

"Some studies on TQM environment in industry for global competitiveness"

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Different Total Quality Management (TQM) environments may be suggested to an organization for improving the quality of products, customer satisfaction, competitiveness and profitability by TQM experts. TQM is not a static activity. It is flexible, adaptable and dynamic management activity which can assist the company to remain competitive and grow successfully in the face of challenges and opportunities posed by market, social-political-economic environment (international and domestic) and scientifically and technological advances.

The present work provides a computationally simple and efficient analytical method of modeling TQM environment using a unified structural approach called graph theoretic approach. TQM is considered as a continuous process involving all – all people, all facilities and all functional areas. Thus, TQM assumes a complex system perspective owing to innumerable factors affecting it. These factors at system, subsystem and component level have inherent interdependence and connectivity. For enhancing competitiveness and to get best results out of TQM implementation, it needs to be considered as a unified approach that takes into account the inheritances and interdependencies at various system levels.

TQM is viewed from systems point of view and a new definition of TQM is proposed and explored thus identifying different factors affecting TQM environment. With innumerable factors governing TQM, complex networks can be drawn and analysed using the graph theoretic approach. To avoid mathematical complexity in the analysis, the various identified factors affecting TQM environment are clustered based on their affinity so as make them manageable for graphical and mathematical analysis in this work.

The work analyses and links various subsystems of TQM, identify factors at each system level, so that the complete TQM environment in an organization can be unified and represented in terms of a single numerical index.

The work also explores the role of intangibles i.e. the soft options in terms of individual human beings' contribution to organization and overall work culture in an organization. Through identification, analysis and mathematical modeling of human factors, the work proposes overall human factor index in an organization. Similarly human performance index is evaluated using contribution of employer, employee, supplier and customer in mathematical terms.

Finally, a performance measurement instrument for TQM is developed. With substantial amount of money and time spent on TQM initiatives, the organizations need to know whether the anticipated benefits of TQM have been achieved or not and if yes then up to what extent. This is analysed by developing a model for measuring TQM outcomes thus measuring TQM effectiveness of an organization.

The various indices viz. TQM index, human resource performance index, human factor index, and TQM effectiveness proposed in the work help in measurement, analysis, continuous monitoring and comparison of various TQM subsystems.