

# Organizational antecedents and capabilities and their effects on firm competitiveness of sustainable supply chain management: An empirical evaluation in a developing economy

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## Abstract

Drawing from the Resource-Based View and Stakeholder theories, this article aims to evaluate empirically the relationship between organizational antecedents, firm capabilities for Sustainable Supply Chain Management (SSCM), and the latter's effects on competitive advantage for a group of 126 focal firms in the city of Bogotá, Colombia. A mixed methods research design was followed. A self-administered (online) questionnaire was sent to a convenience sample of firms. The validity and reliability of the theoretical constructs were verified

through validated factors modeled using reflective indicators, and the structural equation model was tested using partial least squares (PLS). Along with internal consistency, convergent and discriminant validities of the measurement model were evaluated. Finally, the constructs of organizational antecedents, SSCM practices and their effects on the focal company's competitive advantage appear to be properly in line with the data collected and the testing of the proposed framework has provided an acceptable fit with positive relationships between the factors involved.

## 1. INTRODUCTION

Today's world is rapidly changing and this is having a significant impact on all types of businesses, significantly affecting economic and social life. In particular, focal companies and their supply chains are challenged to pursue their objectives and carry out their operations in a more extreme, open and unstable world [1]. A focal company is the most influential and powerful in the chain, by being the trigger of social and environmental initiatives in the supply chain [2]. This type of *sustainable* supply chain management (SSCM) according to [3] can be defined as:

[...] the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e. economic, environmental and social, into account which are derived from customer and stakeholder requirements [3, p. 1700].

Nevertheless, the study of literature implies that companies, in response to social and environmental pressures from stakeholders, need to develop new organizational capabilities [4]. Therefore, there is a need to advance in researching the identification of specific antecedents and organizational capabilities that are necessary to offer such responses from the focal companies and their supply chains and whether these antecedents and organizational capabilities confer any type of competitive advantage to the focal company. All of this is particularly relevant for developing and emerging countries, where environmental and social considerations in the management of supply chains and corporate social responsibility still remain as issues that have not been extensively addressed by scholars and the business community in these countries [5].

Thus, the authors expect for this research to contribute to fill the gaps on this issue and drawing from the Resource-Based View of the firm (RBV) and Stakeholder (ST) theories, this article aims to evaluate empirically the relationship between organizational antecedents, firm capabilities for sustainable supply chain management (SSCM), and the latter's effects on competitive advantage for a group of 126 focal firms in the city of Bogotá, Colombia.

To achieve our research objectives, this paper is organized as follows: first, research questions are briefly introduced. Next, a set of hypotheses is suggested, and then the research method followed in this study is described. Finally, the study's findings are presented, discussing their implications to conclude by identifying the limitations of the study and presenting directions for future research.

## 3. LITERATURE REVIEW AND RESEARCH FRAMEWORK

With the research objectives in mind and drawing from RBV, ST, social and environmental supply chain management, environmental and social management literatures and the author's literature review [6], the variables under study as well as a set of hypotheses linking these variables are presented in this section to explore the relationships between organizational antecedents and capabilities and their effects on competitive advantage.

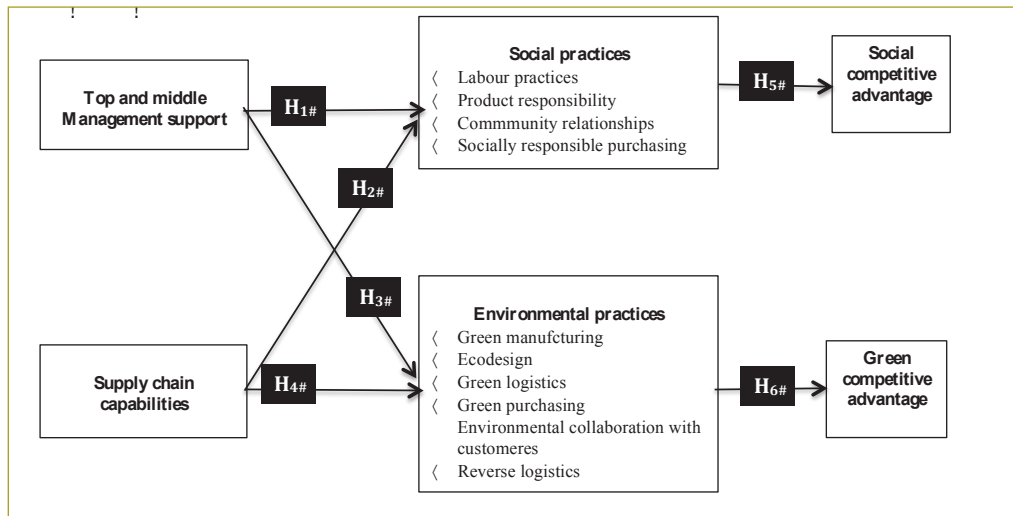
### 3.1 Factors involved in supply chain practice, research framework and hypothesis

Based on RBV and ST theories [7], [8], [9], the authors proposed the research framework shown in Figure 1. First, we proposed that environmental and social practices (including both upstream and downstream sides of the supply chain) have a direct impact on green and social competitive advantage, respectively [10], [11]. Environmental practices and social practices are both second-order factors. Environmental practices are operationalized by conceptualizing them as six first-order constructs. The six first-order constructs are: (i) green manufacturing (GM) [12], [13]; (ii) eco-design (EC) [14], [15]; (iii) green logistics (GL) [16]; (iv) green purchasing (GP) [17]; (v) environmental collaboration with customers (ECC) [18]; and (vi) reverse logistics (RL) [19]. Social practices are operationalized by conceptualizing them as four first order constructs. The four first-order constructs are: (i) labour practices (LP) [20], [21]; (ii) product responsibility (PR) [22], [23]; (iii) community relationships (COMMREL) [24] and (iv) socially responsible purchasing (SRP) [25], [26]. Green advantage (G-CADV) [27], and social advantage (S-CADV) [28], are both understood as first-order constructs.

Second, it is hypothesized that two supply chain capabilities facilitate these social and environmental practices: (i) *top and middle management support and proactivity* (TMMS) [29], [30] [31], and (ii) *supply chain management capabilities* (SCC) [32], [33], [34], [35], which are conceptualized as first-order constructs

Based on the above considerations and guided by the proposed framework, we suggested the following hypotheses:

- HH1: Top and middle management support facilitate the adoption of social practices in the focal



**Figure 1.** Proposed framework.

firm's supply chain management in the context of a developing economy.

- H2: Supply chain capabilities facilitate the adoption of social practices in the focal firm's supply chain management in the context of a developing economy.
- H3: Top and middle management support facilitate the adoption of environmental practices in the focal firm's supply chain management in the context of a developing economy.
- H4: Supply chain capabilities facilitate the adoption of environmental practices in the focal firm's supply chain management in the context of a developing economy.
- H5: Social practices have positive effects on the social competitive advantage of the focal firm.
- H6: Environmental practices have positive effects on the green competitive advantage of the focal firm.

#### 4. METHODOLOGY

For the initial data collection, a first qualitative phase of data collection and content analysis was based on in-depth interviews with company executives from four different firms and industry. Then, followed the generation of the research instrument, which was subsequently sent to a convenience sample of firms. One hundred and twenty-six usable questionnaires were accepted for analysis.

## 5. RESULTS

### 5.1 Evaluation of the measurement model

Internal consistency reliability, convergent validity and discriminant validity were assessed using composite reliability indices (CR), Cronbach's alpha, average extracted variance (AVE) and cross loadings of the indicators, respectively. All these criteria satisfied the cut-off values suggested by literature [36], [37], [38], [39].

### 5.2 Evaluation of the structural model

To evaluate the structural model, the primary evaluation criteria used were the R2 measures, the significance of the path coefficients and the model's capability to predict. Per PLS-SEM literature, our proposed model has fulfilled all these criteria [40], [38], therefore we conclude our model has predictive relevance.

Importance-performance matrix analysis (IPMA) provides information on the relative importance of factors in explaining other factors [39]. The IPMA of green competitive advantage shows that environmental practices have a relatively higher importance but simultaneously, have a relatively low performance and with respect to indirect effects, supply chain capabilities have the highest impact on green competitive advantage. The IPMA of social competitive advantage shows that social practices have a relatively higher importance but simultaneously, have a relatively low performance and with respect to indirect effects supply chain capabilities

**Table 1**  
Convergent validity for the 1st order constructs

1st Order construct	Composite reliability	Cronbach's alpha	AVE	R <sup>2</sup> (endogenous latent variables)
COMMREL	0,849	0,766	0,586	0,757
EC	0,919	0,883	0,740	0,678
ECC	0,895	0,825	0,741	0,668
ENVPR	0,916	0,903	0,362	0,303
G-CADV	0,898	0,860	0,639	0,202
GL	0,880	0,797	0,710	0,430
GM	0,847	0,730	0,649	0,496
GP	0,865	0,764	0,681	0,603
PR	0,830	0,694	0,621	0,602
RL	0,881	0,819	0,649	0,258
S-CADV	0,897	0,846	0,687	0,229
SOCPR	0,885	0,853	0,438	0,326
SRP	0,910	0,851	0,771	0,652
SCC	0,885	0,804	0,720	-
TMMS	0,927	0,894	0,759	-

and top and middle management support have both similar impacts on social competitive advantage.

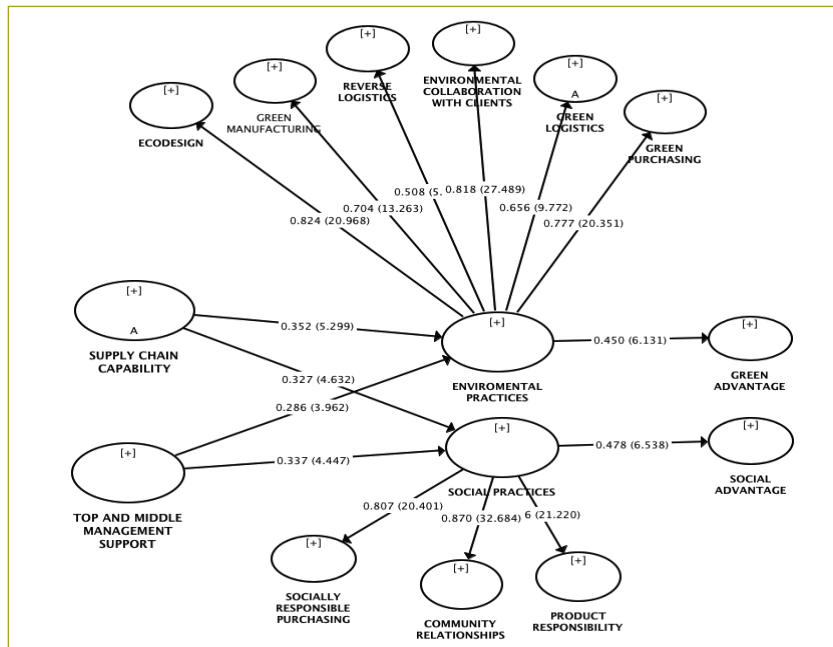
**5.3 Hypothesis testing**

The proposed hypotheses were tested by evaluating the path coefficients using a bootstrapping resampling method with 5000 resamples as suggested by [39]. This analysis shows support for all the hypothesis (See Figure 1). The two constructs associated with organizational antecedents, supply chain capabilities and top

and middle management support do have a significant positive effect on environmental and social practices (H1 to H4. The path coefficients of 0.352, 0.327, 0.286, 0.337 were significant and R2 of 0.303 and 0.326 of environmental and social practices, respectively can be considered acceptable despite the existence of many other determinants [42] that were not incorporated in this research. Support was also found to H5 and H6, the path coefficients of 0.450 and 0.478 were significant along with R2 of 0.202 and 0.229, respectively, confirming that environmental practices and social

**Table 2**  
Discriminant validity for 1st order constructs: Inter construct correlation matrix and the square root of AVE (Fornell-Larcker criterion)

	COMMREL	EC	ECC	G-CADV	GL	GM	GP	PR	RL	S-CADV	SRP	SCC	TMMS
COMMREL	0.765												
EC	0,438	0,860											
ECC	0,566	0,583	0,861										
G-CADV	0,506	0,377	0,438	0,800									
GL	0,380	0,404	0,449	0,176	0,842								
GM	0,439	0,576	0,450	0,373	0,349	0,806							
GP	0,564	0,530	0,600	0,413	0,416	0,510	0,825						
PR	0,537	0,531	0,555	0,446	0,463	0,385	0,490	0,788					
RL	0,265	0,248	0,387	0,096	0,331	0,146	0,281	0,276	0,805				
S-CADV	0,445	0,348	0,378	0,777	0,200	0,328	0,333	0,420	0,112	0,829			
SRP	0,534	0,242	0,441	0,347	0,334	0,240	0,562	0,453	0,233	0,305	0,878		
SCC	0,491	0,286	0,405	0,418	0,401	0,364	0,367	0,337	0,363	0,372	0,348	0,849	
TMMS	0,532	0,362	0,309	0,475	0,347	0,406	0,411	0,425	0,117	0,362	0,239	0,481	0,871



**Figure 2.** Statistical significance of the path coefficients in the proposed research model.

practices are conceptually different from each other [43] and therefore environmental practices only lead to green competitive advantage while social practices only lead to social competitive advantage [28].

**Table 4**  
Effect sizes

Endogenous construct	f <sup>2</sup>
SCC -> ENVPR	0,1363
SCC -> SOCPR	0,1201
TMMS -> ENVPR	0,0889
TMMS -> SOCPR	0,1305

**Table 5**  
Prediction relevance test (Stone-Geisser’s Q<sup>2</sup> test)

Endogenous construct	Q <sup>2</sup>
COMMREL	0,429
EC	0,497
ECC	0,485
ENVPR	0,104
G-CADV	0,117
GL	0,293
GM	0,309
GP	0,401
PR	0,160
RL	0,160
S-CADV	0,153
SOCPR	0,134
SRP	0,497

## 6. DISCUSSION OF FINDINGS AND IMPLICATIONS

SSCM literature suggests that social issues are lacking and a lot of work to be done. This study contributes to SSCM literature [43], [44] by advancing on how to operationalize other social practices in the focal firm’s supply chain management. The findings also confirm that organizational antecedents (top and middle management support and supply chain capabilities) positively and significantly impact focal firms’ social and environmental supply chain practices [45].

What seems interesting to note from the above results is that social and environmental supply chain practices in the sample studied seem to have a cause derived from supply chain capabilities associated only with economic interests of the organizations involved in this study. However, this is not enough for the adoption of sustainability practices if not jointly adopted with a strong environmental and social commitment of top management and involvement of employees like those in middle management levels. These results should also be analyzed with caution because by comparing effect sizes, the findings show that supply chain capabilities have a moderate effect on both environmental practices and social practices as it has top and middle management support on social practices but with a small effect

of top management and middle management support on environmental practices.

The remaining two constructs namely social practices and environmental practices appear to impact significantly and positively the competitive advantage of the focal firms. It is worth mentioning that although environmental practices and social practices are each of a different nature [43], the empirical results suggest that both the green competitive advantage and social competitive advantage are virtually the same and are the result of the adoption of a mixture of implementing risk-oriented strategies and opportunity oriented strategies which have already been studied in the literature [46]. Empirical data seem to suggest that companies do not apply only one or another strategy but a combination of both. The following competitive advantages were obtained: low-costs; avoiding the violation of environmental and social laws and regulations; improved brand image and company reputation; market opportunities and new products.

Finally, from the IPMA results, it is evident that focal firms still need to take more managerial actions in social and environmental sustainability supply chain practices to improve green competitive advantage and social competitive advantage. Additionally, to improve the performance of those practices it is also necessary that managerial activities also focus on improving the performance of supply chain capabilities and top and middle management support factors.

## 7. CONCLUSIONS

The constructs of organizational antecedents, SSCM practices and their effects on the focal firm's competitive advantage appears to fit the data collected properly and the testing of the proposed framework has provided an acceptable fit with positive relationships between the factors involved.

SSCM in developing economies can become an important management activity of focal firms to contribute not only to the objectives of the organizations but also to help alleviate the social and environmental problems that countries in these economies face.

## 8. LIMITATIONS AND FURTHER RESEARCH

Due to underrepresentation of certain industry sectors of Colombia and the sample size, the findings cannot extend to the whole industry of Colombia and of other developing countries. Future studies could help to validate the proposed framework in other developing economies.

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