Hindawi
Journal of Engineering
Volume 2023, Article ID 2625998, 15 pages
https://doi.org/10.1155/2023/2625998

Research Article

Drivers for Sustainable Supply Chain Management and the Practices in Ethiopian Apparel Industries

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Received 29 April 2022; Revised 3 December 2022; Accepted 27 February 2023; Published 8 March 2023

Academic Editor: Natt Makul

Environmental, social, and economic concerns in the apparel manufacturing industries have grown in recent years. The sustainability of the apparel supply chain management in developing countries is characterized by operations highly hazardous to the environment and unethical to society and of important economic value. Studies showed that socioeconomic and cultural differences in different countries affect the success of sustainability practices. Therefore, extensive research is required to measure the current challenges of sustainable practices from environmental, social, and economic perspectives of the apparel industry. Due to unsustainable practices, competitiveness in export and local markets is low in the Ethiopian apparel industries. This paper explores the effect of different factors on the sustainable practices of Ethiopian apparel manufacturing industries. A conceptual framework was formulated to measure sustainable practices. Questionnaires, interviews, and secondary data sources were used for data collection. The data are prepared and pretested for reliability. Integrated interpretive structural modelling and structural equation modelling techniques have been employed for model building and data analyses to see the relationship between the challenges and the existing practices. The proposed model was validated using partial least squares structural equation modelling. The Bootstrapping technique in smart partial least square ensures the reliability of the data for small sample size. The result showed a significant relationship between the factors and sustainable practices. All the environmental, economic, and social perspectives were statistically tested and found significant at p values of 0.05. Sustainable practice in the apparel manufacturing supply chain was found to be low with a mean value of three. This performance is far below the average standard in developing and developed countries. This research provides customized areas of intervention from environmental and social aspects that recognize the societal difference towards sustainability awareness and motivation to implement sustainability initiatives in Ethiopian apparel manufacturing industries. This research could provide awareness for business owners and policymakers and help understand the limitations of existing sustainability practices and the need for interventions. Therefore, apparel manufacturing industries could be potential sourcing destinations for global apparel manufacturing industries.

1. Introduction

The environmental, social, and economic aspects have driven the sustainability agenda over the past 30 years. Sustainable development ensures the current and future needs of society in the entire supply chain network [1–4]. Sustainability has become a worldwide concern, and organizations revised their supply chain activities based on environmental and social issues [5–10]. Apparel manufacturing industries in developing countries have less competitiveness in the export business. This is mainly due to the lack of compliance with buyers' social and environmental standards. The work culture, economic conditions, and lack of awareness of sustainability challenges could be the main contributors. The impact of the buyer-supplier relationship on social sustainability and the mediation role of cultural intelligence on social sustainability performance (SSP) have been investigated [11–13]. Apparel manufacturing industries are very susceptible to social, environmental, and economic aspects of sustainability.

Resource management strategy, cost and financial constraints, and cultural and regulations affect the implementation of social sustainability initiatives [14]. Akbar and Ahsan [15] stated that studies on the challenges to social sustainability implementation in the apparel industries had been given limited research focus. Social sustainability implementation challenges are highly dependent on the internal orientation of a company and supplier collaboration which justifies the need to study the fashion supply chain [16]. The fashion supply chain is characterized by labor-intensive manufacturing activities and long value chain networks. Hence, developing countries achieve economic and social benefits [17]. While searching for low production costs, the fashion supply chain business processes highly compromise the well-being of the planet, society, and the economy. From the environmental perspective, the fashion industry has a long supply chain that demands processes that brings serious hazard to the environment, depletion of energy, water, chemicals, and other resources. Industrialization of economies in sub-Saharan African (SSA) countries needs sustainable global competitiveness towards social and environmental aspects [18]. The recent surge in textile and apparel production and export and government support in Ethiopia provides the opportunity to be sourcing destinations in the region. industrial parks (IPs) established in Ethiopia operate based on the zero-discharge policy of effluents, saving energy using light-emitting diode (LED) and intelligent lighting systems, greening, and landscaping provide a competitive advantage over Asian competitors [19]. Moreover, the authors indicated that the social aspect is neglected in the sustainable industrial development policies and strategies of Ethiopia. Developing countries have labour-intensive production supply chains and less developed environmental regulations. In such cases, both social and environmental aspects are important [20]. In developing countries, not all sustainability concepts did receive equal emphasis, and mostly less attention is given to social aspects including the absence of minimum wage regulations and other labor rights [21–23]. Ethiopian apparel industries exhibit some of these characteristics hence study on the factors, and the current level of adoption of sustainability is vital. Sustainable practices and the integration of sustainability into the circular economy business models have been discussed in different studies [24–26]. Despite improvements in sustainable practices globally, apparel industries in Ethiopia have limited awareness and performance towards sustainability. Apparel businesses in Ethiopia fail to comply with buyers' demands for sustainable production and consumption. The main problem is less attention to social, environmental, and economic conditions, including social compliance and environmental certifications. Developing countries are highly dependent on labor-intensive manufacturing export industries such as apparel industries. But the current performance of these industries on export revenue and job creation is highly affected by failure to meet compliance requirements [18]. The fashion industry is a time-dependent and customer-driven business where some sustainability factors could be unique and worth further investigation to improve global competitiveness and sustainable economic development in Ethiopia. Despite other manufacturing industries, the fashion industry has some unique features regarding economic, social, and environmental sustainability practices. The factors that affect sustainable practices are also unique to the nature of the industry. Few researchers have studied the interrelationship between the factors and their impact on sustainable practices in the apparel sector, and only a few factors from the Ethiopian industries' context have been considered. This study mainly focuses on the challenges of the fashion industry from social and environmental compliance perspectives. To the best of our knowledge, factors that affect sustainability and the current sustainability practices have not been thoroughly studied in Ethiopia. The prominent factors that affect the sustainability practices of apparel manufacturing industries from environmental, social, and economic aspects could be studied. Hence, we believe this study will provide some information on the current challenges of sustainability practices in the Ethiopian apparel industries.

2. Theoretical Framework

In this section, different researchers have investigated sustainability issues in manufacturing industries from different perspectives [27–30]. Integrated interpretive structural modelling (ISM) and structural equation modelling (SEM) approaches have been used to study SSCM practices [31–35]. The integrated ISM-SEM approach builds a model that shows the effect of the factors on sustainable practices and checks the interrelationship between the factors [36–42]. The independent and dependent variables selected in this study have a multistage relationship; hence, SEM has been used. Covariance-based structural equation modelling (CB-SEM) uses the covariance matrix of the data and estimates the model parameters. But, the variance-based partial least squares method (PLS-SEM) uses total variance for the estimation of parameters using SMARTPLS 3 software. The latter has higher robustness for small samples and non-normal data [43–46]. The existing sustainable practices in Ethiopian apparel industries hinder global export market competitiveness. The main challenges are limited social and environmental compliance, and weak marketing linkages to US, European, and Asian markets. Sustainability challenges in Ethiopian manufacturing sectors were studied from economic and social perspectives, and improved sustainable practices were proposed [47, 48]. The ISM methodologies have been used to see the relationship between the factors and their effect on sustainability. The independent factors or constructs have been formulated as follows. Regulatory pressure, top management commitment, and support towards sustainability initiatives across the organizations help to meet the current and future needs throughout the supply chain [49–58]. The modern consumer market demands sustainable practices in industrial business operations. The market competitive pressure, supplier pressure, and customers pressure towards sustainability are important to increase market share and maintain brand reputation [59–63]. Many international companies adopt socially

sustainable practices consistent with the obligations and values of the society in different countries [64–69]. From the reviewed literature, sustainability drivers were identified, and experts rate the importance of the identified factors based on significance in the sector. The Structural self-interaction matrix (SSIM) was prepared and distributed for team of experts from procurement managers, supply chain and logistics managers, production managers, and marketing managers to show the interrelationship between identified factors or factors [42]. 11 experts were used to evaluate the importance of the factors identified from the literature. From experts' judgment and reviewed literature [70], six factors were adapted. Table 1 presents the SSIM for the factors selected in the study. Figure 1 also presents the selected variables developed by the ISM model.

Table 2 presents the final reachability matrix where the structural model is generated from vertices or nodes and lines of edges [71].

The importance of the factors was evaluated based on reachability and antecedent sets to eliminate less important ones [72, 73]. Table 3 provides iterative values of factors to obtain different levels using the level partitioning process.

Table 1: Structural self-interaction matrix.

No	Factors	7	6	5	4	3	2	1
1	Regulatory pressures	V	V	V	V	A	V	—
2	Management commitment	V	V	X	X	X	—	
3	Customer pressure	V	V	A	A	—		
4	Market competitive pressure	V	V	A	—			
5	Supplier pressure	V	V	—				
6	Sociocultural responsibility	V	—					
7	SSCM practices	—						

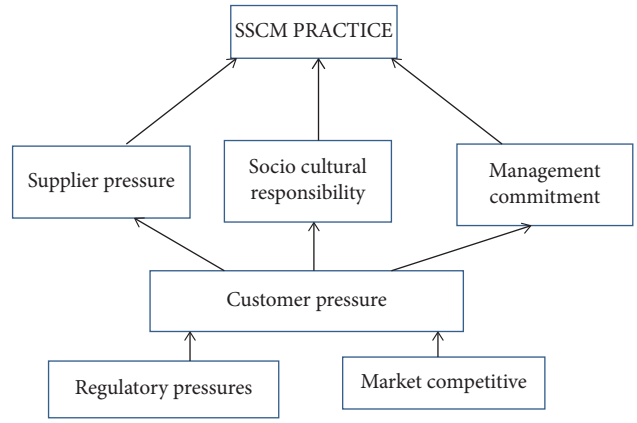

Figure 1: ISM model.

Table 2: The final reachability matrix.

Factors	1	2	3	4	5	6	7	Driving power
Regulatory pressures	1	1	0	1	1	0	0	4
Management commitment	0	1	1	1	1	0	0	4
Customer pressure	1	1	1	0	0	0	0	3
Market competitive pressure	0	1	1	1	0	0	0	3
Supplier pressure	0	1	1	1	1	0	0	4
Sociocultural responsibility	1	1	1	1	1	1	0	6
SSCM practice	1	1	1	1	1	1	1	7
Dependence power	4	7	6	6	5	2	1	31

3. Material and Methods

In this section, standard questionnaires were designed for data collection. SEM technique has been applied to evaluate the relationship between observable and latent constructs or variables to study sustainable practices in Ethiopian apparel industries. A macrolevel analysis of the effects of the independent variables on sustainable practices in Ethiopian apparel manufacturing industries was studied. Middle and top-level company managers within local and foreign apparel industries and government organizations were selected. Government regulations, internal firms' performance, external environment including supplier, customer and market pressure, and customer-supplier integrations were the factors studied to measure sustainable practices of Ethiopian apparel manufacturing industries. The factors considered in this study are entirely based on their relevance to the current challenges towards environmental, social, and economic sustainability of Ethiopian apparel manufacturing industries.

3.1. Sampling Techniques. All apparel industries were identified from the Ethiopian Textile Industry Development Institute (ETIDI) database. According to the ETIDI report, 108 apparel industries are available in Ethiopia; among them, 59 are multinational companies, and 49 are private owned local firms. From a total of 108 industries, 38 multinational companies and 32 local firms with a total of 70 companies were selected for data collection. The companies selected for this study were engaged in export and local markets. Studies showed that management facilitates the adoption of proactive environmental and other sustainability practices [50, 74, 75]. The sample size was calculated based on a sample size formula for the known population. Hence, the study has targeted procurement managers, supply chain and logistics managers, production managers, and marketing managers who provide information on sustainability performance of apparel industries. Researchers suggested that questionnaires are important instruments for empirical study in sustainable supply chain management (SSCM) [76, 77]. Hence, responses from survey questionnaires were evaluated for validity and analyzed. Studies support that the responses from at least 50 respondents are sufficient to conduct SEM analysis [78, 79]. Secondary data were collected from company records, websites, journals, magazines, and books. The scale reliability of the variables is checked using Cronbach's alpha value, and analysis was performed using the PLS-SEM methodology [80–82]. The PLS-SEM uses the bootstrap technique in smart PLS for data resampling until optimal results are obtained [83–85].

Figure 2 shows the structural model built by considering superior-order latent variables.

Table 3: Level partitioning.

Factors	Reachability set	Antecedent set	Intersection set	Level
Regulatory pressures (1)	1, 2, 4, 5	1, 3, 6	1	4
Management commitment (2)	2, 3, 4, 5	1, 2, 3, 4, 5, 5	2, 3, 4, 5	2
Customer pressure (3)	1, 2, 3	2, 3, 4, 5, 6	2, 3	3
Market competitive pressure (4)	2, 3, 4	1, 2, 4, 5, 6	2, 4	4
Supplier pressure (5)	2, 3, 4, 5	1, 2, 5, 6	2, 5	2
Sociocultural responsibility (6)	1, 2, 3, 4, 5, 6	6, 7	6	2
SSCM practices (7)	1, 2, 3, 4, 5, 6, 7	7	7	1

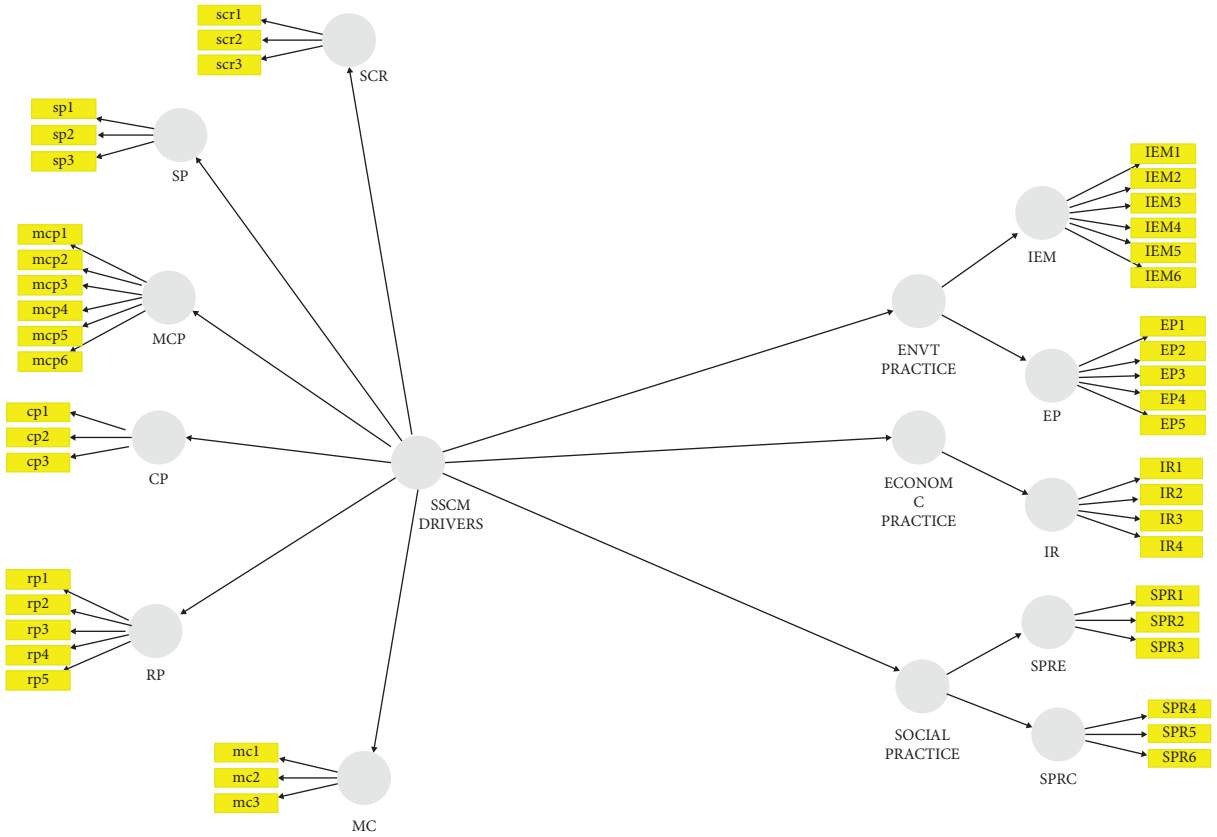

Figure 2: Structural model.

3.2. Measurement and Structural Model. The measurement model has been tested for uni-dimensionality, internal consistency reliability, indicator reliability, convergent validity, and discriminant validity [86, 87]. The convergent validity of constructs is tested by average variance extracted (AVE). Sustainable development in textile and apparel from environmental and social dimensions has grown steadily and spread around the world [88–90]. The fashion industry has driven the industrialization of many countries [91]. Efficiency measures and equipment upgradation can significantly reduce energy consumption, greenhouse gas emissions, and lower costs for textile industries [92–94]. Regulatory pressure helps the manufacturing unit to stand in today's competitive market. Previous researchers have investigated that governments and trade associations, and top management influence organizations to undertake sustainability initiatives [49, 51–56]. Hence, support from top management, government organizations, and trade associations play significant role towards sustainability practices. In addition, the sociocultural responsibility construct includes the firm's moral obligation to society. In general, this study considers factors typically important to improve the sustainability performance of Ethiopian apparel industries. Constructs and respective measures are provided in Table 4.

3.3. Research Hypotheses Development. This study examines the relevant items and constructs related to literature in SSCM. Hypotheses were developed to show the interrelationship between factors and practices using ISM results. Organizational support, government regulation, suppliers, and customers can affect the performance of green supply chain management (GSCM) practices [95–97]. Reviewed literature showed that government regulations, management commitment, social responsibility, customer

Table 4: Constructs and respective measures.

Latent variable (LV)	Measured variable (MV)	Measure code
Regulatory pressures (RP)	Government pressures	RP1
	Regional pressures	RP2
	Trade associations	RP3
	Financial incentives	RP4
	Certification	RP5
Management commitment (MC)	Pop management commitment	MC1
	Middle level management commitment	MC2
	Environmental management system	MC3
Customer pressures (CP)	Customer satisfaction	CP1
	Concern of customer for the environment	CP2
	Organization image	CP3
Market competitive pressure (MCP)	Downstream customer	MCP1
	Competitor	MCP2
	Share holders	MCP3
	Investors	MCP4
	Reputation/image	MCP5
	Financial institutions	MCP6
Supplier pressure (SP)	Supplier selection	SP1
	Supplier involvement	SP2
	Supplier performance	SP3
Sociocultural responsibility (SCR)	Socially acceptable image	SCR1
	Obligation and values of the society	SCR2
	Support the welfare of the society	SCR3
Internal environmental management (IEM)	Environmental management systems	IEM1
	Providing design specification to suppliers including environmental requirements	IEM2
	Cooperation with suppliers for environmental objectives	IEM3
	Design products with reduced consumptions	IEM4
	Commitment of SSCM from senior managers	IEM5
	Support for SSCM from midlevel managers	IEM6
External SSCM (EP)	Cooperation with customers for ecodesign	EP1
	Cooperation with customers for cleaner production	EP2
	Communicate customers' future needs	EP3
	Cooperation with customers for green packaging	EP4
	Responding the needs of customers	EP5
Investment recovery (IR)	Sale of scrap and used materials	IR1
	Design products for reduced consumption of material/energy	IR2
	Design products for reuse, recycle, and recovery of material	IR3
	Design products to avoid or reduce use of hazardous products and/or manufacturing process	IR4
Social practice for employees (SPRE)	Providing positive working environment for the employees	SPRE1
	Safety measures	SPRE2
	Payments and wages	SPRE3
Social practice for community (SPRC)	Providing vocational/primary education facilities to the surrounding people	SPRC1
	Providing employment/business opportunities to the surrounding community	SPRC2
	Providing health care facilities to the local community	SPRC3

and supplier pressure, cost driver, and government involvement could help companies implement SSCM practices. Accordingly, the following hypothesis is proposed.

H_1: factors of SSCM positively affect the environmental aspects of sustainable supply chain management.

Social sustainability primarily focuses on society and social development. Social performance measures consider the green image and product image public perception, corporate social image, level of partnership, quality of life of communities, and social responsibility [55, 98]. The factors that affect sustainable practices in the Ethiopian apparel industry's context have not been researched. In this regard, the following hypothesis was formulated to investigate the relationship between sustainability factors and social sustainable practices.

H_2: factors of SSCM positively affect the social aspects of sustainable supply chain management.

Research evidenced that isomorphic pressures play a critical role in economic sustainability for an enterprise [99, 100]. Based on this, the following hypothesis has been put forward.

H_3: factors of SSCM positively affect the economic aspects of sustainable supply chain management.

Table 5 presents hierarchical relationships of variables using a level matrix in the ISM model. According to ISM and MICMAC analysis results, a testable conceptual framework has been developed (see Figure 3). The conceptual framework in Figure 3 has been developed based on the key factors that determine sustainability from environmental, economic, and social perspectives. These constructs were measured using a 5-point Likert scale standard questionnaire. Factors that affect sustainable practices in the apparel industry have been identified from the literature and expert judgments. A multivariate analysis of multiple dependent and independent factors has been explored. An established research methodology has been followed to justify the validity of the data and the repeatability of the experiments.

4. Results and Discussion

This section discussed the results of the study using quantitative analysis. Descriptive and inferential statistics have been employed in order to summarize and interpret the stated hypotheses and identify factor relationships from the Ethiopian apparel industries perspectives. The reliability and validity of the overall research procedures and findings have been examined. The hypotheses were tested using the measurement model, and factor relationships were studied using the structural model. The study explores possible relationships not based on theoretical or causal justification, but identifying potential associations that may lead to theory development which has been performed.

4.1. Tests for Questionnaires Responses Bias. Questionnaires were pretested for validity before being distributed to respondents. Among 70 questionnaires distributed, 63 were valid. Nonresponse bias was assessed by performing a *t*-test on the scores of early and late respondents based on the assumption that the opinions of late respondents are representative of the opinions of nonrespondents. Respondents were divided into two groups. 36 responses were received during the beginning of the data collection phase, whereas the remaining 27 responses were received in the middle and end of the data collection period. *t*-test was carried out between early respondents with 36 responses and late respondents with 27 responses on all individual items which did not reveal any significant differences between the two groups. Hence, data were free from nonresponse bias.

Table 5: Reliability and convergent validity.

Constructs	Cronbach's alpha	CR	AVE
CP	0.86	0.89	0.74
EP	0.68	0.8	0.51
IEM	0.94	0.95	0.75
IR	0.92	0.94	0.81
MCP	0.77	0.84	0.50
MC	0.76	0.86	0.68
RP	0.57	0.66	0.55
SCR	0.88	0.93	0.81
SP	0.78	0.86	0.68
SPRC	0.84	0.9	0.75
SPRE	0.56	0.7	0.56

Note. CP: customer pressure, EP: external pressure, IEM: internal environmental management, IR: investment recovery, MCP: market competitive pressure, MC: management commitment, RP: regulatory pressure, SCR: sociocultural responsibility, SP: supplier pressure, SPRC: social practice for community, SPRE: social practice for employees, CR: composite reliability, and AVE: average variance extracted.

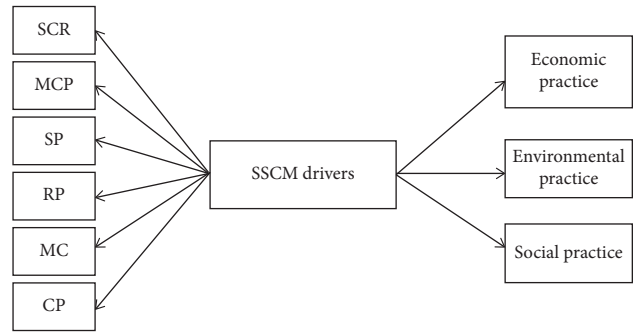

Figure 3: Conceptual framework.

4.2. Demographic Information. A total of 70 questionnaires were distributed, and 63 were found valid. Therefore, the overall response rate was 90%. Table 6 provides a summary of demographic variables.

Descriptive statistics, alpha values, and item-total correlations were used to analyse data after the application of a principal components factor analysis. All the factors of sustainability practices have high item-total correlation values of more than 0.60 to their corresponding higher-level constructs a value greater than a threshold value of 0.5. On the basis of the alpha values and item-total correlations, the six factors including regulatory pressures, market

Table 6: Demographic information of respondents.

Variables	Demographic profiles	No. of respondents	Respondents (%)
Job title	Supply chain and logistic manager	15	23.80
	Production manager	14	22.22
	Marketing manager	13	20.63
	General manager	9	14.28
	Procurement manager	12	19.04
Work experience (in years)	Above 15	25	39.68
	10–15	17	26.98
	5–10	16	25.39
	0–5	5	7.93
Ownership	Local private sector	30	47.61
	FDI enterprise	33	52.38
Market type	Local	25	39.68
	Export	38	60.32

competitive pressure, supplier pressures, management commitment, customer pressure, and sociocultural responsibility, and the four dependent factors including internal environmental management, external SSCM investment recovery, and social practices are confirmed Table 7 presents a significant relationship between factors and sustainable practices in Ethiopian apparel industry supply chain experts. Among the factors, regulatory pressure has the highest mean value of 4.17 followed by customer pressure, supplier pressure, and market competitive pressure with mean values of 4.1, 4.05, and 4.02, respectively. This implies that the four factors are significantly related to SSCM practices. On the other hand, sustainability factors including management commitment and sociocultural responsibility have relatively lower relationship with sustainable practices with mean value of 3.99 and 3.6. Sustainability practices and adoption rate have a mean value below 3.1 for all the four sustainable practice, for example, internal environmental management, and investment recovery with the lowest mean value of 2.82 and 2.86, respectively.

Survey results showed that experts have agreed that regulatory pressures, customer pressure, supplier pressure, and market competitive pressure have a significant and positive relationship with sustainable practices, while management commitment and sociocultural responsibilities have a less significant relationship with sustainable practices. In general, the relationship between independent factors and sustainability practices is significantly higher. Even though the study showed the strong relationship between factors and practices, their implementation status, especially internal environmental management and investment recovery, was found to be very low. Confirmatory factor analysis (CFA) tests the reliability and assesses the extent to which observed variables meet the expected factor structure [101]. The reliability test shows the internal consistency between the variables has an internal consistency value of 0.7 which is an acceptable value [80]. Unlike Cronbach's alpha value, composite reliability prioritizes indicators according to their weights [102, 103]. Convergent validity can be used for highly intercorrelated constructs. Table 5 reports Cronbach's alpha, CR, and AVE to evaluate convergent validity values for the research's constructs.

Fornell and Larcker's criterion and HTMT ratio are found to be the most efficient techniques to evaluate discriminant validity that overall superior for the variance-based SEM model [81]. Table 8 presents the correlations between constructs in the nondiagonal elements with the squared roots of their AVE values in the diagonal line.

When the relationship between indicators within the same construct is stronger than those of the indicators across constructs, a construct establishes discriminant validity [104]. The result in Table 9 demonstrates better discriminant validity of constructs with HTMT ratios are all below the threshold value of 0.85.

Testing the structural model involves evaluating the predictive capabilities of the model and the individual hypothesized relationships. The predictive accuracy and model relevance were assessed using R^2 and f^2 values, respectively. The model effect size was examined using the R^2 value, which represents the combined effects of the independent variables on the dependent variables. F^2 reflects the ratio of the systematic variance explained by particular exogenous variables to the unexplained variance in the dependent variable. F^2 of 0.02 is interpreted as small size, while 0.15 as moderate and 0.35 as large. To evaluate the impact of independent factors on dependent factors, a structural model was built considering superior-order latent variables. Figure 4 indicates the hierarchical structural model. For better adjustment of the model, the factor loading value greater than 0.7 and the AVE value of the first-order latent variables greater than 0.5 are required. The result showed the factor loadings of the indicators SPR3 and EP4. MCP2, MCP3, RP2, RP3, and RP5 had values less than 0.7 and were excluded. In Figure 5, the new structural model is presented.

Table 10 provides results of the new revised model provided satisfactory adjustment indexes, as per the parameters. To evaluate the model adjustment, discriminant validity is used to determine how much the revised construct correlates with other constructs, as well as how many measures represent only a single construct. The cross-loading analysis in Table 11 provides adequate results of discriminant validity.

Table 7: Descriptive statistics and Cronbach alpha values.

Factors	Subfactors	No. of items	Cronbach alpha	Item-total correlations	Mean	SD
Factors	Regulatory pressures	6	0.57	0.475	4.17	0.5
	Customer pressures	3	0.86	0.615	4.1	1.0
	Management commitment	3	0.76	0.776	3.99	0.8
	Sociocultural responsibility	3	0.88	0.444	3.6	0.8
	Supplier pressure	3	0.78	0.425	4.04	0.7
	Market competitive pressure	6	0.77	0.490	4.02	0.3
Practices	Internal environmental management	6	0.94	0.813	2.82	1.1
	External GSCM	5	0.68	0.790	3.18	0.7
	Investment recovery	4	0.92	0.779	2.86	1.0
	Social practices	6	0.78	0.608	3.46	0.7

Note. GSCM = green supply chain management and SD = standard deviation.

Table 8: Discriminant validity analysis (Fornell and Llacker's criterion).

Constructs	CP	EP	IEM	IR	MCP	MC	RP	SCR	SP	SPRC	SPRE
CP	0.86										
EP	0.03	0.71									
IEM	−0.02	0.6	0.87								
IR	−0.16	0.57	0.77	0.9							
MCP	0.39	−0.08	−0.11	−0.18	0.69						
MC	0.65	0.01	−0.01	−0.03	0.36	0.82					
RP	−0.03	−0.31	0.01	−0.13	0.29	0.09	0.74				
SCR	0.04	0.15	−0.05	−0.03	0	0.26	0.03	0.9			
SP	0.64	0.06	−0.09	−0.14	0.36	0.3	−0.06	0.01	0.83		
SPRC	0.02	0.3	0.33	0.28	0.11	−0.08	−0.18	−0.14	0.07	0.86	
SPRE	−0.16	0.61	0.73	0.7	−0.19	−0.1	−0.2	−0.01	−0.06	0.17	0.75

Note. CP: customer pressure, EP: external pressure, IEM: internal environmental management, IR: investment recovery, MCP: market competitive pressure, MC: management commitment, RP: regulatory pressure, SCR: sociocultural responsibility, SP: supplier pressure, SPRC: social practice for community, and SPRE: social practice for employees.

Table 9: Discriminant validity analysis using (HTMT ratio).

Constructs	CP	EP	IEM	IR	MCP	MC	RP	SCR	SP	SPRC	SPRE
CP											
EP	0.17										
IEM	0.06	0.74									
IR	0.14	0.75	0.81								
MCP	0.62	0.19	0.12	0.2							
MC	0.84	0.14	0.09	0.07	0.66						
RP	0.13	0.52	0.15	0.15	0.82	0.37					
SCR	0.12	0.18	0.08	0.09	0.25	0.36	0.28				
SP	0.62	0.14	0.08	0.14	0.64	0.41	0.24	0.2			
SPRC	0.08	0.4	0.39	0.37	0.15	0.1	0.31	0.18	0.11		
SPRE	0.2	0.83	0.85	0.77	0.28	0.18	0.36	0.13	0.13	0.65	

Note. CP: customer pressure, EP: external pressure, IEM: internal environmental management, IR: investment recovery, MCP: market competitive pressure, MC: management commitment, RP: regulatory pressure, SCR: sociocultural responsibility, SP: supplier pressure, SPRC: social practice for community, SPRE: social practice for employees, and HTMT: heterotrait-monotrait ratio.

4.3. Hypothesis Testing. The bootstrapping technique (in SmartPLS 3.0 software) helps to identify significant path coefficient values. The path relationship is significant with p value less than 0.05 and t-value greater than 1.96 at 95% confidence level. This technique randomly draws a large number of sub-samples from the original sample with replacement. A nonparametric bootstrap procedure with 5,000 bootstrap samples was used to get efficient results. The larger number of samples during bootstrapping process ensures the efficiency and robustness of the results.

Table 12 shows that a bootstrap procedure with 5,000 subsamples was used to confirm the significance of the relationships in the model. Results showed that the hypotheses are accepted. A significant relationship between the independent and dependent variables showed that sustainability factors positively affect sustainable practices in Ethiopian apparel manufacturing industries.

The study investigates sustainable practices in Ethiopian apparel manufacturing industries. The effect of different factors on the implementation status of sustainability

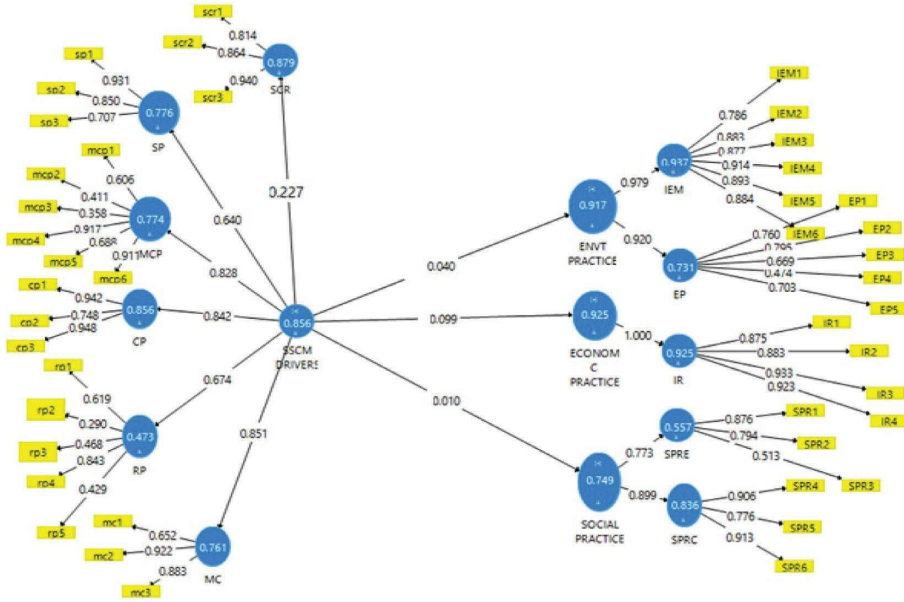

Figure 4: Generated hierarchical structural model.

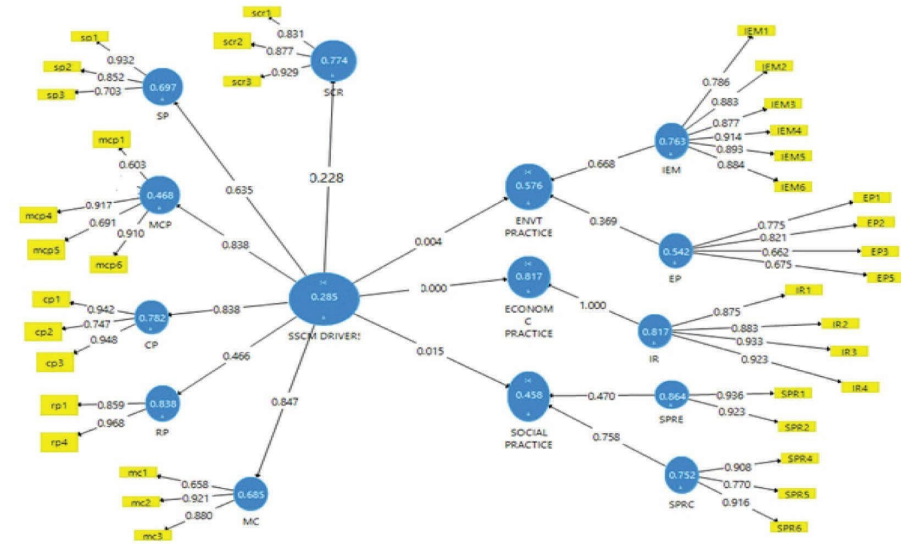

Figure 5: Restructured structural model.

practices has been explored. The findings of the exploratory analysis and relationships in the hypotheses are discussed. The discussion of the results is structured into two sections: sustainability practices in Ethiopian apparel industries and the effect of factors on sustainable practices. Descriptive analysis showed that the adoption of sustainable practices has mean values of less than 3.1 for all the factors related to social, environmental, and economic dimensions. For example, the internal environmental management and investment recovery have achieved the lowest mean value of 2.8238 and 2.8607, respectively. This indicated that the level of sustainability practice in Ethiopian apparel manufacturing industries is low. Compared with the results from other studies conducted in emerging economies, sustainability practice in Ethiopian apparel industries is lower. Hence, a focus should be given to sustainable practices to ensure global market competitiveness. Table 12 shows that three hypotheses are supported. The first hypothesis explained the relationship of independent factors with environmental practices of sustainability, which is supported with the t-value = 3.32 and significance level of $p = 0$. This implies a significant effect of the factors on the implementation status of sustainability has been confirmed. This finding agrees with the impact of management commitment and government regulations on green supply chains [97]. In this study, management commitment and government regulations were found weak in enforcing the environmental aspects of sustainability. Moreover, lack of awareness and follow-up strategies from the management and regulatory bodies are the main challenges that hinder

Table 10: Statistical quality indicators for the revised model.

Constructs	Cronbach's alpha	Composite reliability	AVE	VIF
Internal environmental management	0.94	0.95	0.76	4.22
Investment recovery	0.92	0.95	0.82	5.46
Social practice for community	0.84	0.9	0.75	4.03
Social practice for employees	0.84	0.93	0.86	2.26
External pressure	0.72	0.82	0.54	2.18
Market competitive pressure	0.77	0.83	0.47	1.88
Management commitment	0.76	0.87	0.69	3.14
Customer pressure	0.86	0.91	0.78	4.59
Regulatory pressure	0.83	0.91	0.84	1.9
Sociocultural responsibility	0.88	0.91	0.77	4.42
Supplier pressure	0.78	0.87	0.7	3.3
Social practice	0.75	0.83	0.46	1.85
Economic practice	0.92	0.95	0.82	5.46
Environmental practice	0.92	0.93	0.58	2.36
SSCM factors	0.86	0.88	0.29	1.26

Note. AVE: average variance extracted; VIF: variance inflation factor.

Table 11: Cross-loadings analysis.

Manifest variables	EP	IEM	IR	SPRC	SPRE	CP	MC	MCP	RP	SCR	SP
EP1	0.78	0.63	0.51	0.44	0.6	0.14	0.07	−0.05	0.09	0.07	0.09
EP2	0.82	0.85	0.7	0.34	0.67	−0.1	−0.09	−0.08	0.15	0.15	−0.15
EP3	0.66	0.46	0.3	0.16	0.51	0.02	−0.04	−0.1	0.05	0.25	−0.01
EP5	0.68	0.48	0.69	0.25	0.47	0.15	−0.01	−0.1	0.07	0.02	−0.05
IEM1	0.62	0.79	0.47	0.15	0.51	0.03	−0.06	−0.07	0.05	0.01	−0.04
IEM2	0.7	0.88	0.57	0.16	0.62	0.02	−0.05	−0.06	0.1	0.07	−0.02
IEM3	0.74	0.88	0.6	0.3	0.59	0	−0.01	−0.05	0.09	0.04	−0.04
IEM4	0.77	0.91	0.82	0.35	0.66	0	0.02	−0.01	0.18	0.03	−0.09
IEM5	0.8	0.89	0.76	0.46	0.69	0.01	0	−0.11	0.01	0.11	−0.08
IEM6	0.81	0.88	0.77	0.34	0.7	0.09	0.01	−0.05	0.19	0.03	−0.11
IR1	0.63	0.56	0.87	0.32	0.56	0.13	0	−0.15	0.06	0.03	−0.16
IR2	0.7	0.69	0.88	0.33	0.74	0.17	−0.08	−0.21	0.03	−0.1	−0.13
IR3	0.7	0.75	0.93	0.22	0.66	0.01	0.04	−0.12	0.01	0.08	−0.07
IR4	0.73	0.76	0.92	0.26	0.65	0.04	0	−0.08	0.08	0.05	−0.07
SPR1	0.68	0.61	0.29	0.61	0.93	0.16	−0.11	−0.16	−0.1	0.03	−0.04
SPR2	0.76	0.73	0.25	0.73	0.93	0.03	0.01	−0.03	0.05	0.06	0.01
SPR4	0.37	0.33	0.28	0.25	0.91	0.03	−0.05	0.04	0.05	0.24	0.02
SPR5	0.01	0.11	0.11	0.09	0.75	0.07	−0.11	0.08	0.02	0.06	0.1
SPR6	0.55	0.47	0.45	0.42	0.92	0.01	−0.01	0.04	0.1	0.09	0.1
CP1	0.03	0.01	0.14	0.02	0.12	0.94	0.62	0.66	0.14	0.11	0.59
CP2	0.07	0.03	0.04	−0.07	0.02	0.75	0.73	0.35	0.06	0.13	0.15
CP3	0.02	0.01	0.12	0.04	0.11	0.95	0.6	0.51	0.1	0.04	0.63
MC1	0.06	0.08	0.02	0.01	0.02	0.26	0.66	0.59	0.53	0.18	0.1
MC2	0.03	0.04	0.02	−0.04	0.05	0.73	0.92	0.51	0.36	0.43	0.29
MC3	0.05	0.03	0.03	−0.1	0.06	0.72	0.88	0.35	0.25	0.22	0.32
MCP1	0.11	0.11	0.07	0.13	0.15	0.17	0.34	0.58	0.59	0.28	0.24
MCP4	0.07	0.02	0.17	0.05	0.11	0.47	0.49	0.91	0.53	0.02	0.32
MCP5	0.09	0.06	−0.1	−0.02	0.03	0.48	0.42	0.7	0.23	0.35	0.32
MCP6	0.08	0.06	0.13	0.03	0.07	0.64	0.54	0.94	0.49	0.03	0.63
RP1	0.01	0.11	0.02	0.11	0.06	0.07	0.16	0.48	0.86	0.24	−0.1
RP4	0.05	0.12	0.08	0.04	0.02	0.2	0.54	0.55	0.97	0.14	−0.03
SCR1	0.01	0.08	0.07	−0.08	0.04	0.04	0.17	0.1	0.05	0.83	−0.01
SCR2	0.08	0.02	0	−0.12	0.02	0.04	0.17	0.04	0	0.88	−0.04
SCR3	0.02	0.05	0.01	−0.13	0.02	0.19	0.43	0.03	0.01	0.93	0.05
SP1	0.03	0.05	−0.1	0.08	0	0.41	0.22	0.42	0.11	0.15	0.93
SP2	0.07	0.09	0.13	0.05	−0.06	0.61	0.3	0.47	0.08	0.06	0.85
SP3	0.03	0.04	0.06	0.07	0.01	0.31	0.23	0.35	0.07	0.03	0.7

Note. EP: external pressure; IEM: internal environmental management; IR: investment recovery, SPRC: social practice for community, SPRE: social practice for employees, CP: customer pressure, MCP: market competitive pressure, RP: regulatory pressure, SCR: sociocultural responsibility, and SP: supplier pressure.

Table 12: Significance analysis of the structural model relationships.

Relationship	AVE	t-statistics	p-value	f^2	Q^2
SSCM factors with economic practices	0.817	3.32	0.000	0.021	0.42
SSCM factors with environmental practices	0.576	1.98	0.004		
SSCM factors with social practices	0.458	1.97	0.0015		

Note. SSCM: sustainable supply chain management; f^2: effect size; Q^2: a cross-validated redundancy or predictive relevance.

the implementation of environmental initiatives. These issues are against the demands of ethical business operations in the global market environment. The second hypothesis focuses on the relationship of SSCM factors with social practices, which are also supported by t-value = 1.97 and a significance level of $p = 0.0015$. Factors related to social sustainability such as corporate social responsibility, level of partnership, and quality of life were significant. This study agrees with other studies in [11, 12, 97]. Awareness of corporate social responsibilities and other social sustainability initiatives such as the leadership style, buyer-supplier relationship, and economic conditions affect the commitment to social sustainability practices. Leadership style and sustainability commitment could be affected by the work culture and leadership style of employees in the Ethiopian context. This study identified that the social sustainability practices in Ethiopian apparel manufacturing sectors had been highly affected by these factors. The third hypothesis explains that the relation between factors and economic practices of sustainability is also supported with t-value = 1.98 and a significance level of $p = 0.004$. Factors related to sustainable economic practices were also found significant. In general, environmental, social, and economic sustainability dimensions were considered to measure the generic SSC performance level of Ethiopian apparel industries. The results showed that sustainability factors have a direct effect on the successful implementation of sustainable practices such as internal environmental management, external SSCM investment recovery, and social practices. In addition, interview results suggest that fashion manufacturing industries in Ethiopia have lost significant export market share due to their inability to comply with environmental and social certification requirements. Hence, these factors should be improved to ensure the sustainability of the fashion supply chain through effective relational leadership [105], standardization of processes and operating practices, certifications to environmental and social standards, and effective buyer-supplier relationships. Quality standards and compliance issues are not given significant attention in Ethiopian apparel manufacturing industries. Hence, the sustainability issue has become more important in Ethiopia.

5. Conclusions

Global competitiveness of manufacturing businesses can be achieved through efficient sustainable practices that focus on environment, society, and economic well-being to sustain conducive planet for current and future generations. In this study, challenges to ensure sustainable supply chain management in Ethiopian apparel industries and the current practices were investigated. An integrated model that relates the factors for sustainable supply chain management practices was developed, and practices model by formulating hypotheses supported by theory and empirical evidence. Different approaches were used to quantify the level of sustainability in Ethiopian apparel industries. Literature has been reviewed to identify the major factors and initiatives of sustainable practices, and experts were selected from different sections of the garment industries to rank the importance of factors towards sustainability of Ethiopian apparel industries. Later, descriptive analysis was conducted to evaluate sustainable practices of the current supply chain of Ethiopian apparel industries that could help policymakers and other stakeholders visualize the progress of sustainability for the global competitiveness of apparel businesses. The relative goodness of fit of the model shows that the developed model could represent the relationships among the study constructs. PLS-SEM was used to verify the significance of the relationship between SSCM factors and SSCM practices. Results showed that mean values of SSCM indicators are less than 3.1. For example, the internal environmental management and investment recovery have achieved the lowest mean value of 2.8238 and 2.8607, respectively. This implies that Ethiopian apparel manufacturers did not seriously consider the implementation of sustainability. Moreover, sustainability factors have shown significant relationship with the environmental, social, and economic pillars of sustainable practices. This finding is in line with the one reported in Wolf [69]. Therefore, sustainable supply chain management practices can be improved when the companies focus on the main sustainability factors. Moreover, descriptive analysis showed that SSCM practices including internal and external environmental management, investment recovery, and social practices have mean score values less than 3. This reveals that compared with results from other studies in emerging economies, the current sustainability performance in Ethiopia is low [32, 77]. In this regard, different studies argue that employee and management commitment and support are among the critical factors that ensure the successful implementation of sustainability practices. Using a partial least structural equation modelling, our results show that there is a significant relationship between sustainability factors and its practice. In essence, this study formulated the hypothesis and tested the relationship between the indicators and latent variables using the measurement model and the structural model was evaluated to show the relationship between the constructs. All the three hypotheses that explained the relationship between sustainability factors with

environmental practices, social practices, and economic practices are significant with p value of 0.00, 0.0015, and 0.004 at 95% confidence interval. In addition, researchers believe that the proposed descriptive model represents the relationships among study constructs related to social, environmental, and economic dimensions to evaluate their impact on sustainability practices of the fashion supply chain.

5.1. Managerial Implications. This study provides relevant information for management in Ethiopia regarding the key challenges and factors of sustainability and the current practices of sustainability. The research provides insight for industry managers and policy-makers to focus on regulations that foster sustainable supply chain management initiatives for the fashion industry. The study identified the effect of the main factors of sustainability in the fashion supply chain. Hence, management should focus on them to improve sustainability in the fashion supply chain. The effect of social, environmental, and economic sustainability factors including the leadership style and commitment to sustainability initiatives, buyer-supplier relationship, and improving economic return of the supply chain should be seen from the Ethiopian context to ensure better performance in the sustainability of the supply chain. Due to fierce global competition and unsustainable (environmental, social, and economic) practices in the fashion business, business owners need to prioritize and invest on sustainability to satisfy the needs of global consumers. The developed model supports decision-making for company managers and other stakeholders for the successful implementation of sustainability. Therefore, to safeguard the environment, society, and sustainable economic development by complying with national and international laws, Ethiopian apparel industries should practice sustainability to the fullest potential.

5.2. Limitations and Future Research. This study was mainly focused on factors related to management and government-related challenges, customers and suppliers' pressure at macro level, and sociocultural challenges. Social and environmental challenges related to specific processes and industries were not the focus of this study. In addition, since the research is based on a survey questionnaire to understand generic issue, it might have limited scope to uncover in-depth relationships between the different constructs and indicators in the model. Hence, further studies on detailed investigations and considerations of other operational and firm level sustainability factors and their relationship with sustainability practices can be topics of future research. New model evaluation approaches to ensure explanatory and predictive modelling for sustainability in the apparel value chain can be considered further.

Data Availability

Data are available from the authors upon reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

The research was funded by Bahir Dar University.

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