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## **Benefits of cross-border collaboration at Base of the Pyramid Markets for innovative improvement**

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### **Abstract**

One of the greatest challenges for international buyers at the Base of the Pyramid (BOP) markets is achieving social performance and innovation performance improvements in production processes in export manufacturing firms. In recent years, collaboration with companies from BOP markets has become a source of innovation for companies that do business in developing countries. By collaborating in BOP markets, firms can meet their market growth objectives while simultaneously stimulating social sustainability development. Utilising the partial least squares structural equation modelling (PLS-SEM), we test multiple hypotheses against the data of 239 companies operating in BOP markets in Pakistan. Our results reveal the importance of collaboration in explaining social performance outcomes. This study attempts to offer insights into the effect of collaboration on innovation performance improvements. This study contributes to achieving Sustainable Development Goal 9, in particular focusing on the development of technology infrastructure, to enhance research for promoting innovation. Our findings suggest that collaboration influences can significantly affect the improvements in product and process innovation. Future research could be undertaken by using either quantitative research or survey-based research in BOP markets. Based on the findings, we discuss research and practical implications for the practitioners as well as for policymakers.

## Introduction

In recent years, export manufacturing firms from developing countries have been confronted with challenges of innovation and sustainable development to contribute positively to the United Nations Sustainable Development Goals (SDGs). The developing countries which are characterised by labour-intensive and mass means of production are expected to continue to face challenges of affordable and reliable means of income and quality of living standards. Particularly, for lower-income countries, innovation and infrastructure development is crucial in achieving sustainable development and empowering communities. The SDGs represent a set of 17 priorities for global development that focuses on environmental, social, and economic dimensions with a total of 169 targets. Among the 17 SDGs, goal 9 is 'build infrastructure, promote sustainable industrialisation and foster innovation' in developing countries. Cleaner production technologies and industrial process are of a wide significance for developed as well as developing countries (United Nations Statistical Commission, 2017). Among the nine targets of SDG 9, target 9.3 and 9.4 are aimed at upgrading technological capabilities to make them sustainable, with greater adoption of cleaner production technologies and encouraging innovation in developing countries. This requires attention because the upgradation of technological infrastructure enhances research and development activities primarily have an impact on innovation. The least developed countries often do not have sufficient resources to promote sustainable industrialisation and foster innovation. Following the seminal paper by Prahalad and Hart (2002), the Bottom of Pyramid (BOP) concept is based on the idea that poverty can be alleviated through "providing prospective rewards include growth, profits and incalculable contributions to humankind" (Prahalad & Hart 2002, p. 1). Base or bottom of pyramid terms are used interchangeably in literature to represent the population which is less economically privileged, constituting more than 4 billion people living on less than \$2 per day while proposed earning lies between \$1000 to \$2000. Some scholars use a threshold of \$1 to \$2 (Kolk, Rivera-Santos, & Rufin, 2014).

The human development issues, in the beginning, have been discussed in BOP literature, for example by Prahalad and Hart (2002). These standards on human development in the workplace play a vital role in upgrading products and process. Human development has been discussed in the BOP literature from the very beginning (see, for example, (Prahalad

& Hart, 2002). Add to this the idea that collaboration is a strategic opportunity for companies that wish to achieve sustainable development and both researchers and practitioners need to understand the important relationships impacting innovation (Chen et al., 2017). The collaborations refer to working jointly with the partners (Large & Thomsen, 2011).

Promoting innovation in BOP markets becomes an inevitable strategy. Awan, Kraslawski, and Huiskonen (2018b) revealed that collaboration fosters the configuration of resources that allow partners to improve operational competencies. This cooperation depends on repeated communication and understanding of practical experience held by partner firms (Lakemond, Bengtsson, Laursen, & Tell, 2016). We, therefore, believe that collaboration will indeed help to manage relationships between firms in the context of sustainability (Niessen, Jolink, de Sousa Jabbour, Chappin, & Lozano, 2017). As Awan et al. (2018b) demonstrate, collaboration is necessary for the development of the infrastructure as well as compliance with the policies on occupation health and labour standards. According to Awan, Kraslawski, and Huiskonen (2018c), a positive association exists between social performance improvement and innovation. Despite this comprehension, there remains a gap in our understanding of how organizational learning and dynamic capability perspective enabling can happen through internal communication (Benner, 2009; Pavlou & El Sawy, 2011; Piening & Salge, 2015). Given the relevance of cooperation, some fresh research studies have started to deal with inter-firm relationship aiming to achieve sustainability objectives (Govindan, Seuring, Zhu, & Azevedo, 2016). Grekova et al. (2016) found that collaboration involving environmental performance with suppliers influences a firm's performance. Awan, Muneer, and Abbas (2013) have described the collaborative organizational culture aimed at encouraging innovation.

Previous research has reported a significant association between collaboration and social performance (Awan et al., 2018b; Luzzini, Brandon-Jones, Brandon-Jones, & Spina, 2015; Sancha, Wong, & Thomsen, 2016) and between environmental collaboration and innovation performance (Macchion et al., 2017). However, we have found there has been little research on the impact of collaboration on a firm's innovation performance. Research by Gimenez, Sierra, and Rodon (2012) provides some mixed results regarding

collaboration on sustainability initiatives and the triple bottom line (TBL) performance. The existing research studies revealed that a firm's innovation takes place in the environment provided by the market place wherein businesses operated (Tavassoli, 2015).

BOP related research has gained increasing attention in recent years. The global firms have the potential to help in creating and developing markets for innovations (Palomares-Aguirre, Barnett, Layrisse, & Husted, 2018). There is little understanding of how firms pursuing sustainability initiatives operationalise these opportunities and how this, in turn, influences innovation. We found that there is a gap in prior research that has not yet provided insights as to the mechanisms through which collaboration affects firm-level innovation. The mixed empirical results to date suggest that intervening variables might provide a better understanding of the strength and direction of relationships. It is important to explore this line of research to understand what else can enhance firm-level innovation. Little research to date tests whether a firm's operational capacities explain performance along dimensions of innovation. Within the globalisation and a changing manufacturing landscape, insightful research opportunities are now coming from developing economies. To this end, Pakistan is a new and compelling case for studying developing innovation and operational capacities within manufacturing firms. For that reason, there is also a compulsion to establish creative business practices and innovative solutions and information, which can be designed to the BOP business context making it possible for firms to execute effectively in developing markets and play an important role in the development of social well-being of individual and society (Schuster & Holtbrügge, 2012).

There is a need for research investigating the impact of collaboration on innovation performance outcomes. The empirical validation of business management practices will help advance item measurement, construct development, and give new insights into a dynamic relationship involving sustainability initiatives, social performance, and innovation. This study empirically investigates how collaboration can be used to influence social performance improvement, which, in turn, leads to improve innovation performance. The central aim of our study is to answer the research question how and why cross-border collaboration framed as a resource can trigger innovation performance of export manufacturing firms in the developing country.

We focused on these export manufacturing firms because of their contribution to the Pakistan economy and their experience in dealing with their international clients/customers. The Faisalabad and Sialkot exports earned approximately \$3.26 billion, nearly 56% of the gross domestic production (GDP) of Pakistan in 2014–2015. The study includes export manufacturing firms from different industries. The sample list was based on the 2009 list of export manufacturers that were registered in the Sialkot Chamber of commerce and Faisalabad Chamber of Commerce. The data was collected through a self-administrated questionnaire-based survey from the target respondents. Thus, to reduce the common method bias, we use co-variance base structural equation modelling in the availability of small sample sizes.

This chapter contributes to the literature in two ways. First, this study contributes to the growing study of innovation literature by developing and testing the different effects of both collaboration and social performance improvements on innovation. Second, this study is among the first to focus on an analysis of social performance improvements, which affects innovation performance. Moreover, export manufacturing firms from the base of the pyramid (BOP) need to position their collaboration at social and environmental related issues and need to improve social performance.

### **Synthesis of the Base of the Pyramid**

The Bottom of the Pyramid (BOP) concept is based on the “understanding of the consumption and expenditure patterns of the poor, as well as of the market structures that characterize their environment” (Kolk et al., 2014, p. 16). Many companies have taken a greater interest in BOP markets as a laboratory of innovation due to rapid changes in the global business environment not just serving an existing market but also for the established country markets (Prahalad, Di Benedetto, & Nakata, 2012). In accordance with a report of ten innovation process documented in the United Nations development programme (2008), innovation for BOP has a tendency to include customers at the latter part of the product development stage (Belz & Krämer, 2008). To this bottom line, the BOP studies state that organizations need to find out about the requirements of low-income focus markets, as well as employing a user-oriented model (London & Hart, 2010). The composition of BOP also

depends on the relative size of income and affordability to buy goods. Many BOP markets are mainly concentrated within South-East Asia, Africa, and Latin America (Kistruck & Beamish, 2010). In recent times, the BOP market is more especially associated with organizational sustainability and CSR activities (Arnold & Valentin, 2013; Tarafdar, Anekal, & Singh, 2012).

Earnings are the basic common unit through which individuals are categorised as part of BOP (Subrahmanyam & Tomas Gomez-Arias, 2008). Further, they estimated that the 4 billion poorest in the world were in the lower level of the economic pyramid; that is, at the bottom or base of the pyramid (Prahalad & Hammond, 2002). Prahalad et al. (2012) suggest that for innovation to be achieved a firm must have an understanding of the dynamics of these markets and the process of innovation. The one way to support the BOP population is by finding creative ways of collaboration with their partners on environmental issues. Inter-organizational collaboration is a unique way to implement policies and practices for health and safety improvements. Previous research made some concentrated effort to combine concepts of the sustainable supply chain and the base of the pyramid in international business perspective (Gold, Hahn, & Seuring, 2013). One of the important aspects of BOP is to engage with a supplier to ensure that they use their resources in the best interest of companies (Rivera-Santos & Rufin, 2010).

The cooperation between the local and international partners resulted in the development and improvement in working conditions and a good salary. In accordance with the World Resource Institute, BOP markets comprise of individuals who have the average annual earnings of \$3,000, scaled to 2002 US dollars (Webb, Kistruck, Ireland, & Ketchen, 2010). The traditional worker's monthly salary was minimum \$US 100. Now employees are earning about \$US 160 monthly (Tribune, 2014). On the other hand, in Sialkot, manufacturers of sports goods revealed that purchase order received by Pakistan this time have gone down (The Economic Times, 2018). The sports manufacturing firms in Pakistan is just an example where the older generations have retired from factories and the younger generation is not ready to work in the stitching units. The South Asian regions, in particular Pakistan, remains famous for producing quality sports balls. Pakistan-made footballs was used in the FIFA World Cup 2018 matches (The Economic Times, 2018). The BOP

population which worked in the sports manufacturing firms had to work on minimum labour standards with no job security. The working conditions in the manufacturing sectors are improving, but largely remain at the bottom. This is consistent with the concepts of collaboration and co-ordination promoted by the BOP theory (Schuster & Holtbrügge, 2014). Collaboration is considered a cornerstone of the goals of sustainable development (Pagell & Wu, 2009). Although BOP research has been part of international relationship management (Gold et al., 2013; Khalid et al., 2015), the development of a long-term relationship with various stakeholders is one of the key BOP strategies (Ramani & Mukherjee, 2014).

### **Social Performance**

The Brundtland Report in 1987 provides a triple bottom line framework for measuring the performance of the business in three sustainability dimensions: economic, environmental and social. The report defined the term as the “development that meets the needs of the present generations without compromising the ability of future generations to meet their own needs” (WCED, 1987, p. 47). The social line of the triple bottom line framework refers to the impact of organizational fair business practices on human capital, labour, and community (Elkington, 1997). It pertains to the capability of an organization to identify the practices which have an impact on individuals and society in order to support future generations. The World Commission on Environment and Development's (WCED, 1987), broad definition of sustainable development is widely accepted as recognising the importance and integration of social, environmental, and economic performance. The social performance is a component of the triple bottom line (Kleindorfer, Singhal, & Van Wassenhove, 2005). The idea of social performance has been defined by a corporate social responsibility (CSR) perspective (Wood, 1991). Following this point of view, the existing literature on social performance is diverse. Some scholars define it as follows: an “equal opportunity principle should be understood as an inherent part of the concept of sustainable development, both within and between generations” (Lafferty & Langhelle, 1999, p. 23) On the other side, for example, Carter and Jennings (2002) enumerate social dimensions, such as safety and human rights, diversity, and philanthropy.



The most important channels of the discussion that have come about to deal with additional ways to poverty elimination are the base of the pyramid (BOP) strategies and include market views (Halme et al., 2016). These scholars, as well as business practitioners, have recently got growing concentration on low-income markets in developing and emerging markets (Kolk et al., 2014). Social performance is becoming more important for all companies and is a vital dimension of corporate performance (Nunes, Alamino, Shaw, & Bennett, 2016). The social performance aims to focus on existing business practices and its growth for the upcoming generation in fairness and a judicious manner (Awan, Kraslawski, & Huiskonen, 2018a). If performance improvements in health and safety, human rights, and gender equality are significant, the company can attain more social sustainability. The social sustainability aspects of a manufacturing firm supply chain are of particular concern because this deals with the management of human and societal capital (Sarkis, Helms, & Hervani, 2010). The social issues in the supply chain such as health and safety, bonded child labour, and worker job environment have an impact on a firm's social performance (Hutchins & Sutherland, 2008). The social performance aims to have value for the existing and future generations (Awan, 2017).

### **Hypothesis Development**

Firms which collaborate with their customers have the option to collect the knowledge skills and tasks of a business process. These practices have a significant influence on social performance improvements. Collaboration has a positive and direct effect on a firm's social performance (Sancha, Gimenez, & Sierra, 2016). According to Awan et al. (2018b), collaboration has the central function of sharing information and transfer knowledge. They suggest that collaboration is a way to improve social performance. The social performance improvement in a supply chain incorporates health and safety issues and improvement of environmental issues (Ehrgott, Reimann, Kaufmann, & Carter, 2011). The socially sustainable performance dimensions incorporate health and safety issues, improvement of environmental issues, and child labour (Linton et al., 2007; Seuring & Muller, 2008; Carter & Easton, 2012). More recently, Chen et al. (2017) and Esfahbodi, Zhang, Watson, and Zhang (2017) found a significant positive direct effect of collaboration and sustainability performance. The social performance improvement gained through collaboration may depend on the firm's stock of resources and knowledge. Recent literature suggests that

social and environmental collaboration shape innovation performance improvements in developing economies (Awan & Sroufe, 2020).

Moreover, Gimenez et al. (2016) suggest that firms can achieve better results through collaboration. Further, Awan (2019) finds that joint planning and cooperation is linked to an improvement in social performance. As knowledge and resources are drawn from multiple customers, they have a greater impact on a firm's social performance. Because of this, collaboration improves knowledge resources, which is critical for developing a new process. We posit that given collaborations with and working in a greater number of customers will develop a greater domain of specific knowledge aimed at leverage resources to improve social performance. This means, in collaboration, firms have to undergo multiple accommodation processes. As a result, collaboration results in better accommodation of preventive measures at the firm's level, which improves labour standards and policies on safety and security.

**H1: Collaboration has a positive relationship with social performance improvements.**

Social performance improvement is set to be one of the biggest trends of the next decades, promising a reduction in industrial incidents, improvement of the safety and security of employees, and improvement of employment and labour standards (Awan & Sroufe, 2020). Social performance improvements are about the wellbeing of human beings. Scholars argue that employees are an important player and the primary source for the firm's success and competitive advantage (Barney, Ketchen, & Wright, 2011). Equally, improvements in buyer innovation performance through collaborative buyer-supplier relationships are increasingly critical to improvements in product design, process design, ability to innovate, and shorter product development times. We argue that such links exist because of the presence of a safe working environment and a firm's compliance with occupational and health practices affects the firm's performance. The literature has revealed the collaboration effect of strategic change; it leads to the generation of ideas, reduction of cost, and improvement in product quality (Carey, Lawson, & Krause, 2011).

Moreover, Liu, Zhu, and Yang (2010) argue that employees' motivation can be boosted by creating conditions for workers' participation in joint decision making and encourage group

work and promote productivity. This satisfaction may facilitate the process and product innovation by acquiring insights into best practices and the deeper specific knowledge required for product innovation. A supportive work environment for employee comfort, health, and safety increases work engagement that results in enhanced creative performance (Dul & Ceylan, 2011). The importance of improvements in health and safety, environmental conditions, and compliance with the code of conduct shows that these improvements go hand in hand with improvements in the design of new processes and products. Moreover, Liu et al. (2010) argue that creating conditions for employees to participate in joint decision making and encouraging group work boosts employee motivation, and, in turn, increases productivity. According to Awan et al. (2018c), improvement in social performance is positively associated with improvements in innovation performance. In the literature, we found that most social performance improvement in firms will lead to better firm innovation performance improvements. As discussed earlier, the presence of a safe working environment and firm compliance with occupational and health practices encourage group work to participate in joint decision making. Thus we suggest that,

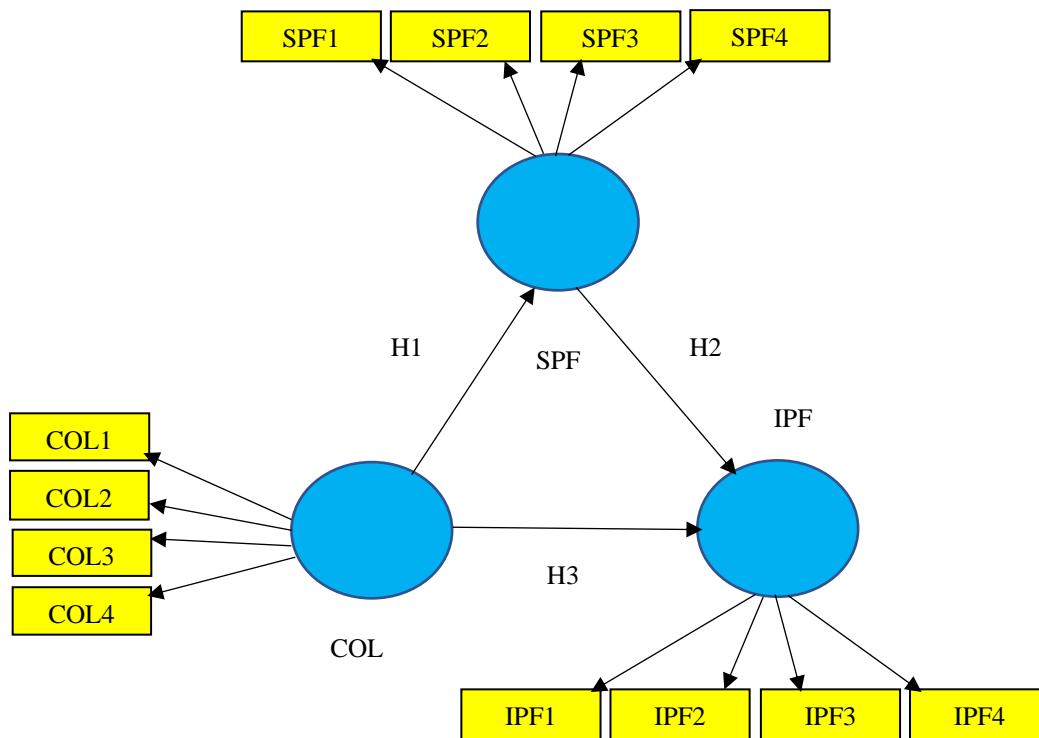
**H2: Social performance improvements have a positive relationship with innovation performance improvements.**

Previous studies have explored the relationships between collaboration and a firm's performance (Cao & Zhang, 2011; Schoenherr & Swink, 2012). Previous literature provides support for the need for collaboration during product and process quality improvements (Macchion et al., 2017; Seuring & Muller, 2008; Vachon & Klassen, 2008). Also, Grekova et al. (2016) found that collaboration with customers has a positive impact on supplier process improvements. Social performance literature increasingly addresses concerns about green innovation resulting from collaborative organizational activities (Awan, Sroufe, & Kraslawski, 2019). Similarly, Gkypali, Filiou, and Tsekouras (2017) suggest that collaboration diversity is negatively associated with innovation performance improvement. Laursen and Salter (2014) found that the collaboration relationship had a positive effect on innovation performance.

Based on the literature, we suggest that increasing external collaboration on a social issue, firms can access that they lack. However, such firm-level benefits should be available; they have the appropriate type and level of absorptive capability. According to the knowledge-based view, the development of knowledge capabilities may lead to the development of new process and products. The knowledge-based view involves the transformation of inputs into outputs for the development of new products and process and improves a firm's performance (Grant, 1996). Collaboration is most important for pursuing shared opportunities to be open to solve problems jointly and to renew resources and skills (Lusch & Vargo, 2014). Conceptually, the knowledge-based view assumes that knowledge resources are the outcome of exchange information, where both partners share appropriate knowledge, and decide what is important and weigh the potential cost and benefits.

The study by Un and Asakawa (2015) suggests that collaboration help firms achieve innovation process outcomes. Innovation process consists of tacit and internal proponents (Pisano & Shih, 2012). This, in turn, boosts employee satisfaction. Following this stream of logic, we suggest that firm efforts to incorporate social performance improvement and sustainability initiatives will help to develop new process and introduce new products. Previous work has yet to find a direct link between collaboration and innovation performance improvements. Thus, we propose that

**H3: Collaboration has a positive relationship with innovation performance improvements.**



<<Insert Figure 2.1 Conceptual Model>>

## Data Methodology

### *Research in Context*

The empirical context for the study sets a population parameter of export manufacturing firms in Pakistan. We focused on these export manufacturing firms because of their contribution to the Pakistan economy and their experience in dealing with their international clients/customers. We chose the export manufacturing firm as the stimulus because export manufacturing firms often use collaboration to improve innovation performance (Awan, 2017). Pakistan is a global production base of textile, sports goods, and surgical instruments, exporting a wide variety of goods to Europe and Western countries (Awan & Sroufe, 2020).

### *Constructs and Measures*

We selected the construct and measures for independent and dependent variables from the existing literature. Based on prior studies (Vachon & Klassen, 2008), we measured collaboration using four items reflecting the extent of cooperation among functions. The social performance constructs adopted were conceptualised as a reflective construct

(Awaysheh & Klassen, 2010; Kleindorfer, Singhal, & Wassenhove, 2005). Respondents were asked to consider the extent to which they had improved social performance through collaboration with their customers over the last three years. Innovation performance was measured using established scales adapted from Kotabe, Martin, and Domoto (2003). Respondents were asked to indicate the degree to which they had improve the innovation performance, over the three years. Questionnaires were constructed in English, and a pilot test was carried out among the 11 senior managers from the export manufacturing firms. The export firms in Pakistan mainly use the English language with their counterparts. We drew all the measured items and scales from the prior research studies (see Appendix A).

### *Sample and Data Collection*

We obtained our sample firms from the registered list of exporters maintained by the federal chamber of commerce and industry. Survey data were collected onsite from the manufacturing firms in Sialkot and Faisalabad from March to April 2017. For this, we identified 650 export manufacturing firm as the sampling frame. The focus on the export manufacturing firms was based on several factors: (i) significant contribution to Pakistan economy, (ii) evidence of learning from their foreign customers and significant export domain to developed countries (Awan, Khattak, & Kraslawski, 2019). A questionnaire was administrated to the managers of these sampling firms. In total, we obtained 186 questionnaires in the first three weeks. We then followed this with telephone calls and through sending them an email, and a total of 71 responses were received after the three weeks. Following data collection of two months, responses were received from 257 firms, of which 148 were found to be unusable due to missing values or had a large portion of incomplete data. A list of all the constructs and measurement items is provided in Appendix (A). Table 2.1 shows the validation of the constructed survey items.

We used an independent sample t-test to check for non-response bias with the data. The common method variance (CMV) bias was tested using the unrotated factor analysis extracted method to establish whether CMV is a problem for the data or not. CMV arises when data from the independent and dependent variable is collected at the same time from single respondents by employing a single survey instrument (Podsakoff & Organ, 1986). We used Harmon's single factor test to assess the potential of CMV on collected data as

suggested and followed the procedures described in Podsakoff, MacKenzie, Lee, and Podsakoff (2003). A total number of three factors emerge with a total variance explained was 28.03%. This revealed that CMV was not an issue for this data (Reinartz, Haenlein, & Henseler, 2009). The early and late respondents/informants were compared for group difference using the t-test statistics (Armstrong & Overton, 1977).

Table 2.1 Validation of constructs Survey items

Items	Factor loadings a	t-value
Innovation Performance Improvement ( IPF)		
IPF 1	0.722	17.164
IPF 2	0.852	40.477
IPF 3	0.805	30.168
IPF 4	0.713	12.560
Social Performance (SPF)		
SPF1	0.774	19.547
SPF2	0.864	30.583
SPF3	0.840	35.746
SPF4	0.734	13.170
Collaboration (COL)		
COL 1	0.666	12.539
COL 2	0.821	34.428
COL 3	0.786	25.036
COL 4	0.755	19.441

<< Insert Table 2.1 >>

## Results

To test the hypothesis, the data analyses were conducted by using IBM SPSS Statistics and partial least square (PLS) structural equation modelling. We preferred PLS mainly because it illustrates much better convergence patterns, as compared to co-variance base structural equation modelling in the availability of small sample sizes. It concentrates on the prediction of the endogenous variable (Henseler, Hubona, & Ray, 2016). We analysed the suggested structural model according to the indicator, importance, and significance of the structural paths, R-square, and  $Q^2$  redundancy test for predictive relevance (Nitzl, Roldan, & Cepeda, 2016). Standardise root mean square (SRMR) has become an important criterion to assess the root mean square difference between the model-implied correlations and correlations observed for the composite factor model (Henseler, Ringle, & Sarstedt, 2015).

In order to obtain a good measurement model, factor loadings coefficients of all measures were above 0.5, construct reliabilities exceed 0.70, and scores of AVE ranging from 0.56 to 0.84 above the variance due to the measurement error. The result shows that convergent validity has been established for all three measures. Results of the discriminant and convergent validity are presented in Table 2.2. Cronbach's alpha coefficient value of all variables exceeded the recommended cut-off point; all values ranged from 0.77 to 0.93, supporting the reliability of the scale (Nunnally & Bernstein, 1994). In analysing the measurement model, we followed the procedure suggested by Hair and Hult (2016) for identification of model misspecification. We examined the coefficient of determination ( $R^2$ ), and standardised root means square residual (Henseler et al., 2014). The results show the scores of the factors were all above the cut-off value of 0.70 and, thus, significant (Hair & Hult, 2016). It is also clear from the resulting output of factor analysis that all items load with their related construct; this shows that the study had an adequate level of convergent validity. Average Variance Extraction (AVE) achieves the acceptable standard and the score was greater than 0.5. Further, all factors scores reliabilities met the standard cut-off point of 0.60, which support that measures had convergent validity (Bagozzi & Yi, 1988). Convergent validity was assessed using the criteria suggested by Fornell and Larcker (1981).



Table 2.2 Reliability and Validity results

	Average Variance Extraction (AVE)	Composite Reliability (CR)	Cronbach's alpha (CA)
IPF	0.601	0.857	0.778
SPF	0.648	0.880	0.819
COL	0.578	0.844	0.753

IPF: Innovation Performance Improvement; SPF: Social Sustainability Performance; COL: Collaboration

Table 2.3:  $f^2$  and  $Q^2$  result output

$f^2$ -results		
	Original Sample	T-Statistics
SPF -> IPF	0.108	2.095
COL-> IPF	0.114	2.072
COL -> SPF	0.204	2.317
Stone-Geisser's test ( $Q^2$ ) statistic results		
IPF	0.132	-
SPF	0.095	-
IPF= $R^2$ =0.250; SPF= $R^2$ =0.170		

SRMR: Standardized root mean square residual: 0.0582

Effect size:  $f^2$  and  $q^2$  0.02 =Small, 0.15 = Medium 0.35 = Large).

<< Insert Table 2.2 >>

The blindfolding is a statistical method that is widely used for assessing the predictive strength of the structural equation models (Hair & Hult, 2016). The effect size  $f^2$  (Cohen, 1992) and cross-validated redundancy index ( $Q^2$ ) (Chin, 1998) results are presented in Table 2.3. The effect size  $f^2$  was also examined for the interaction effect. The value of 0.02 implies that the effect size is small, 0.15 implies that the effect size is medium, and 0.35 indicates that the effect size is high.

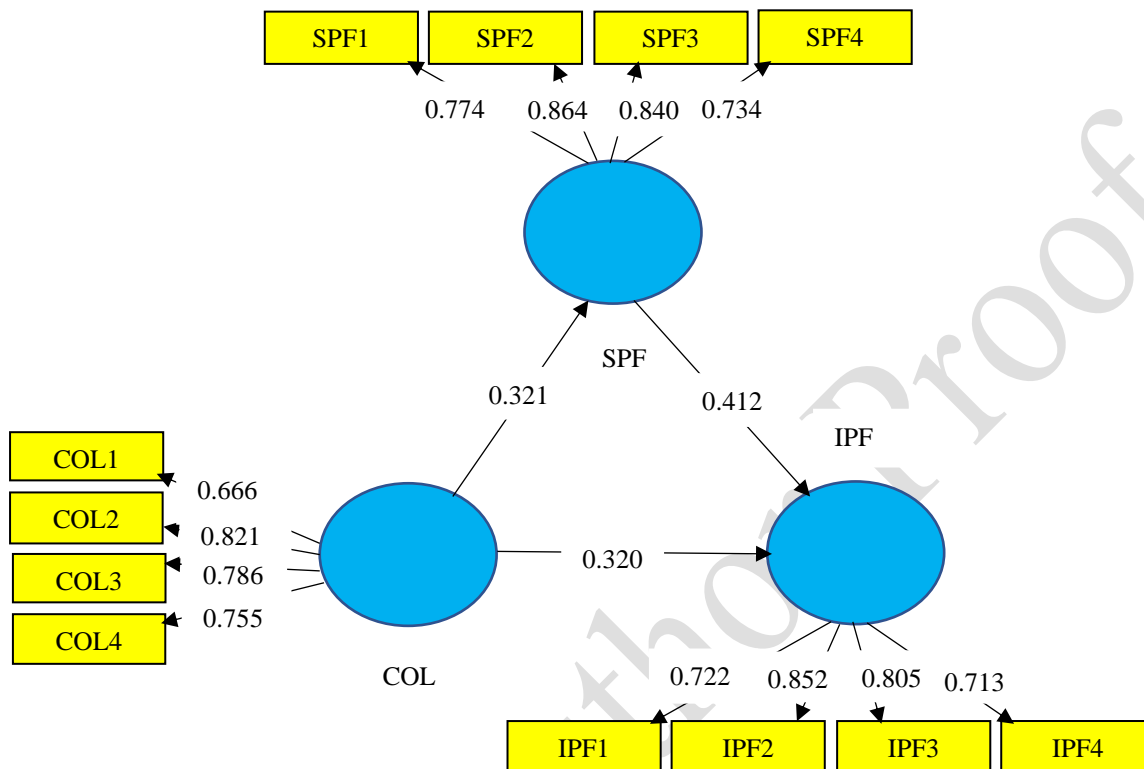
<< Insert Table 2.3 >>

The results of path coefficient analysis from PLS-SEM is shown in Table 2.4. The results of the first hypothesis show that collaboration positively influenced social performance ( $\beta=0.321$ ,  $t=4.83$ ), supporting hypothesis 1. This suggests that collaboration is a useful

solution for improving social performance. As predicted in hypothesis 2, the path from the social performance improvements impacted innovation performance positively ( $\beta=0.412$ ,  $t=6.02$ ). This indicates that social performance improvement can be affected by firms' efforts to improve innovation performance. As suggested in hypothesis 3, the path from collaboration and innovation performance was significant ( $\beta=0.320$ ,  $t=10.14$ ). Thus hypothesis 3 is supported. Figure 2 shows the model and PLS-SEM results.

Path directions	Coefficient	T-Statistics
COL -> SPF	b = 0.321	4.833
SPF -> IPF	b = 0.412	6.023
COL -> IPF	b = 0.320	10.14

<< Insert Table 2.4 >>



<< Insert Fig 2.2 PLS Path model and results >>

An important finding is that social performance affects collaboration and innovation performance improvements. The finding reveals that the manufacturing sector in Pakistan requires a high level of social performance improvements. This requirement can compel a firm to engage in collaboration with its external supply chain partners. The process of knowledge creation through collaboration paves the way for social performance towards the greater innovation performance improvements. These results can help inform other manufacturing firms in developing economies to enable social sustainability, collaboration, and innovation.

## **Discussion**

This study attempts to offer insights into the effect of collaboration on innovation performance improvements. The study is in line with the United Nations Sustainable Development Goals 9 (UNSDGs) that highlight the need for infrastructure development for innovation in developing countries through enhanced collaboration. Our findings suggest that collaboration influences can significantly affect the improvements in product and process innovation. Firstly, this study contributes to the literature on innovation. The present study responded to a research call from Hull and Rothenberg (2008) by examining the effects of corporate social performance on firm innovation with a focus on internal innovation. In this study, we establish a link between social performance and innovation performance. This research extends this line of research which states that firm-specific home country resources are not enough to facilitate innovation performance improvement. Our study proposes that external collaboration is an essential drive for a firm's social performance improvement. There is a growing recognition of the importance of collaborative efforts in boosting a firm's innovation performance (Gkypali et al., 2017). More specifically, we explore how sustainability orientation and network relationships can further influence an emerging market manufacturing firm's social performance improvements.

Secondly, this study contributes by demonstrating how social performance improvements shape the relationship between collaboration and innovation performance improvements. This study makes empirical and theoretical contributions. The chapter contributes to the sustainability literature on social performance, which has already been studied in

developed countries (Huq, Stevenson, & Zorzini, 2014; Yawar & Seuring, 2017). We argue that collaboration on social and environmental issues contributes to explaining the social performance improvements from manufacturing firms within an emerging economy perspective. The results provided evidence on how collaboration affects social performance. By improving social performance, BOP markets firms would be able to retain workers, and ongoing collaboration with their external partners could lead to adoption and upgrading technologies and affect the purchase orders. Staying away from the collaboration could deprive BOP markets of a purchase order (*The Economic Times*, 2018). Our results have highlighted how the collaboration choice of a BOP markets firm can help firms also mitigate the risk of higher orders from their international partners.

This study extends this line of research to explore how different types of sustainability and network relationships might further influence emerging market manufacturing firms and their social performance improvements. This study contributes to the theoretical base of the strategic management literature. The use of the knowledge-based view to frame empirical insights provides theoretical contributions, as it advances the understanding of how interorganizational collaboration influences the social performance improvements in BOP markets. It provides empirical support for the knowledge-based view that firms with superior knowledge resources can align external knowledge resources and later leads to the development of resources through these collaborations. Thus our findings are in line with Schuster and Holtbrügge (2014), who points out that if companies rely on beneficial resources and knowledge to gain social and innovation performance outcomes, it enables companies to respond to the different challenges of BOP markets.

This study extends our knowledge of innovation performance in manufacturing firms in various ways. Firstly, building on the knowledge-based view, we theoretically establish the specific resources and collaboration which may help the firms in improving social performance, provided that they are overly dependent on the knowledge transfer activities from external stakeholders. Secondly, we empirically identified that improvement in social performance could be achieved by integrating resources and compliance with the regulations on policies, and improvement in health and safety issues. We also found evidence that manufacturing firms in South Asian countries do have the potential to

improve their social sustainability if they leverage their resources and capabilities. Such conditions are beneficial to pursue innovation performance. The results highlight that by focusing on social performance improvements, companies gain a better understanding of the conditions under which practices are determinants of innovation performance improvements. Previous results have shown a positive association between environmental sustainability and innovation performance improvements (Macchion et al., 2017).

Empirically, this study enhances the understanding of how collaboration and social performance shape the innovation performance improvements in the manufacturing industry in emerging economies. In line with the suggestions of Haanaes et al. (2011), sustainability practices are essential for future business landscape. The findings confirm our conceptual model, in that suppliers need to investigate more dynamics of collaboration to develop specialised knowledge. This study suggests that where institutional or legal guarantees are lacking, collaboration becomes an assurance to create an improved sustainability performance. This finding is also in line with Husted and Sousa-Filho (2017). We argue that BOP markets firms are focused on the western firms creating a collaboration to deal with the opportunities to enhance and foster innovation.

## **Conclusion**

This chapter develops a theoretical framework to help explain how being the base of the pyramid market can enhance innovation performance through collaboration. The innovation performance improvements in export firms have become a topic of interest to many academicians, practitioners, and researchers. We conclude that innovation performance improvement is dominant through social performance. We also figured out that patterns of innovation performance improvements are driven by an increased level of collaboration. There is a growing interest that BOP represents important market development opportunities. The findings have demonstrated the fact that social performance and innovation performance can co-exist given the focus on the inter-organizational collaboration. Therefore, converting less developed partners and enhancing the well-being and health and safety issues in the BOP markets requires a strong focus on collaboration with their focus on social and environmental issues. The study suggests that collaboration and social performance is the essential living approach for the manufacturing

firms in South Asian countries, meaning that sustainability initiatives are essential for driving innovation performance.

We have also used the knowledge base view to frame arguments on how collaboration between buyers and suppliers can facilitate the manufacturing firms to enhance social performance and innovation performance in BOP markets. Most of the international buyer firms have generally focused on economic pyramids; they have not focused on the well-being of the individual, like health and safety issues and the inclusion of social equality in developing countries. Local firms often have little knowledge concerning the best practices required by their buyers or partners. As such, when international buyer firms enter the BOP markets, they may also leverage firms' existing resources to build local firms' knowledge resources and skills to develop new innovative process and products. For example, Addidas, the largest buyer of footballs within the Pakistan sports manufacturing industry, formed a partnership with the Forward Sports Group, a local firm operating in Sialkot. Addidas initially worked with the forwarding sports company to transfer the technology to serve the needs of the production facility and to develop a new process that is significantly different from their previous practices.

BOP markets are attractive to international buyers. To be socially sustainable, collaboration at the bottom must follow a double bottom collaboration (including social and environmental). The collaboration enables the local firm to implement social sustainability practices, such as providing an equal wage, no support of child labour, establishing equal rights for the workers (both female and male), establishing the sexual harassment system in place, and improving health and safety issues. This supports our arguments that enabling suppliers' firms to improve social performance through buyer collaborations may hold the key to innovation performance.

The primary contribution of this study is the offering of an empirical understanding of how inter-organizational collaboration on a double bottom line (social and environmental) can enable BOP markets' development and improvement in innovation performance. Consistent with the findings of the previous study (Schuster & Holtbrügge, 2014), the findings suggest that cross-border collaboration supports firms in adapting to a mutual

understanding of mutual responsibilities in product and process to reduce the environmental impact. Although BOP literature has found that global firm collaboration is a strategy for market development and innovation, it has not yet recognised the role of inter-organizational collaboration in order to develop and improve social performance at the level of manufacturers' industry. The findings of this study demonstrate that the export-manufacturing firms need interorganizational global collaborations for social sustainability of the firms located in the base of the pyramid to create innovations in products and process. In sum, our findings suggest that social performance improvement possesses a substantial influence on the ability of firms to maintain innovation performance improvement in an emerging country, such as Pakistan.

### *Managerial and Practical Applications*

The following managerial implications may be derived from our research, especially for managers in manufacturing firms in Pakistan and other developing countries' economies with similar social sustainability challenges. Firstly, our results suggest that managers should follow collaboration strategies to identify what their firm needs, but only to a certain point if they are looking for better social performance in the BOP markets. Secondly, managers have to evaluate if the proposed beneficial effects of collaboration outweigh the negative consequences of social issues. However, this should be done with caution, as more dependency might not affect the firm's ability to survive independently. The present study gives empirical evidence for the fact that the development of health, safety, and labour standards can have a positive impact on innovation performance.

Thirdly, the findings suggest that the firms with a socially sustainable performance can differentiate their offering from those of competitors. In particular, this study helps the managers to understand that modes of innovation performance improvements require sustainability culture to be more deeply embedded in the routine firm operations (Adams, Jeanrenaud, Bessant, Denyer, & Overy, 2016). If innovation performance improvement is not visible, we suggest that managers should assess the overlapping of culture. The results of this study also suggest that the supplier should be aware of the partner cultural practices for development of relational activities accordingly.

Fourthly, our findings offer insights for practising managers. International partners (buyers) have to create a mechanism that shifts the BOP markets from a low to superior innovation performance. Creating such a mechanism should be seen as an investment, much like the development of training initiatives in plants and improve social performance. To develop more innovative solutions, two interventions are important providing collaboration and increasing the social well-being of the individuals: the access to the knowledge resources and skills that allows BOP markets in building new innovative solutions. It seems clear that access to knowledge resources and skills is a critical ingredient in improving the cycle of innovation performance.

The findings of this study have the capacity to offer a tool for learning about how well policies and programmes on sustainable development are delivering objectives. Policymakers should target different policies to a different group of industries, for example, to provide more resources to the small and medium enterprises (SMEs) in BOP markets as compared to the multinational corporations, which are mainly engaged in local business transactions (activities). The SMEs are an important player in the BoP market, and SME development can contribute to foster sustainability through innovation. The policymakers should develop industry-specific sustainability practices and should increase the efficiency of the labour force by providing training aiming at promoting a better understanding of the new sustainable development initiatives. Moreover, the mobility of retired senior employees from policy institutions to large companies may be beneficial to transfer their knowledge to firms seeking sustainable performance in all spheres of the triple bottom line.

Moreover, government support has focused on policy development and providing financial benefits. To develop more innovative solutions, two interventions are important – collaboration and increasing the social well-being of the individuals. The access of knowledge resources and skills allow BOP markets to build new innovative solutions. It seems clear that access to knowledge resources and skills is a critical ingredient in improving the cycle of innovation performance. Thus, the effectiveness of the implementation of human rights initiatives, health, and safety-related issues may also depend on the appropriate collaboration.



### *Future Research Studies*

Despite the contribution, this study has limitations, which should be addressed in future research. There is always increasing popularity that base of pyramid markets symbolise imperative expansion opportunities, irrespective of presenting substantial social sustainability improvement challenges. First of all, the sample used contains only Pakistani manufacturing firms. It would be interesting in the future to conduct a study involving other sectors to see whether the findings are also comparable to these firms. Second of all, future research studies should establish a link between innovation performance and economic performance by demonstrating which socially sustainable practices determine economic performance. Our measure of social performance was limited to a few items that may have failed to capture unique aspects of sustainability in manufacturing industries. Future research is needed to identify the unique elements of a social sustainability performance that can enhance social innovation. With respect to future research, the social innovation of foreign partners depends on external collaboration in BOP markets.

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**Appendix**

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## References

- Adams, R., Jeanrenaud, S., Bessant, J., Denyer, D., & Overy, P. (2016). Sustainability-oriented innovation: a systematic review. *International Journal of Management Reviews*, 18(2), 180–205. <https://doi.org/10.1111/ijmr.12068>
- Anisul Huq, F., Stevenson, M., & Zorzini, M. (2014). Social sustainability in developing country suppliers. *International Journal of Operations & Production Management*, 34(5), 610–638. <https://doi.org/10.1108/IJOPM-10-2012-0467>
- Armstrong, J. S., & Overton, T. S. (1977). Estimating nonresponse bias in mail surveys. *Journal of Marketing Research*, 14(3), 396–402.
- Arnold, D. G., & Valentin, A. (2013). Corporate social responsibility at the base of the pyramid. *Journal of Business Research*, 66(10), 1904–1914.
- Awan, Usama. (2017). Mediation analysis of environmental training: perceived stakeholder pressure and environmental supply chain management practices. *International Journal of Research Studies in Management*, 6(1), 1–21.
- Awan, Usama. (2019). Effects of buyer-supplier relationship on social performance improvement and innovation performance improvement. *International Journal of Applied Management Science*, 11(1), 21–35.
- Awan, Usama, Khattak, A., & Kraslawski, A. (2019). Corporate social responsibility (CSR) priorities in the small and medium enterprises (SMEs) of the industrial sector of Sialkot, Pakistan. In *Corporate Social Responsibility in the Manufacturing and Services Sectors* (pp. 267–278). Springer Berlin, Heidelberg
- Awan, Usama, Kraslawski, A., & Huiskonen, J. (2018a). Buyer-supplier relationship on social sustainability: moderation analysis of cultural intelligence. *Cogent Business & Management*, 5(1), 1429346. <https://doi.org/10.1080/23311975.2018.1429346>
- Awan, Usama, Kraslawski, A., & Huiskonen, J. (2018b). Governing interfirm relationships for social sustainability: The relationship between governance mechanisms, sustainable collaboration, and cultural intelligence, 10(12), 4473. <https://doi.org/10.3390/su10124473>
- Awan, Usama, Kraslawski, A., & Huiskonen, J. (2018c). The impact of relational governance on performance improvement in export manufacturing firms. *Journal of Industrial Engineering and Management JIEM*, 11(3), 349–370. <https://doi.org/10.3926/jiem.2558>

- Awan, U., Muneer, G., & Abbas, W. (2013). Organizational collaborative culture as a source of managing innovation. *World Applied Sciences Journal*, 24(5), 582–587. <https://doi.org/10.5829/idosi.wasj.2013.24.05.1085>
- Awan, Usama, & Sroufe, R. (2020). Interorganizational collaboration for innovation improvement in manufacturing: the mediating role of social performance. *International Journal of Innovation Management*. <https://doi.org/DOI:10.1142/S1363919620500498>
- Awan, Usama, Sroufe, R., & Kraslawski, A. (2019). Creativity enables sustainable development: supplier engagement as a boundary condition for the positive effect on green innovation. *Journal of Cleaner Production*, 226, 172–185. <https://doi.org/10.1016/j.jclepro.2019.03.308>
- Awaysheh, A., & Klassen, R. D. (2010). The impact of supply chain structure on the use of supplier socially responsible practices. *International Journal of Operations & Production Management*, 30(12), 1246–1268. <https://doi.org/10.1016/j.jclepro.2019.03.308>
- Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, 16(1), 74–94.
- Barney, J. B., Ketchen, D. J., & Wright, M. (2011). The future of resource-based theory revitalization or decline? *Journal of Management*, 37(5), 1299–1315.
- Belz, F. M., & Krämer, A. (2008). Consumer integration in innovation processes. A new approach for creating and enhancing innovations for the base-of-the-pyramid (BoP)? In Kandachar P, & Halme M. (eds), *Sustainability Challenges and Solutions at the Base of the Pyramid: Business, Technolog.* Routledge, London
- Benner, M. J. (2009). Dynamic or static capabilities? Process management practices and response to technological change. *Journal of Product Innovation Management*, 26(5), 473–486.
- Cao, M., & Zhang, Q. (2011). Supply chain collaboration: impact on collaborative advantage and firm performance. *Journal of Operations Management*, 29(3), 163–180.
- Carey, S., Lawson, B., & Krause, D. R. (2011). Social capital configuration, legal bonds and performance in buyer–supplier relationships. *Journal of Operations Management*, 29(4), 277–288.
- Carter, C. R., & Easton, P. L. (2012). Sustainable supply chain management: evolution

- and future directions. *International Journal of Physical Distribution & Logistics Management*, 41(1), 46–62. <https://doi.org/10.1108/09600031111101420>
- Carter, C. R., & Jennings, M. M. (2002). Social responsibility and supply chain relationships. *Transportation Research Part E: Logistics and Transportation Review*, 38(1), 37–52.
- Chen, L., Zhao, X., Tang, O., Price, L., Zhang, S., & Zhu, W. (2017). Supply chain collaboration for sustainability: a literature review and future research agenda. *International Journal of Production Economics*, 194(2017): 73–87. <https://doi.org/10.1016/j.ijpe.2017.04.005>
- Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern Methods for Business Research*, 295(2), 295–336.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155–159
- Dul, J., & Ceylan, C. (2011). Work environments for employee creativity. *Ergonomics*, 54(1), 12–20. <https://doi.org/10.1080/00140139.2010.542833>
- Ehrgott, M., Reimann, F., Kaufmann, L., & Carter, C. R. (2011). Social sustainability in selecting emerging economy suppliers. *Journal of Business Ethics*, 98(1), 99–119.
- Elkington, J. (1997). Cannibals with forks. *The Triple Bottom Line of 21st Century*. New Society Publishers. Canada.
- Esfahbodi, A., Zhang, Y., Watson, G., & Zhang, T. (2017). Governance pressures and performance outcomes of sustainable supply chain management – an empirical analysis of UK manufacturing industry. *Journal of Cleaner Production*, 155, 66–78.
- Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: algebra and statistics. *Journal of Marketing Research*, 18(3), 382–388.
- Gimenez, C., Sierra, V., & Rodon, J. (2012). Sustainable operations: their impact on the triple bottom line. *International Journal of Production Economics*, 140(1), 149–159. <https://doi.org/10.1016/j.ijpe.2012.01.035>
- Gkypali, A., Filiou, D., & Tsekouras, K. (2017). R&D collaborations: is diversity enhancing innovation performance? *Technological Forecasting and Social Change*, 118, 143–152.
- Gold, S., Hahn, R., & Seuring, S. (2013). Sustainable supply chain management in “Base of the Pyramid” food projects – a path to triple bottom line approaches for

- multinationals? *International Business Review*, 22(5), 784–799.
- Govindan, K., Seuring, S., Zhu, Q., & Azevedo, S. G. (2016). Accelerating the transition towards sustainability dynamics into supply chain relationship management and governance structures. *Journal of Cleaner Production*, 112, 1813–1823.
- Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, 17(S2), 109–122.
- Grekova, K., Calantone, R. J., Bremmers, H. J., Trienekens, J. H., & Omta, S. W. F. (2016). How environmental collaboration with suppliers and customers influences firm performance: evidence from Dutch food and beverage processors. *Journal of Cleaner Production*, 112, 1861–1871.
- Haanaes, K., Arthur, D., Balagopal, B., Kong, M. T., Velken, I., & Hopkins, M. S. (2011). First look: the second annual sustainability & innovation survey. *MIT Sloan Management Review*, 52(2), 77–84.
- Hair Jr, J. F., & Hult, G. T. M. (2016). *A primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Sage Publications.
- Halme, M., Kourula, A., Lindeman, S., Kallio, G., Lima-Toivanen, M., & Korsunova, A. (2016). Sustainability innovation at the base of the pyramid through multi-sited rapid ethnography. *Corporate Social Responsibility and Environmental Management*, 23(2), 113–128. <https://doi.org/10.1002/csr.1385>
- Henseler, J., Dijkstra, T. K., Sarstedt, M., Ringle, C. M., Diamantopoulos, A., Straub, D. W., ... Calantone, R. J. (2014). Common beliefs and reality about PLS: comments on Rönkkö and Evermann (2013). *Organizational Research Methods*, 17(2), 182–209.
- Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modeling in new technology research: updated guidelines. *Industrial Management & Data Systems*, 116(1), 2–20.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135.
- Hull, C. E., & Rothenberg, S. (2008). Firm performance: the interactions of corporate social performance with innovation and industry differentiation. *Strategic Management Journal*, 29(7), 781–789.

- Husted, B. W., & Sousa-Filho, J. M. de. (2017). The impact of sustainability governance, country stakeholder orientation, and country risk on environmental, social, and governance performance. *Journal of Cleaner Production*, 155, 93–102.  
<https://doi.org/10.1016/j.jclepro.2016.10.025>
- Hutchins, M. J., & Sutherland, J. W. (2008). An exploration of measures of social sustainability and their application to supply chain decisions. *Journal of Cleaner Production*, 16(15), 1688–1698.
- Khalid, R. U., Seuring, S., Beske, P., Land, A., Yawar, S. A., & Wagner, R. (2015). Putting sustainable supply chain management into base of the pyramid research. *Supply Chain Management*, 20(6), 681–696. <https://doi.org/10.1108/SCM-06-2015-0214>
- Kistruck, G. M., & Beamish, P. W. (2010). The interplay of form, structure, and embeddedness in social intrapreneurship. *Entrepreneurship Theory and Practice*, 34(4), 735–761.
- Kleindorfer, P., Singhal, K., & Van Wassenhove, L. (2005). Sustainable operations management. *Production and Operations Management*, 14(4), 482–492.  
<https://doi.org/10.1111/j.1937-5956.2005.tb00235.x>
- Kolk, A., Rivera-Santos, M., & Rufin, C. (2014). Reviewing a decade of research on the base/bottom of the pyramid (BOP) concept. *Business & Society*, 53(3), 338–377.  
<https://doi.org/10.1177/0007650312474928>
- Kotabe, M., Martin, X., & Domoto, H. (2003). Gaining from vertical partnerships: knowledge transfer, relationship duration, and supplier performance improvement in the US and Japanese automotive industries. *Strategic Management Journal*, 24(4), 293–316.
- Lafferty, W. M., & Langhelle, O. (1999). Sustainable development as concept and norm. *Towards Sustainable Development* (pp. 1–29). London: Palgrave Macmillan.
- Lakemond, N., Bengtsson, L., Laursen, K., & Tell, F. (2016). Match and manage: the use of knowledge matching and project management to integrate knowledge in collaborative inbound open innovation. *Industrial and Corporate Change*, 25(2), 333–352.
- Large, R. O., & Thomsen, C. G. (2011). Drivers of green supply management performance: evidence from Germany. *Journal of Purchasing and Supply*

- Management*, 17(3), 176–184.
- Laursen, K., & Salter, A. J. (2014). The paradox of openness: appropriability, external search and collaboration. *Research Policy*, 43(5), 867–878.
- Linton, J. D., Klassen, R., & Jayaraman, V. (2007). Sustainable supply chains: an introduction. *Journal of Operations Management*, 25(6), 1075–1082.
- Liu, W., Zhu, R., & Yang, Y. (2010). I warn you because I like you: voice behavior, employee identifications, and transformational leadership. *The Leadership Quarterly*, 21(1), 189–202.
- London, T., & Hart, S. L. (2010). *Next Generation Business Strategies for the Base of the Pyramid: New Approaches for Building Mutual Value*. Pearson Education Upper Saddle River, New Jersey (US)
- Lusch, R. F., & Vargo, S. L. (2014). *The Service-Dominant Logic of Marketing: Dialog, Debate, and Directions*. Routledge United kingdom.
- Luzzini, D., Brandon-Jones, E., Brandon-Jones, A., & Spina, G. (2015). From sustainability commitment to performance: the role of intra-and inter-firm collaborative capabilities in the upstream supply chain. *International Journal of Production Economics*, 165, 51–63.
- Macchion, L., Moretto, A., Caniato, F., Caridi, M., Danese, P., Spina, G., & Vinelli, A. (2017). Improving innovation performance through environmental practices in the fashion industry: the moderating effect of internationalisation and the influence of collaboration. *Production Planning and Control*, 28(3), 190–201.  
<https://doi.org/10.1080/09537287.2016.1233361>
- Nielsen, E., Jolink, A., de Sousa Jabbour, A. B. L., Chappin, M., & Lozano, R. (2017). Sustainable collaboration: the impact of governance and institutions on sustainable performance. *Journal of Cleaner Production*, 155, 1–6.
- Nitzl, C., Roldan, J. L., & Cepeda, G. (2016). Mediation analysis in partial least squares path modeling. *Industrial Management & Data Systems*, 116(9), 1849–1864.  
<https://doi.org/10.1108/IMDS-07-2015-0302>
- Nunes, B., Alamino, R. C., Shaw, D., & Bennett, D. (2016). Modelling sustainability performance to achieve absolute reductions in socio-ecological systems. *Journal of Cleaner Production*, 132, 32–44.
- Nunnally, J. C., & Bernstein, I. H. (1994). The assessment of reliability. *Psychometric*



- Theory*, 3(1), 248–292.
- Pagell, M., & Wu, Z. (2009). Building a more complete theory of sustainable supply chain management using case studies of 10 exemplars. *Journal of Supply Chain Management*, 45(2), 37–56.
- Palomares-Aguirre, I., Barnett, M., Layrisse, F., & Husted, B. W. (2018). Built to scale? How sustainable business models can better serve the base of the pyramid. *Journal of Cleaner Production*, 172, 4506–4513.  
<https://doi.org/10.1016/j.jclepro.2017.11.084>
- Pavlou, P. A., & El Sawy, O. A. (2011). Understanding the elusive black box of dynamic capabilities. *Decision Sciences*, 42(1), 239–273.
- Piening, E. P., & Salge, T. O. (2015). Understanding the antecedents, contingencies, and performance implications of process innovation: a dynamic capabilities perspective. *Journal of Product Innovation Management*, 32(1), 80–97.
- Pisano, G. P., & Shih, W. C. (2012). Does America really need manufacturing. *Harvard Business Review*, 90(3), 94–102.
- Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: problems and prospects. *Journal of Management*, 12(4), 531–544.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903.
- Prahalad, C. K., & Hart, S. L. (2002). The fortune at the bottom of the pyramid. *Strategy & Business* (26).
- Prahalad, C. K., & Hammond, A. (2002). Serving the world's poor, profitably. *Harvard Business Review*, 80(9), 48–59.
- Prahalad, C. K., Di Benedetto, A., & Nakata, C. (2012). Bottom of the pyramid as a source of breakthrough innovations. *Journal of Product Innovation Management*, 29(1), 6–12. <https://doi.org/10.1111/j.1540-5885.2011.00874.x>
- Ramani, S. V., & Mukherjee, V. (2014). Can breakthrough innovations serve the poor (BOP) and create reputational (CSR) value? Indian case studies. *Technovation*, 34(5–6), 295–305. <https://doi.org/10.1016/j.technovation.2013.07.001>
- Reinartz, W., Haenlein, M., & Henseler, J. (2009). An empirical comparison of the efficacy of covariance-based and variance-based SEM. *International Journal of*

- Research in Marketing*, 26(4), 332–344.
- Rivera-Santos, M., & Rufín, C. (2010). Global village vs. small town: understanding networks at the Base of the Pyramid. *International Business Review*, 19(2), 126–139.
- Sancha, C., Gimenez, C., & Sierra, V. (2016). Achieving a socially responsible supply chain through assessment and collaboration. *Journal of Cleaner Production*, 112, 1934–1947.
- Sancha, C., Wong, C. W. Y., & Thomsen, C. G. (2016). Buyer–supplier relationships on environmental issues: a contingency perspective. *Journal of Cleaner Production*, 112, 1849–1860.
- Sarkis, J., Helms, M. M., & Hervani, A. A. (2010). Reverse logistics and social sustainability. *Corporate Social Responsibility and Environmental Management*, 17(6), 337–354.
- Schoenherr, T., & Swink, M. (2012). Revisiting the arcs of integration: cross-validations and extensions. *Journal of Operations Management*, 30(1), 99–115.
- Schuster, T., & Holtbrügge, D. (2012). Market entry of multinational companies in markets at the bottom of the pyramid: a learning perspective. *International Business Review*, 21(5), 817–830.
- Schuster, T., & Holtbrügge, D. (2014). Benefits of cross-sector partnerships in markets at the Base of the Pyramid. *Business Strategy and the Environment*, 23(3), 188–203.
- Seuring, S., & Muller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production*, 16(15), 1699–1710. <https://doi.org/10.1016/j.jclepro.2008.04.020>
- Subrahmanyam, S., & Tomas Gomez-Arias, J. (2008). Integrated approach to understanding consumer behavior at bottom of pyramid. *Journal of Consumer Marketing*, 25(7), 402–412.
- Tarafdar, M., Anekal, P., & Singh, R. (2012). Market development at the bottom of the pyramid: examining the role of information and communication technologies. *Information Technology for Development*, 18(4), 311–331. <https://doi.org/10.1080/02681102.2012.690172>
- Tavassoli, S. (2015). Innovation determinants over industry life cycle. *Technological Forecasting and Social Change*, 91, 18–32.

- The Economic Times*. (2018). Pakistan remains official football provider for FIFA World Cup. Retrieved from <https://economictimes.indiatimes.com/news/sports/pakistan-remains-official-football-provider-for-fifa-world-cup/new-ball-for-knockout-phase/slideshow/64827738.cms>
- Tribune, T. E. (2014). Football: Sialkot workers fire “Brazuca” ball to Brazil. Retrieved from <https://tribune.com.pk/story/716857/football-pakistan-workers-fire-brazuca-ball-to-brazil/>
- Un, C. A., & Asakawa, K. (2015). Types of R&D collaborations and process innovation: the benefit of collaborating upstream in the knowledge chain. *Journal of Product Innovation Management*, 32(1), 138–153. <https://doi.org/10.1111/jpim.12229>
- United Nations Statistical Commission. (2017). Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development. UN Resolution A/RES/71/313. Retrieved from [https://unstats.un.org/sdgs/indicators/Global Indicator Framework\\_A. RES. 71.313 Annex. pdf](https://unstats.un.org/sdgs/indicators/Global Indicator Framework_A. RES. 71.313 Annex. pdf)
- Vachon, S., & Klassen, R. D. (2008). Environmental management and manufacturing performance: the role of collaboration in the supply chain. *International Journal of Production Economics*, 111(2), 299–315. <https://doi.org/10.1016/j.ijpe.2006.11.030>
- WCED. (1987). Report of the World Commission on Environment and Development: Our Common Future. *Our Common Future*, 17, 1–91. Retrieved from [https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/152/WCED\\_v17\\_doc149.pdf?sequence=1](https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/152/WCED_v17_doc149.pdf?sequence=1)
- Webb, J. W., Kistruck, G. M., Ireland, R. D., & Ketchen Jr, D. J. (2010). The entrepreneurship process in base of the pyramid markets: the case of multinational enterprise/nongovernment organization alliances. *Entrepreneurship Theory and Practice*, 34(3), 555–581.
- Wood, D. J. (1991). Corporate social performance revisited. *Academy of Management Review*, 16(4), 691–718.
- Yawar, S. A., & Seuring, S. (2017). Management of social issues in supply chains: a literature review exploring social issues, actions and performance outcomes. *Journal of Business Ethics*, 141(3), 621–643.