

review article

Title: TQM practices and innovation performance: A review of current literature

Abstract:

The title of this paper is total quality management and innovation performance, a review of current literature. This paper has reviewed forty four research articles in the area of quality management and innovation performance from various industries. This paper has identified that irrespective of type of industry most studies have found a positive relationship between TQM and firms innovation performance and in cases where the relationship is weak or negative is because of various contextual factors that has modified this relationship.

Key Words: Total Quality Management, Innovation, Performance.

1.0.Introduction:

In all developed and most developing countries firms now a day's faces unprecedented levels of competition and find themselves in direct competition with both local and international competitors and the reason for this intense competition lies in fast technological changes and globalization of trade. In this scenario in order to survive firms must show higher level of efficiency at low cost to produce customer oriented novel products/services that are innovative as well as cost effective. There are many different management philosophies which can help firms achieve this goal and total quality management is among one of these philosophies.

1.1.Objective of Study:

Empirical studies from various industries have shown that TQM practices have a positive relationship with firm's performance especially its innovation performance but others have also found a negative relationship as well so the main objective of this paper is to clearly explain TQM and innovation performance relationship from a broader perspective. Therefore this paper has reviewed various research studies undertaken in the area of quality management and firm innovation performance from different industries and it has helped to answer the following questions.

- What are the latest trends in total quality management literature?
- Which quality management practices are frequently used among different industries?
- How effective are these quality practices in terms of results in enhancing firm's innovation performance?
- Which conditions can make TQM and innovation performance relationship positive and vice versa?
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1.2.Background of Total Quality Management:

Quality management is one of the most popular and durable management concepts and it has passed through a number of phases since 1920,s. The roots of quality management go back to the

45 teachings of Drucker, Juran, Deming, Ishikawa, Crosby, Feigenbaum and countless other people
 46 that have studied, practiced, and tried to refine the process of organizational management. Before
 47 exploring the different quality management practices it is better to understand what is meant by
 48 the term quality and different people interpret quality differently and few authors had defined
 49 quality in measurable terms that can be operationalized.

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 51 Various practitioners have defined quality in different ways as mentioned in Table 1.

52 **Table 1: Definitions of Quality**

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| <ul style="list-style-type: none"> • "Fitness for use." Where fitness is defined by the customer.(Joseph M. Juran) • "Conformance to requirements." But the requirements may not fully represent customer expectations and Crosby treats this as a separate problem.(Philip B. Crosby) • "Uniformity around a target value." The idea is to lower the standard deviation in outcomes, and to keep the range of outcomes to a certain number of standard deviations, with few exceptions.(Genichi Taguchi) • Quality and management are linked "Costs go down and productivity goes up as improvement of quality is accomplished by better management of design, engineering, testing and by improvement of processes.(W. Edwards Deming) • Quality in a product or service is not what the supplier puts in. It is what the customer gets out and is willing to pay for.(Peter Drucker) • The characteristics of a product or service that bear on its ability to satisfy stated or implied needs.(American Society for Quality) |
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53 Source: Paul W. Hyland, Robert Mellor and Terry Sloan (2004)

54 In today's business world there is a growing recognition that isolated improvements in particular
 55 aspects of the organization are no longer adequate and that a holistic strategy is needed to bring
 56 competitive advantage and this can be done by adopting one of the few quality practices
 57 mentioned below.

58
 59 **• Quality Control:**

60 In this quality tool organizations consider laboratory and testing of products as a main
 61 activity of quality management and invest in and develop their products/services
 62 management systems , these firms usually have quality control labs and departments
 63 testing and measurements make them react to non conformities. Quality controls include
 64 the use of affinity diagrams, pareto charts, histograms, arrow diagrams and run charts.

65 **• Quality Assurance Standards: (ISO)**

66 According to these quality standards a product is a result of many processes and unless
 67 these are controlled effectively quality cannot be delivered therefore they try to control
 68 all these processes that effect product/service quality and most companies assure quality
 69 by using quality programs like ISO 9000, ISO 9000-2000, ISO 14000 etc.

70 **• Continuous Quality Improvements:**

71 Continuous quality improvement is based on the Japanese philosophy Kaizen and firms
 72 which implement this quality tool do not just confer to the quality assurance standards but
 73 they realize that process improvements are directly proportional to competence,
 74 commitment and team work of employees, such organizations mobilize companywide

campaigns for continuously developing skills of quality management at all levels and give assignments on weekly and monthly basis in cross functional teams.

- **The Quality Excellence Models:**

These days' practitioners working in the field of quality management are using quality models to assess and evaluate the contribution of quality practices in achieving better organizational results, and among these models the Deming application prize, MBNQA model also known as Baldrige award and the EFQM excellence model are mostly used.

Table 2: The Quality Award Models and Their Sub Categories.

Deming Award	MBNQA Model	EFQM Excellence Model	China Quality Award
• Policy • Standardization • Organization & its Management • Controls • Education & Dissemination • Quality Assurance • Collection & Dissemination of information on quality • Analysis • Results • Planning for the future	• Leadership • Strategic Planning • Customer Focus • Measurement, Analysis, Knowledge Management • Work Force Focus • Operations Focus • Results (Customer, Product quality, Work force, Leadership, Financial outcomes)	• Leadership • Strategy • People Management • Partnership & Resources • Process, Products & Service Management • Results (Customer, People, Society, Key Performance Results)	• Leadership • Strategy • Customer & Market • Resources • Process Management • Measurement Analysis & Improvements • Operating Results • International Best Practices • Social Factors • Government Strategic Initiatives

2.0. Defining Innovation Typologies Based on Literature:

Damanpour (1991) defines innovation as adaptation of internally generated or purchased device, system, policy, program, process, product or service that is new to the adopting firm so according to him innovation can be anything new that the firm adopts which could be a new process, program or a product/service. While according to Huiban & Bouhsina (1998), Sciulli (1998) innovations can be divided in two main categories i.e. product/process innovations and incremental and radical innovations so the former is in terms of area where the innovation is being done and later is on the way innovations are being adopted.

Hipp et al (2000) divides innovations to be of three types i.e. firstly product/service innovations which includes innovations in the form of introduction of new and improved products or services. Second type are process innovations which include new and improved work methods in the processes and third type are organizational innovations which are not limited to the individual production processes but also involve significant improvements in overall organizational structures and processes.

3.0. Methodology:

In this paper we had reviewed 44 research articles from top ranking research journals assessed different academic data bases like EBSCO, EMERALEDINSIGHT, SCIENCEDIRECT, INFORMS and SPRINGER. Other details about journal name and type of study are mentioned in Table 3 and 4. In this paper among the forty four article reviewed thirty three articles have used quantitative techniques and used several different types of statistical techniques to evaluate the data like regression, correlation, factor analysis, structural equation modeling etc so these studies are placed in the quantitative group while nine studies have used the case study, stories and interview approach and used respondents and experts judgment to assess the TQM and innovation performance relationship so such studies are placed in the qualitative group of articles the rest of two articles are literature reviews in a particular industry to assess the trends in literature in these sectors.

Table 3: Journal paper reviewed

Name of Journal	Number of Articles	Articles Reference
1. The TQM Magazine	7	Ali Bayati (2007), Gill (2009), Gotzamani (2007), Jung (2008), Kumar & Grag (2009), Kakkar & Nrag (2007), Arumugan (2009)
2. Technovation	2	Ana (2001), Parajogo & Hong (2008)
3. International Journal of Production Economics	3	Brun (2012), Sadikoglu (2010), Bayazit (2007)
4. The Qualitative Report	2	Psychogios (2007), Psychogios (2010),
5. International Journal of Quality & Reliability Management	4	Fotopoulus (2009), Pinho (2008), Jitaiboon & Rao (2007), Kumar (2009)
6. Management Science	3	Itner (2001), Eric & Jong (2012), Morrison (2000)
7. European Journal of operations Management	1	Parajogi (2006)
8. Journal Kemanvsiaan	1	Jousoh (2008)
9. Journal of Technology Management	1	Singh & Smith (2004)
10. Omega	1	Parajogo (2006)
11. International Journal of Operation and Production Management	1	Soltani (2010)
12. Organization Science	3	Cardinal (2001), Dahalander (2012), Rothermel (2007)
13. International Journal of Innovation Management	1	Hippel & Miles (2012)
14. Journal of Operations Management	3	Sila (2007), Liusar (2009), Jayaram (2009)
15. Regional Studies	1	Chen & Guan (2012)
16. Asia Pacific Journal of Management	1	Pratoom (2012)
17. Management Research News	1	Ooi & The (2009)
18. International Journal of Health Care Marketing	1	Awan & raouf (2009)
19. International Journal of Project Management	1	Parast (2010)
20. Journal of Business and Applied Management	1	Letica (2007)
21. Service Science	1	Sukwadi (2012)
22. International Journal of Business Research	1	Hosseini (2009)
23. Journal of Decision Support System	1	Matook & Indulska (2009)
24. International Journal of Productivity & performance Management	1	Salahedin (2009)

25. Industrial Management & Data Systems	1	Sit & Ooi (2009)
Total	44	

117 **Table4: Type of Study**

Study Type	Number of Articles	Article Reference
1. Quantitative (Empirical Studies, Meta Analysis)	33	Ali Bayati (2007), Gill (2009), Gotzamani (2007), Jung (2008), Kumar & Grag (2009), Kakkar & Nrag (2007), Arumugan (2009), Ana (2001), Parajogo & Hong (2008), Brun (2012), Sadikoglu (2010), Bayazit (2007), Psychogios (2007), Fotopoulus (2009), Pinho (2008), Jitaiboon & Rao (2007), Kumar (2009), , Eric & Jong (2012), Jousoh (2008), Singh & Smith (2004), Parajogo (2006), , Rothermel (2007), Sila (2007), Jayaram (2009), Chen & Guan (2012), Pratoom (2012), Ooi & The (2009), Awan & raouf (2009), Parast (2010), Letica (2007), Sukwadi (2012), Hosseini (2009) , Matook & Indulska (2009) , Salahedin (2009), Sit & Ooi (2009).
2. Qualitative (Case Studies, Interviews)	9	Dahalander (2012), Itner (2001), Hippel & Miles (2012), Morrison (2000), Cardinal (2001), Soltani (2010), Psychogios (2010), Liusar (2009), Rizwan Faroqi (2008).
3. Literature Reviews	2	Parajogo (2006), Kaihua & Guan (2012)
Total	44	

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119 **Table 5: Summary of Studies on TQM & Innovation Performance**

Article Reference	TQM Indicators	Outcome Indicators	Methodology	Findings
Thawatchai Jit Paiboon & S. Subba Rao (2007)	Leadership, information and analysis, strategic quality planning, HRM and management of process quality	Quality and operational results, customer focus and satisfaction	Meta Analysis approach	The reliability coefficients are same for most TQM practices but their values are greater for TQM studies then for Mkt and MIS studies
Ana Abrunhose & Patricia Moura (2008)	Autonomy, communication, consultation, flexibility and supportive people management	Technological innovations i.e. minimum number of innovations , minimum time in innovations	Survey instrument sample of 500 employees	The value of correlations were high B/W TQM constructs and innovations but the study suggests an introduction of innovations based organizational culture
Joo Jung & Xuemei Su (2008)	MNBQA (1995) indicators and Hofstede national cultural factors	TQM successful implementation in terms of successful organizational results	Survey instrument sample of 186 MNCs managers	Power distance, long term orientation, individualism are more critical effect on successful TQM

Daniel I Prajogo & Soon W. Hong (2008)	MNBQA model criteria (leadership, strategic planning, customer focus, information and analysis, people management, process management)	R&D performance in terms of product quality and product innovation	Data from 130 R&D Korean manufacturer was collected and analyzed by SEM	implementation. TQM practices have strong positive impact on R&D performance in an integrated way rather in a fragmented way and help increase both product quality and innovation
Esin Sadikoglu and Cemal Zehir (2010)	Leadership, training, employee management, information and analysis, supplier management, process management, customer focus, and continuous improvements	Employee performance, innovation performance	A detail research questionnaire, the sample consist of 500 ISO certified firms, Cronbach alpha and the confirmatory factor analysis	All TQM practices are significantly and positively correlated with employee performance, innovation performance
Karun Pratoom & Gomon Savatsomboon (2012)	Knowledge management and self leadership	Individual/ group innovations	Data is collected from 1,526 group members in 138 producer groups of community products in the Northeast of Thailand	Results show that creativity fully mediates the effect of self leadership and knowledge management on innovation among group members
Prakash J. Singh & Alan J R Smith (2004)	Leadership, customer focus, relation with suppliers, employee interrelationship, communication systems, process/product management	Organizational innovation	Data was collected by survey questionnaire from 418 Australian manufacturing firms and used SEM Modeling	Results show insufficient statistical evidence to suggest that TQM is related to innovation and propose that this relationship is much more complex
Linus Dahlander (2012)	Interactions and online communication systems	Individual Innovations	Data was collected by considering a social interaction website as case study	Results show that communications by users in online communities can create value to contributors and firms and help them improve individual innovations.
Christopher D. Ittner (2005)	Prevention , Appraisal Cost, Conformance processes	Internal failure cost and external failure cost	Study a sample of seven firms was selected who had implemented TQM	Learning is a function of investment in quality improvement and learning from defects resolution.
Frank T.R & Andrew M.H	Firms Dynamic Capabilities i.e.	Individual level innovations , firm	The study has used a sample of 163 plant	Innovations at individual level had

(2007)	network structures , R&D capabilities, new technologies	level innovations	managers and has used multiple discriminant analysis	reinforcement effect on innovations at the firm level
Eric Von Hippel & Jeroen P.J. De Jong (2012)	Consumer innovation investments	Number of consumer innovation developments	Stories from different consumers about their home made innovations	The consumer innovations are not protected by intellectual property so producer innovators can benefit from prototype developed by consumers
Jose Carlos Pinho (2008)	Leadership , top management support, continuous improvements, relationship with suppliers, ISO standards, measurements of results	Innovation performance & consumer orientation	A Meta analysis correlation approach of 210 research articles	Firms innovation performance is impacted by consumer orientation results, ISO standards top management training programs and leadership initiative towards innovations.
Pamella D. Morrison & Jhon H.Roberts (2000)	Information sharing through online information systems	Product & service innovations	The study has use a more qualitative approach to acquire data by using 12 focus groups of academic experts	The study concludes that innovators information sharing leads to higher level of user commercial level of innovations.
Ahmed Jusoh & Rushami Zieu Yosoff (2008)	MNBQA, EFQM, QMS ISO 9000 indicators	R&D development of universities	Factor analysis is used to analyze results of survey questionnaire	Seven TQM dimensions i.e. top management leadership, data & information, performance management, process management, process management, customer focus, resource management, are sufficient enough to explain TQM in R&D of universities.
Ronald Sukwadi & Ching Chow Yang (2012)	ACSI model & ECSI model indicators	Perceived Quality, perceived value and public reputation	SEM model is used to explain the results	The study suggests that customer satisfaction and perceived quality can be enhanced by customer interactions in the Indonesian HEIs.
Laura B. Cardinal (2001)	R&D projects with organizational	Incremental /Radical innovations	The study has used a more qualitative	Study suggests that inputs, behavior,

	controls		approach to collect data by interviewing 200 managers	output controls enhance both incremental / Radical innovations.
Daniel I Parajogo & Amrick Sohal (2006)	TQM practices, organization culture, organization strategy	Quality performance, innovation performance(MNI, MTI)	Review of literature	Proposed a model that explain the relationship between TQM & Innovation with reference to internal and external environment.
Kaihua Chen & Jian Cheng Guan (2012)	Technological development/ technological commercialization	Efficiency of China regional innovation system	Review of literature qualitative analysis of trends	The innovation systems are operating on best practices frontiers but still many inconsistencies were identified between technological development capacity & commercialization capacity of regional innovation systems.
Daniel I Parajogo & Amrik Sohal (2003)	Leadership, Strategic Planing, Customer focus, information and analysis, people and process management	Product Quality, product innovations, process innovations.	The study has used data from 130 R&D divisions in Korean manufacturing firms and TQM practices were measured by using structural equation modeling technique	TQM practices positively relates to product quality and product innovations but magnitude of relationship is greater with product quality then product innovations.
Christos B. Fotopoulus & Evangelos L. Psomas (2009)	leadership, strategic quality planning, employee management & involvement , supplier management, customer focus, process management, continuous improvements.	Increase in profits, improved competitive position, improved performance and increased sales	The data was collected from 106 certified firms and SEM technique was used	Significant effect of strategic quality planning, employee management & involvement on improved competitive position, improved performance
Alessandro Brun (2010)	Management commitment, employee empowerment, fact based decision making, focus on customers, continuous improvements	Six sigma implementation	Sample of 1720 ISO certified companies, structural equation modeling by observing standard regression weights and values of squared multiple correlations	The results shows that the lack of financial resources limit companies to implement TQM initiatives.
Mahour Mellat Parast (2010)	Six sigma projects	Technological innovation capability	Descriptive analysis using means scores	The study shows that ix sigma programs

Ebrahim Soltani and Adrain Wilkinson (2010)	Senior and middle managers orientation of TQM i.e. emphasis quality, people, organization and the role of senior managers	Success of TQM program	ratings Case study	mainly focus on existing customers and resist innovation for new customers. The study concludes that TQM being driven by an inspection approach and quality control approach.
Alexandros G. Psychogios (2010)	Employee involvement, continuous improvements, continuous training, team work, empowerment, top management commitment, management style, and cultural change	Managers carriers and job security	68 semi structures interviews were taken from managers both at top and middle level	The results show negative impact of TQM on managers careers and TQM had a strong positive effect on job security.
Vinod Kumar & Franck Choisine (2009)	Senior executives leadership, well designed quality processes,	Employee relations, operating procedures, customer satisfaction, financial results	Sample of 1800 was taken from a list provided by NMAE chambers and used confirmatory factor analysis & regression analysis	Study suggest a strong positive impact of TQM practices on supplier operating and financial performance.
Salaheldin Ismail Salaheldin (2009)	Leadership, organizational culture, top management support, team building and problem solving, employee empowerment, employee involvement, employee training, use of information technology	Cost and waste reduction, improving quality of products, improving flexibility, improving delivery performance and productivity improvements	Data collected from in depth interviews, A sample of 15 winners of MBNQA, descriptive statistics and values of coefficients and t test	Study finds a strong affect of leadership, employee empowerment, employee involvement, employee training on improving delivery performance and productivity improvements.
Mohammad Usman (2009)	Top management commitment, strategic planning processes for quality management, quality information availability, employee training, employee involvement, process design,	Results of whole sale distribution	Study used postal survey method and 297 SME,s, data analyzed using factor analysis and standardized regression analysis	Results show that most significant factor of TQM in pharmaceutical whole sale distribution is process design.

Wen Yi Sit et al (2009)	supplier quality, benchmarking Leadership, human resource focus, process management, customer focus, strategic planning, and information and analysis	Customer satisfaction(Internal and external customers	Survey mail questionnaire with 56 % response , analysis done Using confirmatory factor analysis, cronbach,s alpha values and step wise regression analysis	Results show that leadership commitment has a strong effect on customer satisfaction while strategic planning and process management has insignificant effect on customer satisfaction.
S.M.S. Hussein, et al (2009)	Education , cultural values, economic development, efforts for quality, supply chain management, advertising and human resource satisfaction.	Improving efficiency TQM	A survey questionnaire filled by 450 ISO certified service firms, analysis by confirmatory factor analysis and step wise regression	Significant factors effecting quality include supplier quality and improvement of quality department , quality and data reporting, and quality process management.
Jaspreet Gill (2009)	Planning of product, price, organization, leadership and commitment	Organizational Profits	standardized regression analysis	TQM leads to efficient use of resources , higher productivity, fever rejects, and cost reductions in manufacturing and inventory management.
Jayanth Jayaram, Sanjay L. Ahire and Paul Dreyfus (2009)	Firms size, TQM duration, Unionization and industry context	TQM implementation	Descriptive analysis	The study concludes that firm size , TQM duration and industry type moderates the influence of total effect of culture but the strongest contributor to variation is size of firm.
Keng Boon Ooi (2009)	Performance appraisal , selective hiring processes, reward system, customer focus, training and employee focus on knowledge management activities	Knowledge acquisition , knowledge dissemination and responsiveness to knowledge	Sample of 394 plant managers, The structural model was tested using LISERAL 8.2 and the confirmatory factor analysis	The study concludes that to foster HRM and TQM practices that have positive effect on knowledge management activities should develop a performance appraisal system to encourage knowledge management

Sabine Matook and Marta Indulska (2009)	Generalizability of model , flexibility , completeness, usability and understanding	Quality of processes reference models	Squared multiple correlations	behavior. The results have suggested that the use of QFD model has enhance company's ability o better service their customer requirements both internal and external.
J. Carlos Bon Leusar et al (2009)	Leadership , policy and strategy, people management , partnership and resources, process management	People results , customer results, and society results	Case study of 4 companies	The study suggest that the EFQM enablers capture both technical and social dimensions of TQM and both dimensions are interrelated and both aspects have a strong positive influence on the results
V. Arumugam , Hiaw Wei Chang, Keng Boon Ooi and Pei lie Teh (2009)	Leadership, strategic planning , customer focus, information analysis, people management, and process management	Customer satisfaction , work processes improvements, productivity, supplier quality management, and financial and non financial performance.	Structured research questionnaire, 446 Spanish companies, SEM, correlation coefficient matrix and least square regression analysis.	The results suggests that the strength of the company in its quality management implementation lie in the customer focus and process management and this also leads to high levels of leadership commitment, strategic planning and human resource development.
Raj Kumar, Dixit Grag and T.K Grag (2009)	Management effective participation, reward scheme, communication systems, vendors power, statistical quality controls	Customer satisfaction	Self administered questionnaire, sample consisted of 299 employees, Descriptive statistics were used	The study concludes that customer focus must be the prime objective for any industry and all the TQM factors must be used systematically to achieve effective TQM implementation.
Ranganathan and Mehra (2008)	Customer focus, information analysis	Customer Satisfaction	The study has used confirmatory factor analysis, least square regression analysis,	The results show positive association between customer focus and proper information sharing with customer satisfaction.
Eriksson and Hansson (2008)	Impact of TQM	Percentage change in sale, return on assets, return on sales,	Data was collected from 345 SMEs and descriptive statistics	The results show that during the implementation

		percentage change in total assets, and percentage change in number of employees	were used to access the effect of quality practices	periods the award receiver companies may not perform better than there competitors but after implementation of TQM award recipient companies performed better than there competitors on all studied financial indicators
Tari and Sabater (2008)	Quality tools and techniques, i.e. Benchmarking, Quality costing, Quality function deployment, Quality improvement teams, Statistical process control	Quality Improvement	The study took Swedish companies that have received the national, regional The data was collected from 17 companies	Results of study show that there is a positive correlation between a firm's TQM level and the use of tools and techniques for quality improvement.
Nofal, Omain and Zairi (2008)	Performance measures, training, employee participation, senior executive's commitment and involvement, internal customer supplier concept, teamwork	Commercial and competitive benefits	Sample size was 106 firms from eastern Spain, Correlation analysis	Found a positive association between leadership commitment and employee participation with commercial and competitive benefits of a firm.
Maria Leticia (2007)	EFQM excellence model indicators	Firms performance	Collected the information from secondary data sources i.e journal articles	The results have confirmed that firms adopting EFQM model outperform their competitors.
Ismail Sila (2007)	TQM implementation, ISO 9000 registration, country of origin, company size and scope of operations	Companies Performance	Survey data by using a research questionnaire of 450 ISO certified Spanish manufacturing and service firms.	The results have shown that all TQM practices are similar across sub group of companies with in each contextual factor.
Alexandra's G Psychogios (2008)	Top management attitude, continuous commitment for quality improvements, empowering	Organizational performance	The study has used structural equation modeling to develop and check the model by conducting multiple group	The results have shown that most managers in the Greek service industry give more importance to hard

Rizwan Farooqi (2008)	workers, quality culture development, ISO certifications, quality controls. Quality in employee training, organization quality culture maintenance by top managers	Viability of TQM implementation	analysis technique across sub group of companies. The study uses in depth interviews with 400 managers as a source of data and more qualitative approach is used to explain the attitude of managers towards TQM.	aspects o TQM and have poor understanding of the importance of soft side of TQM. The study has shown that the average attitude of the contractors towards the importance of adopting TQM.
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4.0.Latest trends in total quality management literature:

After this review it is quite clear that in most industries i.e. manufacturing, service, IT , marketing etc most practitioners and managers now a day's implement quality techniques based on quality control standards (ISO series) or quality excellence models (MBNQA, EFQM) and among these models quality management techniques like top leadership training and behavior toward quality, customer focus, information sharing, participation, autonomy etc have mostly proven to be very effective in enhancing firm performance especially its product/service quality and innovation performance.

5.0.Arguments supporting positive relationship between TQM practices and innovation performance:

The following arguments are made on the basis of this review.

1. Those firms which give autonomy to its employees to make decisions according to their judgment in this scenario autonomy has a positive effect on innovation performance as employees feel less bounded by rules and procedures which in turn improves their creativity and innovation potential.
2. Information sharing also proves to be very effective way to enhance employee innovative skills in a high information sharing plate forms more ideas are generated which intern leads to introduction of new products/services.
3. Cross functional teams are also proven to be very effective way to enhance creativity and innovation especially in project based organizations.
4. In this review we have found that leadership that emphasizes on innovation and reward new and effective ways to deliver product/services also lead to higher levels of innovation at both group and individual level in their firms.
5. In some cases continuous improvements leads to more incremental innovations as it concentrates on step wise improvements in all organizational processes.
6. Customer focus can enhance firm's innovation performance and firms which try to fulfill the needs of their customers are forced to introduce new products/services that can satisfy their changing demands.
7. Firms with high level of investment in R&D had shown better innovation performance then those who invest less in R&D and this is especially applicable for firms operating in a more uncertain business environment.

5.1.Arguments supporting negative relationship between TQM and innovation performance:

1. Sometimes firms that give too much attention to customer needs fail to foresee new opportunities and markets and fail to come up with new products and services as they are reacting only towards customer's needs and demands.
2. In some cases continuous improvement philosophy has hindered in the way of radical innovations as its main emphasis is on increasing and improving efficiency of current products and services.
3. Quality controls also sometimes effect negatively on firms innovation performance as firms following this technique gives more attention to fulfill and control quality at a particular level which reduces chances for firms to make any radical innovations.
4. Employees who work in teams usually decrease their level of individual innovative performance as people who work in groups try to stick with the group opinion which decreases their individual level of creativity.

6.0.Conclusion:

Based on the review of these research articles this paper concludes that most TQM practices inherently have a positive relationship with firms innovation performance and in those cases where we find a negative relationship is because of the contextual factors like uncertainty in business environment, firm size, financial resources and firms culture etc so positive results can only be guaranteed through TQM practices for enhancing innovation performance if the management selects the best TQM technique which fits according to its internal and external environmental conditions.

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