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**ARTICLE INFO**

**ABSTRACT**

The purpose of this paper is to examine the co-opetition and firm performance relationship through the mediating role of innovation and moderating role of trust. This is broadly acknowledging that symmetry of co-opetition (i.e., simultaneous competition and cooperation) is achieving core advantage when firms engage in such co-opetitive relationship. Further, it is hypothesized that co-opetition has a positive influence and firm performance. The sector selected for this study is sports goods industry where requirements of co-opetition are just not a requirement but also a necessity as small businesses with limited assets need heavy resources to perform internationally. Therefore, required attention was given to the effect of co-opetition on firm performance. The sample size were 415 and survey questionnaires distributed to respondents representing sports goods industry using a simple random sampling technique. The only 361 responses were useable for analysis other 54 questionnaires did not receive or not in condition to use them. The finding of this study indicated that co-opetition through innovation has a significant effect on firm performance. Furthermore, this study also verifies that the influence of trust on co-opetition and performance relationship reveals some important nuances that indicate this relationship either strong or weak. The implication of this study investigation offers that the practitioners and managers contain “optimal level” of co-opetition with their competitors, which always increases firm performance. Where as “too little” and “too much” intensity of co-opetition distrust between rivals and ultimately decreases firm performance. Finally, this study is one of the initial studies that investigating the role of innovation and trust on co-opetition and performance relationship in sports goods industry.

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1. **INTRODUCTION**

1.1 **Background of Study**

Competition is a very common concept in marketing and strategic literature that performance of firm should be increase with the help of firm’s own skills, capabilities, assets and resources using by the mangers in their business strategy (Baker, Jensen, & Murphy, 1988; Bayo-Moriones, Bello-Pintado, & de Cerio, 2010; Kumar, 2010; Vorhies & Morgan, 2005). However, small and medium enterprises (SMEs) firms of sports goods industry have low technological skills, resources and assets that did not increase the firm performance efficiently. Therefore, the only way to attain firm’s performance and manager’s objective is to collaborate with rivals, so that new skills, resources, capabilities and assets can be achieved (Ali & Khalid, 2017; Bayo-Moriones et al., 2010; Gnyawali & Ryan Charleton, 2018; Xie & Johnston, 2004). Therefore, the emergence of increasing performance through Co-operations and competitions alone & together Co-opetition in sports industries in developed countries has led sports management scholars and researchers of underdeveloped countries to explore such strategies for optimization in firm performance. As a Sports Industry Via Mainstream and Non-Mainstream contribution to the economy needs continuous evolvement to increase firm performance.

Moreover, Innovation is also a very important source of competitive advantage and a breakthrough that generates many subsequent innovations through these skills, capabilities and resources (M.-K. Kim, Park, & Paik, 2018). At the same, creating such significant innovation is a difficult task that requires mutual trust and essential knowledge (M.-K. Kim et al., 2018; Zhu, Dong, Gu, & Dou, 2017). However, when firm’s shares their resources, skills and capabilities for subsequent innovations, the degree of trust could influence on managers decision that co-opetition positively constrains on performance of firm (Bengtsson & Raza-Ullah, 2016; S. Kim, Kim, Pae, & Yip, 2013; Tidström, 2014). Therefore, collaboration between rivals within the same industry (Gnyawali & Park, 2009; Rai, 2016) is a very beneficial strategy to enhance firm ability to generate innovation, which leads to superior long run
performance and competitive advantage (Bouncken & Kraus, 2013; Hurmelinna-Laukkanen, Ritala, & Sainio, 2013; Ritala & Sainio, 2014; Zhu et al., 2017). Thus, the co-opetition (a simultaneous relationship i.e. cooperation and competition) between firms play a vital role where managers collaborate with their rivals to attain new skills, capabilities, assets and resources (Gnyawali & Ryan Charleton, 2018; Granata, Lasch, Le Roy, & Dana, 2018; S. Kim et al., 2013; Yami & Nemeh, 2014) .

Furthermore, the perception that co-opetition is a favorable approach for both the parties to enhance performance in long run, yet the empirical tests results between firm performance and co-opetition show mixed results. Previous studies demonstrated that, positive relationship (Belderbos, Carree, & Lokshin, 2004; James M Crick, 2019b), negative relationship (M.-K. Kim et al., 2018; Park & Russo, 1996), and even non-significant relationship (Mention, 2011) exist when firms involved in co-opetition relationship. These inconsistency of results indicated that co-opetition and performance relationship is very complex and dependent on other factors such as innovation and trust (M. Chen, Tang, Wu, & Wang, 2020; James M Crick, 2019a), which is also very important for balancing co-opetition (Raza-Ullah, 2019). Thus, there is necessary to investigate the other constructs such as innovation and trust to balancing the co-opetition for superior long term performance.

The small and medium enterprises (SMEs) have many competitive characteristics with different comparisons. In spite of these characteristics, these firms feel pressure to stand and compete other firms in domestic as well as international markets (Bulak & Turkyilmaz, 2014). For this purpose SME’s are required to improve their innovation strategies according to customer requirements and up-gradation in technological changes. Nowadays, competitive paradigms are continuously changes. Therefore, these SME’s must be aware about these changes to compete simultaneously in domestic and international market in a different dimension such as products innovation and development, manufacturing, design, communication, marketing and distribution (Bulak & Turkyilmaz, 2014; He, 2021). The literature showed that co-opetition management and firm performance in SME’s is a critical issue and previous studies have not precisely explained it (Bengtsson & Raza-Ullah, 2017; Chiambaretto, Bengtsson, Fernandez, & Nisholm, 2020a; Fernandez, Le Roy, & Chiambaretto, 2018; Gnyawali & Ryan Charleton, 2018; Raza-Ullah & Eriksson, 2017). Because studies about these constructs are very exceptional and inconclusive (M. Chen et al., 2020; James M Crick, 2019b; Gnyawali & Ryan Charleton, 2018; Hoffmann, Lavie, Reuer, & Shipilov, 2018; M.-K. Kim et al., 2018) Therefore, SME’s could not survive and grow without involving in co-opetition strategies and management of co-opetition tension. Moreover, SME’s managers should properly understand about how co-opetition tension manages more effectively.

1.2 Research objectives

To identify and assess the factors that affects the symmetry of co-opetition and firm performance in an emerging economy, and to assess innovation and trust towards firm performance.

➢ To investigate the factors that impact the co-opetition symmetry and firm performance
➢ To determine the direct and indirect relationship between co-opetition symmetry, innovation and firm performance.
➢ To evaluate the relationship between innovation and firm performance.
➢ To assess the intensity of trust that influences the co-opetition symmetry and firm performance.

1.3 Research questions

Although this research precisely focuses on export-oriented SMEs from sports goods industry, to what extent do they compete and cooperate during co-opetition. While this study interlinked with empirical and theoretical studies, the following research questions are to be carried out for investigation:-

➢ What extent co-opetition symmetry increase firm performance?
➢ What is the relationship of co-opetition symmetry and firm performance with the indirect effects of innovation?
➢ What is the relationship between innovation and firm performance?
➢ What extent trust influence on the symmetry of co-opetition which impact on firm performance?

1.4 Statement of the problem

In the current scenario, the export industries of Sialkot are supplying their products and services directly or indirectly throughout the world. Moreover, those products made in the Sialkot region have received worldwide recognition in international markets, because of high-quality standards of product and precise selection of design, raw material, manufacturing process, and timely delivery to the customers. Although a few years ago, China and India has a massive entry into the international market, but Pakistan’s sports goods industry also has a very strong
manifestation in the international markets. In spite of these challenges, Pakistan is still the largest export of gloves used for, shooting, baseball, goalkeeper, boxing and motorbikes, etc through co-opetition relationship between sports goods firm when compete at international market.

Therefore, the purpose of this research is to determine the problem face by small and medium enterprises of sports goods industry which involve in a co-opetition relationship, when compete in domestic market and cooperate with each other at international markets. Particularly, the SME’s export homogeneous products such as soccer balls in sports goods industry. However, most of the studies on co-opetition and performance related to multinational corporations (Chiambaretto et al., 2020a; Chiambaretto, Bengtsson, Fernandez, & Näsholm, 2020b; Raza-Ullah, 2019; Raza-Ullah & Kostis, 2020). Therefore, this research focus on gap that linked with the symmetry of co-opetition and performance with a mediation role of innovation and moderating effect of trust in small firms of sports goods industry.

2. REVIEW OF LITERATURE AND HYPOTHESES DEVELOPMENT

Co-opetition refers to the simultaneous relationship among firms i.e. competition and cooperation (Fernandez et al., 2018; Hoffmann et al., 2018). Co-opetition is a “portmanteau of competition and cooperation” (Raza-Ullah, 2017). This “neologism-coined by Novell’s founder, Ray Noorda - first appeared in the 80s” as various scholars, described that firms cooperate with business rivals for their combined benefits (Afuah, 2000; Belderbos et al., 2004; Ketchen Jr, Snow, & Hoover, 2004; Zhang & Frazier, 2011). The pioneer research has been conducted in late 90s, which boost co-opetition as a strategy. Moreover, there are two different directions of research in inter-firm relationship - cooperation and competition (Brandenburger & Nalebuff, 1996; Gnyawali & Ryan Charleton, 2018). The cooperation direction has focused on development of interrelated relationship to acquiring skills, resources, knowledge and capabilities from each other to gain collaborative advantages, which improves innovation and efficiency (Ahuja, 2000; Chiambaretto et al., 2020b; Raza-Ullah & Eriksson, 2017; Tariq et al., 2014). In contrast, the competition direction has concentrated on superior competitive advantage in relation to its competitors, which is possible when firm having core competency in their product and services, improve innovation capabilities and capacity of minimum price (Bouncken, Fredrich, Ritala, & Kraus, 2018; Porter, 1991). However, in reality, these two different extremes cooperation and competition provided one side perspective as shown in figure 2.1 below (Rusko, 2011 and Hassan et al., 2013). Nowadays in practice, firms gain competitive edge (Dagnino & Padula, 2002) and long-term performance (Lado, Boyd, & Hanlon, 1997) with simultaneous cooperation and competition with each other. Thus, co-opetition is a new direction, which combined the cooperation and competition simultaneously (Giovanna Padula & Giovanni Battista Dagnino, 2007).

![Figure 2.1 Position of co-opetition between paradigms (Rusko, 2011)](image)

Co-opetition has various practical examples, such as co-opetitive alliances between Oracle and Ericsson (Bengtsson & Johansson, 2014), Apple and Google (Raza-Ullah, Bengtsson, & Kock, 2014), (Raza-Ullah et al., 2014) Sony and Samsung (Gnyawali & Park, 2011). As, the opinion of Oracle Corp (OC) Chief Operating Officer (COO), shows the importance and strength of co-opetition relationship, “If you look at the least ten years, SAP has been an awful big competitor, the number one or number two competitor of ours, and yet [our] engineers corporate [with theirs]” (M.-J. Chen, 2008). Hence, in alliances and inter-firm relationship, co-opetition is a new direction and trend on co-opetition research has increased.

2.1 Co-opetition and Firm Performance

The scholars define co-opetition as a paradox that juxtaposes the simultaneous interactions between cooperation and competition (Raza-Ullah et al., 2014; Stadttler & Van Wassenhove, 2016). Moreover, a position ourselves in the activity school of thought that suggests that co-opetition occurs among two firms (Bengtsson & Raza-Ullah, 2017). To address complex challenges in high-tech industries such as short product life cycles,
complicated technologies, and huge capital requirements, firms constantly search for partners with relevant and complementary resources. Often such partners are strong competitors since they possess the required capabilities, leveraging which superior value can be created. For example, Gnyawali and Park (2011) demonstrated in a detail case study how the two fierce rivals, Sony and Samsung formed a co-opetition relationship to tackle the unique industrial challenges and tap new opportunities by combining their resources and capabilities. Similarly, another case study by Fernandez and Chiambaretto (2016) reports that Thales Alenia Space (TAS) and Astrium (hostile competitors) collaborated with each other to manufacture a dual system of telecommunication satellites. More recently, BMW and Daimler have started to cooperate despite their heads-on rivalry in order to share high costs of developing new technologies including autonomous driving systems. Thus, firms are likely to pursue risky, large-scale, and resource-intensive projects by developing collaborative ties with their competitors, and in the due course share knowledge, technology, and capabilities in order to create a bigger pie that is not possible alone.

As cooperation and competition are two opposing forces, they tend to remain in constant tension with each other such that one strives to dominate the other (Bengtsson & Johansson, 2014; Raza-Ullah et al., 2014). The literature further suggests that the tension between cooperation and competition tends to push firms to either focus on cooperation or on competition. Doing so, however creates an imbalance in the relationship, which leads to unplanned dissolutions (Das & Teng, 2000). Scholars suggest that the key to success is balancing competition and cooperation (Teece, 1992). Balance refers to the relative intensities of cooperation and competition at similar levels. Scholars for instance have proposed that when both cooperation and competition are strong, firms can produce higher economic rents and achieve superior, sustainable performance (Lado et al., 1997). On the contrary, alliance performance will likely be jeopardized when one competing force is very strong and the opposite force is comparatively very (Bengtsson & Raza-Ullah, 2017; Das & Teng, 2000; Raza-Ullah & Eriksson, 2017 & Bilal et al., 2016). Recent empirical studies also support that claim, a balanced co-opetition positively affects performance (B.-J. Park, M. K. Srivastava, & D. R. Gnyawali, 2014). Therefore, firms can strike and maintain the balance of cooperation and competition in creating ‘co-opetitive advantage’ and thus generate superior performance.

**H1:** Co-opetition has a positive relationship with firm performance.

### 2.2 The mediation role of Innovation

Firm’s innovation process improvement more relies on co-opetition strategies (Bouncken et al., 2018; H. Chen, Yao, Zan, & Carayannis, 2020; Ritala, 2012). The co-opetition strategies tolerate organization to join the profit received from competition and cooperation (Bengtsson & Kock, 2000; Fernandez et al., 2018). Furthermore, Innovation process balances cooperative and competitive factors to co-create or add value in existing product, as a result firm increased their profit from innovation (Cassiman, Di Guardo, & Valentini, 2009). Firms could be collectively improved their innovativeness and co-create mutual benefits through co-opetition. Similarity and complementarity of competitors explained the benefits of co-creation as well as collective innovativeness. The sharing of different knowledge and new skills between rivals enable the firms to co-create value that cloud not possible individually, because competitor’s resource complementarity increases potential for synergy from co-opetition relationship (Das & Teng, 2000; Khanna, Gulati, & Nohria, 1998; Silverman & Baum, 2002). Therefore, empirical studies examined that a balanced co-opetition relationship is most beneficial for innovation to enhance firm performance (B.-J. R. Park, M. K. Srivastava, & D. R. Gnyawali, 2014; Raza-Ullah, Bengtsson, & Gnyawali, 2018). The finding of (Fernandes, Ferreira, Veiga, & Marques, 2019) and (H. Chen et al., 2020) studies demonstrated that co-opetition generates a positive significant impact in firm performance through innovation process and innovation activities. Thus, the selection of competing partner is very important that make a possible balance co-opetition to achieve positive innovation outcomes which leads to enhance firm performance.

**H2:** Co-opetition has a significant positive impact on innovation.

**H3:** Innovation has a positive significant relationship with firm performance.

**H4:** Innovation mediates the relationship between co-opetition and firm performance.

### 2.3 Trust as a moderator

Trust define as firm’s are believing to an uncertain competitors based on the faith that competing partner perform according to their expectation and best interests of each other, despite the risky nature of co-opetition (Guo, Zhang, Zhu, & Wang, 2017). Prior literature suggests that trust is about “confident positive expectations regarding another’s conduct . . . [and about] expectations of things hoped for” (Lewicki, McAllister, & Bies, 1998). Positive expectations include both good behavioral intentions and task performance expertise of the relationship partner...
Trust between competitors is the degree to which rivals involving in co-opetition relationship and assured that the integrity in that kind of relationship (Bengtsson & Raza-Ullah, 2016; Czernek & Czakon, 2016; Tidström, 2014). The relational view believes that the trust between coopetitive firms that involves in collaborative strategies of business rather than competitive business strategies (Coviello & Brodie, 2001; Ylimaeki & Vesalainen, 2015). Therefore, the firms should be aware and understand the situation to share more relevant skills, capabilities and assets with reliable competitors when they involve in co-opetition activities (Hoffmann et al., 2018). However, there is a high degree of tensions and uncertainty increase during such cooperative business strategies when collaborate with competitors (Hurmelinna-Laukkanen et al., 2013). The top management of competing firms shares their capabilities, skills and assets with trusted rival firms that decrease the tensions and consequently increase firm performance (James M. Crick, 2019b). At small level, (Crick, 2021) demonstrated that tensions and financial problems increased between rivals when they did not carefully utilize use the sharing capabilities and skills. On a large scale, the firms share resources and capabilities with their irresponsible competitors that ultimately have negative impact on firm performance (Hurmelinna-Laukkanen et al., 2013). Therefore; partners trust on each other is very important factor for improvement of firm performance (Hoffmann et al., 2018; S. Kim et al., 2013; Tidström, 2014). Hence, it is proposed that the influence of trust on intensity of co-opetition and firm performance relationship, when the firms engaging in co-opetition to share their skills, capabilities and assets with the rival firms.

**H5:** Trust moderates the relationship between co-opetition and firm performance.

### 2.4 Theoretical Framework

The resource-based view is very important theoretical root that using in co-opetition research (Barney, 1991; Barney, Wright, & Ketchen Jr, 2001; Peteraf, 1993). Moreover, the cooperating with competitors becomes a critical challenge for utilization of resources that otherwise would be inaccessible (Elena Bonel & Elena Rocco, 2009; E Bonel & E Rocco, 2009; Choi, Garcia, & Friedrich, 2010; Gnyawali & Park, 2009; Morris, Koçak, & Ozer, 2007) and a way to restructure and generate competitive advantages. There is also a strong perspective that inter-organizational cooperation provides the benefits to firms for their innovative performance in many categories (Ahuja, 2000) for this kind of context it is compulsory to combine a variety of resources while externally mange competences and knowledge. The research framework represents the four constructs. The construct co-opetition reveals the intensity of co-opetition, which may increase the firm performance. The construct of innovation coordinates between the relationship of co-opetition and firm performance. The construct of trust influences on the co-opetition and firm performance relationship.

![Figure 2.2 Theoretical framework](image-url)
3. RESEARCH METHODOLOGY

3.1 Sampling and data collection

The population of this research included all the export oriented firms from sports goods industry situated in the region of Sialkot, Pakistan. However, this study only focused on export oriented firms which involved in co-opetition relationship and listed in Sialkot chamber of commerce and industry. The sports goods industry selected to test the hypothesis since the firms operating in these industries found to be highly involved in co-opetition (Ahsan, 2021; Nawaz, Javed, & Ullah, 2020; Quintana-García & Benavides-Velasco, 2004) and export their products in international market with mutual consent, precisely for FIFA World Cup after every four years. There are 2,268 sports goods industry firms listed in Sialkot chamber of commerce and industry in which 129 firms under C category (Corporate class) which represents public and private firms, whereas 2,139 firms under A category (Associate class) which represents small and medium firms. Therefore, our sampling frame for this study is 2,139 firms. Through a secondary database i.e. Sialkot Chamber of Commerce and Industry (SCCI), randomly selected 800 export oriented firms from sport goods industry based on registered code in SCCI using a simple random sampling techniques.

3.2 Research instrument and sample size

Following earlier research, Tehseen, Ramayah, and Sajilan (2017) the survey designed according to a method that the probability of common method bias minimized. A pilot testing of the questionnaire has been completed through a survey of 15 to 20 senior managers of small firms before actual data collection. After receiving the response from these respondents, we resolved the ambiguity, content issues and relevance of the items (Van Teijlingen & Hundley, 2001). However, from these selected firms, some firms were not interesting to participate in our study and some of them were out of reach. As a result, 130 firms dropped. Furthermore, the 670 remaining firms in which 255 were not involved in co-opetition directly or indirectly. Thus, our final sample had 415 firms to which a survey conducted (Wolf, Harrington, Clark, & Miller, 2013). The questionnaires distributed to respondents using a simple random sampling technique, from these 415 responses, only 361 were usable for analysis other 54 questionnaires did not receive or not in condition to use them. The response rate is thus 45%, which is acceptable in comparison to similar studies (H. Ho & Ganesan, 2013; Raza-Ullah, 2019).

3.3 Measurement of Scales and construct operationalization

All measurement items and scales checked and tested before going to operationalize our constructs using a multi item scale with a total 16 items. This research paper used previous measurements instruments, items slightly changed to reflect our research according to specific context. For data collection, we asked the managers of small firms to answer the question and complete it on a 7-point likert scale from 1 (not at all) to 7 (extremely high) range. The assessment of firm performance, a 4 items scale created by (Krishnan, Martin, & Noorderhaven, 2006; Lavie, Haunschild, & Khanna, 2012). The measure of co-opetition was evaluated by utilizing 4 items scales contained by H. Ho and Ganesan (2013) that slightly modified of competitive intensity and knowledge sharing to reflect competition and cooperation respectively. The innovation was evaluated by utilizing 4 items of scale developed by Tsai and Ghoshal (1998), and Molina-Morales and Martínez-Fernández (2010). Finally, to access the trust a 4 items existing scales adopted from (Connelly, Crook, Combs, Ketchen Jr, & Aguinis, 2018; Jiang, Li, Gao, Bao, & Jiang, 2013).

3.1.1 Control Variables: This study used several control variables for minimize the effect of the other factors that may affect our dependent and independent variables such as industry (using dummy variables of 0 for sports goods and 1 for other), firm size (logarithmic value of total number of employees), and firm age. Data related to all control variables obtained from a secondary database according to context i.e. Sialkot Chamber of Commerce and Industry (SCCI).

3.4 Data Analysis approach

The Smart PLS version (Smart PLS 3.2.9) are using for results of partial least square structural equation modeling (PLS-SEM) (Henseler, Ringle, & Sarstedt, 2015). Because researcher highly recommended PLS-SEM for analyzing complex model, especially which deal with both formative and reflective model (Hair Jr, Matthews, & Sarstedt, 2017) as purpose in our study model. Following two stages process interpreted the result of partial least square structural equation modeling (PLS-SEM). At first stage, this study evaluated the measurement model for reliability and validity. At second stage, the assessment of structural path model based on the significance of coefficient, model predictive relevance (Q2), and coefficient of determination (R2).
4. DATA ANALYSIS AND RESULTS

The purpose hypotheses in figure 2.2 were analyzed using the latest version of software Smart-PLS (Smart-PLS 3.2.9). The study of Gefen, Straub, and Boudreau (2000) recommended that PLS-SEM have advantages in evaluating the latent variables with various manifest construct over regression-based methods. However, the study of Henseler, Ringle, and Sinkovics (2009) also recommended that PLS has two-step process which involves the evaluation of measurement and structural model. Additionally, PLS-SEM is considering a best method that is highly suitable for a multivariate analysis and currently also selected as a best technique within business studies (J. Hair, Hollingsworth, Randolph, & Chong, 2017; Peng & Lai, 2012; Yasser, 2016).

4.1 Measurement Model Estimation

The values of reliability, validity, and internal consistency of the observed constructs together with unobserved constructs that measured through questionnaire are calculated in measurement model (R. Ho, 2013). Consistency evaluations are based on single observed and construct reliability tests, whereas convergent and discriminant validity are used for the assessment of validity (J. F. Hair, Sarstedt, Ringle, & Mena, 2012).

<table>
<thead>
<tr>
<th>Table 4.1 Construct Validity and Reliability</th>
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<tbody>
<tr>
<td>Constructs</td>
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<tr>
<td>Co-operation</td>
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<tr>
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<td></td>
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<td>Innovation</td>
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The items that have low factor loading were excluded from the analysis as a part of measurement model evaluation (Gefen & Straub, 2005). Therefore, in this study only one item (T4) has low factor loading (<0.600) was removed from the analysis. The composite reliability and cronbach’s alpha used in this study to test the reliability of constructs. The values of cronbach’s alpha of each variable more than 0.700 and value of composite reliability 0.700 also higher than the recommended value (Wasko & Faraj, 2005). Moreover, the Average Variance Extracted
(AVE) value of each construct above 0.500 thresholds that shows the acceptance of convergent validity. Thus, the results of factor loading for the items, reliability and validity as presented in Table 4.1 above all were acceptable.

<table>
<thead>
<tr>
<th>Table 4.2 Fornell-Larcker Criterion Test</th>
<th>Co-opetition</th>
<th>Performance</th>
<th>Innovation</th>
<th>Trust</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-opetition</td>
<td>0.833</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance</td>
<td>0.469</td>
<td>0.858</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovation</td>
<td>0.404</td>
<td>0.478</td>
<td>0.818</td>
<td></td>
</tr>
<tr>
<td>Trust</td>
<td>0.027</td>
<td>0.078</td>
<td>0.050</td>
<td>0.758</td>
</tr>
</tbody>
</table>

The above table 4.2 shows the fornell-larcker criterion for assessment of discriminant validity. The square root of AVE values for all the constructs were higher than the inner-construct correlation. Moreover, heterotrait-monotrait ratio was also used for evaluation of discriminant validity (Henseler et al., 2015). Hence, the assessment of discriminant validity reliable. The structural model can now be tested in next stage.

4.2 Structural Model Estimation

The demonstrated the reliable and valid results of measurement model. The measurement of structural model outcomes explained in the next step. This relationship between constructs included the measurement of coefficient of determination ($R^2$) value, Path coefficient ($β$ value) and T-Statistics. Furthermore, this relationship of constructs also measured the effect size ($f^2$), the predictive relevance of the model ($Q^2$) and evaluated structural model considering the other key standards.

4.2.1 Measurement the value of $R^2$

The coefficient of the determination measures the overall effect size and variance explained in the endogenous construct for the structural model. In this study, the inner path model value was 0.322 for the performance endogenous latent construct. This shows that the independent construct co-opetition and mediation construct innovation substantially explained 32.2% of the variance in the performance. This shows that about 32.2% of the change in the performance was due to co-opetition and innovation variables as shown in the study model. The study of Henseler et al. (2015) and J. Hair et al. (2017) verified that. The 0.75 value of $R^2$ is considered substantial. The 0.50 value of $R^2$ is considered as moderate and the $R^2$ value of 0.26 or below is considered as week. Hence, in this study the value of $R^2$ is moderate.

4.2.2 Estimation of the Path Coefficient ($β$) and T-Statistics

The path coefficient in the PLS and the standardized $β$ coefficient in the regression analysis were similar. Through the $β$ value, the significant of hypothesis was tested. To test significance of path coefficient and T-statistics values, a bootstrapping procedure using 5000 subsamples with no sing changes carried out for this study as presented in table 4.3 & 4.4 below.

<table>
<thead>
<tr>
<th>Table 4.3 Path Coefficient and T-Statistics</th>
<th>B</th>
<th>T-Statistics</th>
<th>$p$-value</th>
<th>Hypotheses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-opetition -&gt; Performance</td>
<td>0.329</td>
<td>4.829</td>
<td>0.000</td>
<td>Accepted</td>
</tr>
<tr>
<td>Co-opetition -&gt; Innovation</td>
<td>0.404</td>
<td>8.084</td>
<td>0.000</td>
<td>Accepted</td>
</tr>
<tr>
<td>Innovation -&gt; Performance</td>
<td>0.343</td>
<td>6.202</td>
<td>0.000</td>
<td>Accepted</td>
</tr>
<tr>
<td>Co-opetition -&gt; Innovation -&gt; Performance</td>
<td>0.138</td>
<td>5.534</td>
<td>0.000</td>
<td>Accepted</td>
</tr>
<tr>
<td>Trust -&gt; Co-opetition</td>
<td>0.027</td>
<td>0.292</td>
<td>0.771</td>
<td>Rejected</td>
</tr>
<tr>
<td>Trust -&gt; Performance</td>
<td>0.064</td>
<td>0.783</td>
<td>0.434</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

In this study, first hypothesis proposed that intensity of co-opetition would significantly and positive influence on the performance of firm. As, predicted, the finding of this study in table 4.3 and figure 4.1 confirmed that the intensity of co-opetition significantly influenced on the firm performance ($β = 0.329, T = 4.829$ and $p < 0.000$). Hence, $H_1$ positively supported. The second hypotheses in study proposed that intensity of co-opetition have significant impact on innovation. Therefore, the finding endorsed that the intensity of co-opetition has significant
positive impact on innovation ($\beta = 0.404$, $T = 8.084$ and $\rho < 0.000$) which shows that $H_2$ also positively supported. Furthermore, the influence of innovation on firm performance as proposed in our third hypothesis was also significant ($\beta = 0.343$, $T = 6.202$ and $\rho < 0.000$) which also conforming our hypotheses $H_3$. In addition, the mediation hypotheses proposed that innovation mediate the relationship of intensity of co-opetition and firm performance with positively significant indirect effect. The finding in table 4.3 and figure 4.1 provided the empirical support for our hypotheses $H_4$ where the intensity of co-opetition has indirect positive significant impact on performance of firm through innovation ($\beta = 0.138$, $T = 5.534$ and $\rho < 0.000$). Thus, $H_4$ supported positively. Whereas, the moderating effect of trust $H_5$ was found to be statistically insignificant, as supported previous study (Raza Ullah, 2019).

4.2.3 Measurement of Effect Size ($f^2$)

The $f^2$ shows the impact level of each exogenous construct on the endogenous construct. If the values of $f^2$ were 0.35 stated (strong effect), 0.15 (moderate effect) and 0.02 and below (week effect) (Cohen, 1988). The below table 4.4 values endorsed that the effect size for co-opetition to performance (0.134), innovation to performance (0.145), innovation to co-opetition (0.195), trust to performance (0.004) and trust to co-opetition (0.001). According to study of Cohen (1988) the exogenous constructs (co-opetition & innovation) in this study had a moderate effect and (trust) had a weak effect. These constructs participated relatively to the moderator $R^2$ value 32.2% in endogenous construct (performance).

| Table 4.4 Effect Size $f^2$ |
|-------------------------------|------------------|------------------|
| Co-opetition -> Performance   | 0.134            | Moderate         |
| Innovation -> Performance     | 0.145            | Moderate         |
| Innovation -> Co-opetition    | 0.195            | Moderate         |
| Trust -> Performance          | 0.004            | Weak             |
| Trust -> Co-opetition         | 0.001            | Weak             |

4.2.4 Predictive relevance of the Model ($Q^2$)

The $Q^2$ statistics used to measure the quality of partial least square path model (Tenenhaus, Vinzi, Chatelin, & Lauro, 2005). Therefore, in SEM the value of $Q^2$ must be greater than zero for a particular endogenous latent construct. The figure 4.2 below shows that the $Q^2$ value for this study model was equal to 0.222, which was higher than the prescribed limit, and supports that the path model’s predictive relevance was adequate for the endogenous construct.
4.2.5 The Standardize Root Mean Square (SRMR)

The SRMR is an index of the average variance of standardized residuals between the observed and the hypothesis covariance matrices (F. F. Chen, 2007). The SRMR is a measure of the estimated model fit. When the SRMR value < 0.08, then the study model has a good fit (Hu & Bentler, 1998) and with a lower SRMR being a better fit. Therefore, the table 4.5 shows the model of this study SRMR value was 0.08, which demonstrated that this study model had a good fit. Moreover, the value of Chi-Square = 639.638 and NFI = 0.822 was also measured.

Table 4.5 Model fit Summary

<table>
<thead>
<tr>
<th>Estimated Model</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SRMR</td>
<td>0.088</td>
</tr>
<tr>
<td>d_ULS</td>
<td>1.052</td>
</tr>
<tr>
<td>d_G</td>
<td>0.310</td>
</tr>
<tr>
<td>Chi-Square</td>
<td>639.638</td>
</tr>
<tr>
<td>NFI</td>
<td>0.822</td>
</tr>
</tbody>
</table>

5. DISCUSSION

This study investigated that when and how co-opetition symmetry improves firm performance through innovation and influence of trust that are important for successful relationship (H. Chen et al., 2020; Raza-Ullah, 2019). This study also observed the significant beneficial and insignificant role of innovation and trust in co-opetitive relationship. Furthermore, the study suggested that innovation is an important intervening construct through which intensity of co-opetition increased relationship with performance and trust is an important factor which influence on this relationship. The study based on a sample of 361 firms involved in inter-firm co-opetition relationships to support the hypotheses co-opetition symmetry has positive significant relationship with firm performance through innovation and trust has a negative insignificantly influence on this relationship. Therefore, the relationship between co-opetition symmetry and firm performance has been studied well by the previous researchers and argued that firms can obtained new skills, capabilities and resources by collaborating with competitors to enhance firm performance (Ali & Khalid, 2017; Ballantyne, 2004; Bengtsson & Johansson, 2014; Ritala & Sainio, 2014; Rehman et al., 2018). However, the positive significant relationship between co-opetition symmetry and firm performance has been evaluated empirically and conceptually (James M Crick, 2019; Gnyawali & Park, 2009; Iyer, Srivastava, & Rawwas, 2014; M.-K. Kim et al., 2018; Peters & Pressey, 2016).

Consequently, these studies support to our hypotheses co-opetition has a positive relationship with firm performance $H_1$ and this study in the same way as other researchers Co-opetition has a positive significant impact on innovation. Co-opetition is directly linked with innovation and has an impact on firm performance (Huang & Yu, 2011). Moreover, co-opetition must be considered as an important element that facilitates firms to improve innovation activities with sharing knowledge, resources and capabilities to achieve long run performance (Belderbos et al., 2004; Giovanna Padula & Giovanni Battista Dagnino, 2007). In addition, innovation activities provide a superior long run firm performance and consequently achieve larger competitive edge (Ferreira & Fernandes, 2017; Hsu, Kannan, Tan, & Leong, 2008; Hua & Wemmerlöv, 2006; Kaminski, de Oliveira, & Lopes, 2008; Roberts & Amit, 2003). The research hypotheses related to the co-opetition positive impact on innovation $H_2$, innovation positive
impact on firm performance $H_3$ and co-opetition and firm performance relationship through innovation $H_4$ were empirically supported. As study of (Ritala & Sainio, 2014) verified that co-opetition and firm performance has a direct link but there are numerous moderating factors that affecting this relationship (Bengtsson & Raza-Ullah, 2016; Hoffmann et al., 2018). Trust is one of the most influential factors that impact on relationship of co-opetition and firm performance (Della Corte & Aria, 2016). Moreover, trust between the competitors correspondingly moderates the same relationship. Consequently, if manager trust their competitors and share all resources and capabilities then the firm performance improved (Hoffmann et al., 2018). On other side, most of the firms do not trust on their rivals and feel uncomfortable to share skills, capabilities and resources then the performance of firm decreased (James M Crick, 2019a). Thus, this uncertainty in firm’s performance that engaged in co-opetition due to negative insignificant impact of trust, which supported our research hypotheses $H_5$. The mutual trust between the firms involved in co-opetition relation might be a positive effect on firm performance (Czernek & Czakon, 2016).

5.1 Implication and Contribution of research

This research theoretically contributes in several ways. First, firms are increasingly feeling the need or even forced that to work mutually with their competitors. Therefore, firms rapidly created networks and co-opetition relationship in which rival firms work with each other. In this scenario, individual firms face major challenges to collaborate with their competitors. According to findings of this study, firms need to create such appropriated advantages in co-opetition relationship; firms need to focus on their internal organization structure and external stakeholders. Particularly, the implementation of mechanisms that transplant and control sharing information within and outside the firm, that significantly increased the ability of innovation from collaboration with competitors. Second, there is much need to explain how trust is more important construct to improve co-opetition and innovation impact on performance. Therefore, there should be a need to introduce the brighter side and positive role of trust in the literature (Lewicki et al., 1998; Raza-Ullah, 2019).

As, this research conducted on export oriented sports goods firms which involved in co-opetition relationship to improve their mutual performance. Therefore, to achieve this objective trust plays a vital role. Furthermore, theoretical implication of this study derives from the approaches and the methods under which co-opetition obtains value through innovation, trust and firms performance working in various sector and industries. Moreover, when there is incremental, new innovation or market development required then it is very important to evaluate the competitors carefully and after that sharing the costs and risks related to these developments with mutual trust and collaboration. These results regarding innovation and trust have a clear implication for promoting policies in terms of co-opetition activities for innovation. For instance, sharing knowledge, resources and capabilities with competitors increases the level of trust of managers, education and innovation activities that boost the cooperation, which leads to greater positive impact on firm performance. This way of collaboration between competitors identified that co-opetition relationship has a significant for the development of innovation activities that increased manager’s trust to achieve superior long run performance.

In addition to theoretical contribution, this study also has numerous managerial implications. The managers of co-opetitive firms should involve in a co-opetition relationship at optimal level and share the necessary knowledge, capabilities, skills and resources with competing firms. However, too little and too much co-opetition is not beneficial for the both partners. Therefore, managers should be understand that if they involve in too much co-opetition and share lot of resources and capabilities then distrust reveals between competitors that consequently decrease firm performance. On other side, in too little co-opetition the partners may be struggle to survive in market due to insufficient resources and capabilities. Thus, managers should continuously aware regarding their external factors and market situation for an effective balance in co-opetition. Furthermore, the practitioners should be understand the uncertainty of competitive behavior, business environment and external forces such as other competitors that might have different effect on firm performance. Hence, practitioners and managers should be initiate that their industry is more cooperative than competitive with sharing the right and more effective resources and capabilities that engage co-opetition at optimal level and consequently improve firm performance. At the end, there are some cautious for managers to share their assets with trustworthy competitors when they involve in co-opetition activities. However, it could be very difficult for managers to evaluate that their competitors are trustworthy or not in advance of involving in co-opetition relationship.
5.2 Limitations and future research

This study delimited to the export oriented firms of sports goods industry in Sialkot and did not include the firms of other industries of Sialkot such as leather, surgical and cutlery industries, due to lack of research resources regarding data collection, approach to SME’s Owners and budget constrain. The co-opetitive behavior and aspects of other industries regarding the SME’s performance ignored in this study. In demographic point of view, this study also delimited to the export oriented firms of one specific region of Pakistan i.e. Sialkot and did not included the export oriented firms from other region of Pakistan.

Same like other studies, the contribution of this study also suffer from some limitations, which are open window for future research. First, the sample of this study is limited to firms operating in the context of Sialkot, Pakistan. As the perception of intensity of co-opetition may vary across cultural contexts (Jukka, Blomqvist, Li, & Gan, 2017), it would be beneficial and better result oriented to explored current study in other settings to finding in broader way. Second this paper based on the data collected from export firms related to sports goods industry and ignored the firms from other industries such as leather and surgical. However, if a future opportunity adds respondents from other industries, it would bring in much more richness into understanding the hypothesis relationships. Third, the cross-sectional nature of study does not allow us to observe the processes through which trust develops and increases or decreases over time. Future studies adopting a longitudinal design could add substantial value on this issue.

6 CONCLUSION

This research study explained the contingency and complexity of the relationship between co-opetition and firm performance and addressed the key issue in co-opetition literature that when and how co-opetition symmetry achieves greater long run firm performance. This paper investigated the mediation role of innovation and moderating role of trust on the relationship between intensity of co-opetition and firm performance. The finding of this study as expected, that co-opetition has a positive significant affects on firm performance through innovation (intervening construct) and that trust (moderating construct) negatively influences on this relationship. Overall, this study recommends that innovation have a beneficial role to enhance firm performance and trust that reveals some important nuances in co-opetition and performance relationship.

REFERENCES:


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