Exploring the Relationship Between Innovation Capability, Total Quality Management and SMEs Performance in Electric Fan Industry of Pakistan: Moderating Effect of Relational Learning

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Abstract

Purpose – The main objective of this paper is to simultaneously determine the moderating role of relational learning in the relationship between Innovation Capability, Total Quality Management and SMEs Performance. This study attempts to expand the insights by determining these relationships in the context of a rapidly liberalizing and developing economy; Pakistan. By conducting this research with Pakistani data, the authors can assess whether the relationship between these three strategic resources shows systematic differences to those in developed economies.

Design/methodology/approach – The authors of this study utilized the data collected through survey method in Electric Fan Industry of Pakistan. Well established scales were adopted from past research in order to measure the constructs used in the study. Structural equation modeling technique was used to test the hypotheses of the study. 239 fan manufacturing firms have been included in the sample. The authors used Smart PLS version 3 for data analysis.

Findings – The findings revealed that relational learning moderates the relationship between predictor and criterion variables. Contrary to the previous findings, no significant relationship between Innovation Capability and SME Performance was found to exist; however, there existed a positively significant relationship between total quality management and SME performance.

Research limitations/implications – Owing to the cross-sectional time frame that the study follows, it does not infer any causality. Having been limited to only fan manufacturing industry, the study calls for further research in different industry/country perspectives.

Practical implications – The study highlights policy building prospects for Pakistani government based on the principles of innovation capability and quality enhancement through collaborating with business networks and exploring the potential of relational learning to help improve overall SMEs performance.

Originality/value – This study contributes to the growing body of literature on SMEs-level innovation, TQM and relational learning in developing economies like Pakistan.

Keywords: innovation capability, total quality management, relational learning, SMEs performance

1. Introduction

Electrical Fan Industry in Pakistan is the primary focus of the present study as this industry has encountered the problem of dismal performance despite of great potential to grow and succeed both in domestic as well as international markets. Electric fan manufacturing comes under the category of light engineering industry and is considered among those pioneer industries that were operating at the time of Pakistan’s independence in 1947. The cluster of electric fan industry is based in two famous cities of Pakistan, Gujarat and Gujranwala. Both the cities have become the production center for almost 98% of country’s overall production. In the current production scenario, the cluster captures the sales of Rs. 18 billion through its 10 million fans per year. This industry consists of 1200 fan manufacturers/vendors. This sector not only accommodates the domestic needs of the country but is also potentially exporting in the international market. The biggest international markets for Pakistani fans are UAE (23%), Yemen (18%), and Saudi Arabia (17%) (Ahmed, Mahmud & Hamid, 2010), while, Middle East, Central Asia and Africa also offer a huge export potential in this regard.
Keeping in view the economic significance, the fan cluster has marked substantial growth during the previous decade, however; the growth performance of SMEs since 2011 is quite dismal (Afraz, Hussain & Khan, 2014; Van Der Bank & Van Der Bank, 2014; Paul, 2014; Moustafa., Tourkia & Ramadan, 2017; Castro, 2018). Pertinent to Electrical fans exports, Pakistan’s share of $ 40 million in total international trade volume of $ 4 billion is comparatively very smaller if matched with other countries in the region. SMEs of neighboring countries in the region like China, Singapore and Thailand have leapfrogged because of their internationally reputable brands, competitiveness, innovation, better quality and higher productivity.

Specifically, the aforementioned competencies of SMEs in China, Singapore, Thailand and other countries are the major weaknesses of SMEs in electrical fan manufacturing industry of Pakistan. There is lesser focus on developing reputable brands, firms lack innovation capabilities, quality management aspect is generally overlooked (Afraz et al., 2014; TDAP, 2011) relational ties among industry, academia and other business partners are quite poor and firms fail to respond to demands and cope with challenges of their respective business environment (Khan, 2015; Yanga & Yenb, 2016; Alfauzan & Tarchouna, 2017; Sai, 2017; Irbawati., Wiryokusumo & Leksono, 2019).

Considering the perspective of the global opportunities available in electrical fan manufacturing, this study aims to examine some leading causes of dismal performance of SMEs in electrical fan manufacturing industry of Pakistan. Hence, this study intends to explore the relationship between Innovation Capability, Total Quality Management (Independent Variables) and SMEs Performance (Dependent Variable). Past literature as would be discussed in the literature review suggests that the relationship between the aforementioned variables is inconsistent and inconclusive. Therefore, this study has proposed Relational Learning as potential moderator as it is significantly correlated with the predictor variables as well as the criterion variable which justifies their inclusion in proposed framework as recommended by (Baron & Kenny, 1986). The following section further emphasizes and elaborates literature review pertinent to the present study.

2. Literature Review

(Neely, Gregory & Platts, 1995) define performance in terms of a process that quantifies the business actions of a firm leading it to accomplish its goals and objectives. Different ways in which the performance might be expressed include either the actual efficiency or effectiveness of a business action or the resultant outcome of the business action. Thus, in order to secure higher performance levels, respective goals and objectives of firm must be pursued in an efficient and effective manner as compared to its competitors.

Like other developing countries, Pakistan's economy is also largely based on SMEs (Khalique, Isa, Shaari & Abdul, 2011). (Hussain, Farooq & Akhtar, 2012) argued that SMEs have enormously contributed in Pakistan's economic stability and competitiveness since its independence. They are scattered throughout the country in urban as well as rural areas; in Pakistan SMEs comprise of 90% of overall economic enterprises, employing approximately 80% of non-agricultural workforce, and contributing almost 40% of national GDP (MoF, 2014). Most of these SMEs are playing their potential role in employment growth and generation.

According to (Batool & Zulfiqar, 2011), the Government of Pakistan has clearly included SME sector as one of the four central drivers of economic growth and development. They have further proposed that proactive, innovative and flexible SMEs can have the potential of employment creation, introduction of efficient work force, production of foreign exchange, distribution of technological knowledge and development of the business management skills throughout Pakistan, therefore, adding to the overall economic progress of the country.

Keeping in view the above mentioned discussion in relation to problems of SMEs in Pakistan, a few contemporary variables have been selected for this study in order to examine their relationship with SMEs Performance. These variables include Innovation Capability and Total Quality Management as independent variables and Relational Learning.

A detailed literature review describes that there are two dissimilar viewpoints found with regards to the relationship between innovation capability and SMEs performance. At one hand, several researchers have attempted to highlight the importance of innovation capability for greater firm performance (Bowen, Rostami & Steel, 2010; Cainelli, Evangelista & Savona, 2004; Calantone, Cavusgil & Zhao, 2002; Hafeez, 2014; Hafeez, Shariff & bin Mad Lazim, 2013; Hashi & Stojčić, 2013; Keskin, 2006; Rhee, Park & Lee, 2010). On the other hand, studies showing insignificant relationship between innovation capability and firm performance are also present (Armour & Teece, 1978; Darroch, 2005; Geisser, 1974; Hage & Aiken, 1967; Kimberly & Evanisko, 1981; Rogers, 1995; Saunila, 2014). However, majority of the studies have exhibited a positive relationship between innovation capability and SMEs performance. For that reason, the study hypothesizes the following:
H1: There is a positive relationship between Innovation Capability and SME Performance.

With reference to TQM and SMEs Performance relationship, most of the empirical studies which examined the impact of TQM on performance have established that implementation of TQM practices improves the firm performance (Duh, Hsu & Huang, 2012; Gimenez-Espin, Jiménez-Jiménez & Martínez-Costa, 2013; Kaynak & Hartley, 2008; Kim, Kumar & Kumar, 2012; Lam, Lee, Ooi & Lin, 2011; Rahman & Bullock, 2005). Therefore, TQM implementation needs to be adjusted and applied by SMEs in the same manner. Hence, this study hypothesizes that:

H2: There is a positive relationship between TQM and SME Performance.

Moreover, it is suggested in the literature that relational learning of a firm can enable an organization to optimally exploit the benefits of its innovation capability (Ahuja & Katila, 2001; Bell & Zaheer, 2007) and TQM practices (Ahuja & Katila, 2001; Bell & Zaheer, 2007; Kocoglu, Imamoglu & İnce, 2011; Loke, Downe, Sambasivan & Khalid, 2012; Martínez-Costa, Martínez-Lorente & Choi, 2008). Nevertheless, to the best of our knowledge there are very limited empirical studies if any that have explored the moderating effect of relational learning capability on innovation capability-performance and TQM-performance relationship in the context of SMEs.

Relational learning capability takes in to consideration the knowledge that exists outside the firm. The capability of a firm to integrate the external knowledge in their innovation capability and TQM can largely determine the performance of SMEs. Keeping in consideration the above mentioned discussion the following hypotheses are thus posited:

H3: Relational learning moderates the relationship between innovation capability and SMEs performance.

H4: Relational learning moderates the relationship between TQM and SMEs performance.

3. Research Methodology

This study has employed quantitative research method. Survey was conducted in Electric Fan Industry of Pakistan. SMEs owners/managers were the respondents for this study. 239 usable responses were gathered using a structured questionnaire. Scales were adopted/adapted from the previous literature. Smart PLS version 3 was used. Structural equation modeling technique was employed to test the hypotheses. Two stage process was used to test the moderating effects.

4. Findings and Results

Demographic profile of respondents was quite diverse in terms of age of business, firm size and capital invested in the business. Before initiating multivariate data analysis initial screening of the data was ensured to verify the suitability of the data for advanced multivariate analysis. Tests pertaining to detection of outliers, data linearity, normality, multicollinearity, homoscedasticity, and auto correlation were performed. Afterwards, Measurement Model was evaluated to verify Convergent and Discriminant validity as given in Table 1 and Table 2 respectively.

Table 1. Convergent validity

<table>
<thead>
<tr>
<th>Constructs and Indicators</th>
<th>Cronbach's Alpha</th>
<th>rho_A</th>
<th>Composite Reliability</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation Capability</td>
<td>0.982</td>
<td>0.982</td>
<td>0.983</td>
<td>0.773</td>
</tr>
<tr>
<td>Total Quality Management</td>
<td>0.982</td>
<td>0.982</td>
<td>0.983</td>
<td>0.763</td>
</tr>
<tr>
<td>Relational Learning</td>
<td>0.985</td>
<td>0.986</td>
<td>0.986</td>
<td>0.811</td>
</tr>
<tr>
<td>SMEs Performance</td>
<td>0.986</td>
<td>0.986</td>
<td>0.988</td>
<td>0.870</td>
</tr>
</tbody>
</table>

Table 2. Discriminant validity – Fornell Larcker criterion

<table>
<thead>
<tr>
<th>Constructs</th>
<th>IC</th>
<th>TQM</th>
<th>RL</th>
<th>SMEs Perf.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation Capability</td>
<td>0.879</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Quality Management</td>
<td>0.686</td>
<td>0.873</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relational Learning</td>
<td>0.611</td>
<td>0.699</td>
<td>0.900</td>
<td></td>
</tr>
<tr>
<td>SMEs Performance</td>
<td>0.704</td>
<td>0.866</td>
<td>0.778</td>
<td>0.933</td>
</tr>
</tbody>
</table>
After ensuring the convergent and discriminant validity of the measurement model, structural model was constructed to test the hypotheses of the study as given below in Figure 1.

![Figure 1. Structural model](image)

Based on the corresponding T-statistics and P-values given in Table 3, it is revealed that there is no significant relationship between Innovation Capability and SME Performance; whereas, there exists a positively significant relationship between total quality management and SME performance. Moreover, results indicate that relational learning significantly moderates the relationship between Innovation Capability, TQM and SMEs Performance.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Relationship</th>
<th>Std. Beta</th>
<th>Std. Error</th>
<th>t-value</th>
<th>p-value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>IC -&gt; SMEs</td>
<td>0.018</td>
<td>0.003</td>
<td>0.443</td>
<td>0.33</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H2</td>
<td>TQM -&gt; SMEs</td>
<td>0.737</td>
<td>0.003</td>
<td>16.882**</td>
<td>0.000**</td>
<td>Supported</td>
</tr>
<tr>
<td>H3</td>
<td>IC*RL</td>
<td>0.133</td>
<td>0.002</td>
<td>3.242</td>
<td>0.001**</td>
<td>Supported</td>
</tr>
<tr>
<td>H4</td>
<td>TQM*RL</td>
<td>0.258</td>
<td>0.003</td>
<td>6.825</td>
<td>0.000**</td>
<td>Supported</td>
</tr>
</tbody>
</table>

**p<0.01, Results are significant with 1 tail where: T values >2.33 (p values < 0.01)
*p<0.05, Results are significant with 1 tail where: T values > 1.645 (p values < 0.05)

Moreover, for the purpose of determining the strength of the moderating effects of Relational Learning on the relationship between Innovation Capability, Total Quality Management and SMEs performance, (Cohen, 2013), effect size was calculated. Furthermore, the moderating effects’ strength, can be assessed by comparison between the value of R-squared (coefficient of determination) of the main effect model with that of the R-squared value of the full model that involves both independent variables and moderating variable (Henseler & Fassott, 2010; Wilden, Gudergan, Nielsen & Lings, 2013). Effect size of moderation is given below in Table 4. Results indicate strong moderating effects of relational learning on the relationship between predictor and criterion variables.
Table 4. Effect Size of moderating variable (f² (Henseler & Fassott, 2010) and (Cohen, 2013) recommendation

<table>
<thead>
<tr>
<th>Moderating Variable</th>
<th>R² Included</th>
<th>R² Excluded</th>
<th>f-Squared</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relational Learning</td>
<td>0.876</td>
<td>0.846</td>
<td>0.242</td>
<td>Strong</td>
</tr>
</tbody>
</table>

Moreover, an assessment of predictive relevance serves as another measure when it comes to structural model extractions. Hence, this study applied the Stone-Geisser’s test of predictive relevance research model by means of blindfolding procedures (Geisser, 1974; Stone, 1974). Similarly, (Chin, 1998) and (Hair Jr, Sarstedt, Hopkins & Kuppelwieser, 2014) opined that Q² is a criterion used in order to measure how well a research model predicts the omitted cases’ data. In another development, (Henseler, Ringle & Sinkovics, 2009), stated that a research model with a Q² statistic(s) higher than zero is regarded to have predictive relevance. Predictive relevance is given in the following Table 5.

Table 5. Construct cross-validated redundancy (predictive relevance)

<table>
<thead>
<tr>
<th>Total</th>
<th>SSO</th>
<th>SSE</th>
<th>Q²  (1-SSE/SSO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation Capability</td>
<td>4,063.00</td>
<td>4,063.00</td>
<td></td>
</tr>
<tr>
<td>Total Quality Management</td>
<td>4,302.00</td>
<td>4,302.00</td>
<td></td>
</tr>
<tr>
<td>Relational Learning</td>
<td>4,063.00</td>
<td>4,063.00</td>
<td></td>
</tr>
<tr>
<td>SMEs Performance</td>
<td>2,868.00</td>
<td>853.115</td>
<td>0.613</td>
</tr>
</tbody>
</table>

Hence, Q² in Table 5 shows an acceptably good relevance (0.613) for the criterion variable (SMEs Performance), indicating that the model developed for the study has high predictive relevance.

5. Conclusion

The study substantively contributes to the extant literature on innovation, TQM and relational learning in the context of an emerging market such as Pakistan. The study reflects policy building prospects for government of Pakistan based on the principles of innovation capability and quality enhancement through collaborating with business networks and exploring the potential of relational learning to boost the performance of SMEs. Furthermore, SMEs in Pakistan require a greater focus on adopting and sustaining TQM practices to create a distinguished management style which would enable them to compete locally as well as internationally. TQM paves the way for channelizing a quality culture and cross-functional team knowledge transfer which can shield SMEs from intense competition and can allow them to leapfrog and outperform their business rivals.

References


