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The relationship between cost leadership competitive strategy and firm performance

A mediating role of quality management

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Abstract

Purpose – The purpose of this paper is to examine the cost leadership competitive strategy's (CLCS) impact on firm performances and the mediating role of quality management (QM) practices in the context of micro, small and medium enterprises (MSMEs).

Design/methodology/approach – A structures questionnaire data collected from 245 ISO 9000 certified MSMEs in India (65.1 per cent of response rate) have been utilised to understand the CLCS's impact on firm performances. In the first step, the data adequacy tests were performed to check the reliability and validity of the questionnaire and survey data. After that, the partial mediating model (direct, indirect and total effect) along with structural equation modelling approach was employed to test the research hypotheses.

Findings – The study results revealed that no direct relationship exists between the CLCS and firm performances ($0.12 < \beta < 0.13$; $p > 0.05$); however, QM practices entirely mediated their relationship ($\beta = 0.73$, $p < 0.01$). Among eight model parameters, with highest total effects on product quality improvement ($\beta = 0.6264$) and process improvement ($\beta = 0.6028$), the continuous improvement secured the rank 1, followed by information and analysis ($\beta = 0.2334$) and supplier management (0.1839), respectively, at $p < 0.05$. Based on the empirical results, it can be concluded that the continuous improvement via proper information and data analysis is the key to achieve CLCS's goal in the MSMEs.

Research limitations/implications – The study results' generalisation towards the large organisations is limited. The survey result findings applicability to other developing countries should also be treated with caution because the Indian Government subsidised the MSMEs selected for this study. The study results will help managers in implementing CLCS at the organisational level. The successful implementation will facilitate a competitive advantage in the local market and will motivate them to think globally.

Originality/value – The research observation and findings are expected to contribute to the strategic management in manufacturing industries. The study also confirms the existence of strategic management in MSMEs in a developing country. Furthermore, the major contribution is to understand the mediating role of QM practices, especially continuous improvement effect on the relationship between CLCS and firm performances in a developing country. The results indicated that the CLCS is only possible when the managers in the manufacturing sectors emphasis on the QM practices in their firms.

Keywords Competitive strategy, Organizational performance, Continuous improvement, Quality management, Information systems

Paper type Research paper

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1. Introduction

A dynamic and turbulent industrial environment characterised the period of the 1990s manufacturing industries (Whittington *et al.*, 2017). The importance of innovation, automation and manufacturing strategy increased and well understood by disciplines

including economics, industrials, businesses, marketing, military and tactics (Hill *et al.*, 2014; Kharub and Sharma, 2017a, b; Olhager and Feldmann, 2018). The strategy projects outcomes indicate that about 70 per cent of the differences in successful and unsuccessful companies are affected by the attributes of strategic factors such as quality, flexibility, integration and innovation. Only other 30 per cent are associated with operational efficiency (Grobler, 2007). The strategy attributes determine its structure, which in turn influences its ability to achieve long-term objectives (Lofving *et al.*, 2014). Over the years, to accelerate the progress and development, many strategies and their attributes have been generated in the field of strategic management (Song *et al.*, 2018). The organisations which previously adopted modern strategies are now claiming the success in achieving competitive advantages (Dayan *et al.*, 2017; Sangwa and Sangwan, 2018a).

Among other (e.g. Mckiernan, Mintzberg, Ahlstrand and Lampel), Michael Porter is regarded as the founding father of strategic management discipline. His work explained the development of three correlated concept frameworks, namely, five forces, generic strategy and value chain (Stonehouse and Snowdon, 2007; Kharub and Sharma, 2017a). According to the framework, a firm's success is the function of strength in competitive forces. On the evidence of forces involved in Porter's framework, recent studies claim that a firm can generate competitive strategy of cost leadership or differentiation and can deliver better performance (Kharub and Sharma, 2016, 2017a). The strategy should be developed after comprehensive analysis of relevant proficiencies (Kathuria *et al.*, 2007; Song *et al.*, 2018). Although the relevant proficiencies (productivity improvement programs (PIPs)) for a manufacturing firm are comprised of many domains such as total productive maintenance, capacity building measures, reliability centred maintenance and lean manufacturing (Sangwan *et al.*, 2018), the quality management (QM) has been considered as a most reliable PIP among others (Kaynak, 2003; Das *et al.*, 2008; Kharub and Sharma, 2015; Sangwa and Sangwan, 2018b). During the strategy development, experts emphasised on the possibilities of its alignment with other PIP. The useful PIP's alignment helps in the successful implementation of the chosen strategy. QM practices at the organisational level, when correctly implemented and aligned with other operational areas, have shown a significant performance improvement and associated cultural changes (Leonard and McAdam, 2004). This also motivates many authors to suggested the aligning QM with competitive strategies (Cho and Pucik, 2005; Das *et al.*, 2008; Kharub and Sharma, 2018a).

Micro, small and medium enterprises (MSMEs) play a significant role in economic development of both developed and developing countries. In this globalisation era, technology changes rapidly with increased competitiveness; therefore, the MSMEs must survive and maintain their competitive advantage in marketplace (Lofving *et al.*, 2014). However, the MSMEs are facing the challenge in choosing and implementing a proper competitive strategy due to the increasing costs, especially in developing countries (Morris *et al.*, 2015). In many cases, the MSMEs are not able to adopt an approach to their unique features of operation which results in a lack of strategic alignments (Berends *et al.*, 2014; Chapman and Hyland, 2000). Many small firms, mainly operating in developing countries, are confused in choosing and implementing the suitable strategic practices. MSMEs are often confused about: what a strategy consist of, how a strategy is formulated and implemented and whether there are other supporting attributes to strategy? Furthermore, the role of QM practices in implementing the competitive strategy in the MSMEs is not clear. The following section provides a detail on the MSMEs characteristics and the cost leadership competitive strategy (CLCS).

1.1 MSME's characteristics and CLCS

In the existing literature, the importance of CLCS has been emphasised by many empirical studies (Baack and Boggs, 2008; Li and Li, 2008). In a manufacturing unit, the CLCS

represents the ability to produce with low cost compared to the potential competitors. It requires efficient manufacturing strategies with efficient PIP to support scale efficiency. The CLCS focuses on avoiding manufacturing misalignment and promotes the cost minimisation (Banker *et al.*, 2014). The underline cost reduction in manufacturing sector via the use of statistical quality control (Kharub and Sharma, 2018a), quantitative analysis (Leonard and McAdam, 2004), tightening R&D expenditures (Wallsten, 2000) and sales force and advertising (Li and Li, 2008) has been well highlighted in the literature.

It is generally accepted that firm's competitive strategy also impacts manufacturing strategy and that varies from country to country (Ehie and Muogboh, 2016). The conditions in countries like India and China (developing countries) where demand situation is comparatively high with the free market system look favourable to implement CLCS (Baack and Boggs, 2008). Recently, Kharub and Sharma (2017b) observed that in India the input costs for natural and human resources are lower and the consumer demand is typically flexible. The MSMEs often have enough local demand for primary products and may have an optimum price for locally produced goods. That implies that small local firms have advantages (compared to large or multi-national companies) to meet the local demands (Kharub and Sharma, 2017a). For the MSMEs, manufacturing can be a mean of generating competitive advantage (Lofving *et al.*, 2014). They can facilitate the market with cheap pricing and a reasonable quality of products. In India, the MSME sector is subsidised by the government and allocated some products which can only be manufactured by them (Kharub and Sharma, 2018b). The unique characteristics of the MSMEs in India, especially the supporting role of government, make favourable conditions to implementing strategies. These conditions also support the large-scale production system and development of the CLCS. Furthermore, MSMEs can create a competitive edge if right decisions are made in the manufacturing strategies to supports large-scale production system.

However, MSMEs operating in developing countries often face institutional and infrastructure deficiencies that include lack of skilled labours, underdeveloped communication infrastructures and weak transportation systems (Chapman and Hyland, 2000). The capabilities such as manufacturing flexibility, automation, design and development are typically available with large organisations (Gupta and Barua, 2016; Leonidou, 2004; Wong, 2005). Therefore, this situation seems unfavourable and risky for the product differentiation. The most comprehensive studies on the concept of competitive strategy in the MSMEs have been performed by many authors (Dangayach and Deshmukh, 2006; Gaur *et al.*, 2011; Kathuria *et al.*, 2007, 2010; Kharub and Sharma, 2016). The results of these studies have clarified the situation of competing priorities especially the MSMEs in India. For example, in their study, Dangayach and Deshmukh (2006) and Kathuria *et al.* (2010) observed that the priorities of manufacturers in India firms are reducing cost; improving quality; fast delivery; and flexibility. The present study is motivated by the future directions presented in above-discussed studies in which authors have stated that research investing competitive capabilities in developing countries is long obsolete. In context of MSMEs, many questions and issues remained unattended. For example:

RQ1. Is CLCS applicable in MSMEs?

RQ2. What is the relationship between CLCS and firm performance?

RQ3. What is the impact of QM practices on the relationship between the CLCS and firm performance?

RQ4. What is the rank of attributes of the QM practices with respect to their impact of firm performance?

The objective of this paper is to address the above-stated research questions (RQs). The rest of this paper is organised as follows: the subsequent sections present literature review

followed by a research framework and hypotheses formulation. Section 4 presents research methodology. The data analysis and results are presented in Section 5. After discussing the results in Section 6, Section 7 concludes the findings with managerial implication and scope for the future study.

2. Literature review

The competitive strategy has become an essential tool to achieving firm's business objectives (Baack and Boggs, 2008; Ehie and Muogboh, 2016; Kharub and Sharma, 2016, 2017a, b; Olhager and Feldmann, 2018). As a result of globalisation, it has become challenging to understand what constitutes competitive strategy and what not? The literature relevant to competitive strategies can be understood by creating four categories. The first category includes articles elaborating the concept of competitive strategy (Kathuria *et al.*, 2007; Porter, 2000, 2008; Skinner, 1969, 1985). The second category stressed on its definition (Dangayach and Deshmukh, 2006; Ward and Duray, 2000). The third category emphasised on linking the competitive strategy with firm's performance (Amoako-Gyampah and Acquaah, 2008; Olhager and Feldmann, 2018). The fourth category includes the article emphasising on developing capabilities or PIP to support firm's competitive strategy (Sharma and Kharub, 2014; Whittington *et al.*, 2017).

The applicability of these capabilities or PIP to the firm's competitive strategy has become a critical factor that decides its success or failure. The degree to which these PIP are aligned with firm's strategy affects the way of strategy development and implementation (Grobler, 2007). This paper will contribute to the fourth category of the literature regarding competitive strategy by empirically establishing the role of QM practices in achieving the goal of CLCS, particularly in the context of MSMEs.

2.1 QM practices and organisational performance

The previous studies show that QM practices can impact firm performances in several ways. In their recent studies, Sharma and Kharub (2014) observed that using statistical process control (SPC), a company can eliminate special causes of variance and bring the process to the state of control, hence, reducing the process variability. The low level of process variation reduces rework and scrap; hence, it allows producing the quality product at lower operating cost. If the achieved product's quality level (manufactured at lower operating cost) succeeds in fulfilling the customer's expectations, it will improve customer loyalty. On another hand, a bad product experience diverts customers from future purchase (Chen and Chuang, 2008). Similarly, Wang and Chen (2006), based on the survey results of 85 Taiwan manufacturing industries, observed that via efficient communication system as a part of total QM project firms can resolve conflict in ERP system, and hence, increase supplier relationship and process quality. Sadikoglu and Zehir (2010) pointed out that the skills and techniques learned during a QM programme do not stay particularly with new employees when they enter into the job. According to Kharub and Sharma (2018a), it is also possible that sometime there is a mismatch between employee's and organisation's or department's quality belief. It is not uncommon that employees get training at one workplace and they find that thighs do not work as they believe. Consequently, they move to another organisation.

Overall, after extent review of the literature covering the association between QM practices and firm performances, we identified two main arguments. First, quality practices establish a system of working culture which creates a fertile atmosphere for an organisation to be productive and innovative (Perdomo-Ortiz *et al.*, 2006; Jagoda and Kiridena, 2015). Second is opposite argument which believes that implementing quality practices could prevent the organisation from being innovative (Leonard and McAdam, 2004; Rowe *et al.*, 2005). Tracking customer-focused view (as a QM core principal), organisation may trap into

a limited market. It starts focusing only on existing clients and sees the market demands only through its regular customer's eye (Wallsten, 2000). As a result, organisation fails to encourage the research and innovation (Thai Hoang *et al.*, 2006). Therefore, based on extent review of literature on QM, the current study adopts four factors to represent QM practices to evaluate its impact on firm performances. They are information and analysis, continuous improvement, supplier management and design and development. The adjustment presents QM practices vs CLCS.

2.2 QM practices and CLCS

The industry is said to be a low-cost producer if it sells its products at average industry prices and yet earns a profit higher than its competitors, or may sell at a price below average to gain significant market share (Ward and Duray, 2000; Ulengin *et al.*, 2014). The rationale for the high-level performance enjoyed by the firms working on a low-cost model is its large proportion of the market and achieving economies of scale in procurement, production, marketing and other costs of components. The large-scale production allows a firm to use own sales forces rather than commission agents. Adding to it, Cho and Pucik (2005) pointed that a company can start enjoying strong competitive positions if it focuses on their primary product's market and tends to generate high profits and utilise sales force for specific product lines. High market share accompanies high returns, hence, profitability (Li and Li, 2008).

According to Kathuria *et al.* (2007), the success of a competitive strategy requires a shared understanding of organisational objective at multiple levels. The firms need to generate resources coherent with its strategic objectives. In literature, for successful implementation of a competitive strategy, the importance of alignment in various vertical and horizontal activities has been well discussed. For example, Hill *et al.* (2014) argued that fit should be viewed in light of the synergy costs encountered by a firm. Amoako-Gyampah and Acquaah (2008) emphasised the importance of flexibility to accommodate changes in the operating environment. They concerned that a resilient manufacturing system can utilise its versatility as an adaptive response to unpredictable situations. Similarly, the importance of functional areas like operation strategy (Dubey *et al.*, 2015; Jagoda and Kiridena, 2015), knowledge and technology strategy (Ahmad and Schroeder, 2011; Dayan *et al.*, 2017; Kyobe, 2004; Wong, 2005), innovation (Gupta and Barua, 2016), training and supply chain (Wu and Ku, 2013) have been well documented. However, there are very few studies which have discussed role of QM in strategy implementation. Especially the relationship between CLCS and QM practices need to be explored. This may be because many researchers in the field have provided high support to the view that QM itself must be adopted as a strategic model for an organisation (Kaynak, 2003; Das *et al.*, 2008). Therefore, according to them the quality philosophy has been successfully evolved from the operational level to strategic level. However, Atkinson (2006) and Douglas and Judge (2001) suggested that from the strategic management aspect, QM is more concerned with strategy implementation or pursuing rather than as a core strategic choice. Similarly, Lofving *et al.* (2014) emphasised to perceive QM as a second- or third-order strategy. Although QM contributes in more than one dimension such as operational, culture, empowering team and investors, MSMEs are still missing the full potential of QM practices by failing to link it with competitive strategy. As the literature presents ambush statements in this regard, the object of this research is to investigate how QM practice is associated with CLCS.

2.3 CLCS and firm performance

The firm performances good or bad are strongly related to the clear understanding of the environmental factors and the choice of competitive strategy (Ehie and Muogboh, 2016). Porter mentioned that a company which stresses on CLCS creates efficient-scale facilities, emphasises

reduction in expenditures and minimises R&D, sales force, advertisement and overhead costs (Stonehouse and Snowdon, 2007). With the CLCS, a firm can gain competitive advantage over its competitor only by having higher returns on assets and by producing the products with reasonable quality (Porter, 2008). According to Amoako-Gyampah and Acquaah (2008), the CLCS has a significant relationship with firm performances. It enables them to achieve and sustain their desired objectives for a considerable period. Under most of the conditions, an enterprise that achieves a significant level of product quality grabs high proportion of market share and enjoys benefits from increased sales growth. Furthermore, the total unit cost of manufacturing and distributing a part tends to decrease by a more or less uniform rate with each percentage increase in a company's cumulative output (Cho and Pucik, 2005). So, to measure the impact of CLCS, questions relevant to the changes in a company output have been asked.

The next section will explain various research hypotheses formulated to establish argument on the association between three prime latent variables representing CLCS, QM practices and firm performances.

3. Research framework and hypothesis

The literature review on the relationship between three latent variables (namely, CLCS, QM practices and firm performance) has recorded support as well as controversies. This background intimated a need for an empirical study to unravel the confusions by testing these relationships using primary data. Authors noticed that the current study is crucial as it examines the mediating role of QM practices in the context of CLCS and firm performance. After a thorough literature review, three set of hypotheses are developed.

The first set is concerned with the association between the components of QM practices and CLCS:

H1. There is a positive and significant relationship between CLCS and QM practices.

H1a. There is a positive and significant relationship between information and analysis and CLCS.

H1b. There is a positive and significant relationship between continuous improvement and CLCS.

H1c. There is a positive and significant relationship between supplier management and CLCS.

H1d. There is a positive and significant relationship between design and development and CLCS.

The second set presents the hypotheses related to the relationship between CLCS and two indicators of firm's performance:

H2. There is a positive and significant relationship between CLCS and firm performance.

H2a. There is a positive and significant relationship between CLCS and process improvement.

H2b. There is a positive and significant relationship between CLCS and product quality improvement.

The third set of research hypotheses is intended to integrate first two sets. It examines the degree to which the elements of QM practices mediate the relationship between CLCS and firm performance:

H3. QM practices mediate the relationship between CLCS and firm performance.

To test the above-stated research hypotheses a framework is designed as shown in Figure 1.

4. Research instrument and data collection

4.1 Questionnaire design

A field study using questionnaire method was conducted in MSMEs in different sectors, namely, mechanical, automobile, electrical and electronics and textile. The survey instrument (questionnaire) for obtaining data was designed after extent review of the literature. Since the primary objective of this study is to test the above-stated research hypotheses, the current study focuses on past research studies which have pre-tested relevant constructs to ensure the reliability and validity of measuring instrument. In the end, after discussion with the group of experts from industries and academia, minor issues were highlighted and corrected. Furthermore, pilot testing of the instrument was accomplished, and suggestions from 15 recognised ISO 9000 certified MSMEs were included in the instrument.

4.2 Sample size determination and survey administration

The primary data have been collected from MSMEs situated in the state of Himachal Pradesh in India. The total population of such MSMEs working in various manufacturing sectors was about 39,512 units. The sample size was determined by using Cochran formula at 95% of confidence interval; it comes out as 380.47 firms. Thus, the accepted sample size (n) is taken as 381 units. Questionnaires were administered through personal visits, using postal services and online through e-mails. A total number of 248 (192 face-to-face interviews, 34 online and 22 postal) responses were obtained, with a response rate of 65.1 per cent. The details of respondents profile is shown in Figure 2.

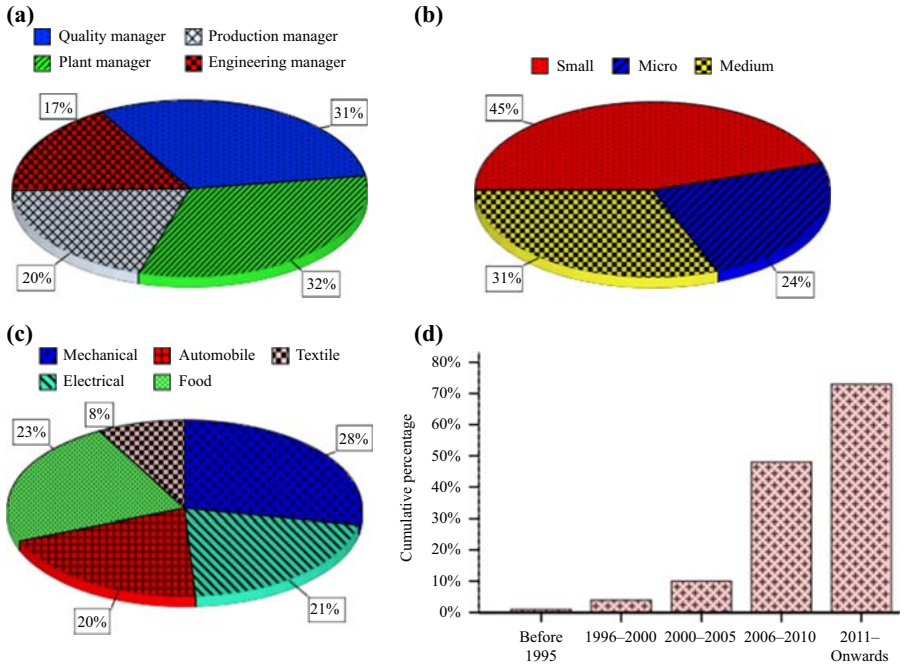
5. Analysis and results

Two steps were involved in data analysis. In the first step, the sampling adequacy test and data reduction process were carried out. In the second step, structural model using structural equation modelling (SEM) was performed.

5.1 Data adequacy

The rate of missing value is directly related to the quality of statistical inference from the study. In literature, there is no standard acceptable cut-off value given for missing data. For example, Enders (2003) stated that 15–20 per cent data were commonly missing in studies relevant to education and psychology. Dong and Peng (2013) added that 5 per cent or less missing values were inconsequential whereas if the proportion of missing value is more than 10 per cent, it will bias statistical results. So, based on the above argument in this study, the cases with more than 10 per cent missing values were eliminated. Furthermore, unengaged responses were identified based on the values of standard deviation (SD), i.e. the case with SD < 0.5 was eliminated. A total of three cases were removed during data screening. So, the final sample used to test the research hypotheses was reduced to 245 valid responses, yielded a useful response rate of 64.3 per cent.

Figure 1.
Research framework



Notes: (a) Respondent profile; (b) company profiles; (c) sector-wise classification; (d) quality practices being implemented

Figure 2.
Respondents and their company profile

5.1.1 Variable normality test using skewness and kurtosis. The skewness (X) is a standard of the "asymmetry" and kurtosis (λ) is a degree of peakedness of distribution. If the skew estimation of a normal distribution is zero, it typically indicates symmetric distribution. The skewness values of variables were found between $-0.421 < X < 0.321$, which are within permissible limits of −2 to +2 (Dubey *et al.*, 2015). Similarly, kurtosis values were observed between $3.056 < \lambda < 5.135$ (i.e. $\lambda \geqslant 3$), which showed that data are adequate for analysis. To test non-response (or participation) bias, we conducted a *t*-test on randomly selected 15 items from both groups (Kyobe, 2004). The test revealed that there is no significant difference between the data collated in two different phases ($p > 0.05$). To examine the common method bias, Harman's one-factor test was adopted (Podsakoff *et al.*, 2003). First, Harman's one-factor test was performed with five-factor and another with one-factor model having all measured variable loading on it. The value without rotation was 0.764 for the proposed five-factor model and 0.321 for the one-factor model. Thus, the common method bias issues have been resolved.

Furthermore, for data adequacy, Kaiser–Meyer–Olkin (KMO) measure was performed on 35 items (measures), taken from a previously published research paper in the well-reputed journal, relevant to three latent variables of this study. This is an indicator to test whether a co-relation matrix is appropriate for factor analysis (FA). Kaiser and Rice (1974) provide guidelines for KMO value (Table I).

The value below 0.5 shows that there is miserable common variance in the correlation matrix and it should not be factor analysed. The results of KMO test were found adequate at 0.82 which is higher than the recommended value (e.g. 0.60) which indicates sufficient inter-correlation and also Barlett's test of sphericity was considered significant at $\chi^2 = 14{,}954.508$, $\mathrm{df} = 351$

and $p < 0.001$ (Ocal *et al.*, 2007; Dubey *et al.*, 2015). Hence, it is assumed that all 35 measures (items) are suitable for applying FA.

5.2 Data reduction

FA using principal component analysis (PCA) with varimax rotation was performed in order to identify the pattern among identified measure. Furthermore, Cronbach's α and confirmatory factor analysis (CFA) were performed to check the reliability and validity of data measuring instrument, respectively. The pattern matrix classified 35 items under seven composite variables; one for CLCS, four for QM practices and rest two represent firm performance. The summary of FA, CFA, correlation coefficient (r) and reliability test is presented in Table II.

5.3 Partial mediation

Direct effect (DE) is indicated by a single-headed arrow pointing from one latent variable to another. In Figure 3, blow paths "a", "b" and "c" represent DE through standardised partial regression coefficient β_1, β_2 and β_3, respectively.

Indirect effect (IE) reflects a partial mediation within a model. It means the effect of one latent variable on another is transmitted (at least in part) via a third/intervening variable. Computationally, it is the product of at least two paths that can be traced from one latent variable to another. Figure 3 captures the notion that "*Y*" partially mediates the relationship

Table I.
Kaiser-Mayer-Olkin (KMO) measure of sampling adequacy

In the 0.90s	Marvellous
In the 0.80s	Meritorious
In the 0.70s	Middling
In the 0.60s	Mediocre
In the 0.50s	Miserable
Below 0.5	Unacceptable

Table II.
Results from data reduction process

Variables	Total number of items: Original	Deleted during factor analysis	Deleted during CFA	Remaining	Cronbach's α	Range of correlation coefficient*
Coat leadership	5	1	1	3	0.8257	0.426**–0.701**
Supplier management	5	1	1	3	0.7048	0.141*–0.830**
Continuous improvement	5	1	1	3	0.7441	0.309**–0.764**
Information and analysis	5	1	0	4	0.6475	0.441*–0.535**
Design and development	5	2	0	3	0.7721	0.423**–0.830**
Process improvement	5	1	0	4	0.7838	0.328**–0.822**
Product quality improvement	5	1	0	4	0.7360	0.423**–0.822**
Total	35	8	3	24		

Note: *,**Correlations are significant at the 0.05 and 0.01 levels (two-tailed), respectively

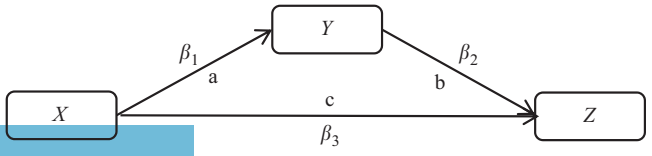


Figure 3.
Partial mediation

between "*X*" and "*Z*". In another word, the IE of "*X*" on "*Z*" is equal to $\beta_1 \times \beta_2$. However, there remains the DE of "*X*" on "*Z*" as represented by coefficient β_3.

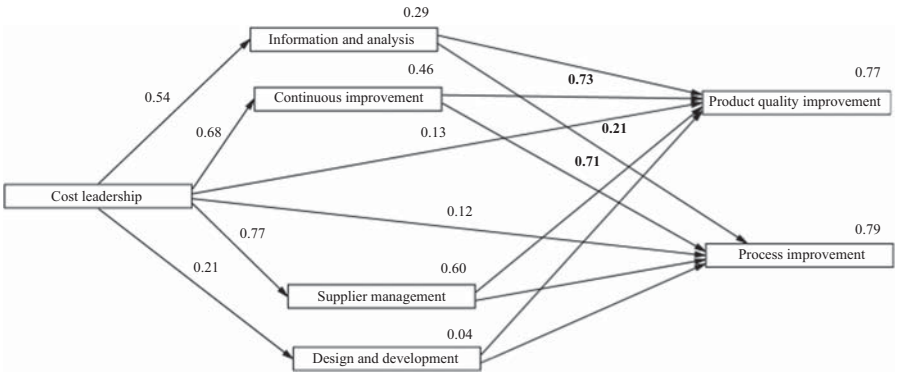
The total effect of one variable on another is equivalent to the sum of all DE and IE between two variables. For instance, in Figure 3, the total effect of "*X*" on "*Z*" is equal to $\beta_1 \times \beta_2 + \beta_3$ (i.e. the sum of the IE and DE of "*X*" on "*Z*").

5.3.1 Structural models and hypotheses test results. In the current study, the hypotheses have been tested through constructing structural model using SEM. Structural model provides a DE, IE and total effect on the output file as unstandardised and standardised partial regression coefficient β values along with their significance tests. As compared to traditional regression method, SEM has been considered the superior method in both theatrical and experimental ground (Jagoda and Kiridena, 2015; Wu and Ku, 2013). It reduces bias by taking measurement errors into account. SEM is a second-generation data analysis technique which can simultaneously represent the casual relation between CLCS (independent variable), firm performance (dependent variable) and QM practices (mediating variable). Table III presents all DE, IE and total effects among variables, whereas Figure 4 presents only significant statistical paths along with standardising β values and fit indices.

Cost leadership model							
Direct effect of	SPC (β)	*t*-valve	Indirect effect of		SPC (β)	Total effect	Rank
Cost leadership on			*Cost leadership on*	*Mediated by*			
Information and analysis	0.54***	9.963	Product quality improvements	Information and analysis	−0.0054	0.1246	6
Continuous improvement	0.68***	14.426	Product quality improvements	Continuous improvement	0.4964	0.6264	1
Supplier management	0.77***	19.190	Product quality improvements	Supplier management	0.0539	0.1839	4
Design and development	0.21***	3.361	Product quality improvements	Design and development	0.0126	0.1426	5
Product quality improvements	0.13	2.167	Process improvements	Information and analysis	0.1134	0.2334	3
Process improvements	0.12	2.147	Process improvements	Continuous improvement	0.4828	0.6028	2
Information and analysis on			Process improvements	Supplier management	−0.0077	0.1123	8
Product quality improvements	−0.01	−0.185	Process improvements	Design and development	−0.0063	0.1137	7
Process improvements	0.21***	5.932					
Continuous improvement on							
Product quality improvements	0.73***	17.737					
Process improvements	0.71***	17.720					
Supplier management on							
Product quality improvements	0.07	1.483					
Process improvements	−0.01	−0.274					
Design and development on							
Product quality improvements	0.06	1.930					
Process improvements	−0.03	−0.998					

Notes: SPC, standardise path coefficient. ***$p < 0.05$

Table III.
Direct, indirect and total effect among latent variables



Notes: $\chi^2 = 19.03$; df=7; RMSEA=0.074; PGFI=0.52; PNFI=0.64; CFI=0.97. The values in bold show the impact of: continuous improvement on product quality improvement (0.73); continuous improvement on process improvement (0.71); information and analysis on process improvement (0.21)

Figure 4.
Structural model

Hypotheses tests. Concerning first hypotheses, four significant paths coefficients (β) from CLCS to the components of QM practices state that there exist a direct relationship between CLCS and QM practices (i.e. information and analysis, continuous improvement, supplier management and design and development). From Figure 4 and Table III, it can be seen that CLCS has DE on information and analysis ($\beta = 0.54$, $t = 9.963$, $p < 0.05$), continuous improvement ($\beta = 0.68$, $t = 14.426$, $p < 0.05$), supplier management ($\beta = 0.77$, $t = 19.190$, $p < 0.05$) and on design and development ($\beta = 0.21$, $t = 3.361$, $p < 0.05$). These results indicate that CLCS has a DE and significant effect on QM practices; hence, *H1a–H1d* are supported. These findings support the previous findings of Dangayach and Deshmukh (2006) and Douglas and Judge (2001).

Concerning the second hypothesis, it requires that a positive and significant path must exist between at least one of the firm performance indicators and the CLCS. The results indicate that all the paths were not significant. From Figure 4 and Table III, it is clear the DEs of CLCS on product quality improvement ($\beta = 0.13$, $t = 2.167$, $p = 0.06$), and on process improvement ($\beta = 0.12$, $t = 2.147$, $p = 0.07$), are not statistically significant at $p < 0.05$. In other words, the regression weight for CLCS in the prediction of firm performances is not statistically significant. The results indicate that *H2a* and *H2b*, which state that CLCS has a direct and positive influence on firm performance, are not supported. The study results support previous findings of Amoako-Gyampah and Acquaah (2008).

In the case of the third hypothesis, this states that QM practices mediate the relationship between the CLCS and firm performances. To support this, it requires that at least one statically significant path must exist between the components of QM practices and firm performance indicators. Study results indicate that out of four QM components, continuous improvement mediates the relationship between CLCS and firm performances by having a statistically significant DE on both of the indicators of firm performance ($\beta = 0.73$ and $\beta = 0.71$, $p < 0.01$). Furthermore, the results indicate that it is also important not to ignore another components such as information and analysis, which also mediate the relation between CLCS and process improvement ($\beta = 0.21$, $p < 0.01$). The results show that the effect of CLCS is higher when a firm emphasises continuous improvement or puts considerable efforts on information and analysis. Hence, *H3* is supported. These results are in line with Chapman and Hyland (2000).

Table IV presents ranking among eight parameters (1–8). The ranking is based on the total effect made by CLCS on firm performance when mediated by the components of QM practices. It shows that first and second ranks are occupied by "continuous improvement" by creating highest total effects 0.6264 and 0.6028 on product quality improvement and process improvement, respectively. The third position is occupied by "information and analysis" followed by "supplier management". Study results show two areas which need critical improvement, i.e., "supplier management" (0.1123) and "design and development" (0.1137) for "process improvement". All the model-fit-indices satisfy the recommended cut-off values (Kaynak, 2003).

6. Discussion

This study aimed to examine the effect of QM practices on the association between CLCS and firm performances. To fulfil this objective a partial mediating model using SEM model was constructed and empirical results so obtained are discussed as follows.

Experts in the field suggested that if a firm wishes to implement a CLCS, it must pay attention to cost minimisation mainly via reducing waste, rework, time and improving efficiency with employee involvement (Sangwan *et al.*, 2018). The study results confirm this assumption. For example, from Figure 4 among four QM components, the CLCS provides the strongest link with "supplier management" and "continuous improvement" i.e., $\beta = 0.77$ and $\beta = 0.68$, respectively. Furthermore, the model indicates that it is equally important not to ignore the other components. The emphasis on "information and analysis" and "design and development" is equally important as indicated by links $\beta = 0.54$ and $\beta = 0.21$, respectively. According to Sangwan and Choudhary (2018), managing suppliers has been considered as heart of a manufacturing organisation. Effective supplier management touches every aspect of manufacturing activity and ensures seamless flow of process. Study results are in line with Dubey *et al.* (2015) where authors concluded that effective supplier management provides service excellence and minimises the risk to gain increase in value from vendors. Similarly, according to Sharma and Kharub (2014) and Kharub and Sharma (2015), continuous improvement through SPC, providing products and process with minimum defects, enables the firms to reduce the cost of its operation and achieve its CLCS goals. Proper QM allows employees to use quality tools and analyse data and, hence, skilful controlling of quality costs. At last, by emphasising on the process design and development, a firm can adjust process parameters rapidly ($\beta = 0.21$). Hence, it reduces the requirement of excess capacity and thus a reduction in changeover cost that can translate to price reduction and the attainment of a cost leadership position.

Study results show that there is no direct relationship between cost leadership strategy and firm performance. However, it affects performance via emphasising on quality practices. When emphasising cost leadership as a competitive strategy, the ranking of quality parameters impacting on firm's performance is found as shown in Table V.

	1	2	3	4	5	6	7
Cost leadership strategy	0.000						
Continuous improvement	0.000	0.000					
Information and analysis	0.000	−0.781	0.000				
Supplier management	0.000	0.914	−0.475	0.000			
Design and development	0.000	−0.811	1.441	1.362	0.000		
Product quality improvement	0.000	0.023	−0.525	0.735	−0.502	0.039	
Process improvement	0.000	−0.121	−0.554	0.514	−0.296	2.005	−0.170

Table IV. Standardized residual covariances

Continuous improvement appears to have the maximum association with firm performances. The results are in line with previous studies, i.e., Chapman and Hyland (2000), Cho and Pucik (2005), Das *et al.* (2008), Kaynak (2003) and Sangwa and Sangwan (2018a). For example, the study conduct by Chapman and Hyland (2000) reported the same results from Australian small manufacturing firms. They found that small firms have recognised the value of continuous improvement programs as a low-cost approach. The authors concluded that small steps with continuous improvement can provide defendable competitive advantage over potential competitors. Furthermore, the results noted that adequate informants and proper analysis have a significant impact on process improvement. Our results show that overall the impact of CLCS is more significant in the presence of the QM practices.

7. Conclusions

Nowadays, the primary challenge for MSMEs is to find a means of gaining a competitive advantage over the potential competitors. According to Porter, this is possible either by offering higher value to the customer using lower prices or by providing more significant benefits via product or service differentiation that justifies a higher price. Previous studies have observed that owing to the scarcity of the resources (i.e. technology, flexibility, design and development techniques), the MSME sectors in India prefer cost leadership over the differentiation. Furthermore, from last two decades, this sector has introduced the QM practices to reduce the production cost and improve the firm performances. In this context the aim of this study is to answer four RQs, as stated at the end of the Introduction section. In order to answer stated RQs, the study employed a partial mediation model using SEM and calculated the DE, IE and total effect of CLCS on firm performance. The answer to *RQ1* is "yes", the CLCL is applicable to the MSMEs. In response to *RQ2*, any direct relationship between the CLCS and firm performance is not found. However, when answering to *RQ3*, study results showed that the QM practices completely mediate the relationship between the CLCS and firm performance. To answer *RQ4*, the total impact of the QM practices on the firm's performance was calculated. Based on the total impact, the QM practices were ranked from 1 to 8. The continuous improvement got the rank 1, followed by information and analysis. With rank 1, it shows that continuous improvement is prime means through which the CLCS's goal can be accomplished in MSMEs. Furthermore, study results conclude that the MSMEs need to focus on the supplier management and design and development as they received ranks 7 and 8, respectively.

7.1 Managerial implications, limitations and future scope

The current study shows that managers in the MSMEs seem to pay most of their attention on the cast leadership competitive strategy. The Indian MSMEs have passed the initial hurdle of quality and are focusing on information analysis and continuous improvement. Managers will know that continuous improvement have a significant impact on strategy

Ranks	Quality parameter	Firm performance indicator
1	Continuous improvement	Product quality improvements
2	Continuous improvement	Process improvements
3	Information and analysis	Process improvements
4	Supplier management	Product quality improvements
5	Design and development	Product quality improvements
6	Information and analysis	Product quality improvements
7	Design and development	Process improvements
8	Supplier management	Process improvements

Table V.
Quality parameter's ranking based their impact on firm performances

development and its implementation. However, due to their relatively low level of emphasis on the design and development and supplier management, they are still in the early stage of completive progression and far away from the apex. To compete at the global scale, there is a need to focus on the designing and development and supplier management. The study encourages to identify and depict firms based PIP to support management in this endeavour. Study results will help managers in effective implementation of CLCS by aligning with appropriate QM practices at multiple levels within an organisation. When managers will succeed in implementing the CLCS at the organisational level, first it will facilitate a competitive advantage at the local market and second it will motivate them to think globally. This research will help students and practitioners in the field by providing a better understanding of competing priorities in the India MSMEs. This study informs global managers and MNCs seeking to outsource or planning to invest in India that managers in MSMEs place significant emphasis on information analysis and continuous improvement. Managers should note that manufacturing capabilities in India MSMEs are not sufficient to support product verities and they are not able to make frequent changes in design and production volume.

The data collection for this study was confined to the state of Himachal Pradesh; hence, the results cannot be generalised. However, the findings are identical to previous studies that included samples from all over the country. In that sense, the results are relevant and informative for researchers as well as practitioners in the field. The survey is confined to only manufacturing companies; it might be interesting to collect date from the service industry in a future study to see the role of QM in the realisation of its benefits. Using oblique rotation (direct oblimin and promax) in the PCA, it will be interesting to know the relationship between items/factors of quality practices and organisational performance. Although the Indian MSMEs have recognised the value of continuous improvement, still a system can be developed to ensure that the programs are focused on strategic importance. Future research should include differentiation strategy, marketing and human resources and assess the joint contribution of these approaches to competitive strategy and firm performance.

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