-and-after analysis of key performance indicators, compares the key performance indicators (before and after TQM implementation).Comparison: Comparison can be made with benchmark points – points of difference from the best in class or industry standards for SME's quality performance in order to measure improvement and also points at which the SME is performing extremely well or not at all.

Return on Quality (ROQ) Analysis: The question of trying to calculate is how much it costs to improve the quality and what will we get in return for the money?Suitable criteria for assessing TQM maturity and effectiveness include the elements of these quality awards programs (i.e., quality awards program, Malcolm Baldrige National Quality Award).

8. CONCLUSION

Total Quality Manufacturing: Total quality manufacturing is a system for aligning the organizational elements to create maximum customer satisfaction through total machine reliability, reducing variation and minimizing variation in all the business processes throughout the supply chain.Applications of Statistical Process Controls: Perform statistical analyses to determine the closeness of key processes to the quality specification and how to minimize this.Employee Surveys: Monitor compliance of your employees with TQM principles as well as with the organization‘s quality culture in the eyes of your employees by taking regular survey.In addition to their ability to measure and evaluate how much progress their TQM Initiatives are moving along, SMEs can observe and find more areas to improve as well as benefits from quality management for the benefit of the stake holders.

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