

The effects of Cultural factors on GSCM implementation, Empirical evidence from Morocco

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Abstract. This paper aims to link Green SCM and cultural factors by empirically testing a conceptual model emphasizing how national culture and organizational culture affect the GSCM implementation. The conceptual model includes the effects of the firm's characteristics, especially the firm size, type and industry sectors, on the application of GSCM practices. This paper was conducted among a sample of manufacturing companies incorporating a range of industrial sectors from Morocco. The data was collected using an online questionnaire and analyzed using SPSS version 25 and SmartPLS software 3. The findings have provided empirical evidence regarding the significant effect of national culture and organizational culture on GSCM implementation. The moderator variables, firm type and firm size, have a significant impact on the relationship between cultural factors and GSCM, except for the industry sector, which does not explain the implementation of green practices. The findings of this paper are expected to help managers and business owners develop cultural orientations that ensure and encourage sustainability and green SCM practices. The existing literature has mainly examined either national culture dimensions or organizational culture dimensions' effects on green supply chain initiatives in developed countries. Thus, this paper highlights the fact that cultural dimensions can be deployed together at the same level of analysis to analyze which one predict better the GSCM integration.

1 Introduction

Over the last years, scholars have apprehended supply chain management as a strategic function within companies, which supposed to manage purchasing, supply, transportation, and distribution activities to guarantee organizational effectiveness[1]. Consecutively, key events and stringent requirements appeared to affect the evolution of logistics and supply chain management (SCM). Recently, sustainability has broadened the logistics field offering new opportunities to improve the competitiveness and performance of organizations. [2] as it brings new challenges [3], [4].

Within this paper, we focused on green supply chain management for investigations. In an attempt to fill this gap and to understand the internal factors influencing the diffusion of green practices, we bring together a range of different drivers identified from the existing literature. The role of culture is identified as of great importance in operations management and supply chain management decisions in prior literature [5]. In this study, we reviewed relevant research to raise knowledge about its role in green supply chain management decisions. To achieve this goal, we study culture in two basic categories: National, and Organizational Culture. To sum up, the present thesis aims to investigate the combined influence of organizational and national cultural orientations on the adoption of green supply chain practices in Moroccan firms in diverse sectors. Much recent discourse had investigated the role of cultural factors regarding sustainability implementation, the findings either support or hinder such implementation[6]. The present paper aims to expand the previous work performed on the relationship between culture and environmental sustainability practices to fill the research gaps regarding the controversial results in the literature and to contribute to the supply chain literature since little is known about the contribution of culture in GSCM in the context of developing countries. The research question, "Do national culture and organizational culture influence the GSCM implementation?" was formulated based on the

conducted literature review, a conceptual framework was correspondingly developed. The link of green supply chain management with cultural factors has not been tested enough. This paper intends to examine the effect of both national culture and organizational culture at the corporate level on GSCM. An empirical analysis of this kind has not been previously undertaken and constitute the principal value of this paper. Through this paper, the following sub-objectives are to achieve:

- 1). To examine the role of national culture dimensions in firms' GSCM implementation.
- 2). To examine the role of organizational culture dimensions in firms' GSCM implementation.
- 3). To examine the control variables effects, i.e. firm size, firm type, and the industry sector on the level of application of the GSCM initiatives.

The contribution of this paper is twofold. First, it helps explore the level of application of the green initiatives at the supply chain level of Moroccan based companies. Second, it provides empirical evidence of how culture is a predictor supporting green sustainability implementation. The paper is organized as follows: Section 2 presents the research methodology, research context of Moroccan cross-industries the sample of research and data analysis techniques. Section 3 discusses the findings, the demographic characteristics, the results of the regression analysis, the hypotheses summary results as well. Section 4 discusses the results with particular reference to the literature review prior works. The last section presents a conclusion, limitations, and future research directions.

2 Methodology

2.1 Hypotheses development

H1. National culture has a significant impact on GSCM adoption.

H2. Organizational culture has a significant impact on GSCM adoption.

As for industry type, most researchers select samples from different sectors to guarantee the variation in the data collected. Thus, we intend to analyze the moderating role of industry type on the relationship between national and organizational culture and environmental initiatives. Firm size has been a moderator in numerous management studies.

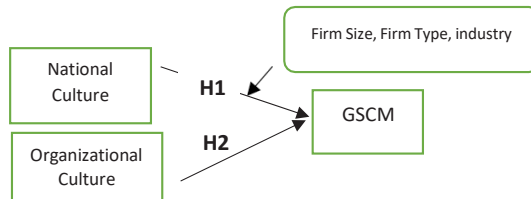


Fig.1. Research Framework

2.2 Population and Sampling

The population of the current study is based on Moroccan firms and senior managers were taken as the key informant and respondents of the present study. The sample comprises diverse categories of sectors including, agro-industry, automotive, metal, distribution, logistics, electrics and electronics, aeronautics, and others. A questionnaire was designed and distributed during the spring-summer 2020 online. The sample size of 147 respondents was selected.

2.3 Profile of Respondents

The final sample size obtained reached 147 firms, with a final response rate of 50%.

Most firms participating in this study belonged to the food manufacturing industry (30,1%; n=44), followed by automotive industry (17,8%; n=26), then aeronautics industry (8,9%; n=8).

The majority of participating firms are large companies (63,7%; n=93), medium-sized companies represented (20%, n=35). 69 entities are foreign subsidiaries, while 67 are 100% Moroccan firms, and only seven entities are half Moroccan. The geographical dispersion of 64,4% of the firms participating in the study is international (n=94).

2.4 Common Method Bias

The impact of common method bias for our study, was assessed using Harman’s single factor test via SPSS v.25. As a result, this study has no severe issues with common method variance.

2.5 Statistical tool

This paper used the Partial Least Squares Structural Equation Modeling (PLS-SEM). [6] has compared the established three methods enabling for modelling the reflective-formative second-order constructs in PLS: first, the repeated indicators approach, second the two-stage approach, and finally the hybrid approach.

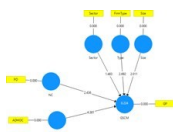


Fig.2. Structural model

3 DATA ANALYSIS

Partial least squares (PLS) methodology has been applied to data gathered from a sample of 130 Moroccan firms. The results of this analysis are discussed in the sections below.

3.1 Assessment of Measurement Model

Using SmartPLS 3.3.3, factor loadings, composite reliability, Cronbach’s alpha, average extracted variance (AVE), and discriminant validity were calculated. Our outer model is a reflective-formative measurement model.

According to [9], the factor loadings should be at least more than 0.5 to attain the acceptable level. The case of scale items of national culture dimensions (FO1, FO2, FO3) that measures future orientation and (UAV1, UAV2) measures uncertainty avoidance. The scale items of organizational culture dimensions: Adhocracy culture (AC1, AC2, AC3, AC4, AC5), Market Culture (MC1, MC2, MC3, MC4, MC5), Hierarchical Culture (HC1, HC2, HC3, HC4, HC5), and Clan Culture (CC1, CC2, CC3, CC4, CC5). Green supply chain initiatives were measured using five dimensions: Eco design (ED1, ED2, ED3), Green Purchasing (GP1, GP2, GP3, GP4, GP5), internal environmental management (IEM1, IEM2, IEM3, IEM4, IEM5), Green logistics (GL1, GL2, GL3, GL4, GL5, GL6), and Reverse logistics (RL1, RL2, RL3, RL4, RL5). All the scales have factor loadings of more than 0.7 and 0.8. Therefore, the convergent validity is assessed and well attained in this study.

Table 1. Discriminant validity

	GSCM	NC	OC	Sector	Size	Type
AC	0.34	-0.051	1	-0.193	0.081	0.078
Type	0.243	0.024	0.078	0.007	0.16	1
GP	1	-0.19	0.34	0.021	0.199	0.243
PD	-0.19	1	-0.051	0.036	-0.055	0.024
Sector	0.021	0.036	-0.193	1	-0.167	0.007

Size	0.199	-0.055	0.081	-0.167	1	0.16
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3.1 Assessment of Structural Model

A two-stage approach of reflective-formative model was analyzed with the help of SmartPLS v.3.3.3. The PLS bootstrapping was selected to observe the direct effects with a sub-sample of 1000. The current study has two direct hypotheses, as shown in figure 4. The first hypothesis, H1, related to national culture and GSCM, was rejected as the t- value was less than 1.96. The second hypothesis H2 was accepted as the t-value was greater than 1.96 (t- value=10.034; p-value=0.000).

Table 2. Second-order construct a structural model

	Original Sample(O)	Sample Mean(M)	Standard Deviation(STDEV)	T Statistics ((O/STDEV))	P Va lues
NC->GSCM	-0.174	-0.175	0.072	2.404	0.017
OC->GSCM	0.326	0.319	0.076	4.299	0.000

Table 3. Hypotheses testing

Hypotheses	Beta	T value	Decision	F square
H1. NationalCulture-> GSCM	- 0.174	2.404	Supported	.866
H2. OrganizationalCulture-> GSCM	0.326	4.299	Supported	.001

- Critical t-values. *1.96 (P < 0.05)

Coefficient of determination R²

We are assessing the variance explanation of the central construct of interest GSCM (R²). The independent variables explain 29.2% of the dependent variable. The overall R² is found to be weak since R² is ranging between 0.19 and 0.33 but acceptable since, according to [7], is above 0.19. The effect size measures the contribution of each exogenous construct on the endogenous construct [8].

Table 4. R-square of the endogenous latent variable and Effect size F²

Construct Relation	R2	Result		GSCM	Result
GSCM practices	0.224	Weak	National Culture	0.002	No effect size
			Organizational Culture	0.376	Large effect size

Table 5. R² of GSCM

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T- Statistics ((O/STDEV))	P- Values
GSCM	0.224	0.242	0.059	3.773	0

Using the blindfolding procedure in PLS, we measured the construct prediction capability. The D Value can be any number from 5 to 10. We have selected D=10 since the sample size (n=147) divided by (D=10) should be a round number. The Q2 should be above 0%. Here in our paper, the Q2 is 27%

Table 6. Predictive relevance (Q²)

	SS O	SSE	Q ² (=1- SSE/SSO)
GSCM	147	107.31 3	0.27
National culture	147	147	
Organizational Culture	147	147	

The GoF is defined as the global fit measure, and it is the geometric mean of both average variances extracted AVE and the average of R2 of the endogenous variable [9]. [8] assessed the SRMR, which is the root mean square discrepancy between the observed and model implied correlations. The SRMR shows an absolute fit measure when a value of 0 indicates a perfect fit.

Moderating effects: Our model posited the existence of moderating variables between culture-independent variables and GSCM- dependent variable. Recent methodologies and approaches have been used to assess the effects of moderators using SmartPLS[10]. Advanced analysis in PLS-SEM includes the moderating categorical variables.

Table 7. Moderating effect

	Original Sample (O)	T Statistics ((O/STDEV))	P - Values
Sector_ ->GSCM_	0.114	1.571	0.117
Size_ ->GSCM_	0.151	1.972	0.049
Type ->GSCM_	0.197	2.847	0.005

4 DISCUSSION

The present paper aims to investigate the simultaneous influence of organizational and national cultural orientations on the adoption of green supply chain practices in the Moroccan firms in the manufacturing and transportation sectors. Much recent discourse had investigated the role of cultural factors regarding sustainability implementation, the findings either support or hinder such implementation [5]. The current study aims to first expand the previous work performed on the relationship between culture and environmental sustainability practices, second to fill the research gaps regarding the controversial results in the literature, and finally to contribute to the supply chain literature since little is known about the contribution of culture in GSCM in the context of developing countries. The findings from this study reveal a strong relationship between green supply chain practices with both organizational and national culture.

4.1 Theoretical implications

This study contributes to BOSCM in the following ways. First, it proposes and tests the developed model based on behavioral factors and GSCM. The importance of culture’s impact on GSCM has been tried before, but until now, prior works only works on either national or organizational culture. Second, it enhances the knowledge in the field of environmental sustainability through cultural values.

4.2 Managerial implications

The findings of this paper further reveal some managerial insights for managers and manufacturing

firms related to the critical role the culture can play in promoting sustainable practices within firms by building a solid and responsible organizational culture in support of their green vision and sustainability awareness towards their community. It is of great relevance to establishing a new business culture that supports environmental policies and emphasizes sustainable and responsible behaviors.

5 CONCLUSION

This work investigates the impact of a national culture through power distance and organizational culture through adhocracy culture on the application level of GSCM initiatives in the Moroccan context. With a rigorous scanning of the literature, we developed a conceptual model, which is tested using a survey approach. Overall, the direct relationship between GSCM practices and culture is auspicious. Larger sample sizes may bring additional insights. The data collection was collected using online questionnaires distributed among 146 Moroccan firms. These responses were analyzed using structural equation modelling (SEM). This study is probably the first to provide an integrative perspective of cultural factors impact on GSCM practices in the Moroccan context. Relatively consistent with the theoretical views, the quantitative data analysis revealed both power distance and adhocracy culture to have a negative and positive significant impact on GSCM, respectively. Furthermore, constructs and other factors as religion can be leveraged in future research. The GSCM performance may be incorporated in future research. Further empirical validation of the proposed hypotheses is required.

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