

Impact of Quality Management Tools & Techniques towards Quality Orientation leading to Firm Performance – A study in the context of service SMEs

Om Sharma¹ and George Easaw²

¹ Research Scholar, Alliance School of Business, Alliance University, Bangalore, Karnataka 562106, India

² Professor, Alliance School of Business, Alliance University, Bangalore, Karnataka 562106, India

Abstract

A study further to Quality Orientation (QO) of a firm and its performance. This study measures moderating effect of Quality Management Tools & Techniques (QMTT), usage on Firm Performance and its influence. This study identifies the importance of usage of which QM Tools and Techniques for each principal of QO for consistent Firm Performance. We also reflect the generalizability of Tools & Techniques on Firm Performance. QMTT positively influence firm performance. Future implications of Firm Innovativeness on firm performance can be studied.

Keywords: *Quality Orientations, Quality Management Tools and Techniques, Firm Performance*

1. Introduction

Success of SMEs is important for a nation and its service firms to add to its economy [10]. Even though some SMEs have been growing and are successful, consistency delivery in business is important. Firm's continuity to perform good is essential for business results. [30] Researched and found, firm's quality and innovative orientation plays a major role in service firms, which fail to follow tools & technique and innovativeness have been on a decline trend or are stagnant. This study shall help to determine continuity to perform on firm performance [2]. Entrepreneurs of SMEs are confronted with various problems impacting their performance [17]. This calls for studying these firms in length on consistent performance.

Quality-Orientation (QO) is defined as deployment of quality management principles, Customer Value and Focus, Innovative performance, Continuous improvement, Top management leadership,

Employee management, Customer focus, Supplier management, Quality data & reporting, Process management, performance [8], [21], [15], [20], [1].

Using quality management tools and techniques (QMTT) to design and conduct quality improvement projects leads to a faster and more effective improvements in a firm [22]. Few more practices; innovation and continuous improvement tools can assure better performance for the firm [1], [7], [9]. It has been researched that quality tools and techniques are not implemented to the extent it is required (*rare or not at all*) [1]. Implementation magnitude and degree of usage of tools & techniques are important for the firm performance [1]. Research indicates that the tools supporting design and innovation, such as quality function deployment, design of experiments, and TRIZ, were placed in the lowest levels of both understanding and implementation [1]. It is imperative to review the usage and its effect of QMTT on firm performance.

Firm Performance (FP) has been defined by different research with different parameters. Return on Quality, Customer Satisfaction, Long term Profits, Financial ratios [20] Superior firm performance [19], Market orientation [16], Quality [29], Competitive advantage [23]. It is imperative that firms' long run success comes from creating value of services that advance the performance, competitiveness, and success of the firm [19], [26].

2. Review of Literature

QO is an alternative to business orientation [20], [29]. "QO is also defined as organization wide proclivity on Continuous Improvement (CI), Teamwork, Customer Value" [21], [15]. Interestingly reduction in variations of the process is also studied "core thrust

of Quality-Orientation is on reducing variation in organizational processes and product quality” [25]. Quality Orientation as an emerging philosophy [20] defines attributes as Customer Satisfaction, Employee Empowerment, Quality Focus, Process Improvement, High level product, Low variability in production function. Firm measures for these are return on Quality, Customer satisfaction, long term Profits, Financial ratios [18].

Prior research indicates that the difference between the customer expectation and customer experience is vital for customer satisfaction and in turn firm performance [24]. Quality Orientation can lead to a good process output which will result in customer satisfaction. Answer to the above research question will help us empirically validate the above argument and understand the linkages between Quality-Orientation and Firm performance. It will also help us reiterate the importance of having a Quality Orientation in progressive enterprises for them to succeed in a competitive market environment. Reviewing prior research, on quality orientation of a firm found most of the scales viewed are concentrating quality management principles and quality orientation was well proved to be associated with each other [20], [9], [31]. Post our literature study we chose the measurement scale of these researchers.

Firm performance has been defined by different research with different parameters. Return on Quality, Customer Satisfaction, Long term Profits, Financial ratios [20] Superior firm performance [19], Market orientation [16], [23]. Reviewing the literature measurement scale [6] depicts the firm performance on variables of Quality Tools. We referred and used the same scale for our study.

Tools and techniques associated with Quality Management principles have different levels of understanding and implementation and are not studied in length [9]. “Quality management is not practiced widely or successfully” [7]. Prior research suggests usage of these tools are also area of study, “Tools being used in railaity and or superficially” [7]. Effectiveness of quality management system is by reviewing commonly used critical success factors and tools rather than the overall methodological approach [7]. Using implementation tools to design and conduct quality improvement projects for faster and more effective improvement [22]. We found a less research done from Implementation of tools and its impact on Firm Performance.

3. Materials and Methods

As Quality Orientation, Quality management Tools & Techniques and Firm Performance is our constructs of the study, we chose [6] and [27] measurement scale

more suited for our study. Refer Table-01 for the dimension, Items (questions) and references related to it.

Table 01: Measurement scale for QM Tools & Techniques

Dimension	Item (Likert Scale (7-point :1=strongly disagree to 7=strongly agree))
Clegg et al (2009) and Fotopoulos & Psomas (2008)	Please indicate the level of usage of Checklist in your firm
	Please indicate the level of usage of Fishbone in your firm
	Please indicate the level of usage of FMEA in your firm
	Please indicate the level of usage of Customer Satisfaction Survey results in your firm
	Please indicate the level of usage of Six Sigma methodology in your firm
	Please indicate the level of usage of ISO 9001 practices in your firm

Since our study was to see usage and magnitude of tools and technique usage for quality orientation and firm performance, we adopted the measurement scale of [7] and [12]. Refer Table-02 below for the dimension, questions, and references.

Table 02: Measurement scale for Firm Performance

Dimension	Item (Likert Scale (7-point :1=strongly disagree to 7=strongly agree))
Miles et al (1995), Reichfield (2006) & Calantonea, Cavusgila, Zhaob (2002)	We measure Net Promoter Score (i.e., Customer Satisfaction)
	We measure Return on asset (i.e., financial ratios)
	We measure Return on sales
	Is your firm profitable for the last three years?

We controlled for firm size and age as older firms tend to introduce more innovations [28], firm size has independent effects on firm success [4]. We chose the scale used adapted from related literature [6], [27] for measuring the pressures of firm size and age in the business. Below Table-03 reflects the questions and reference from literature.

Table 03: Measurement scale for Control Variables – Firm Size and Age

Control Variables	Item (range of employees in numbers and range of years from inception)	Reference
Firm Size	How many people does your organization employ at present?	Reichfield (2006)
Firm Age	What is the length of time in business	Calantonea, Cavusgila, Zhaob (2002)

Descriptive statistics for the latent variable constructs are shown in the below Table 04.

Table 04: Descriptive Statistics for Constructs

Construct Code	Mean	Standard Deviation
QO	5.604	1.509
FP	4.869	1.847
QMTT	5.428	1.694

Instrument reliability and validity was performed and results are as in Table 05 below.

Table 05: Reliability and Validity

Reliability and Validity of the constructs				
Variables	C- Alpha	rh-A	CR	AVE
FP	0.718	0.743	0.826	0.548
QMTT	0.892	0.912	0.919	0.657
QO	0.920	0.941	0.930	0.397

4. Results and Discussion

4.1 Effect of Quality Orientation on Firm Performance.

As we can see in the Table 06, path coefficient between QO and FP is 0.281 (which is significant). Quality Orientation was found to be positively influencing Firm Performance. P- value of 0.001, which is a significant effect (*is a significant finding strengthening* [5]). The coefficient of determinant (R Square) value for Firm Performance variables was 0.472 (Table 08), which means that the latent variable Quality Orientation explains 47% of variation in Firm Performance variable, this was the research gap whether QO positively influence Firm Performance and create a complete advantage.

Quality Management is mediating variable for Organizational Performance for SMEs [28]. Very few studies on the direct impact of quality orientation on firm performance. Empirically validating the effect of Quality Orientation on firm performance helped us clear this ambiguity.

Table 06: Path coefficient values for the structural model special effects comparison

	Without Control variables		With Control variables		Significant?
	Effect Coeff.	P Values	Effect Coeff.	P Values	
QMTT - FP	0.207	0.005	0.251	0.001	Yes
QO - FP	0.281	0.001	0.687	0.000	Yes
QO - QMTT	0.697	0.000	0.697	0.000	Yes

Above literature ambiguity and Table 06 results clearly reflects there is a positive influence of Quality Orientation of a firm on its Firm Performance. Hence, we conclude that these two constructs and associated latent variables were proven to be associated and has significance per our hypothesis tested and studied.

4.2 Mediating effect of Quality Management Tools and Techniques between Quality Orientation on Firm Performance.

As we can see in the Table 07, path coefficient of QMTT between QO and FP is equal to 0.175. Quality Management Tools and Techniques was found to be positively mediating between Quality Orientation of a firm and its Firm Performance. The coefficient of determinant (R Square) value for Quality Management Tools and Techniques variables was 0.486, which means that the latent variable Quality Management Tools and Techniques explains 48% of variation in Quality Orientation of a firm and its overall Firm Performance. This was the research gap whether QMTT can mediate between Quality Orientation of a firm and in turn its Firm Performance.

Table 07: Path coefficient values for the structural model special effects comparison

Path coefficient values for the structural model special effects and significance					
Relations	Without Control variables		With Control variables		Significant?
	Effect Coeff	P Values	Effect Coeff	P Values	
QO → QM TT → FP	0.144	0.008	0.175	0.003	Yes

Table 8: R Square values compared.

Variables	R Square
FP	0.472
QMTT	0.486

There are three types of mediations [32], complementary mediation, competitive mediation, and indirect-only mediation. In the case of complementary mediation, both the direct path and indirect path are significant and are of the same sign. In the case of competitive mediation, both the direct path and the indirect path are significant but are of opposite sign. In the case of the indirect-only mediation, the direct path is not significant, and only the indirect path is significant [13], [14]. The indirect-only mediation corresponds to the concept of full mediation explained [32]. If the direct effect is not significant and only the indirect effect is significant, i.e., full mediation, then it is implied that the mediator is fully compliant with the hypothesized structural model with mediation theoretical framework [14].

The literature ambiguity of Quality Management Principles practiced through Tools and Techniques is

Quality-Orientation and Quality Management Tools & Techniques training, usage, understanding and implementation can positively influence firm performance.

Literature gap & ambiguity and Table-05 results clearly reflects positive mediating effect of Quality Management Tools & Technique between Quality Orientation of a firm on its Firm Performance. Hence, we conclude that usage of Quality Management tools and Techniques like Checklist, Fishbone, Failure Mode Effect Analysis, Customer satisfaction surveys, six sigma and ISO certification are useful for a firm and significant for a Quality Orientation of a firm and in turn impacts positively its firm performance.

5. Conclusions

The result of our data analysis answered all four hypothesis and empirically confirmed that our inferences are significant. Quality orientation of a firm positively influence firm performance, quality management tools & technique used explains being a quality-orientation of a firm. Quality management tools and techniques positively influence firm performance. Quality management tools and techniques mediates between quality orientation and firm performance. Finally, out of four questions on firm innovativeness, three were found to be significant i.e., firm innovativeness mediates between Quality orientation and firm performance, and firm innovativeness explains quality orientation positively and has a positive influence on firm performance.

Below are the four-hypothesis proved by our study.

1. Quality-Orientation positively influences firm performance.
2. Being Quality-Oriented does Quality Management Tools & Technique used explains being a Quality Orientation of a firm.
3. Quality Management Tools & Techniques positively influence Firm Performance.
4. Quality Management Tools & Techniques mediates positively between QO and FP.

Theoretical our study empirically highlighted whether quality management tools & techniques applied in a firm has a positive influence on performance and will help managerial decision making for consistent delivery using tools & techniques which should be deployed.

The result of the study confirmed that Quality Orientation (focus on customers, top management commitment, suppliers management, employee management, Quality data & reporting, and process management) of a firm positively influence usage of Quality Management Tools and Techniques (like Checklist for work to do, Root Cause Analysis (RCA) for problems, risk analysis and mitigation, reaching out to the customer on timely manner to take their

feedback through Customer satisfaction surveys (CSAT), driving process improvement (PI) by six sigma and standardization of processes by ISO 9001) positively influence firm performance.

It is proved that QMTT is also essential for firm performance and has an impact on Customer satisfaction, gives return of quality, and leads to overall profits of the firm.

This study helps us to explain the relationship of these two widely researched and proven constructs in Firm Performance – Quality Management Tools & Techniques positively influence Firm Performance. Which had not been explicitly probed in the prior research.

Acknowledgments

We would also like to acknowledge the significant contribution to our research by Dr. Sajan Mathew, Dr. Sukanya Kundu, Dr. Madhumita Guha Majumder, Dr. Shamim Mondal and Dr. Pratima Verma by guidance and support.

Reference

- [1] Abd-Elwahed, Impact of implementation of total quality management: An assessment of the Saudi industries. *South African Journal of Industrial Engineering*, 29(1), 97-107, (2018).
- [2] Agarwal, Erramilli and Dev, Market orientation and performance in service firms: role of innovation. *Journal of Services Marketing*, 17(1), 68-82, (2003).
- [3] Ali, Abdualmajed, Abdullah, and Gorondutse, The effect of entrepreneurial orientation, market orientation, total quality management and organizational culture on the SMEs performance: A theoretical framework. *Journal of Business and Retail Management Research (JBRMR)* 12(1), 26-40, (2017).
- [4] Baer and Frese, Innovation is not enough: climates for initiative and psychological safety, process innovations, and firm performance. *Journal for organisation behavior*, 24(1), 45-68, (2002).
- [5] Bassellier, Geneviève, Izak Benbasat, and Blaize Horner Reich. "The influence of business managers' IT competence on championing IT." *Information systems research* 14.4, 317-336, (2003).
- [6] Calantone, Cavusgil and Zhao, Learning orientation, firm innovation capability, and firm performance. *Industrial Marketing Management*, 31(6),515-524, (2002).
- [7] Clegg, Rees and Titchen, A study into the effectiveness of quality management training - A focus on tools and critical success factors, *The TQM Journal*, 22(2), 188-208, (2010).
- [8] Davis, Greg, Tyge and Kreiser, Entrepreneurial Orientation and Firm Performance: The Moderating Role of Managerial Power. *American Journal of Business*, 25(2), 41-54, (2010).
- [9] Elshaer, and Augustyn, Direct effects of quality management on competitive advantage.

- International Journal of Quality & Reliability Management, 33(9), 1286-1310, (2016).
- [10] Faulconbridge et al, Corporate Ecologies of Business Travel in Professional Service Firms: Working Towards a Research Agenda. *European Urban and Regional Studies*, 16(3), 295–308, (2009).
- [11] Finstad, Response interpolation and scale sensitivity: Evidence against 5-point scales. *Journal of usability studies*, 5(3),104-110, (2010).
- [12] Fotopoulos, and Psomas, The use of quality management tools and techniques in ISO 9001:2000 certified companies: The greek case. *International Journal of Productivity and Performance Management*, 58(6), 564-580, (2009).
- [13] Hair, Hult, Ringle, and Sarstedt, A primer on partial least squares structural equation modeling (PLS-SEM). Sage Publications. (2016).
- [14] Hair, Sarstedt, Pieper, and Ringle, The use of partial least squares structural equation modeling in strategic management research: a review of past practices and recommendations for future applications. *Long Range Planning*, 45(5-6), 320-340, (2012).
- [15] Kaynak, The relationship between total quality management practices and their effects on firm performance. *Journal of Operations Management*, 21(4), 405-435, (2003).
- [16] Kohli, and Jaworski, Market Orientation: The Construct, Research Propositions, and Managerial Implications. *Journal of Marketing*, 54(2), 1–18, (1990).
- [17] Korsakienė et al, Institutional theory perspective and internationalization of firms. How institutional context influences internationalization of SMES?. *The International Journal Entrepreneurship and sustainability issue*, 2(3), (2015).
- [18] Kotler, Reconceptualizing marketing: An interview with Philip Kotler. *European Management Journal*, 12(4), 353-361, (1994).
- [19] Malhotra, Lee, and Usley, The mediating role of mindful marketing between market and quality orientations, their interaction, and consequences, (2012).
- [20] Miles, Russell, and Arnold, The quality orientation: An emerging business philosophy? *Review of Business*, 17(1), 7-7, (1995).
- [21] Mohr-Jackson, Quality Function Deployment: A Valuable Marketing Tool. *Journal of Marketing Theory and Practice*, 4(3), (1996).
- [22] Ovreteit, Mittman, Rubenstein, and Ganz, Using implementation tools to design and conduct quality improvement projects for faster and more effective improvement. *International Journal of Health Care Quality Assurance*, Vol. 30 Issue: 8, pp.755-768, (2017).
- [23] Pandey, Maranville, Chetima, Deficit irrigation and nitrogen effects on maize in a Sahelian environment: II. Shoot growth, nitrogen uptake and water extraction, *Agricultural Water Management*, 46(1), 15-27, (2000).
- [24] Parasuraman and Grewal, The Impact of Technology on the Quality-Value-Loyalty Chain: A Research Agenda, *Journal of the Academy of Marketing Science*, Vol 28, (2000).
- [25] PK Ng, Goh, and Eze, Knowledge Management: A case study of KM's role in a semiconductor manufacturing firm. *International Conference on Quality, Productivity and Performance Measurement*, 1(1), (2009).
- [26] Porter and Kramer, *Creating Shared Value*. Harvard Business Publishing, 1(1), 11-17, (2011)
- [27] Reichheld, *The Ultimate Question: Driving Good Profits And True Growth*. Reed Elsevier Inc, 03(2), 224, (2006)
- [28] Sorensen, and Stuart, Aging, Obsolescence, and Organizational Innovation. *Administrative Science Quarterly*, 45(1), 81-112, (2000).
- [29] Taguchi, "Quality engineering (Taguchi methods) for the development of electronic circuit technology," in *IEEE Transactions on Reliability*, 44(2), 225-229, (1995).
- [30] Utterback and Abernathy, A dynamic model of process and product innovation, *Omega*, 3(6),639-656, (1975).
- [31] Yusr, Mokhtar and Othman, The effect of TQM practices on technology innovation capabilities, *International Journal for Quality Research* 8(2), 197-216, (2014).
- [32] Zhao, Lynch, and Chen, Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of consumer research*, 37(2), 197-206, (2010)