

Environmental Management Practices and Firm Performance: The Impact of Sustainability Barriers in the Textile Sector of Pakistan

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Abstract

The present study investigates the impact of economic/sectoral (SBR), managerial (MBR), and supplier-related (SPBR) barriers on firm financial performance (FNPR) through the mediation role of environmental management practices (EMPs). It also examines the direct impact of EMPs on firm FNPR. Primary data is collected using a structured survey technique from 63 Pakistani textile firms through purposive sampling. Responses were analysed applying SPSS and SEM Smart-PLS software. The direct effects show that EBRs directly and negatively affect the implementation of EMPs, whereas EMPs are found to enhance the firm's FNPR. Specific indirect effects depict that EBRs also have an adverse impact on firm FNPR through mediating influence by EMPs. The adverse effects of MBRs and SPBR were not significant either on EMPs or FNPR. The study extends the literature on sustainability barriers, EMPs, and firm FNPR in the textile industry. It also provides theoretical underpinnings for the firm's stakeholder theory and natural resource-based view. Practical implications for policymakers and industry and potential research directions are also discussed.

Keywords: Sustainability barriers, Environmental management practices, Financial performance, Textile Sector, Pakistan.

Introduction

Human and economic losses caused by the recurrent natural disasters have placed ecologic safety on the agenda of governments, environmental communities, industrial firms, consumers, and other stakeholders of many countries in the world (Gadenne, Kennedy and McKeiver, 2009). This environmental degradation is relatively more adverse to developing countries than the developed ones (David Eckstein, 2017). Since the Brundtland Report, attention towards the research concerning sustainability has gradually increased in numerous business domains (Rajeev et al., 2017). Sustainability focus has been moved from the organisational aspect to the supply chain (SC) aspect (Linton, Klassen and Jayaraman, 2007).

Global companies have swiftly emerged a sustainability perspective into their SC by implementing different environmental management practices (EMPs), e.g., eco-friendly product design and reusable products (Sheu, Chou and Hu, 2005). However, firms face problems in information sharing, merging environmental plans and economic gains, and lacking effective implementation when employing sustainability in businesses (Berns et al., 2009). The road to sustainability for developing countries is much more complex than for developed ones. Overcoming the lengthy list of barriers that prevent organisations from implementing sustainable procedures throughout their SC is a significant challenge faced in

developing countries (Jia et al., 2018). Better insight and recognition of such obstacles are necessary (Jia et al., 2018).

Incorporating sustainability aspects in traditional SCM is complicated (Herren et al., 2010). Different industries face different challenges while adopting sustainability measures in SCs due to underlying barriers (Al Zaabi, Al Dhaheri and Diabat, 2013). Whether social, economic, or environmental, sustainability at any level cannot be attained without considering these barriers (Arevalo and Aravind, 2011).

In the context of the textile industry, much research about SC sustainability is done in developed countries (Harms et al., 2013; Walker & Jones, 2012), whereas many production centres and suppliers are situated in emerging economies, e.g. Pakistan, India and Bangladesh. Empirical studies on SSCM in these countries seem deficient (Parker, 2011; Desore and Narula, 2018). Since the sustainability barriers and practices are industry-related and the textile SC is global, these points also make it relevant to investigate the effects of sustainability barriers concerning EMPs and firm financial performance on economic-environmental grounds in line with the SDG 12 of sustainable production and consumption (SPC).

Furthermore, supply chain EMPs depend on specific economic and industrial conditions; thus, more research is necessary for the context of growing economies to recognise tendencies and paths to attain sustainability in the textile sector. This focus on emergent nations will help solve global problems better and comprehensively. The pressures confronted by developed economy buyers for promoting sustainable practices are dissimilar to those tackled by the emergent economy buyers, highlighting the need for empirical investigations on developing states' buyers and suppliers (Rajeev et al., 2017). It is essential to focus the research and study such evolving nations' suppliers (Huq, Stevenson and Zorzini, 2014). Whether social, economic, or environmental, sustainability at any level cannot be attained without considering these barriers (Arevalo and Aravind, 2011).

Few authors have examined barriers to adopting green practices and their relevant effect on organisational performance (Jabbour et al., 2016). Still, the study lacks the financial performance aspect, which is the core objective of any business. Barriers to sustainable and environmental SC initiatives have been researched (Al Zaabi, Al Dhaheri and Diabat, 2013; Chakraborty and Mandal, 2014; Post and Altman, 2017; Moktadir et al., 2018), but empirical evidence for the impact of different barriers on firm EMPs and FNPR in the textile sector is still lacking. Some researchers have inspected the association between green/environmental supply chain management (SCM) and firms' performance in Pakistan, but they neither considered the influence of barriers to sustainability nor the studies were based on the textile sector of Pakistan (Khan and Qianli, 2017; Shafique, Asghar and Rahman, 2017). As far as the authors know, such empirical research is not present in the textile industry context, which has explored the influence of sustainability barriers on EMPs and financial performance.

To address this research need, the current paper investigates the impact of economic (EBR), managerial (MBR), and supplier-related barriers (SPBR) on adopting EMPs and their relevant effects on the firm's financial performance. A literature review, methodology, results, discussion, and conclusion segments are presented following the introduction section.

Literature Review

The present research is based on the stakeholder theory (Touboulic and Walker, 2015) and the "natural resource-based view" of the firms (NRBV) (Hart and Dowell, 2011). The stakeholder theory emphasises the significance of all stakeholders in making decisions about various aspects of businesses (Touboulic and Walker, 2015). Environment and society are the crucial stakeholders for any business, and the firms should consider their responsibility towards these elements. Globally, the textile sector produces considerable waste, resulting in environmental pollution (Thadepalli and Roy, 2022). Thus Examining the impact of various sustainability barriers can help better understand the magnitude of these hurdles in implementing environment-friendly practices. By mitigating these barriers according to their relevant effects, businesses can better serve all stakeholders.

Similarly, the NRBV of the firm states that businesses that incorporate environment-related aspects in their processes can gain performance benefits and a competitive edge (Hart and Dowell, 2011). The present study examines this view by investigating the impact of implementing EMPs on the firm's FNPS.

Barriers to sustainability

Researchers have categorised sustainability barriers in various groups such as economic, managerial, technical, suppliers related, regulatory, internal, external, etc. This study utilises the classification of barriers by Baig et al. (2020). According to Baig et al. (2020), three types of barriers are prominent in the Pakistani textile industry. These include economic/sectoral barriers (EBR), managerial barriers (MBR), and supplier-related barriers (SPBR). Among all these three categories, EBR is the most critical. The most significant barriers related to sustainability risk related to transportation, pollution based on air and water (Raian et al., 2022)

Economic/Sectoral Barriers (EBR)

High investment is needed to implement sustainable procedures like eco-friendly design, manufacturing, green packing, and discarding harmful waste. Similarly, adopting innovative and green technology, sound IT infrastructure, inducting a skilled and competent workforce, providing social benefits, etc., involves enormous expenditure. On the other hand, the inability to predict clear profits or return on these outlays and buyers' demand for lesser prices create barriers for EMPs in SCs. Some authors have found monetary expenses are highly substantial hurdles to EMPs (Ageron, Gunasekaran and Spalanzani, 2012; Giunipero, Hooker and Denslow, 2012; Al Zaabi, Al Dhaheri and Diabat, 2013). Among the studied ones, Ageron et al. (2012) found that the most critical three barriers to sustainable supply management were financial costs, investments required for being eco-friendly, and subsequent return on investment. Hence, financial concerns are the topmost and principal barrier to adopting EMPs and SSCM initiatives (Luthra et al., 2011; Giunipero, Hooker and Denslow, 2012; Al Zaabi, Al Dhaheri and Diabat, 2013; Mittal and Sangwan, 2014a, 2014b). Handling the environmental, social, and economic barriers can decrease environmental pollution (Vishwakarma et al., 2022a).

Businesses implement sustainability processes and EMPs due to governmental, NGOs, and other stakeholders' demands and incentives (Diabat, Kannan and Mathiyazhagan, 2014; Meixell and Luoma, 2015). These pressures and motivations arose from different sources and promoted sustainable practices in SC. For example, governmental demands and judicial

requirements, accountability towards other stakeholders, competitive advantage persuasion, customer requests compliance, reputational loss, etc. Similarly, regulatory checks and controls also play an essential role (Giunipero, Hooker and Denslow, 2012; Oelze, 2017; Moktadir et al., 2018). In contrast, the absence of such pressures and enablers contributes to an increase in barriers. Beske et al. (2008) describe that due to the global nature of today's business environment, organisations work with several suppliers located around the world. Larger SCs are required for appropriately serving the different markets in distant continents. These continents and countries have diverse acceptable standards and legislation of sustainability, making it challenging to comply with all these legislations and gain the cooperation of suppliers located remotely. Some of these standards and laws might contrast with each other indicating diverse challenges in each region. Subsequently, compliance is complicated (Nidumolu, Prahalad and Rangaswami, 2009). Hence the diversity or lack of standards is a barrier to adopting SSCM practices (Giunipero, Hooker and Denslow, 2012). Further, in a related study, (Bouzon et al., 2016) found that economic-related issues, uncertainty, economic instability, lack of financial returns, etc., are the most influencing barriers among the analysed set of barriers. Thus, owing to this discussion, we hypothesise that,

H1a: EBRs negatively impact EMPs

Managerial Barriers (MBR)

Berns et al. (2009) state that there is ambiguity among corporate leaders about sustainability and the true meaning of being a sustainable organisation. Most firms think that as eco-friendly as they try to be, their actions will wear away profitability and competitiveness. They believe that it increases costs and will not provide immediate economic profits (Nidumolu, Prahalad and Rangaswami, 2009). Top management's support is essential to accomplish any strategic plan. Their commitment promotes the development and application of sustainable activities in the business. Top management's lack of such consent is the most dominant barrier to adopting SSCM practices (Giunipero, Hooker and Denslow, 2012; Al Zaabi, Al Dhaheri and Diabat, 2013; Jia et al., 2018; Moktadir et al., 2018). Previous studies indicate that management rarely has a clear implementation strategy related to supply chain management practices, and in many cases, management underestimates the necessary arrangements to introduce sustainable transition (Chari et al., 2021).

Adopting EMPs in traditional SCM via altering the company's current practices and policies throughout its SC is very difficult. It is a significant barrier to such efforts (Murillo-Luna, Garcés-Ayerbe and Rivera-Torres, 2007; Giunipero, Hooker and Denslow, 2012; Jabbour et al., 2016). A study by Berns et al. (2009) elaborated on this challenge as complexity in projecting and planning above five years, ambiguity and difficulty in measuring investment effects, difficulty in planning, high uncertainty in regulations, and predicting customer preferences. Jabbour et al. (2016) observed that internal barriers adversely affect the execution of EMPs, and this negative impact also mediates firm performance. Hence, it is hypothesised that,

H1b: MBRs negatively impact EMPs

Suppliers Related Barriers (SPBR)

Suppliers create more than half of the product's value. Hence, relevant facets of sustainability must be recognised and combined with SCM to evaluate sustainable performance (Hutchins and Sutherland, 2008; Paulraj, 2011). According to Jia et al. (2018), governments and

supplier firms emphasise financial benefits more than environmental sustainability in developing countries. The lack of resources acts as a barrier for the suppliers, and they think EMPs an additional burden or cost to them (Giunipero, Hooker and Denslow, 2012). The supplier-related barriers of scarce resources and financial burden create hurdles for the buyers in the way of a true SSCM.

In textile SCs, where most of the production is based in developing countries (Parker, 2011; Desore and Narula, 2018), the buyer countries must address such supplier-relevant barriers to achieve sustainability and sustainable textile products. Suppliers, especially in developing countries, are forced to comply with sustainability practices which creates pressure on them—on the other hand, pushing them ironically to struggle to minimise the costs for remaining competitive and securing business. The sustainability risk management initiatives will not be beneficial until the focal companies do not integrate sustainability in their SC rather than being profit-oriented only. Since the SCs have turned global more than ever before (Bruce, Daly and Towers, 2004), the textile sector has been problematic because of outsourcing from underdeveloped supplier economies. However, the suppliers' standpoint is absent in the literature except for a few studies (Huq, Chowdhury and Klassen, 2016). Suppliers' environmental certification is considered a crucial element of SSCM. Thus, we hypothesise that

H1c: SBRs negatively impact EMPs

Environment Management Practices (EMP)

A significant contribution relating to environmental management practices is made by (Zhu and Sarkis, 2004; Zhu, Sarkis and Geng, 2005; Zhu, Sarkis and Lai, 2007, 2008; Sarkis, Zhu and Lai, 2011). The authors identified and examined various environment management practices, also denoted as GSCM practices, including internal environment management practices (EMP), senior managers' commitment to eco-friendly SCs, accreditation of ISO-14001, cleaner production, recyclable packing, and environmental certification of suppliers etc.

The positive influence of these EMPs on a firm's performance is highlighted in various studies (Mitra and Datta, 2014; Khan and Qianli, 2017; Feng et al., 2018). However, there are positive, negative, and insignificant findings on the impact of green SC initiatives on firm economic or financial performance. The association between GSCM practices and organisational performance still needs clarity due to varied results in previous studies.

Financial Performance (FNPR)

Literature reveals that organisations that incorporate a "sustainability culture" tend to have better long-run performance than other organisations which don't (Pagell and Wu, 2009; Lin and Tseng, 2016). One of the primary and essential research agendas in organisational sustainability-related studies is the negative and positive economic effects of a firm's sustainability efforts (Sarkis, Zhu and Lai, 2011). The critical foundation begins with financial performance (Wang and Sarkis, 2013). The association between EMPs and financial performance has garnered mixed literature findings that further attract researchers' attention to examining this relationship.

Rao and Holt (2005) argued that EMPs in the SC boost organisational competitiveness and economic/financial performance. Khan and Qianli (2017) indicated that EMPs and organisational performance are positively associated in a study about Pakistani firms.

In a study, Zhu et al. (2013) found that environmental SCM practices do not associate with firm performance directly but indirectly through mediation effect by environmental and operational performance. Similarly, Lee et al. (2012) also depicted insignificant direct relation of EMPs with firm performance through the same has been demonstrated significantly positive through mediation and moderation. Industries development can be achieved by focusing on sustainable manufacturing because every industry follows sustainable practices during the whole manufacturing process (Vishwakarma et al., 2022b).

Some authors found insignificant associations between EMPs and firm FNPR. According to Zhu et al. (2007), Chinese automobile companies engaged in GSCM practices improved environmental and operational performance, but their economic performance was not significantly improved. On the contrary, a study by Kim and Rhee (2012) on Korean manufacturing companies showed a negative association between such practices and firm performance. Another study by Wang and Sarkis (2013) indicated a positive link between GSCM practices and environmental performance yet negative concerning financial performance if the GSCM practices are implemented individually.

These mixed positive, negative, or no findings concerning the connection of green or environmental SCM practices with firm FNPR call for further investigation in this context. Thus, we propose that,

H2: EMPs positively impact firm financial performance.

Baig et al. (2020) concluded that barriers adversely affect the adoption of firm SSCM initiatives, but they did not examine whether this impact mediates firm performance or not. Jabbour et al. (2016) found a negative effect of internal sustainability barriers on the firm performance through mediating the impact of EMPs. Still, the authors did not examine the influence of barriers on FNPR. To further extend the literature, we propose that

H3a: EBRs negatively mediate firm financial performance through EMPs

H3b: MBRs negatively mediate firm financial performance through EMPs

H3c: SPBRs negatively mediate firm financial performance through EMPs

Figure-1 exhibits the conceptual model for the paper, which builds on NRBV theory and gets support from stakeholder theory. It also highlights the research contributions of the present research work by depicting the unexplored hypothesised associations between sustainability barriers and firm performance through EMPs of SSCM.

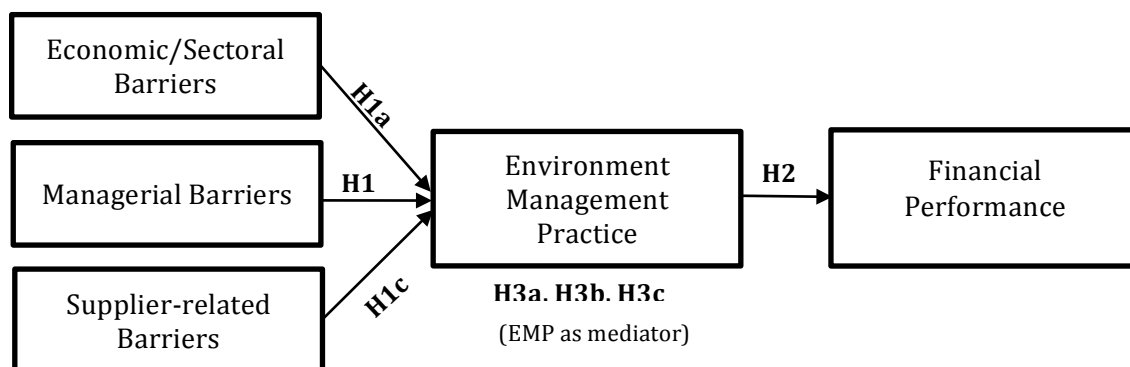


Figure 1: Conceptual Model

Methodology

The primary data for this quantitative research is collected from senior managers of 63 Pakistani textile firms listed on the "All Pakistan Textile Mills Association" (APTMA). For this purpose, a structured survey instrument was designed, and scales were adapted from past literature. The first section of the questionnaire contained four questions about demographics such as the firm age, professional experience, etc. Five items of EBRs, two items of MBRs, and two items of SPBRs were adopted from the study of Baig et al. (2020). The four items of EMPs were adapted from Das (2018), whereas four questions on FNPR were taken from Feng, Yu, Wang, Wong, et al. (2018). All the responses were collected in English on a five-point Likert scale where barriers were answered on a scale of "1 = not important" to "5 = very important" EMPs were responded as "1=, not at all true" to "5= absolutely true" and FNPR on "1=much worse" to "5=much better" scale.

Data was gathered through purposive sampling, and the desired respondents were telephonically contacted to get appointments. Due to the sensitivity of the objectives, self-administration of the survey was done to avoid ambiguities in responses. Some questionnaires were emailed, and some were dropped to be filled in. The demographic data were evaluated using Statistical Package for Social Science (SPSS). The twofold measurement and structural model were examined through Partial Least Square-Structural Equation Modeling (PLS-SEM) using SmartPLS v.3.0.

Results and Findings

Demographics

78% of the respondent firms were more than ten years old, whereas 41% had more than 1000 employees. Among the responding managers, almost 40% were from the company's most senior management, i.e., directors, etc. All the managers were senior industry experts having more than ten years, and 27% had more than 20 years of work experience.

Measurement Model

First of all, the measurement model (Figure-2) was assessed, including the construct reliability and validity analysis. Internal consistency for the under-study model was estimated through composite reliability (CR) measure. It is an estimate of overall reliability. The CR is a more reliable measure of internal consistency than others because it considers the different outer loadings of the indicator variables (Hair, Babin and Krey, 2017). As a rule of thumb, its value should be greater than 0.6. Table-1 shows the CR for all the constructs was more than 0.6 ranging from 0.636 to 0.913. The values indicated fulfilment of the threshold point for all the variables showing that the measures of the model were reliable.

Construct validity explains the sufficiency of sampling a specific domain of construct (Nunnally, 1994). It was measured through convergent and discriminant validity. Convergent validity (CV) is evaluated by conducting Confirmatory Factor Analysis (CFA). Among its different approaches, examining the assessed factor loadings of construct measures in the ultimate CFA model is the first method used to measure the convergent validity. Table-1 show that all items have significant factor loadings above the value of 0.50, ranging from 0.613 to 0.936.

Table 1: Construct Reliability and Validity

Construct	Item	Loading	Cronbach's Alpha	Composite Reliability	Average Extracted (AVE)	Variance
EBR	EBR1	0.787	0.795	0.857	0.547	
	EBR2	0.705				
	EBR3	0.809				
	EBR4	0.767				
	EBR5	0.613				
MBR	MBR1	0.713	0.647	0.829	0.712	
	MBR2	0.957				
SPBR	SPBR1	0.747	0.636	0.834	0.718	
	SPBR2	0.936				
EMP	EMP1	0.908	0.913	0.938	0.792	
	EMP2	0.920				
	EMP3	0.843				
	EMP4	0.885				
FNPR	FNP1	0.872	0.798	0.862	0.613	
	FNP2	0.671				
	FNP3	0.871				
	FNP4	0.696				

The average variance extracted (AVE) was also utilised to estimate the (CV) of the five constructs. AVE is the indicator of the average variance that a specific construct can extract from the observable item loaded on it. It is a strict estimate of convergent validity. According to Malhotra et al. (2006), "AVE is a more conservative measure than CR." The five constructs were found to be having AVE ranging from 0.547 to 0.792. AVE equal to or greater than 0.5 of a construct is considered an acceptable value for convergent validity (Hair, Ringle and Sarstedt, 2011). All latent variables have AVE more than the threshold of 0.5, representing a healthy CV.

The discriminant validity (DV) shows that a reflective construct has the greatest association with its specific items than other discriminant constructs in the model (F. Hair Jr et al., 2014). DV of the constructs was evaluated by assessing the square roots of AVE and the correlation between the constructs. According to Fornell and Larcker (1981), the italic values in table-2

show that the square root values of AVE for all the latent variables are more than the value of correlation between any individual couple. Hence discriminant validity is indicated.

Table 2: Fornell Larcker and HTMT Criterion

	EBR	EMP	FNP	MB	SPBR
EBR	0.739	-0.418	-0.128	0.082	0.035
EMP	0.434	0.890	0.288	0.076	0.230
FNP	0.301	0.317	0.783	-0.087	0.041
MB	0.245	0.109	0.220	0.844	0.502
SPBR	0.274	0.278	0.216	0.798	0.847

Note: The diagonal values in the Italic present the "square root of the average variance extracted" (AVE) of the constructs.

Note: "EBR=Economic/sectoral barriers, MBR=Managerial barriers, SPBR=Supplier-related barriers, EMP=Environmental management practices, FNPR=Financial performance"

Henseler et al. (2015) recommend using the HTMT criterion to examine the discriminant validity of constructs. The requirements for HTMT are a value below 0.90 to establish discriminant validity between two reflective constructs. According to Kline (2015), the similarity value between constructs below 0.9 shows a slight likelihood that a set of indicators that significantly loads on one latent variable will also represent any other construct. The bold values in Table-2 show that all the values for HTMT measures for the present study model are less than 0.9, depicting validity for all constructs. Hence the constructs are further analysed for the structural model.

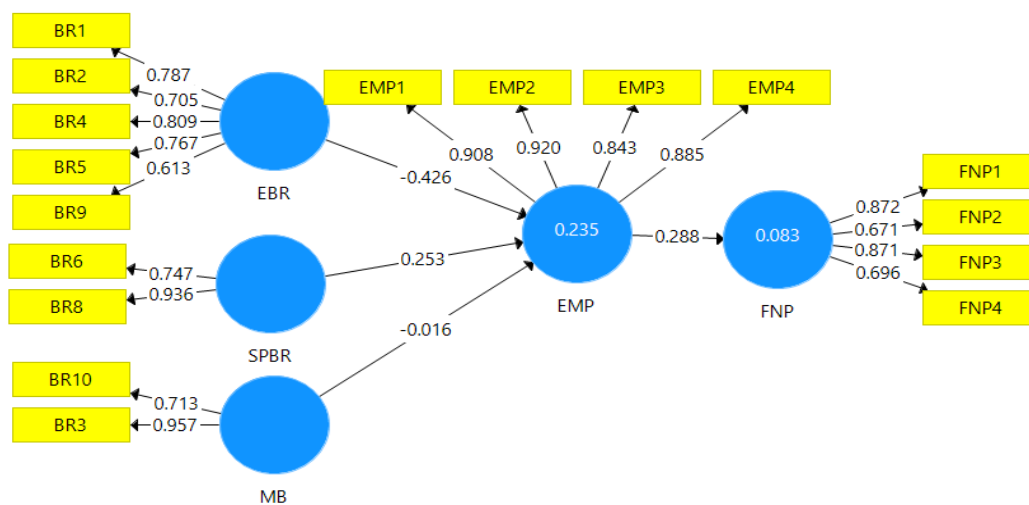


Figure 1: SmartPLS-Measurement Model

Structural Model

The structural model helps the researcher to measure and verify that the hypotheses, changed into structural paths, are either endorsed by the findings or not (Urbach and Ahlemann, 2010). The analysis of the structural model confirms the validity of the measurement model. The present study examined the proposed hypothetical relationships among constructs, as shown in Figure-3, by testing a twofold model through SEM-SmartPLS (Baron and Kenny, 1986; Hair Jr, 2006). The findings are shown in Tables-3.

The direct effects results show that EBR negatively affects the adoption and implementation of EMPs ($\beta = -0.426$, $p < 0.05$), thus, offering significant evidence for the acceptance of hypothesis H1a. This finding supports the study of Baig et al. (2020). It provides empirical evidence for several qualitative studies that identified economic barriers as the most critical obstacles to sustainability initiatives (Luthra et al., 2011; Giunipero, Hooker and Denslow, 2012; Al Zaabi, Al Dhaheri and Diabat, 2013; Mittal and Sangwan, 2014a, 2014b). Although the negative impact of MBR on EMPs was found, it was not proven significant ($\beta = -0.016$, $p > 0.05$). Thus, hypothesis H1b was rejected. This result contrasts with the study of Jabbour et al. (2016), which found that internal barriers significantly and negatively affect the EMPs and firm performance. Interestingly, the negative effect of SPBR on EMPs was not found but there was depicted a significantly positive influence ($\beta = 0.253$, $p < 0.05$). Hence, H1c was also not supported, but the positive impact calls for further elaboration.

The direct positive impact of EMPs on firm FNP was found statistically substantial ($\beta = 0.288$, $p < 0.05$), representing an essential finding in the textile sector. Hypothesis H2 was supported. This result gives support and provides evidence to the previous studies of Rao and Holt (2005), Zhu et al. (2007), and Lee et al. (2012) by indicating that EMPs can also directly impact the firm FNPR in the perspective of an emerging country textile SC. It also contrasts the negative findings of Kim and Rhee (2012) and Wang and Sarkis (2013).

The specific indirect effects depicted in Table-3 show that only EBR significantly and negatively impacts the firm FNP through mediating effect by EMPs ($\beta = -0.123$, $p < 0.05$), so H3a was accepted. This association further supports the similar findings of Jabbour et al. (2016) about the negative impact of barriers on firm performance. But the present study clarifies that in the textile industry of a developing economy, external economic barriers to the company most significantly affect the firm's FNPR. However, hypotheses H3b ($\beta = -0.005$, $p > 0.05$) and H3c were rejected ($\beta = 0.073$, $p > 0.05$). These findings also indicate the influence of insignificant direct negative associations between MBR, SPBR, and EMPs.

Table 3: Direct and Indirect Effects

Hypotheses	β	Standard Deviation	T Values	P Values
Direct Effects				
H1a: EBR -> EMP	-0.426	0.102	4.174	0.000
H1b: MBR -> EMP	-0.016	0.156	0.106	0.916
H1c: SPBR -> EMP	0.253	0.138	1.839	0.066

H2: EMP → FNP 0.288 0.112 2.576 0.010

Specific Indirect

H3a: EBR → EMP → FNP -0.123 0.061 2.018 0.044

H3b: MB → EMP → FNP -0.005 0.056 0.085 0.932

H3c: SPBR → EMP → FNP 0.073 0.056 1.311 0.190

Note: "EBR=Economic/sectoral barriers, MBR=Managerial barriers, SPBR=Supplier-related barriers, EMP=Environmental management practices, FNPR=Financial performance"

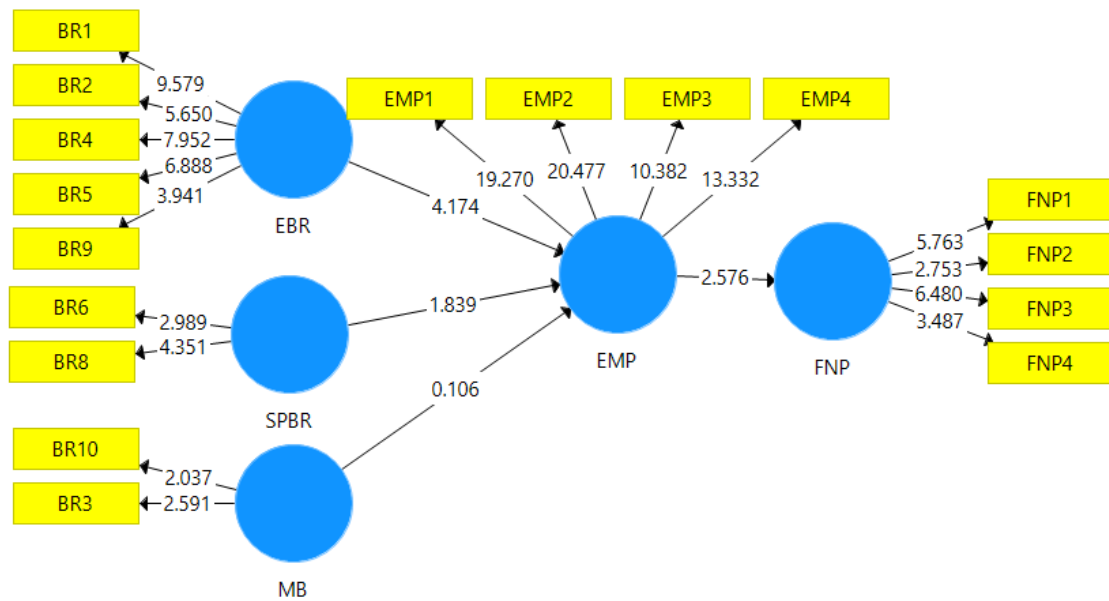


Figure 2: SmartPLS-Structural Model

Conclusion

The study provides important insights into the burning issue of sustainable and environmental SCM through empirical evidence from the textile sector of Pakistan. The objective of the present study was to examine the impact of sustainability barriers on firm EMPs and financial performance. The findings indicated that economic/sectoral barriers, i.e., high investment, lack of environmental laws and regulations, etc., are the most significant challenges to the textile sector sustainability in Pakistan. These economic barriers hinder the smooth integration of ecological initiatives in supply chains and negatively impact firm financial performance. The study also provides theoretical insights into the unclear association of EMPs with the firm FNPR. It strengthens the NRBV of the firm by concluding that EMPs

increase firm FNPR in the textile sector. Moreover, the economic/sectoral barriers also negatively affect firm FNPR by hindering the execution of EMPs in the textile SC.

Although most organisations worldwide, in the textile industry, blow the sustainability slogan, few implement it in reality. Suppliers, especially in developing countries, are forced to comply with such practices, creating pressure on them. On the other hand, buyers keep pushing the suppliers ironically to struggle to minimise the costs for remaining competitive and securing business. The sustainability risk management initiatives will not be constructive until the focal companies do not integrate sustainability in their supply chain rather than being profit-oriented only. Thus, extraordinary attention is required to cater to the textile sector's innovation needs to improve sustainable practices because the textile industry is an old industry where it is quite difficult to change the production process in the short term (Chen et al., 2021).

Textile firms in Pakistan face numerous obstacles while incorporating sustainability aspects in their businesses. These issues must be addressed to implement the sustainability agenda in the Pakistani textile industry successfully. Acceptability of sustainable EMPs can be enhanced if the high initial investment cost is minimised and the country has introduced adequate laws and standards. If textile firms adopt environment-friendly practices, it can increase their financial performance.

To achieve potential benefits of SSCM, the managers need to implement environmental management practices of ISO 14001, green product design, and cleaner production for compliance and to enhance firm economic performance. Additionally, increasing coordination among suppliers and manufacturers can be a crucial factor in producing sustainable products in the textile sector (Alonso-Muñoz et al., 2022).

Pakistan is also lagging in the race toward 2030 sustainable development goals (SDGs) achievement compared to relative developing countries. The government should understand that minimising the barriers faced by the textile industry can enhance the implementation of EMPs, and it can be a good step toward SDG-12 of responsible consumption and production. The government should emphasise EMPs in textile supply chains to reduce pollution and improve society. Several textile companies in Pakistan have been closed due to failure to meet the cost and competitive prices in local and international markets. As the textile sector is a significant employer of the Pakistani labour force, and breakdown of the industry can directly affect earning capability of people. To cope with the high-cost related issues, the government should enhance international collaboration to get customised and sponsored environmental certifications for the textile sector as well as subsidised utilities, tax relief, etc. at the domestic level to promote EMPs in the textile industry and save it from going out of the competition in the international market. Thus, developing new technology to cut down the waste and enhance the production efficiency can improve the sustainable practices; moreover, with the help of reverse logistics, all phases of the supply chain can be managed to improve sustainable practices (Alonso-Muñoz et al., 2022).

Future researchers may replicate this study with a bigger sample size in other essential export sectors of Pakistan, such as the leather industry, and services sector, such as banking and information technology, to get better insights into the sustainability barriers and their impact on Pakistan. Firm size, age, and social practices of SC can also be essential factors to study.

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