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Buyer-Driven Knowledge Transfer Activities to Enhance Organizational Sustainability of Suppliers

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Received: 14 March 2020; Accepted: 4 April 2020; Published: 8 April 2020

Abstract: Despite the significant contribution of buyer-driven knowledge transfer activities (BDKTAs) to innovation and operational performance, studies that analyze social sustainability in manufacturing (suppliers) firms are still scarce. This paper examines the mediation relationship of knowledge acquisition and investment in environmental management between BDKTAs and social performance improvements (SPIs). The paper contributes to the understanding of buyer knowledge transfer activities, with a focus on the knowledge acquisition capabilities and investments in environmental management, and the effect on SPIs. The hypotheses were examined with partial least squares structural equation modeling (PLS-SEM) with data collected from 239 firms. Buyer knowledge transfer activities are likely to increase the willingness of suppliers to make specific environmental investments into operations in waste reduction procedures, the recycling of materials, and pollution prevention training of employees. We proposed that buyer knowledge transfer activities are necessary to survive and grow and thus there is a need to acquire knowledge resources to achieve organizational sustainability. Buyer knowledge transfer activities are necessary to make investment decisions in environmental management programs. Firms that focus on buyer knowledge transfer activities and internal investments into environmental management can attain sustainability objectives.

Keywords: sustainable investment; buyer-driven knowledge transfer activities (BDKTAs); social performance improvements (SPIs); buyer–supplier relationship

1. Introduction

Globalization and the intensification of sustainability competition have led export manufacturing firms to seek knowledge resources. The notion of sustainability has gained momentum and is currently of strategic importance for many manufacturing firms. Awan, Kraslawski and Huiskonen [1] demonstrated the positive effects of cross-border collaboration on social performance improvements (SPIs). Firms from developing countries often rely on their cross-border buyers to acquire resources to achieve their sustainability objectives. To meet these challenges, the firms need to expand their knowledge resources to improve their understanding of the factors that contribute to knowledge transfer and the influences on performance. Export manufacturing firms look for developing knowledge

resources outside their broader environment. The importance of the acquisition of knowledge not internal to firms and acquired from cross-border partners has been discussed in knowledge management literature [2]. There has been an upsurge in interest of firms in managing external knowledge sources, and the collaboration between suppliers and buyers is increasingly important [3]. This becomes increasingly salient as the firms' success in social sustainability issues depends increasingly on their knowledge acquisition and external collaborations.

In most developing countries, buyers have been communicating about the negative social sustainability impacts of supplier practices on their concern regarding sustainable development issues [1]. Many buyers of international brands are severely affected by unethical behaviors of their suppliers that occur in the operations and supply chain. Previous research has provided evidence that supplier development initiatives have been fruitful in upgrading supplier performance [4,5]. Despite considerable research on environmental sustainability in the supply chain relationship, the supplier-side of knowledge acquisition for social sustainability has mostly been ignored [6]. The study on how the buyer enables knowledge enrichment activities affects the firm peripheries, and the development of new activities is still in inception [7].

Previous studies focused on buyer involvement and knowledge integration for environmental sustainability. It is unclear whether the buyer-side knowledge development activities could be extended to the supplier-side in order to increase the organizational performance [8]. Recently, Li, Zhou and Wu [8] explored international buyer involvement and knowledge integration impact on environmental sustainability and export performance. Export firms in developing countries lack the resources and capabilities, and the buyers can help their partners to maintain knowledge development practices, by providing their employee skills and training and by actively participating in product and technology development [4]. Recent research suggests that suppliers need to extend their focus beyond firm boundaries to engage their buyers [9].

Previous research reported on the importance of external knowledge for performance improvements and internationalization [10]. Conversely, various studies suggested that buyer-enabled knowledge enrichment activities led to generating supplier benefits [7]. The supply chain management scholars focused on sustainability practices that help suppliers to achieve sustainability objectives, e.g., [11,12]. Empirically, Klassen and Vereecke [13] found that buyer involvement can lead to improving sustainability performance. The literature has explicitly called for research into social sustainability, particularly in the context of supplier development from developing countries [14,15]. At the same time, a prior study has examined the of impact buyer-driven knowledge transfer activities (BDKTAs) on operational performance [4]. However, studies that analyze social sustainability in manufacturing firms are still scarce.

The growing literature on sustainability [16–19], underlines the importance of examining how supplier firms acquire knowledge resources and make environmental investment decisions in their operations to adapt to new requirements and sustain SPIs. In this context, the present study poses the following questions: What is the impact of BDKTAs on the SPIs of manufacturing firms? Secondly, do knowledge acquisition capability and investment in environment decisions mediate the relationship between the BDKTAs and SPIs of manufacturing firms? This study conceives two significant contributions. First, the result shows that export manufacturing firms that manage their BDKTAs gain more knowledge on investment decisions. Many organizations are grappling with the control of social sustainability issues in their responsible supply chains [13,14]. This study provides evidence that BDKTAs can lead to changing investment decisions and lead to improving social sustainability issues. Second, this study adds to the current understanding of social exchange theory (SET) by providing empirical support for the mediating role of knowledge acquisition capability and investments in the environment on SPIs. This study highlights the importance of export manufacturing firms using exchange frequency to benefit more from improving their performance.

2. Literature Review and Methods

2.1. Theoretical Development

Social exchange theory (SET) provides the primary theoretical basis for our theoretical model. SET is focused on recurring exchanges and enduring relationships that occur between partners [20]. The supply chain literature has used SET to examine the buyer–supplier relationship, as it aids in understanding the value of relational norms in a relationship and a partner likely to transform the resources that are possessed to gain outcomes [21]. Thus, for social exchange theory that is concerned with both the buyer and supplier, they must jointly participate in order to receive direct exchange [20]. The research stream on social exchange theory can be traced back to early work that has been used to explain why firms are motivated on exchanges of value by actors that aim at maximizing their gains [21–23]. In the supply chain context, the social exchange structure is based on the notion that the buyer–supplier relationship creates value and actors are engaged in joint decision making [20]. SET has been studied in a supply chain relationship [21]. Exchange structures include three kinds of exchange, namely productive exchange, direct exchange and generalized exchange. The distinction is based on the nature of the exchange relationship. For example, in productive exchange both buyers and suppliers engage in joint activity and receive benefits. In direct exchange, buyers and suppliers interact directly. Whereas in generalized exchange a third party establishes the exchange relationship between buyers and suppliers and hence indirect exchanges occur [20].

2.2. Hypothesis Development

The current research on the buyer–supplier relationship demonstrates the importance of sustainability performance [24]. Shafiq, Johnson and Klassen [25] examined the impact of supplier social engagement on firm SPIs. Research tends to suggest that collaborative relationships impact the firm knowledge base and SPIs. According to Awan [26], a governance model is rational on how firms achieve sustainability objectives. Similarly, Lee [27] examined the relationship between responsible supply chains and supplier SPIs in the Asian context. Moreover, to meet the increasing demands of customers, employee and societal well-being, manufacturing firm's capabilities are essential. Awan, Kraslawski and Huiskonen [28] demonstrated that export firms' capacity to improve social sustainability depends, in part, on the buyer's understanding about supplier preferences towards achieving sustainability goals. There is a positive and significant relationship between supplier involvement and social sustainability performance [29].

A positive association between external supply chain collaboration and social performance has already been identified [30]. SPIs are a prominent part of many global initiatives in the field of supply chain management [31]. Social sustainability practices in the supply chain contribute to improved health and safety, labor standards and employee well-being. Specifically, within the buyer–supplier relationship and based upon SET, recently, Carey, Lawson and Krause [32] suggested that interaction allows buyers and suppliers to develop a better understanding of complex issues. Awan and Sroufe [33] found positive effects of buyer collaborations on SPIs. The positive impact of buyer knowledge-sharing activities on firm performance is also evident in the literature. The buyers have the potential to share their knowledge with the supplier through a partnership, and thus the supplier' firms become more capable in sustainability learning from their partners [34]. Thus, we posited the following:

Hypothesis 1. *BDKTAs are positively associated with firms' SPIs.*

Knowledge acquisition is an important learning base for activities and plays key roles in achieving performance outcomes [35]. It recognizes the acquisition of knowledge and providing training is a key factor related to improving the learning [36]. A recent study of Aragon, Jiménez and Valle [37] remarked that firms that implement a set of best knowledge activities can achieve better SPIs. The acquisition of new knowledge depends on several factors, including internal capabilities [38],

employee qualifications [39], the extent of a firm's education and training programs [40] and firms' external cooperation with buyers [41]. Therefore, integrative learning is not only embedded in the skills and experiences of employees but also is deeply embedded in routine interactions with external partners.

In a buyer–supplier relationship, the supplier firm needs to recognize what knowledge and resources enable the supplier to enhance SPIs. Firms' learning capabilities and collaboration facilitate learning and promote knowledge acquisition [41]. The buyer knowledge-driven activities were reported to contribute to firm performance [4]. Furthermore, social exchange theory also suggests that direct exchanges are essential as they drive access to resources and knowledge, which is not available internally [20]. Based on these arguments, we posited:

Hypothesis 2. *BDKTAs are positively associated with supplier knowledge acquisition capability.*

Hypothesis 3. *Supplier knowledge acquisition capability mediates the relationship between BDKTAs and SPIs.*

The investment in social and environmental programs is strategically crucial for the manufacturer [42]. Investment in the environment refers to the investment in environment (pollution and waste reduction) and social aspects (work place health and safety) of organizations [43]. By investing in environmental factors organizations attempt to reduce the negative environmental impacts and by investing in social factors tries to improve the health and safety of the workplace. Research has considered the effects of social and environmental investments at the plant level in environmental and safety practices [44]. The purpose of investing in the environment and social practices is to provide a safer working environment for the employees and to minimize the risk associated with the infrastructure. Given these arguments, our study proposes that investment in environments partially mediates the effect of BDKTAs on SPIs. The ability to exploit the resources composed of BDKTAs constitutes an important factor for firms, not only to enhance their SPIs. Thus, we posited that:

Hypothesis 4. *BDKTAs are positively associated with investment in environmental management.*

Hypothesis 5. *Investment in environmental management mediates the relationship between BDKTAs and SPIs.*

Figure 1 provides a theoretical background and develops the relationships that underline the conceptual model.

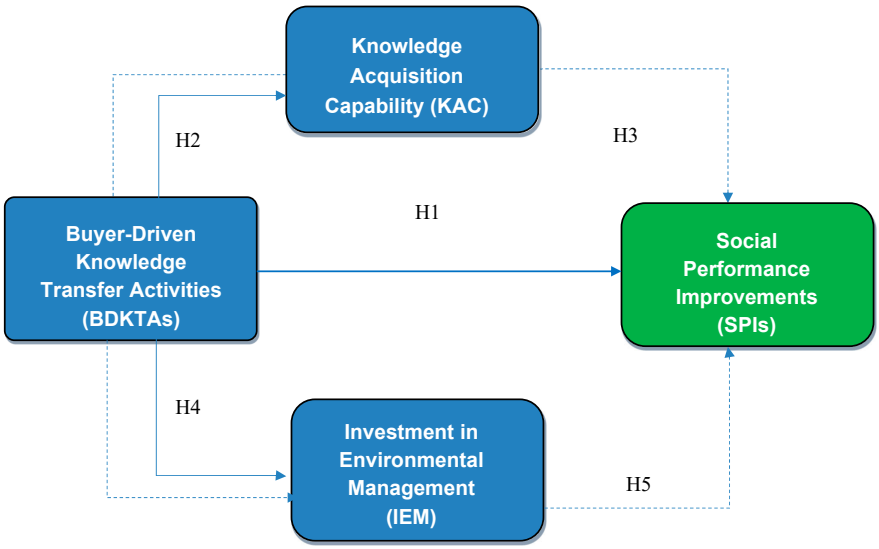

Figure 1. Conceptual Model.

2.3. Research Setting and Data Collection

This study is a quantitative research study with a survey as the primary research strategy. A questionnaire was the main data collection tool to collect the data. We tested our hypotheses by collecting data from the export industry of Pakistan from four manufacturing industries, namely textiles and clothing, sports, surgical and leather. These four sectors contribute to more than 60% of the total exports of Pakistan. These sectors are the backbone of the country's economy and frequently make use of partnerships, in terms of buyers and suppliers, across borders to access new knowledge resources. The sample of 650 firms was drawn from 1152 registered firms with the Federation of Chamber of Commerce and Industry, Pakistan. In total, 239 questionnaires were considered for analysis due to missing values and other factors in the collected 257 responses.

This study employed the Krejcie and Morgan [45] approach for deciding the appropriate sample size for this study. The parameter shows that a minimum of 310 samples was necessary for a population of 1152 export manufacturers. Considering the characteristics of the manufacturing firm's population, random sampling was adopted. We sent the survey using postal mail services to 650 firms with cover letters and a return postal envelope. We followed the guidelines of Salant and Dillman [46] for the mailed questionnaire. We made follow-up calls to the firms that had not responded after the three-week first mailing. After three weeks, our follow-up calls increased the survey response collection. To reduce the bias, in the cover letter, we clearly explained and mentioned that we would not provide this information to a third party, and that we would use all the information for academic research purposes only. We made a telephone call to each firm who did not respond initially after the first three weeks, and we received a total of 239 responses. We used a t-test to assess whether the earlier and later respondents were significantly different. We did not find any difference between the late and early respondents. We have provided information in the text. The following item, "We actively engaged in supplier evaluation of training and education opportunities" with a factor loading of 0.478 was deleted.

The data was collected form export manufacturing firms with survey questionnaires (Appendix A). The construction and measures of items were adapted from previous research studies (See Table 1). To assess the common method variance (CMV), Harmon's one-factor test [47] was carried out. The result shows that the first factor captured only 31.6% of the variance. Overall, CMV was not a serious concern in our research.

Table 1. Measures and constructs.

No	Latent Variables	Operational Measure	Scale	Source
1	BDKTAs	Multi-items	7-point Likert	[5,47]
2	KAC	Multi-items	7-pointLikert	[48]
3	IEM	Multi-items	7-point Likert	[43]
4	SPIs	Multi-items	7-point Likert	[49,50]

BDKTAs: buyer-driven knowledge transfer activities; SPIs: social performance improvements; KAC: Knowledge acquisition capability; IEM: Investment in environmental management.

3. Data Analysis and Results

We analyzed the data using partial least squares structural equation modeling (PLS-SEM) approach by using SmartPLS software version 3.2.1 [51]. The PLS measurement model results showed that the factors loading of scale items were above 0.60, and the average variance extracted (AVE) was above the recommended cut-off value, which supports convergent validity [52]. The construct and discriminant validity of these data were assessed using the criteria described by [52]. We assessed the construct reliability using composite reliability (CR) and Cronbach's alpha (CA).The results showed that the values of CR and CA were > 0.70 [53]. The results indicated that all factor loadings of items were greater than the cut value of AVE 0.5, which supports convergent validity [52]. Discriminant validity indicates the extent to which a construct differs from the other constructs within the model. Cross-loading analysis revealed that all the items were loaded to the respective constructs. The findings

also demonstrated that the square roots of the AVE of all constructs were greater than the square estimation correction.

In Table 2, all item correlations, means and standard deviations are reported. Table 2 indicates that the square roots of the AVE of all constructs were higher than the square estimation correction. The PLS measurement model resulted in the present support for the discriminant validity. Table 3 shows the validation of the constructs from the survey items. As shown in Table 4, the average variance extracted (AVE) and composite reliability (CR) were above the recommended cut of values of 0.60 and 0.80, respectively. The results indicated that the construct met the convergent validity assumptions of all the measures.

Table 2. Correlations means and standard deviations.

	BDKTAs	SPIS	KAC	IEM	PE	WE	FS	FA
BDKTA	**0.747**							
SPIs	0.550 **	**0.777**						
KAC	0.475 **	0.641 **	**0.748**					
IEM	0.425 *	0.532 **	0.383 **	**0.785**				
PE	−0.032	0.048	0.068	−0.006	1			
WE	−0.031	−0.095	−0.011	0.036	−0.019	1		
FS	−0.061	−0.009	−0.041	0.043	−0.054	0.547 **	1	
FA	−0.064	−0.072	−0.004	−0.005	−0.091	0.206 **	0.328 **	1
M	5.487	5.468	5.438	5.493	0.754	0.816	0.823	0.817
SD	0.6758	0.6818	0.6146	0.6863	0.5196	0.3343	0.467	0.4702

Notes: Diagonally, bold values are the square root of the average variance extracted. BDKTAs: buyer-driven knowledge transfer activities; SPIs: social performance improvements; KAC: knowledge acquisition capability; IEM: investment in the environmental management; PE: level of education; WE: work experience; FS: firm size; FA: firm age; M: mean; SD: standard deviation. ** Correlation is significant at the $p < 0.01$ level; * correlation is significant at the $p < 0.05$ level.

Table 3. Validation of constructs of the survey items.

Items	Factor Loadings	*t*-Value	Error Variance	Construct/Indicator Reliability
Buyer-driven knowledge transfer activities (BDKTAs)				
BDKTAs1	0.764	19.820	0.416	0.584
BDKTAs2	0.768	24.034	0.410	0.590
BDKTAs3	0.749	20.445	0.439	0.561
BDKTAs4	0.707	18.294	0.500	0.500
Social-Performance improvements (SPIs)				
SPIs1	0.805	32.214	0.352	0.648
SPIs2	0.807	35.794	0.349	0.651
SPIs3	0.777	26.186	0.396	0.604
SPIs4	0.714	16.764	0.496	0.510
Knowledge acquisition Capability (KAC)				
KAC1	0.775	30.282	0.399	0.601
KAC2	0.796	25.877	0.366	0.634
KAC3	0.731	15.635	0.460	0.534
KAC4	0.684	14.117	0.532	0.468
Investment in environmental management (IEM)				
IEM1	0.715	18.750	0.489	0.511
IEM2	0.757	19.898	0.427	0.573
IEM3	0.840	30.852	0.297	0.706
IEM4	0.821	27.533	0.326	0.674

BDKTAs: buyer-driven knowledge transfer activities; SPIs: social performance improvements; KAC: knowledge acquisition; IEM: investment in environmental management.

Table 4. Reliability and validity results.

	Average Variance Extraction (AVE)	Composite Reliability (CR)	Cronbach's Alpha (CA)
BDKTAs	0.559	0.835	0.742
SPIs	0.603	0.858	0.779
KAC	0.559	0.835	0.740
IEM	0.616	0.865	0.791

In Table 5, the magnitude and significance of the path coefficient of the structural model were examined by observing the R square of the dependent variables, and the predictive model relevancy was estimated using "Stone–Geisser's test" (Q^2). A value of Q^2 of less than zero suggests that the model lacks predictive relevancy, and values greater than zero show that the model has predictive relevancy. The results in Table 5 support that the model has predictive relevance. The bootstrapping technique was applied to assess the standard errors and t-statistics [54]. Consistent with Hair and Hult [55], bootstrapping (5000 resamples) was used to generate standard errors and t-statistics. The model explains 56.9% of the knowledge acquisition variance; 24.7% of the variance was for the social and environmental investment, and 20.4% variance explained the social sustainability performance. The preliminary model fit confirmed that mediation analysis could be performed on the structural model.

Table 5. The f^2 and Q^2 result outputs.

f^2 **Results**		
	Original Sample	**T-Statistics**
BDKTAs -> KAC	0.327	3.416
BDKTAs -> IEM	0.256	3.375
BDKTKAs -> SPIs	0.116	1.997
KAC -> SPIs	0.289	2.683
IEM> SPIs	0.112	1.963
Stone–Geisser's test (Q^2) statistic results		
KAC	0.122	
IEM	0.123	
SPIs	0.317	

SRMR: standardized root mean square residual: 0.0583. Effect size: f^2 and q^2 0.02 = Small; 0.15 = Medium; 0.35 = Large.

3.1. Discussion

To test the hypotheses, a structural model was built using the SmartPLS 3.2.1 [51] The path coefficient of the PLS structural model was produced using a bootstrapping procedure. Concerning Hypothesis 1, the results supported that the perceived effect of buyer knowledge driven activities was significantly and positively related to the SPIs of firms ($\beta = 0.272$, $t = 6.092$, $p < 0.001$). The result suggested that SPIs are based on the benefits a firm received from the direct exchange. The findings align with previous research that identified suppliers' perceived SPIs [25]. The findings revealed a positive and significant relationship between the affect of BDKTAs on the knowledge acquisition capability ($\beta = 0.49$, $t = 9.56$, $p < 0.05$). The results showed that buyer knowledge-sharing was positively related to knowledge acquisition capability.

The results rendered support for Hypothesis 2. Accordingly, support was found ($\beta = 0.45$, $t = 8.798$) for Hypothesis4. A positive and significant relationship was found between knowledge acquisition capability and SPIs ($\beta = 0.41$, $t = 9.26$, $p < 0.05$). The findings also exhibited a positive relationship between the investment in environmental decisions and SPIs ($\beta = 0.36$, $t = 6.59$, $p < 0.05$). Buyer knowledge-sharing activities are likely to increase the willingness of suppliers to make specific

environment investment into operations in waste reduction procedures, the recycling of materials and pollution prevention training of employees.

The outcome of the bootstrapping analysis (Hypothesis3) demonstrated that the indirect effect of BDKTAs and SPIs was significant at the 95% bias-corrected confidence interval. The overall mediation model test indicated that the knowledge acquisition capabilities were partially mediated, and investment in environmental management fully mediated the relationship between BDKTAs and SPIs. The estimation results on the total effects and indirect effects of knowledge acquisition capabilities and investment in environmental management on SPIs are presented in Table 6. The PLS path model provided support for the mediation analysis. We used the methodology suggested by Preacher and Hayes [56] and Mackinnon, Fairchild and Fritz [57] to test the mediation hypotheses (H3 and H5). This study used bootstrapping analyses in addition to the method proposed by the authors in [58]. If the confidence interval (CI) for an indirect effect does not include zero, this implies that mediation has occurred, and the indirect effect is significantly different from zero. Assessing the significance of indirect effects for mediation analysis is well matched with recent suggestions by several scholars [57].

Table 6. The direct and indirect effects of BDKTAs on SPIs through KAC.

Relationship	**Total Effect (*c*):**			**Direct Effect (*c′*):**			**Indirect Effect**	
	b	***t***	**SE**	**b**	***t***	**SE**	**b**	**SE**
BDKTAs to SPIs	0.55	10.14	0.054	0.31	5.99	0.053	0.23	0.043
LLCI	0.4473			0.2146			0.1577	
ULCI	0.6629			0.4248			0.4248	
Sobel test results	b = 0.03, SE = 0.038, Z = 6.16, $p = 0.024$							

Bias-corrected 95% confidence interval reported in brackets. LLCI: lower level confidence interval; ULCI: upper level confidence interval.

In Hypothesis3, we proposed that knowledge acquisition capabilities mediate the relationship between BDKTAs and SPIs. The total effect of BDKTAs on SPIs was positive and significant ($\beta = 0.32$, $p < 0.05$; Table 6). The indirect effect of BDKTAs and SPIs through knowledge acquisition capability was also positive and significant ($\beta = 0.14$, $p < 0.05$; Table 6). The outcome of the bootstrapping results revealed that the direct effect remained significant and positive even after introducing the knowledge acquisition capabilities as a mediating variable ($\beta = 0.17$, $p < 0.05$; Table 6). Therefore, H3 is supported. The partial mediation is concluded. These findings are congruous with the results of a previous study [7].

The findings lend support to the idea that buyer knowledge-sharing activities are important for acquiring knowledge resources for SPIs. This contributes to the literature of international business on buyer knowledge-sharing by showing that supplier knowledge acquisition capability is a crucial mediator between BDKTAs and SPI. The export manufacturers in Pakistan require focusing on internal resource exploration, development, and restructuring, which is inherently a social process relying on knowledge transfer activities. The resource bundling that takes place through BDKTAs paves the way for resource acquisition activities towards great SPIs.

In Hypothesis 5, we proposed that investment in environmental management mediates the relationship between BDKTAs and SPIs. The total effect of BDKTAs on SPIs was positive and significant ($\beta = 0.32$, $p < 0.05$; Table 7). Subsequently, the indirect effect of BDKTAs and SPIs through investment in environmental management also positive and significant ($\beta = 0.22$, $p < 0.05$; Table 7). Supplier firms may attempt to invest in operations more easily with the efforts of buyers associated with the sharing of knowledge by participating in joint problem solving, employee training and jointly developing new technology and ensuring their compliance with the child labor and employment regulations. The results of the bootstrapping analysis show that the direct effect remained positive but insignificant after introducing the knowledge acquisition capabilities as a mediating variable ($\beta = 0.09$, $p > 0.05$;

Table 7). Thus, full mediation was confirmed. Accordingly, the results suggested that investment in environmental management fully mediated the relationship between BDKTAs and SPIs.

Table 7. The direct and indirect effects of BDKTAS on SPIs through IEM.

Relationship	Total Effect (*c*):			Direct Effect (*c'*):			Indirect Effect	
	b	*t*	SE	b	*t*	SE	b	SE
BDKTAs to SPIs	0.55	10.14	0.054	−0.08	7.16	0.055	0.15	0.038
LLCI	0.4473			−0.0821			0.0907	
ULCI	0.6629			0.2087			0.2406	
Sobel test results	b = 0.15, SE = 0.032, Z = 4.48							

Bias-corrected 95% confidence interval reported in brackets. LLCI: lower level confidence interval; ULCI: upper level confidence interval; IEM: investment in environment.

The findings are consistent with the results of the previous study on the integration of health and safety decisions using supplier involvement and achieving social sustainability outcomes [29]. The investment in environmental management through buyer knowledge-sharing activities paves the way towards greater SPIs. Such findings reinforce the argument that firms' investments with external knowledge sources enhance firms absorptive capacities, which could ultimately have a reinforcing effect on improving the SPIs of the firm [29]. On the other hand, the results suggest that investment in environmental management fully mediates the impact of SPIs and partially mediated knowledge acquisition. The BDKTAs improved SPIs, mainly through investments in environmental management.

3.2. Study Contributions

This study presents key contributions to the existing literature to deepen understanding of the effects of buyer knowledge-sharing activities on SPIs. First, this study extended the idea of a social supply chain relationship in international business through the analysis of BDKTAs for sustainability programs. Our study extended the notion of implementing supplier development programs' advanced knowledge in a particular domain [11]. These results are reasonably supported by the previous research findings discussed in [29]. We found the knowledge acquisition capability to be an important intervening variable between the BDKTAs and SPIs.

The results demonstrated that the buyer social interaction process enabled suppliers to invest in knowledge resources for process and product developments. Second, this study added to the current understanding of social exchange theory (SET) by providing empirical support for the mediating role of knowledge acquisition capability and investment in environment on SPIs. It also highlighted the importance of export manufacturing firms using exchange frequency, and these BDKTAs led to improved SPIs. We developed a model of BDKTAs that theorized on SET as an enabling factor in shaping the success of relationships for both international buyers and suppliers involved in achieving the desired performance. Social exchange theory emphasizes the importance of exchange dependence relationships to maximize collaboration [20].The results revealed that both buyers and suppliers should always strive to make a power balance in their exchanges to enhance both the tangible and intangible resources across their relationship.

4. Conclusions

This study investigated whether knowledge acquisition capabilities and sustainable investment mediate the relationship between BDKTAs and SPIs. Previously, the importance of external knowledge sources was drawn to attention, and their consequences on firm SPIs were thoroughly investigated. This study demonstrated the importance of BDKTAs by providing supporting evidence on its positive effects on firm SPIs. On the other hand, the results suggested that investment in environmental

management fully mediated the impact of SPIs and partially mediated knowledge acquisition. The BDKTAs imp roved SPIs, mainly through investments in environmental management. Export manufacturing firms with a high investment in environmental management were likely to improve their organizational sustainability. A firm's knowledge acquisition capabilities under the support of the buyer can help companies to develop specific investment decisions that will serve as a basis for their sustainability actions. Based on our survey data, we found that there was a positive relationship between buyer knowledge-sharing activities and firm social sustainability. Buyer knowledge-sharing practices are recognized as an important driver for organizational sustainability.

This study concludes by taking a broad approach from previous research studies, that supplier firms acquire and utilize resources that better fit the firm's ability to improve SPIs. BDKTAs have different implications for supplier firms. As the results show, knowledge acquisition and environmental investment decisions, in particular, are central to meeting the long-term needs of society and the firm. BDKTAs increase the knowledge management capability of supplier firms and increase the ability to manage and utilize resources. We proposed that buyer knowledge-sharing activities are necessary to survive and grow and thus there is a need to acquire knowledge resources to achieve organizational sustainability. It can be anticipated that firms who govern their knowledge acquisition and environmental management decisions will have sustainable SPIs, while at the same time build their image. The firm's capacity to control resources can have a vital role to play for their international buyers who undertake internationalization activities.

5. Implications and Future Research Directions

First, a positive relationship among investments in environmental management, knowledge acquisition and BDKTAs was essential for organizational sustainability. Second, the scale of BDKTAs provides guidance to firms to evaluate themselves according to the degree to which investment decisions are necessary to develop organizational sustainability. Specifically, by confirming the mediating role of sustainable investments, our results indicated that there is an indirect link between BDKTAs and SPIs. Taken together, our results suggested that specifically South Asian countries' manufacturing firms' ability to absorb and utilize knowledge from external knowledge sources is a particularly important and useful process. SPIs may improve their reputation at the local and international levels and improve the quality of goods that are necessary for the firm's financial performance.

The findings of our study are also constrained by few limitations and open some paths for future research. Future research studies may ought to investigate the mechanism through which a firm's live capabilities affect the firm innovation and profitability and other determinants of collaborations. Although our study extended the scope of supplier development research to supply chain relationships, it is important for future research to study other types of supplier development (e.g., self-governance of social sustainability, new product development and reuse of material) to further generalize of the effects of BDKTAs. This study adopted the cross-sectional approach, with data collected from key informants. The single time point constrained our capacity to establish causality among the relationships. The limitations of this study and findings need to be validated in cross-border and longitudinal studies with interviews and objective data. Future research can be designed across industries longitudinally to assess how relationship fairness influences the co-development sustainability performance.

Author Contributions: Conceptualization, U.A.; methodology, U.A.; investigation and conclusions, A.K. and U.A.; formal analysis, U.A. and A.K.; model development, S.R.; review and editing, A.D. and S.R. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Acknowledgments: All Authors are thankful to Prince Sultan University for the financial support towards the publication of the paper. All Authors are thankful to anonymous reviewers and editor for their valuable feedback in improving the paper.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. Constructs of survey items.

Items	Factor Loadings [a]	*t*-Value
Buyer knowledge transfer activities (BDKTAs)		
BDKTAs1. We actively participated in site visits and on-site (operational and managerial) consulting.	0.764	19.820
BDKTAs2. We actively participated in joint problem solving and process improvement.	0.768	24.034
BDKTAs3.We actively participated in joint new technology and product development.	0.749	20.445
BDKTAs4. We actively participated in employee trade skill training and education.	0.707	18.294
SPIs:		
SPIs1. We have improved compliance with human rights in our facilities.	0.805	32.214
SPIs2. We have improved the quality of life of the local community.	0.807	35.794
SPIs3. We have improved compliance with child labor employment in our facilities.	0.777	26.186
SPIs4. We have improved employee occupational health, safety, and labor conditions in our facilities.	0.714	16.764
Knowledge acquisition capability (KAC)		
KAC1. We acquired knowledge about key task involved in the production process.	0.775	30.282
KAC2.We learned a lot about how to take social initiatives to develop new products.	0.796	25.877
KAC3.We acquired a lot of information about the new manufacturing process.	0.731	15.635
KAC4.We acquired a lot of information about customer needs on social issues.	0.684	14.117
Investment in environmental management (IEM)		
IEM1. Investment in health/safety practices	0.715	18.750
IEM2. Investment in recycling of materials	0.757	19.898
IEM3. Investment in training of employees (pollution prevention)	0.840	30.852
IEM 4. Investment in waste reduction	0.821	27.533

Notes: all item loadings and *t*-values are significant at $p < 0.05$.

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