



Unleashing the role of top management and government support in green supply chain management and sustainable development goals

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Abstract

Achievement of Sustainable Development Goals (SDGs) has become one of the most important goals across the globe due to their significant role in the economic prosperity and human well-being. Recently, the business industry has become a dominant concentration for SDGs. However, the importance of small- and medium-sized industries has been rarely debated in this perspective. In particular, no attempt has yet been made to estimate the commitment of small and medium Enterprises (SMEs) towards SDGs in the emerging market in Pakistan. This study fills the gap by examining the influence of top management support on SDGs (e.g., environment and community practices) with a mediating role of green supply chain management and government support as a moderator. The model of this study is tested through structural equation modeling on the cross-sectional data collected through a structured questionnaire from 313 Pakistani SMEs. The results show that top management support significantly influences green supply chain management, environment, and community-based SDGs. Green supply chain management plays a partial mediating role between top management support and environment practices as well as between top management support and community practices. Government support significantly strengthens the relationship between top management support and green supply chain management. This research recommends SMEs to encourage participation in green supply chain practices and SDGs. Additionally, this research strongly suggests the government to facilitate SMEs in the adoption of green practices that can resultantly contribute to SDGs. Further implications have stated.

Keywords Top management support · Government support · Green supply chain management · Environment · Community · Sustainable development goals

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Introduction

Interest in Sustainable Development Goals (SDGs) has led to a high level of investment in research, but this research is habitually grounded on large firms which face pressure from their shareholders to execute sustainability and environmental practices. However, in actuality, this does not transpire at sufficient level to discourse today's challenges. Hence, this slow pace has been influenced sustainability and environmental initiatives among the SMEs (Álvarez Jaramillo et al., 2019). Unlike the traditional approach, nowadays SMEs have become an influential factor of Sustainable Development Goals (SDGs) (Higgs & Hill, 2019). Up to date, a considerable number of studies has been carried out to unleash the importance of SMEs in SDGs both in emerging and developed economies

(e.g., Ayuso & Navarrete-Báez, 2018; Malik & Jasińska-Biliczak, 2018; Higgs & Hill, 2019). However, it is not yet determined either top managers of SMEs directly contribute SDGs (environmental practices and community practices), or first they promote green supply chain management (GSCM) practices that in turn can endorse to SDGs.

There is a rational background of the notion why environmental practices are important in SMEs and why they should be engaged in environmental activities? Because, nowadays, society has become progressively environmentally conscious, “greening,” companies’ exertions to silhouette environmental oriented products, services, structures, technologies, processes, and business practices, has become prevalent (Vachon and Klassen, 2006). The prerequisite to assimilate environmental activities into supply chains process has been extensively documented (Wong et al., 2015). Considering the high number of SMEs in the globe, a significant contribution of SMEs to environment is needed. But empirical studies are still rare particularly in emerging markets such as Pakistan. Facing the budding internal and external pressure, industries have initiated programs making their operational activities green and sustainability practices (Luthra, Garg & Haleem, 2015). At the present time, industries have a cavernous acumen into social, economic, and environmental sustainability at national and international levels than ever beforehand (Nhat, 2006).

This research answers the questions “Does top management support (TMS) improve SMEs contributions to GSCM practices and SDGs? Does government support strengthen the path between TMS and GSCM and SDGs?” To explain further, there are three major objectives of the research. First, this research unleashes the role of TMS in gaining SDGs that has remained out of focus in the prior studies particularly in emerging economies such as Pakistan. Though the role of top managers is widely tested in the context of upper echelons theory (Hambrick & Mason, 1984) but the character has remained scared in SDGs. Second, this study proves GSCM practices as a mediator between TMS and SDGs to release either top managers directly influence SDGs or they first focus on green practices. According to Luthra, Garg and Haleem (2015), environmental and sustainability practices are significantly affected by operational activities and strategic posture. Hence, managers should first promote green practices that in turn can spur SDGs. Third, this research aims to check government support as a moderator between TMS and GSCM. The implementation of green business practices is difficult, and firms face several barriers and challenges while adapting green practices (Mudgal et al., 2009). Considering the possession of government on valuable resources (Anwar, Rehman and Shah, 2018) as well as instructional pressure

(Luthra, Garg & Haleem, 2015) on business activities in emerging economies, it is essential to build ties with government bodies and get their support for operational activities. For instance, Luthra et al. (2015) pointed out that the government has a significant role in the green practices of the organizations. Hence, firms must welcome government support for environmental practices.

This research contributes to the existing body of environmental literature and suggests useful implications for practicing managers and practitioners. For instance, this research sheds light on the natural resource-based view (NRBV) theory (Hart, 1995) which demonstrates the maintained of competitive advantage through different environmentally related resources. However, the theory is often missed in SMEs in the context of SDGs. Similarly, resource dependence theory (RDT) argues that most of the organizations are dependent on external factors, and it affects the organization activities in the context of environment (Hillman, Withers & Collins, 2009). It also argues that top managers need to reduce their dependence on the external factors when deal with environmental uncertainty. In the present study, we unleash the importance of TMS in GSCM and SDGs that can enhance the literature of RDT in a better way. Moreover, this research is based on experimental evidence received from Pakistani SMEs. Up to date, scarce studies, probably no study has been carried forward to test the role of certain factors (e.g., TMS, government support and GSCM) in SDGs. This research enables top managers and practitioners to give plenty courtesy to the green practices and sustainability performance that do not only help in SDGs but upsurge firm performance (Orazalin, Mahmood & Narbaev, 2019). This research also presents alarming signals for government to support SMEs in term of GSCM as to attain the progress of SDGs (Table 1).

Theoretical background and literature review

TMS and SDGs

This research sheds light on the NRBV theory as posited by Hart (1995). The NRBV theory suggests that firms can maintain competitive advantage only through the resources that are not effortlessly copied by their competitors. It entails of three unified tactics: (i) prevention of pollutions, (ii) product custodianship, and (iii) sustainable development. Each of these strategies has various environmental driving forces and provides different sources of competitive advantage which are based on different resources. For instance, prevention of pollution through the production process increases efficiency by (a) minimizing the input required, (b) streamlining the process, and (c) tumbling acquiescence liabilities and costs (Hart and Dowell, 2011).

TMT background and characteristics are significantly associated with environmental activities and

Table 1 Conceptualization of the study variables

Variables	Conceptualization
Top management support	TMS to SDGs is the magnitude to which senior managers exhibit assurance to guarding nature, drive the firms' environmental strategy, and upkeep its environmental initiatives (Banerjee et al., 2003).
Government support	Government support is the extent to which government organizations help business firms in the adoption of GSCM (e.g., Songling et al., 2018).
GSCM*	GSCM can be perceived as a "set of managerial practices that syndicates environmental issues with SCM for the purpose to assurance environmental obedience and endorse the environmental aptitude of the entire supply chain" (Chu et al., 2017).
SDGs	SDGs describe "the ability to create development sustainable—to safeguard that it encounters the desires of the current without compromising the capability of future generations to meet their own needs" (Robert et al., 2005).

*"The concepts 'green supply management', 'environmental purchasing', 'responsible buying', and 'sustainable supply chain management' have been used interchangeably in the literature labelling the actions and decisions made in firms leading at the success of products and services with environmental care" (Lintukangas, Hallikas & Kähkönen, 2015)

environmental situations (Qian, Cao & Takeuchi, 2013). Management practices have a crucial role in the environmental and ecological practices, but still, many firms are not aware of how to deal with environmental issues (Zaid, Jaaron & Bon, 2018). In general, the implementation of sustainability and environmental practices are costly and requires enough resources. Hence, top managers should be careful in adopting the environmental related initiative (Daily and Huang, 2001). Perez et al. (2007) suggested three major intangible assets that can spur environment practices, namely, (i) the commitment of top managers towards environmental practices and issue, (ii) planning of environmental strategies, and (iii) the usage of environmental management accounting. The involvement of senior managers facilitates firms in the adaptation of a system that can provide useful information related to the environment such as flow cost accounting, environmental regulations, and ecological race (Yang Spencer et al., 2013). Eco-friendly information and news succor managers in building strategies and policies for high environmental performance (Lisi, 2015). In an organization where environmental committee exists, encourages top management and make them committed towards environmental issues. As a result of this commitment, firms' environmental management performance improves (Dixon-Fowler et al., 2017). Organizations should disclose the importance of environmental practices among their managers, shareholders, and employees. For instance, when top managers understand the potential advantages of environmental initiatives (e.g., high performance and reputation), they will be inspired to obligate to ecological and sustainability practices. HRM and top managers play an essential role in environmental and CSR-related activities (Järlström, Saru & Vanhala, 2018). A number of studies have confirmed that TMS and commitment to

environmental issues play a noteworthy character in environmental and social performance that can, in turn, facilitate SDGs (Perez et al., 2007; Yang Spencer et al., 2013; Chang and Deegan, 2010; Kalyar, Shafique & Abid, 2019). Therefore,

H1. Top management support significantly facilitates environment practices.

H2. Top management support significantly facilitates community practices.

Support of top managers and GSCM

Upper echelon theory suggests that top management background, experience, and personality play an important role in organization outcomes and practices (Hambrick & Mason, 1984). Senior managers are the central player in building, structuring, and organizing the resources that provide a maximum advantage (Sirmon et al., 2007). HRM practices and top managers' efforts are deemed an essential element when a firm faces challenges (e.g., technological, environment, and competition) in the adoption of green practices. Such practices encourage firms to hire and retain employees with satisfactory skills of management resources that maximum green practices and competitive advantage (Sirmon and Hitt, 2003). Environmental protection has become very crucial in the supply chain process. Companies now esteem and care for the atmosphere and vigorously engage in the ecological requirements of societies and external shareholders (Banerjee, 2002). Though, support and capacity can be produced from any position in the organization. In other words, managers working in the bottom, middle and top can reflect supply chain practices. However, decision and commitment from the top management play the most potent role because it influences process from resource acquisition to resource development that effect environmental policies and

environmental practices (Oliver, 1997; Bansal & Roth, 2000). Organizations now face big pressure for green practices. In this perspective, the TMS simplifies the process of shimmering the institutional and external force for GSCM into the industries (Powell and Colyvas (2008). In contrast, the lack of TMS and commitment can give an outcome in a higher conflict in integrating institutional pressure and catastrophe to espouse green practices and green activities. Therefore, dedication and support of senior managers are considered one of the driving force in the commencement of green practices as well as successful implementation of green environmental practices (Lau & Ragothaman, 1997; Epstein & Roy, 1998). In general, TMS facilitates organizations in instigating and implementing green practices and environmental issues that in turn can enhance SDGs (Bansal, 2003; Sarkis, Gonzalez-Torre & Adenso-Diaz, 2010). Therefore,

H3. Top management support significantly facilitates green supply chain management.

GSCM and SDGs

Incorporating environmental philosophy with SCM and organizational practices, GSCM can be labeled as companies' numerous synchronized efforts to condense their influence on the regular environment during the complete life cycle of a product, including the process of raw material purchasing and selection, product design, production, finished product distribution, and end-life product management (Perotti et al., 2012). To realize green, social and economic objectives in term of sustainable GSC and sustainable operations management, the concept of GSCM is relevant, that looks for superior environmental efficiency in supply chains. GSCM is one of the most significant subjects in the modern literature of operational and environmental management (Jabbour & de Sousa Jabbour, 2016). The adoption of GSP is whispered to configure the conditions and surroundings where staffs work and the local society, where people adore a better life (Rani and Mishra, 2014). The execution of GSCM or the application of manufacturing operations that are environmentally positioned and less polluted have a significant positive influence on the social indicators of staff, society, and community (Jabbour and de Sousa Jabbour, 2016). Hence, GSC should be extensively promoted, particularly in the industrial sector of emerging economies to make a green economy where satisfactory environmental, sustainability and social activities are executed (Li et al., 2015). In emerging economies such as China, adopting and practicing GSC has been considered an important practice to upsurge the performance of sustainability and community-based services (Luthra, Garg & Haleem, 2015). GSCM practices are not only significant for satisfactory results of sustainability and environment but also

present a unique role in the progress of economic growth (Ghanem, 2018). Additionally, De Giovanni (2012) claimed that the implementation of GSCM practices facilitates the achievement of several goals such as customer protection, environmental preservation, and transparency in the markets. Considering the benefits, organizations are encouraged to promote the implementation of GSCM into their business actions. Several studies have confirmed that GSCM practices play a significant role in gaining sustainable development (Sarkis et al., 2011; Luthra et al., 2015; Khan & Qianli, 2017). Therefore, we intend that GSCM can contribute to SDGs that lead to the following hypotheses:

H4. Green supply chain management significant facilitates environment practices.

H5. Green supply chain management significantly promotes community practices.

Mediating role of GSCM

Predisposed by the inner and outer pressure to adopt socially friendly business activities, it becomes essential for top managers to identify and recognize practices that can contribute to social, environmental and competitive performance (e.g., SDGs). Green practices including GSCM, green technology, and green innovation are the most appropriate examples of these practices (El-Kassar & Singh, 2018; Wu et al., 2018). However, these practices (e.g., GSCM) do not come directly but requires top management commitment (Burki, Ersoy & Najam, 2019) and in turn help in attaining SDGs.

TMS can be considered an essential element in the achievement of SDGs. However, SDGs cannot be directly enhanced through the commitment and support of top managers. Top managers first promote and encourage GSCM practices that in turn can subsidize to environmental and social performance. As pointed out by Sarvaiya, Eweje and Arrowsmith (2018), the implementation of SCR strategy, environmental initiatives and sustainability programs needs the participation of employees and staff and initiating meaningful change in organizational culture. Additionally, Luthra, Garg and Haleem (2015) claimed that the swelling societal issues and environmental related problems usually fused due to various actions of the supply chains that drives the organizations to travel towards responsible social GSCM. Therefore, before going ahead, industries, as well as responsible managers, need to encourage the adoption of green practices that in turn can spur environmental and social performance. GSCM and green human resource management are the two significant factors in human resource management and operational management with the contributing role in environmental sustainability. GSCM due to its essential role in organizational performance and environmental success attracts firms and top management. Therefore, managers often intend to invest in GSCM that in

turn contribute to sustainable development of organizations (Jabbour and de Sousa Jabbour, 2016). Top managers should practice green practice instead engaged in supply chain practices. The reason to encourage GSCM practices is that they significantly contribute to sustainable management and environment-related performance (Yildiz Çankaya & Sezen, 2019). As pointed out by Cervellon and Wernerfelt (2012), communities are now environmentally orientated, and members are interested in sharing information about green practices in manufacturing, supply chain, distribution, recycling, or re-use of materials. Industries need to promote green practices ahead of jumping to environmental outcomes. Managers who intend to enjoy high environmental, social, and community-based performance are required to reconfigure their strategies (e.g., GSCM) being environmentally friendly (Dubey et al., 2017). Therefore, we posit that top management should encourage GSCM before focus on gaining SDGs. This discussion creates the hypothesis:

H6. Green supply chain management significantly mediates the relationship between top management support and environment practices.

H7. Green supply chain management significantly mediates the relationship between top management support and community practices.

Moderating role of government support

Most SMEs do not participate in the environmental, social, and sustainability practices due to limited resources (Higgs and Hill, 2019). This assumption is favored by many other researchers where lack of GSCM practices are reported in SMEs (Nikolaou & Zervas, 2017; Van Hemel & Cramer, 2002). The scarcity of natural resources has forced the responsible authorities such as government and industries to pledge corporate and industrial ecological management procedures (Zhu, Sarkis, and Geng 2005). One of the primary reasons behind this issue is the lack of resources and lack of support in emerging and developed economies (e.g., Martín-Gómez, Aguayo-González & Luque, 2019). Particularly in developing countries such as China and Pakistan, the government possesses valuable resources and a firm cannot access specific resources unless government is agreed (Anwar, Rehman and Shah, 2018). In this perspective, the government is deemed a crucial factor in the approval of sustainability and green activities. For example, Hoskin (2011) argues that government legislation and environmental rules are the main drivers that influence the adoption of GSCM in any country. Such legislation and regulations (government and environmental) push industries towards the implementation of GSCM and sustainability practices (Caniato et al., 2012; Wu et al., 2012). Seventeen goals of the UN have increased pressure on

developed and developing economies to support the community as well as protect the environment. Hence, organizations now also affected by institutional pressure to adopt strategic environmental initiatives (Schoenherr et al., 2014). Organizations must reply to the rules of the concerned nations and government regulations towards greening their practices and activities (Zhu and Sarkis, 2006; Zhu et al., 2013). In the emerging markets such as India, the government has a direct and indirect role in the adoption, promotion, and implementation of sustainability and green practices (Luthra et al., 2015). In such regions, governments facilitate industries and managers in the adoption of environmental and social friendly practices. Several ministries have established for the support of green activities. To summarize, government support can significantly assist ventures in the implementation of GSCM practices in emerging economies (Luthra et al., 2015). This is useful to state that managers in such atmospheres often look for government support and state regulatory framework while initiating environmental and sustainability practices (Mitra and Datta, 2014). Therefore,

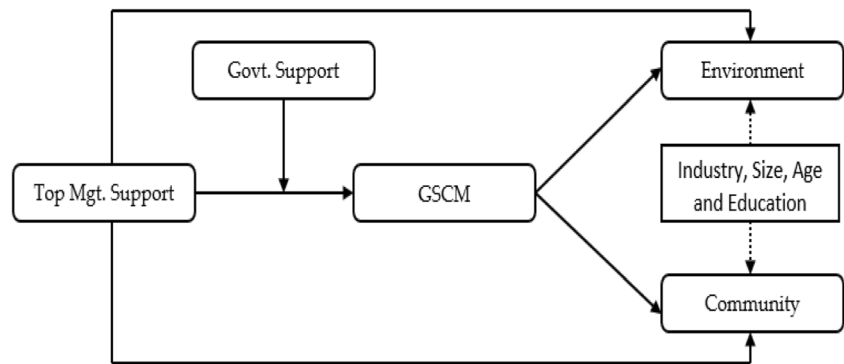
H8. Government support significantly moderates the relationship between top management support and green supply chain management in the manner that the connection will be stronger when firms receive satisfactory government support.

Figure 1 shows the research model.

Methodology

Sample and population

The model of this research is tested on the empirical data set based on a sample of Pakistani SMEs operating in Islamabad and Rawalpindi. Registered firms lists were taken from Islamabad chamber of commerce and industry and Rawalpindi chamber of commerce and industry. To important points from methodological view in this research are as follows: first, only those firms are surveyed where more than 20 and less than 250 employees were working. This is because Pakistan defines SMEs as a firm where less than 250 employees work. Second, only manufacturing firms (steel, marble, and furniture) are targeted as they are more environmentally orientated as compared to other firms. There were total 9400 registered firms in Rawalpindi and Islamabad regions. However, we targeted only manufacturing firms that are around 1500 as suggested by Anwar (2018). A sample of 307 firms is selected based on probability-based formula with 5% margin of error and 95% confidence interval. This research used a self-reported questionnaire for data collection as SMEs do not disclose their financial and other

Fig. 1 Research model

information to the general public—which creates problems in analysis. We used a hard copy questionnaire for data collection because an e-mail approach can give a lower response rate in emerging economies such as Pakistan (Anwar, 2018). We distributed 600 questionnaires among the manufacturing firms and requested top managers to fill the survey because of their awareness about the firms strategic planning and performance. In the questionnaire, it was mentioned that information about this survey should not be shared with the general public. After 2 months, we received 331 questionnaires of which 18 questionnaires were incorrectly filled. Finally, only 313 useable responses were included in this research, with an adequate response rate 52.17%.

The SMEs who responded to the survey are presented in Table 2.

Measures

TMS: TMS shows a momentous role in the tactical forecasting and operational activities of any organization. They are the most influential bodies of the organization who decide for proceedings. In this research, we used the support of top managers related to GSCM that are taken from Chu et al. (2017) who used six items to unpack the role of top managers in GSCM.

Government Support: In this research, six items were used to measure government support that can be helpful for GSCM. These items were tested in a prior study by Songling et al., (2018) but the items were slightly modified to achieve the study objectives.

GSCM: Literature has used several measures and dimensions for GSCM practices. We considered seven items validated by Chu et al., (2017). These items were tested and validated through confirmatory factor analysis.

SDGs: There are three significant goals namely economic, social and environmental. In this research, we targeted the two goals; social and environmental that have been deemed significant in the current era. To measure environmental practice, we used twelve items and for community practices, we used

eight items that have adopted from Ayuso and Navarrete-Báez (2018). These items were tested in the context of SMEs to assess how they contribute to SDGs.

Control variables

A few previous studies have recommended the ventures size, the age and educational background of top managers to be controlled in a study of SMEs performance for the purpose to reduce spurious results (Anwar, 2018, Degong et al., 2018). In this research, we controlled the three mentioned variables in the structural model while testing hypotheses. Mix results have generated for the control variables via the structural model.

Table 2 Characteristics of the SMEs

Particular	No. of firms	% out of total
Types of industry		
1. Steel sector	112	35.8
2. Marble sector	135	43.1
3. Furniture sector	66	21.1
Age of the SMEs		
1. 10 years and less	97	31.0
2. 11–20 years	93	29.7
3. 21 and above years	123	39.3
Size of the SMEs		
1. 20–50 employees	72	23.0
2. 51–100	47	15.0
3. 101–150	80	25.6
4. 151–200	72	23.0
5. 201–250	42	13.4
Educational status		
1. Intermediate and below	66	21.1
2. Bachelor	92	29.4
3. Master	123	39.3
4. PhD etc.	32	10.2
Total	313	100

Data analysis and results

Data of this study are passed through several screening tests that have discussed below. For testing the hypotheses, we used structural equation modeling in SPSS because it is strongly recommended for a model with mediators. Moreover, AMOS separate the measurement error of each items unlike SPSS which have not the specific characteristics (e.g., read detail from Anwar and Ali Shah, 2018).

Descriptive statistics

We executed descriptive statistics, and the results are discussed in Table 3. The results describe that the highest mean value is of “tms3” but the highest standard deviation is of “gs3.” Data used in this research are normal as the values of skewness and kurtosis have provided satisfactory results ± 2 (George, 2011).

Common method bias

Cross-sectional data (a data set collected at the same time) typically faces the problem of common method bias (CMB) (Podsakoff and Organ, 1986). To check this issue, we executed Harmon One factor test using the extraction method of principal component analysis. The results indicated only 5 factors which have eigenvalues greater than 1, and the first factor shown 23.96% variance which is less than 50%. Hence, we inveterate that there is no issue of CMB in this study. In addition to the CMB as it is being criticized for lack of validity, researchers have recommended the common latent factor to test the CMB issue in a dataset. We checked the impact of a latent factor on measurement model and compared the model fits of the both model (one run with common latent factor and only measurement model). Our data did not show any problem of CMB as no significant issue of CMB was detected.

Multicollinearity

To check if there is overlapping among the independent variables (TMS, GSCM, and government support) in the research, we executed variance inflation factor (VIF) in SPSS that is shown in Table 4. We confirmed that our data are not affected by the multicollinearity issue because none of the constructs displayed any threats as all the factors show VIF values (less than 3) and tolerance (above 0.10) in the acceptable range as posited by Hair et al. (2010).

Confirmatory factor analysis

To ensure validity and reliability of the items and factors, we performed confirmatory factor analysis (CFA) in AMOS. In the CFA, we first ensured the model fitness such as Model fits:

Table 3 Descriptive statistics

Items	Mean	S.D	Skewness	Kurtosis
tms1	3.69	0.553	− 0.208	− 0.322
tms2	3.65	0.559	− 0.427	0.625
tms3	3.71	0.546	− 0.279	− 0.198
tms4	3.70	0.560	− 0.505	1.017
tms5	3.66	0.555	− 0.155	− 0.459
tms6	3.72	0.568	− 0.460	1.078
gs1	3.61	0.626	− 0.109	− 0.181
gs2	3.65	0.608	− 0.844	0.535
gs3	3.65	0.667	− 0.125	− 0.112
gs4	3.61	0.600	− 0.669	0.157
gs5	3.65	0.568	− 0.578	0.113
gs6	3.60	0.591	− 0.550	− 0.022
gsc1	3.51	0.513	− 0.045	− 1.637
gsc2	3.52	0.513	− 0.083	− 1.631
gsc3	3.54	0.530	− 0.238	− 1.147
gsc4	3.53	0.525	− 0.403	− 0.210
gsc5	3.54	0.530	− 0.355	− 1.115
gsc6	3.54	0.524	− 0.026	− 1.345
gsc7	3.53	0.525	0.012	− 1.349
com1	3.66	0.572	− 0.243	− 0.207
com2	3.60	0.591	− 0.644	0.689
com3	3.66	0.560	− 0.345	− 0.174
com4	3.67	0.576	− 0.531	0.892
com5	3.67	0.569	− 0.280	− 0.150
com6	3.68	0.582	− 0.799	1.318
com7	3.69	0.568	− 0.854	1.470
com8	3.59	0.604	− 0.486	0.540
env1	3.63	0.570	− 1.031	0.371
env2	3.63	0.564	− 0.995	0.293
env3	3.63	0.557	− 0.987	0.277
env4	3.55	0.624	− 0.680	− 0.043
env5	3.56	0.608	− 0.617	− 0.096
env6	3.57	0.612	− 0.759	0.012
env7	3.55	0.603	− 0.633	− 0.154
env8	3.56	0.618	− 0.759	0.000
env9	3.52	0.641	− 0.556	− 0.161
env10	3.56	0.623	− 0.558	− 0.051
env11	3.56	0.570	− 0.640	− 0.366
env12	3.55	0.587	− 0.624	− 0.256

CMIN/DF = 1.903, GFI = 0.83, AGFI = 0.81, NFI = 0.86, TLI = 0.92, and CFI = 0.93 that provided satisfactory values (higher than 0.90) as suggested by Hair et al. (2010) and Hu and Bentler (1999). RMR = 0.016 and RMSEA = 0.054 values also found in the acceptable range (below 0.08) which confirmed the fitness of the model (Hair et al., 2010). Standardized factor loading of all items met cutoff (above 0.70, $p < 0.001$) that are shown in Table 5. The convergent

Table 4 Multicollinearity

Independent variables	Environment		Community	
	Tolerance	VIF	Tolerance	VIF
TMS	0.826	1.211	0.826	1.211
Government support	0.954	1.048	0.954	1.048
GSCM	0.805	1.242	0.805	1.242

validity, also called average variance extracted (AVE), provided satisfactory value (above 0.50), and discriminant validity (e.g., square root of AVE) also shown an acceptable value (above 0.70) as per the recommendation of Hair et al. (2010). Finally, discriminant validity was calculated and found the value in the target range (above 0.70) which is accepted as claimed by Nunnally (1994).

Correlation

In this research, we executed the Pearson correlation via SPSS that are shown in Table 6. The results indicate a positive significant association between TMS and GSCM ($r = 0.398$, $p < 0.05$), a positive significant link between TMS and environment practices ($r = 0.367$, $p < 0.05$) as well as between TMS and community practices ($r = 0.346$, $p < 0.05$). In addition, GSCM practices are significantly positively related to environment ($r = 0.337$, $p < 0.05$), and community practices ($r = 0.308$, $p < 0.05$).

Structural model

Hypotheses of the study are tested in the structural model using AMOS. We executed a separate model for mediation and a separate model for moderation. In the first structural model (see Fig. 2), the mediating role of GSCM between TMS and SDGs. In the second structural model (see Fig. 4), we tested government support as a moderator between TMS and GSCM.

The results of the first structural model show (see Table 7) that TMS significantly influences environmental practices ($\beta = 0.245$, $p < 0.05$) as well as significantly influences community practices ($\beta = 0.236$, $p < 0.05$) which favored H1 and H2. Similarly, TMS has a significant influence on environmental ($\beta = 0.395$, $p < 0.05$) that favored H3. Additionally, GSCM significantly contributes to environmental ($\beta = 0.158$, $p < 0.05$) and community practices ($\beta = 0.167$, $p < 0.05$) and thus support H4 and H5.

The indirect influence of TMS on environment practices and community practices is significant ($\beta = 0.063$, $p < 0.05$; $\beta = 0.067$, $p < 0.05$) and the direct influence also remained significant that partially support H6 and H7. In the control variable, age of the SMEs and size of ventures have a

substantial role in environmental practices while only the size of firms has a significant role in community practices.

R square shows that 23% change in environmental practices and only 18% change in community practices is explained by TMS when GSCM plays a mediating role as well as size, age and educational background as control factors.

In the structural model 2 (see Fig. 3), this research tested government support as a moderator between TMS and GSCM. The results show (see Table 8) that government support significantly moderates the relationship between TMS and GSCM ($\beta = 0.025$, $p < 0.05$) and thus supporting H8. The *R*-square shows that only 14% variance is explained in GSCM when government support plays as a moderating role.

The interaction term of TMSxGS is displayed in Fig. 4. It indicates that the government support moderators the relationship between TMS and GSCM. However, the role played by high and low government support has a minor variation. It reveals that a firm needs access government support in every case either low or high because significantly improves the path between TMS and GSCM practices.

Discussion

The 17 goals have been received considerable attention of empirical and qualitative research (González-Ruiz, Botero-Botero & Duque-Grisales, 2018; Álvarez Jaramillo et al., 2019; Higgs & Hill, 2019). However, prior studies predominantly focused on the determinants of SDGs but have ignored how these goals can be through the business industry, particularly SMEs. Our empirical research unleashes the importance of TMS, government support and GSCM in the achievement of SDGs. Based on the cross-sectional data collected from emerging SMEs, we confirmed that certain factors play a substantial role in attaining SDGs. This research takes into account the newly added part of RBV that is named “NRBV” theory. Our study also strengthened the literature of RDT (Hillman, Withers & Collins, 2009) through the empirical evidence. For instance, we revealed that TMS help firms to take part in GSCM practices, social and environmental activities. Hence, our study strongly favors RDT and revealed the role of top managers in environmental practices should not be ignored in small firms. Though the theories is tested by prior studies but major emphasis is given to large firms and developed economies (Álvarez Jaramillo et al., 2019). Nevertheless, very rare, if any study has considered NRBV theory in the context of SMEs and SDGs. In particular, no study has yet conducted among Pakistani SMEs in the context of SDGs. Hence, the current research illuminates the relevant research and contribute useful information to the existing studies. Our results confirmed that TMS is essential for environmental and community practices in emerging economies such as Pakistan. However, the importance of

Table 5 Item loadings, validity, and reliability

Sr. no.	Measures	Estimate
Top management support		
tms6	Our top managers have well defined the company's environmental policy	0.62
tms5	Our top managers are likely to approve special fund for investment in green practices	0.87
tms4	Our top managers are willing to invest resources needed to implement green practices	0.68
tms3	Our top managers show a positive attitude towards green practices	0.67
tms2	Our top managers proactively support green practices implementation	0.78
tms1	Our top managers recognize the importance of green practices	0.81
Government support		
gs6	We can access government programs aimed at supporting GSCM are effective	0.89
gs5	In my country, almost anyone who needs help from a government program for GSCM can find what they need	0.85
gs4	We access support of the competent and intellectual people working for government agencies supporting GSCM	0.83
gs3	We are supported by an adequate number of government programs for GSCM	0.78
gs2	We access science parks and business incubators who provide adequate support for GSCM	0.71
gs1	We access a wide range of government assistance for GSCM through contact with a single agency	0.74
Green supply chain management		
gsc7	Our supplier firm and we jointly developed environment-conscious products	0.74
gsc6	We provided our suppliers with technical, managerial and financial assistance to address environmental issues	0.71
gsc5	We provided our suppliers with relevant and helpful information on how to comply with our environmental requirements	0.76
gsc4	We demanded our suppliers to develop environmental-friendlier products	0.66
gsc3	We conducted environmental audits of our suppliers on a regular basis.	0.67
gsc2	We demanded our suppliers to establish environmental management systems	0.65
gsc1	We assess our suppliers' environmental performance through a formal and green procurement process	0.80
Environment practices		
env12	We communicate actions to internal stakeholders (e.g. meetings with staff, intranet, reports, etc.).	0.69
env11	We communicate your actions to your external stakeholders (e.g. website, reports, etc.).	0.61
env10	We have established metrics that you monitor (e.g. regarding risks, levels of pollution, of energy consumption, waste, etc.).	0.66
env9	We consult stakeholders (e.g. employees, suppliers, clients, creditors, etc.) for environment-related decisions	0.77
env8	We integrate environmental considerations in the conception and development of products and services in all phases of their life cycle (eco-conception and the analysis of the life cycle).	0.92
env7	We integrate environmental considerations in your purchase decisions and the evaluation of your suppliers.	0.68
env6	We encourage and support your employees to use alternatives means of transportation to commute instead of single occupancy cars (e.g. ride share, public transport, bicycle, etc.).	0.57
env5	We give priority to less polluting vehicles and modes of transportation and/or optimize your distribution network	0.56
env4	We give priority to more water and energy efficient equipment	0.62
env3	We raise awareness and/or train of the employees in water and/or energy conservation	0.70
env2	We give priority to reusable, used or recycled materials.	0.79
env1	We separate your garbage and waste (recycling of materials: paper, plastic, glass and metal).	0.80
Community practices		
com8	We communicate actions among internal stakeholders (e.g. meetings with staff, intranet, reports, etc.).	0.86
com7	We communicate actions to external stakeholders (e.g. website, reports, etc.).	0.67
com6	We have established metrics that monitor (e.g. amounts spent, allocated time, types of beneficiaries, etc.).	0.72
com5	We favor local suppliers	0.75
com4	We favor job creation in your region.	0.80
com3	We offer internships and contribute to student training	0.67
com2	We consult stakeholders (employees, suppliers, clients, creditors, associations, NGO, etc.) for decisions concerning local development	0.81
com1	We contribute to community cultural, sporting or teaching activities (public organizations or associations with social, cultural, sporting or teaching activities)	0.66

Table 6 Correlation

Variables	AVE	$\sqrt{\text{AVE}}$	C.R	Alpha	1	2	3	4	5	6	7	8
1. Size	–	–	–	–	1							
2. Age	–	–	–	–	0.144*	1						
3. Education	–	–	–	–	0.162**	0.095	1					
4. TMS	0.55	0.74	0.88	0.88	0.143*	0.179**	0.124*	1				
5. Govt. support	0.65	0.81	0.91	0.92	0.099	–0.026	0.077	–0.056	1			
6. GSCM	0.51	0.71	0.88	0.88	0.171**	0.208**	0.151**	0.398**	0.168**	1		
7. Environment	0.50	0.71	0.92	0.91	0.261**	0.383**	0.183**	0.367**	0.018	0.337**	1	
8. Community	0.56	0.75	0.91	0.92	0.301**	0.149**	0.104	0.346**	0.035	0.308**	0.250**	1

AVE average variance extracted, CR composite reliability

*Correlation is significant at the 0.05 level (2-tailed)

**Correlation is significant at the 0.01 level (2-tailed)

TMS has also incorporated in other countries such as Chu et al. (2017) argue that TMS helps firms in the attainment of ecological and social goals. Additionally, Perez et al. (2007) scrutinized that TMS is the most significant intangible asset of firms in environmental practices. We also deep-rooted that TMS is very crucial for the promotion of GSCM. In line with Sarkis, Gonzalez-Torre & Adenso-Diaz (2010) who described that successful implementation of GSCM practices needs the active support of top managers. Nowadays, intuitional pressure compels top managers to promote and participate in GSCM (Powell and Colyvas (2008). In turn, GSCM spur SDGs as resulted in our study. For instance, Rani and Mishra (2014) dissected that implementation of GSCM practices influence the environment where people work as well as the working conditions of the employees.

Our findings discovered that GSCM partially mediates the link between TMS and SDGs that did not entirely favored our assumptions as we posited that TMS first promote GSCM which in turn contributes to SDGs. Though, a few studies, e.g., Sarvaiya, Eweje and Arrowsmith (2018), Burki et al. (2019), and Yildiz Çankaya and Sezen (2019), have

scrutinized that top managers first participate in green practices that in turn influence environmental and community initiatives. This research partially favors the notion and unleashes that GSCM plays only a partial mediating role between TMS and SDGs. However, our study favored Mitra and Datta (2014), Zhu and Sarkis (2006), and Zhu et al. (2013) who claimed that top managers often look for government support to participate in GSCM. Indeed, government support is essential for GSCM practices as unbridled in our research. Additionally, Hoskin (2011) pointed out that government support plays a significant role in the adoption of GSCM. In this research, we also confirmed that top managers need the strong help of government bodies to participate in GSCM actively.

Implications for practice

Beyond the theoretical contribution, this research recommends several significant implications for practitioners, policymakers, and SMEs. Worldwide, SDGs are becoming popular due to several reasons of which the three highlighted

Fig. 2 Structural model 1 (mediation)

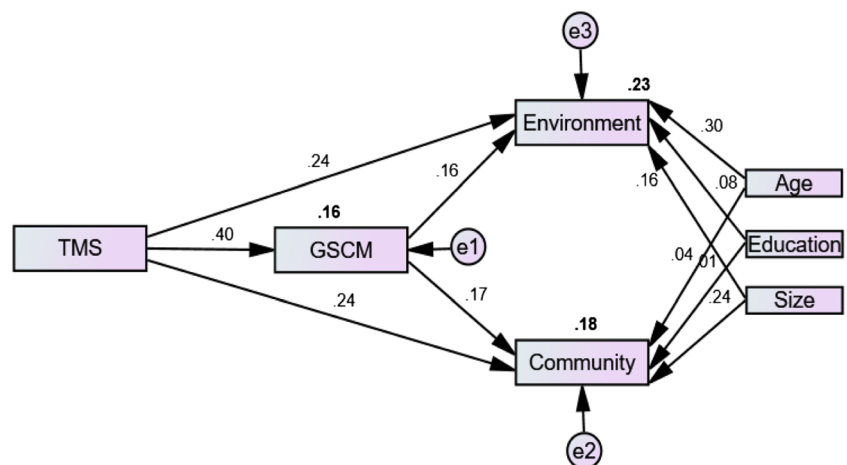


Table 7 Hypotheses testing (mediation)

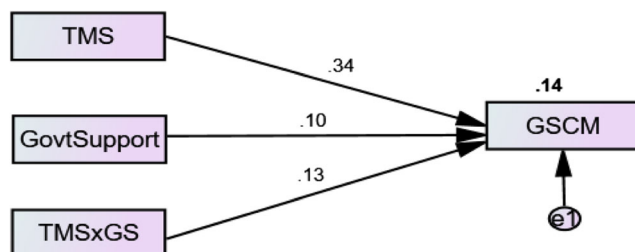
Hypotheses	Direct	Indirect	Total
Environmental practices <--TMS	0.236 (0.001)	0.063 (0.003)	0.299 (0.006)
Community practices<--TMS	0.245 (0.002)	0.067 (0.009)	0.311 (0.016)
GSCM<--TMS	0.398 (0.000)	–	0.398 (0.000)
Environmental practices <--GSCM	0.158 (0.060)	–	0.158 (0.060)
Community practices<--GSCM	0.167 (0.016)	–	0.167 (0.016)
Environmental practices<--Size	0.156 (0.003)	–	0.156 (0.003)
Environmental practices<--Education	0.085 (0.077)	–	0.085 (0.077)
Environmental practices <--Age	0.295 (0.001)	–	0.295 (0.001)
Community practices <--Size	0.236 (0.001)	–	0.236 (0.001)
Community practices<--Education	0.090 (0.828)	–	0.090 (0.828)
Community practices<--Age	0.039 (0.447)	–	0.039 (0.447)

benefits, named social propensity, environmental protection, and economic well-being. To achieve these goals, countries irrespective of their status (e.g., developed, developing, or underdeveloped) have utterly formulated a variety of programs and policies. In this perspective, the findings of this research are very important to achieve satisfactory results of SDGs via less expensive ways. Our results show a significant role of TMS in the adoption of GSCM and environmental as well as community-based SDGs. We suggest top managers and responsible authorities of business firms to give equal attention to GSCM and SDGs. To boost community-based and ecological performance, senior managers need to provide adequate attention to the adoption of GSCM that in turn spur SDGs. Our findings also revealed that government support significantly facilitates senior managers in GSCM practices. This insight is particularly relevant in the context of SMEs as they are governed by owners and top managers directly. As discussed earlier that in emerging economies, the government often possess a majority of the valuable resources (e.g., Anwar, Rehman and Shah, 2018) that may be necessary for green activities. We recommend to build a strong tie as well as establish a positive relationship with government bodies to access the valuable resources that can expedite GSCM. Particularly in the Pakistani context, we give more weight to government support compared to other nations due to her legislation. As pointed out by Caniato et al. (2012) that government legislation has a significant role in the adoption of GSCM practices. Hence, we suggest government bodies to

make ease of laws for the industrial sector and let them participate freely in green practices. Unlike large firms which have in general no issue of financial slack, SMEs often look for financial support to practice environmental actions. Hence, the government can consider economic issue of SMEs to ensure their assistance towards SDGs. Considering the equality in the characteristics of Pakistan with other economies, we strongly recommend similar implications for other economies (developed and developing) to get benefits of the insights generated by this study.

Limitations and future research directions

Despite having several prominent recommendations for policy makers and managers, this research is not free of constraints. For instance, in this study, we focused on manufacturing SMEs from the particular areas (e.g., steel, marble, and glasses). Future research can focus on green practices and SDGs performed by other industries, e.g., trading and services if they habitually engaged in greenness. We collected cross-sectional data, to avoid the common method bias, in-depth interview and longitudinal data can provide constructive yields. We applied SEM to test hypotheses, PROCESS can be executed for the testing model. Additionally, we tested the role of TMS in SDGs. However, it is very crucial to test if there is adequate finance to participate in environmental and community practices primarily in the context of SMEs. For

**Fig. 3** Structural model 2 (moderation)**Table 8** Hypotheses testing (moderation)

Hypothesis	Estimate	S.E.	C.R.	P
GSCM <--- TMS	0.366	0.056	6.481	0.000
GSCM <--- Govt. support	0.070	0.037	1.885	0.059
GSCM <--- TMSxGS	0.025	0.010	2.386	0.017

GS government support

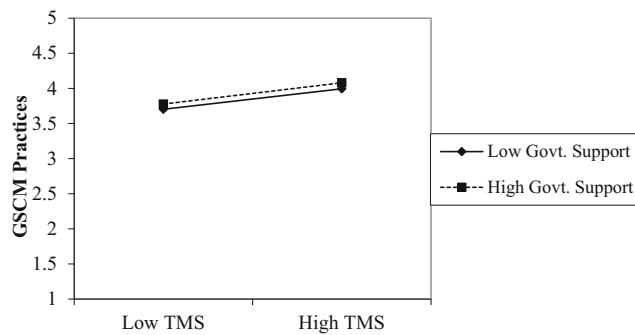


Fig. 4 Interaction term

instance, Gambetta et al. (2019) financial framework is very essential for SDGs especially in emerging economies. Moreover, González-Ruiz, Botero-Botero and Duque-Grisales (2018) suggested that financial eco-innovation should be adopted to shape SDGs. We recommend if top managers first restructure their innovative process that in turn can enhance SDGs. We also welcome researchers from other economies to test the model in various industries to articulate insights in a better way.

Conclusion

This study has tested the importance of TMS and government support in GSCM and SDGs in SMEs working in the emerging market Pakistan. Moreover, this research used the mediating role of GSCM practices between TMS and SDGs with a moderating role of government support. The model of this study is tested on a survey conducted among owners and managers of SMEs. We tested the data in AMOS and SPSS. The results show that TMS significantly influences GSCM, environment and community-based SDGs. GSCM plays a partial mediating role between TMS and environment practices as well as between TMS and community practices. Government support significantly strengthens the relationship between TMS and GSCM. This research recommends SMEs to encourage participation in green supply chain practices and SDGs. Additionally, this research strongly suggests the government to facilitate SMEs in the adoption of green practices that can, in turn, contribute to SDGs. Further implications have stated.

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