INFLUENCE OF FIRM STAKEHOLDERS' PRESSURE AND SUSTAINABILITY CAPABILITIES ON DEVELOPING SUSTAINABLE SUPPLY CHAIN MANAGEMENT

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Abstract - In recent years there has been a strong interest from practitioners and experts in the development of concepts specific to sustainable supply chain management. More, very few papers have examined in a holistic approach the determining effects of stakeholder pressure and organizational capabilities on sustainable supply chain management practices and management performance. As a consequence, we developed a model that deals with the links between these variables by means of Partial Least Squares Structural Equation Modeling, and tested on a sample of 178 enterprises. Our findings confirm the logic that firms undertake SSCM practices mainly because of perceived stakeholder's pressure to be sustainable. More, the impact of external stakeholder's pressure on SSCM practices is much greater in magnitude than those of internal stakeholder's pressure. Also, we discover that internal capabilities-management performance and environment-related technical capability-are important drivers of SSCM practices.

Keywords - Sustainable Supply Chain Management; Stake Holders' Pressure; Sustainability Capabilities; Management Performance

I. INTRODUCTION

Sustainable supply chain management (SSCM) plays a key role in Romania's transformation to sustainable economic growth (Florescu et al., 2019). SSCM, which integrates sustainability in the core business functions of supply chain management (SCM), is a management philosophy or SCM focus on two bottom lines simultaneously: environmental and economic contributions for long-term sustainable growth (Seuringet al., 2008). By engaging in SSCM practices, firms may achieve sustainable competitive advantages through superior resource usage efficiency and financial performance (Dubey et al., 2017; Govindan et al., 2020; Vaioet al., 2020). In this sense, the sustainability in SCM is an inevitable approach to sustainable development of Romania. However, SSCM practices in Romania are relatively underdeveloped and under-examined thus far (Vasiliu et al., 2013). As a result, there is a need of knowledge about the forces that drive firms to adopt SSCM practices in Romania. Previous studies have investigated the drivers of SSCM practices (Zhu et al., 2013; Chen et al., 2017; Kumar et al., 2020). However, the previous findings on the driving effects of firm environmental pressures on SSCM practices are inconclusive (Esfahbodi et al., 2017). Roy et al. (2020) do not find a significant relationship between external stakeholder pressures and SSCM practices. Thus, the motives of SSCM practices, even the motivating effects of a particular stakeholder's pressure, needs to be further examined. In these efforts, some scholars insist on that various stakeholders' pressure are the main motives of SSCM practices (Sarkis et al., 2010) and point that the inconclusive empirical findings may be a result of the limitation of IT in its inability to explain firms' heterogeneous responses in adopting SSCM practices when facing the same institutional environment (Dubey et al., 2017). Several researchers thereby used resource-based view to investigate the driving effects of resources and capabilities (such as measurement performance, organizational learning, and sustainability capability) on SSCM practices (Gong et al., 2019; Roy et al., 2020). Dubey et al. (2017) outline the importance of management performance in promoting adoption of SSCM practices and Gong et al. (2019) find the positive effect of sustainability capability on SSCM practices. However, these studies did not take the motivating effects of stakeholder's pressure in account simultaneously, and thus did not address the inconsistent findings on the motivating effects of stakeholder's pressure. To address such research gap, our study examines the influence of firm stakeholder pressure and sustainability capabilities in adopting SSCM practices. With an empirical test based on survey data from 178Romanian firms, this article makes several contributions. First, this work contributes to the SSCM literature with quantitative findings from Romania. Second, the present article contributes to the research on the relationship between stakeholder's pressure and SSCM practices by examining the driving effect of the interaction of firm environmental pressures and sustainability capabilities on SSCM practices to help resolve and explain the inconsistency off this relationship.

II. LITERATURE REVIEW

2.1. Theoretical background

2.1.1. Sustainable supply chain management

With the increasing importance of sustainability, SCM researchers are integrating sustainability into SCM to boost the development of the field of SSCM (Dubey et al., 2017; Bui et al., 2021). SSCM refers to SCM focusing on the simultaneous achievement of environmental and economic contributions for long-term sustainable growth (Seuringet al., 2008). In recent years, SSCM has been widely examined across different industries around the world, such as the manufacturing (Wolf, 2011), food (Grimm et al., 2014), electric (Wittstrucket al., 2012), automotive (Luthra et al., 2015), air space and oil and gas (Vaioet al., 2020), both in developing and developed countries (Ansari et al., 2017). These previous works mainly focus on categorizing SSCM initiatives, the impact of SSCM on performance, and the drivers of and barriers to SSCM. The SSCM initiatives that organizations undertake are extremely diverse. For example, several researchers suggest that SSCM practices include activities related to sustainable design, production and distribution (Esfahbodi et al., 2017) or sustainable packaging and environmentally friendly purchasing (Zailani et al., 2012). Others classify SSCM practices into different categories such as supply chain coordination- continuity- risk management (Beske et al., 2014), supply chain learning (Hong et al., 2018), and proactivity for sustainability (Beske et al., 2014). A number of scholars examine the performance consequence of SSCM practices (Esfahbodi et al., 2017) and their antecedents (Chen et al., 2017; Karmaker et al., 2021). Paulraj et al. (2017) demonstrate that SSCM practices improve environmental performance. Based on survey data from 220 manufacturers, Hong et al. (2018) find that SSCM practices have positive impacts on economic, environmental, and social performance. Regarding the antecedents of SSCM practices, the reviews of Dubey et al. (2017) and Ansari et al. (2017) identify economic incentives, government regulations (Walker et al., 2012; Esfahbodi et al., 2017), customer pressure (Chkanikovaet al., 2015; Roy et al., 2020), information sharing, collaboration with partners (Beske et al., 2014), executive management commitment (Wolf, 2011; Wittstrucket al., 2012), and organization competitiveness (Dubey et al., 2017) as important drivers of SSCM practices. A lack of financial resources (Grimm et al., 2014), a lack of expertise and training (Walker et al., 2012), a lack of information (Wolf, 2011), a lack of information capabilities (Zaabi et al., 2013), and the complexity of SSCM implementation (Chkanikovaet al., 2015) are found to hinder the implementation of SSCM initiatives. This study focuses on two types of sustainability capabilities: management performance and environment-related technical capability. According to Liang et al. (2007), Pagell et al. (2009), Carter et al. (2011) and Kiron et al. (2013) management performance is important resource for implementing SSCM practices. Environment-related technical capability is another important sustainable capability (Liu et al., 2017) as technology plays an essential role in environmental protection (Acquaye et al., 2018). Environment-related technical capability refers to the capability to develop and use technology to produce and deliver products/services that are environmentally friendly. Examples of such capability include the ability to redesign production processes to reduce pollution, the technology capability to utilize renewable resources, and the ability to dispose of harmful materials.

2.2. Hypothesis development

2.2.1. Stakeholders pressure and sustainable supply chain management practices

Stakeholders are individuals and groups which can affect the company's performance or who are affected by a firm's actions (Freeman, 1984). Clarkson (1995) distinguishes between primary stakeholders, those without whose participation and support the organization cannot survive, and secondary stakeholders, which affect and are affected by the organization but are not engaged in transactions with it and are not essential for its survival of primary stakeholder groups and its survival and success depends on the capacity to create value for these stakeholders by satisfying their demands and expectations. An organization can behave either in a more proactive or more reactive manner to face such demands. As regards environmental responsibility, stakeholders demand integrity, respect, standards, transparency and accountability (Waddock et al., 2003). In fact, the environmental commitment of a firm implies harmonizing environmental performance with stakeholders' expectations (Gupta, 1994). Thus, the company acts conditioned by the pressures that it receives and perceives from its stakeholders. Alvarez et al. (2001) also observed that the implementation of environmental practices in the hotel industry responds to a higher stakeholder pressure. Therefore, we hypothesize the following:

H1a: There it is a positive relationship between external stakeholder's pressure and SSCM practices.

H1b: There it is a positive relationship between internal stakeholder's pressure and SSCM practices.

The quality of management approach sets out the relationship between the various parties involved and the company, including the management of the business, the shareholders and other stakeholders. Esty et al. (2008) indicate that quality of management

seeks to increase the capability of stakeholders to create value by utilization of opportunities and management of risks related to environmental and social activities. In addition, the sustainability also has a positive association with the quality of management. In addition, De Villiers et al. (2011) states that there is a positive association between good environmental reporting and shareholder wealth, and the important objective of corporate boards to adhere to good environmental practices. Several studies have examined different aspects of sustainable practices and its reflections on the operations management such as (KazimierasZavadskas et al., 2019; Khaghaany et al., 2019; Kumar et al., 2020; Luthra et al., 2020; Mangla et al., 2020; Panda et al., 2020) contrasts the efficiency of conventional and circular production processes across a number of measures. Khan et al. (2020) have shown that using renewable energy in logistics not only increases environmental sustainability but also create a better national image and offers better export prospects in environmentally responsible countries to support a sustainable growth economy. Besides, some researchers emphasize the quality of management and sustainability reporting. Therefore, we hypothesize the following:

H1c: There it is a positive relationship between quality of management and SSCM practices.

2.2.2. Sustainability capabilities and sustainable supply chain management practices

Firms' adoption of SSCM practices are influenced by their sustainability capabilities in terms of management performance and environment-related technical capability. Management performance has been recognized as important resource in forming and implementing a firm's strategies (Liang et al., 2007). Top management's beliefs and behaviors influence organizational culture and values, which guides firms' behaviors (Yuan et al., 2020). In this sense, management performance for corporate social responsibility helps a firm form a sustainability culture and deploys budgetary and other resources to develop SSCM practices. In fact, several studies suggest that management performance and firm environment-related technical capability are key antecedents to the implementation of sustainability-related activities (Kiron et al., 2013). Moreover, Pagellet al. (2009) find that management performance plays a key role in establishing SSCM by integrating sustainability goals, practices, and cognition into SCM. Therefore, we hypothesize the following:

H2a: There it is a positive relationship between firm management performance and SSCM practices.

Environment-related technical capability is another important enabler and is necessary to implement SSCM strategies. To develop SSCM, firms need to redesign production/service processes to reduce negative environmental and social externalities. This redesign or transformation requires environment-related technologies and the capabilities to develop or access such technologies. With such technical capability, firms may develop SSCM practices to leverage their advantages. Several previous studies have lent support to this argument. For instance, Shang et al. (2010) point out the importance of environmentally sustainable technology capabilities in developing environmentally SSCM in electronics firms. Liu et al. (2017) find that supply chain capability (including technical capability) is positively related to environmentally sustainable supply chain strategy. Hassini et al. (2012) show that technologies that enhance environmentally sustainable process capability are helpful for establishing SSCM. These observations suggest the following hypothesis:

H2b: There it is a positive relationship between firm environment-related technical capability and SSCM practices.

2.2.3. The interaction effect of stakeholder's pressure and sustainability capabilities

According to Child (1997), firms' conduct is influenced by the external environment, internal resources and capabilities, and their combinations. Following this logic, this study proposes that the interaction of stakeholder's pressures (external environmental factors) and sustainability capabilities (internal resources) influences the implementation of SSCM strategy. On the other hand, the specific profiles of resources and capabilities determine firms' heterogeneity (Barney, 1991); thus, sustainability capabilities influence firms' heterogeneity in their responses to stakeholders' pressure. From a contingent perspective, the efficiency of resources is contingent on environmental factors (Sirmon et al., 2007); thus, the relationship between sustainability capabilities and SSCM practices is contingent on stakeholder's pressure. In sum, institutional pressures and sustainability capabilities have an interaction effect on firms' adoption of SSCM practices.

We expect to observe a reciprocal relationship between management performance and external pressures in motivating SSCM practices. First, when management performance feels greater pressure from external and internal stakeholder's pressure and quality of management to develop SSCM practices, they may make greater efforts to establish a sustainable development culture and policies and have more incentives to deploy resources to facilitate SSCM practices. Second, management performance can improve firms' responses to stakeholder's pressure by enhancing employees' proactivity and efficiency (Carter et al., 2011). Therefore, we hypothesize the following:

H3a: There it is a positive relationship between firm management performance, stakeholder's external pressure and SSCM practices.
H3b: There it is a positive relationship between firm management performance, stakeholder's internal pressure and SSCM practices.
H3c: There it is a positive relationship between firm management performance, quality of management and SSCM practices.

In contrast, the motivating effects of environment-related technical capability and stakeholder's pressure on SSCM practices may not strengthen each other. First, firms with better environment related technical capability may enjoy better sustainable performance (Hassini et al., 2012; Liu et al., 2017), and thus they may have less incentive to respond to stakeholders' pressure on sustainable development and be less proactive in doing so. Second, firms facing greater stakeholders pressure need to make more efforts and invest more in managing the environmental and social requirements of external and internal stakeholders and quality of management (Sarkis et al., 2010), which may take away some efforts to leverage the advantage of environment-related technical capability. Therefore, we hypothesize the following:
H3d: There it is a negative relationship between technical capabilities, stakeholder's external pressure and SSCM practices.
H3e: There it is a negative relationship between technical capabilities, firm stakeholders' internal pressure SSCM practices.
H3f: There it is a negative relationship between technical capabilities, quality of management and SSCM practices.

III. METHODS AND RESULTS

3.1. Measurement and data collection

This study surveyed the SSCM practices of companies to gather data to test the hypotheses, using a database from Romanian National Institute of Statistics. The survey was conducted from March 2020 to November 2021. The scales were adopted from measures in previous studies in the field. The questionnaire includes three sections: stakeholder's pressure, sustainability capabilities and SSCM practices. In the first section, stakeholder's external pressure was measured with four items adapted from Murillo- Luna et al. (2008). The internal stakeholder's pressure scales were adapted from Shahzad et al. (2020) and Abdel-Maksoud et al. (2016). Three indicators adapted from Waddock and Graves (1997) were used to measure quality of management. Informants were asked to indicate their agreements on these items according to their perception about the pressures that drive their companies to implement SSCM practices with 1 representing "strongly disagree" and 7 representing "strongly agree". Regarding sustainability capabilities, two items adapted from Carter et al. (2011) and Verboncu (2011) were used to measure management performance. Environment-related technical capability was measured with four indicators adapted from Calantone et al. (2002). Informants were asked to indicate their agreements on these items according to their perception about the internal capabilities that enable their companies to implement SSCM practices with 1 representing "strongly disagree" and 7 representing "strongly agree". SSCM practice was operationalized as a third-order construct with two dimensions: risk management and environmental management, which were operationalized as secondorder variables. Similar to Wang et al. (2018), social responsibility management was composed of three dimensions: strategic orientation, continuity, and collaboration, and environmental management were measured with three dimensions: sustainable manufacturing, sustainable packaging, and environmental protection management. All these six first-order variables were measured with items adapted from Carter et al. (2011) and Zailani et al. (2012). Informants were asked to indicate the efforts that their companies have putted into implementing the actionsin the last 3 years with 1 representing "none" and 7 representing "very high". Using Romanian National Institute of Statistics, we obtained a random original sample of 681 firms. The survey was conducted via e-mail. A total of 178 completed and useful questionnaires were collected and used for this research with a response rate of 26.1%. The low response rate was generated by the serious problems generated by the Covid19 health and economic crisis among Romanian companies and their high death rate.To assess the homogeneity of the data collected, t-tests were used to compare the firm characteristics and research variables across data from different methods. The results show that no significant differences were found at the$p < 0.05$ level, indicating that the data collected by these two methods were homogeneous. Moreover, the firm demographics of the responding firms were compared with the non-responding firms in the sample. The comparison suggests that non-response bias was not a serious issue in this study.

3.2. Data analysis

With the advantage of handling complex models with small sample sizes (Penget al., 2012), partial least squares (PLS) structural equation modeling (SEM) using Smart PLS 2.0 M3 software (Henseleret al., 2010) was used for the data analysis, considering the small sample size (N= 178) and the complexity of the model given the number of interaction terms. According to the rule of thumb for robust PLS path modeling estimations suggested by Barclay et al. (1995), this sample size is acceptable for the research model as the sample size is larger than ten times the maximum number of paths directed at any construct

in inner model (i.e., 11). Before hypothesis testing, the measures were assessed in terms of reliability, convergent validity, and discriminate validity. As shown in Table 1, all composite reliability (C.R.) values (between 0.878 and 0.964) and Cronbach's alpha (between 0.778 and 0.961) are greater than 0.70, indicating adequate reliability. All average variance extracted (AVE) values are greater than 0.50, indicating acceptable convergent validity.

Table 2 shows that the square roots of the on-diagonal AVEs are greater than the off-diagonal correlations of the matrix, indicating acceptable discriminant validity. Two approaches were used to assess common method bias (CMB). First, following Podsakoffet al. (2003), Harmon's single- factor test was conducted. The result shows that no factor accounts for more than 30% of the variance, suggesting that CMB is not a concern. Second, the unmeasured latent method construct approach suggested by Liang et al. (2007) for the PLS model was used.

Item	Loading	T-value	C.R.	AVE	Cronbach's Alpha
External stakeholders' pressure (ESP)					
ESP1	0.807	14.586	0.925	0.758	0.892
ESP2	0.888	44.313			
ESP3	0.905	59.703			
ESP4	0.873	34.404			
Internal stakeholders' pressure (ISP)					
ISP1	0.807	15.891	0.891	0.733	0.820
ISP2	0.788	18.383			
ISP3	0.858	31.201			
Quality of management (QM)					
QM1	0.924	54.039	0.935	0.828	0.894
QM2	0.936	63.022			
QM3	0.862	28.934			
Technical capability (TC)					
TC1	0.862	28.521	0.905	0.706	0.861
TC2	0.867	34.413			
TC3	0.798	17.206			
TC4	0.826	19.103			
Management performance (MP)					
MP1	0.911	50.149	0.899	0.817	0.778
MP2	0.895	36.374			
Sustainable manufacturing (SM)					
SM1	0.819	23.430	0.940	0.699	0.924
SM2	0.899	51.948			
SM3	0.882	29.846			
SM4	0.894	40.301			
SM5	0.851	22.713			
SM6	0.722	10.732			
SM7	0.760	14.813			
Sustainable packaging (SSP)					
SSP1	0.813	19.835	0.922	0.669	0.899
SSP2	0.825	21.332			
SSP3	0.881	36.348			
SSP4	0.824	19.441			
SSP5	0.819	25.379			
SSP6	0.733	13.992			
Environmental protection management (EPM)					
EPM1	0.898	48.329	0.951	0.725	0.944
EPM2	0.894	47.741			
EPM3	0.846	21.903			
EPM4	0.871	31.8152			
EPM5	0.834	29.562			
EPM6	0.772	18.349			
EPM7	0.847	28.899			
EPM8	0.832	21.118			
Strategic orientation (SO)					
SO1	0.681	8.401	0.878	0.646	0.814
SO2	0.621	12.129			
SO3	0.754	10.470			
SO4	0.879	30.779			
SO5	0.883	34.019			

Continuity (C)					
C1	0.862	18.030	0.942	0.799	0.918
C2	0.934	52.415			
C3	0.918	43.195			
C4	0.864	25.317			
Collaboration (CO)					
CO1	0.900	28.301	0.934	0.832	0.898
CO2	0.917	17.671			
CO3	0.914	23.828			
Environmental management * (EM)					
EM1	0.918	49.987	0.964	0.588	0.961
EM2	0.865	27.664			
EM3	0.898	30.904			
Risk management* (RM)					
RM1	0.821	14.683	0.914	0.504	0.898
RM2	0.852	25.038			
RM3	0.764	14.119			
SSCM practice *					
EM	0.896	64.258	0.9158	0.5438	0.927
RM	0.764	25.904			

Table 1 Measurement model results.
Note: • high-order constructs.

	GP	CUP	COP	TC	TML	SSCM
External stakeholder's pressure (ESP)	0.870					
Internal stakeholder's pressure (ISP)	0.519	0.854				
Quality of management(QM)	0.398	0.436	0.910			
Technical capability (TC)	0.382	0.225	0.329	0.840		
Management performance (MP)	0.459	0.521	0.369	0.420	0.901	
SSCM practices (SSCM)	0.651	0.551	0.486	0.520	0.588	0.734

Table 2Correlation matrix
Note: the square root of the AVE is reported on the diagonal. The latent construct correlations are reported off-diagonals.

3.3. Results

The results of the hypothesis tests are summarized in Table 3.

Hypothesis	Description	Results
H1a	Stakeholders external pressure → SSCM practices	Supported
H1b	Stakeholders internal pressure → SSCM practices	Supported
H1c	Quality of management→ SSCM practices	Supported
H2a	Management performance → SSCM practices	Supported
H2b	Technical capability → SSCM practices	Supported
H3a	Firm external environment pressure x management performance → SSCM practices	Not supported
H3b	Firm internal environment pressure x management performance → SSCM practices	Not supported
H3c	Quality of management x management performance → SSCM practices	Supported
H3d	Firm external environment pressure x technical capability → SSCM practices	Supported
H3e	Firm internal environment pressure x technical capability → SSCM practices	Supported
H3f	Quality of management x technical capability → SSCM practices	Not supported

Table 3 Results of hypothesis tests.

IV. DISCUSSION

Our findings confirm the logic that firms undertake SSCM practices mainly because of perceived stakeholder's pressure to be sustainable. These findings are consistent with previous studies (Esfahbodi et al., 2017) that found positive relationships between stakeholder's pressure and SSCM practices. While environmentally SSCM is one aspect of SSCM practices, our findings also lend support to those of previous studies (Chu et al., 2018; Zhu et al., 2013) that stakeholders' pressure are main

driving forces that push firms to undertake environmentally SSCM. Of interest in these findings is that the impact of external stakeholder's pressure on SSCM practices is much greater in magnitude than those of internal stakeholder's pressure.

This study offers several contributions to the ongoing research on SSCM. First, this study contributes to the SSCM literature by examining the SSCM practices of Romanian companies. As Hong et al. (2018) point out, research on SSCM in developing countries is still limited (Khan et al., 2021). Responding to this call, this study provides a better understanding of the driving forces of SSCM practice adoption in Romania. Specifically, this study advances the research on the driving forces of SSCM practices by examining the simultaneous driving effects of stakeholder's pressure and sustainability capabilities. More importantly, this study addresses the inconclusive relationships between stakeholder's pressure and SSCM practice adoption. Third, the present study contributes to the research on sustainability capabilities. While previous studies outline the role of sustainability capabilities in facilitating SSCM practices (Liu et al., 2017), the findings of this research shed new light on the role of management performance and environment-related technical capability in SSCM practices. Extending their direct driving role in SSCM practice adoption, the findings suggest the contingent role of sustainability capabilities on firms' responses to environmental pressures.

This study also provides several useful implications for managers and policy-makers. First, while the findings suggest that sustainability capabilities are important drivers of SSCM practices, management performance may improve their efficiency and effectiveness in adopting SSCM practices in three ways: 1) they can integrate SSCM into firm strategies and convey their beliefs on environmental protection to employees, 2) they can be directly responsible for environmental aspects of the work, and 3) they may invest in environment-related technologies, develop technical capabilities, and exploit such technologies and abilities to design/redesign and deliver products/services in a environmentally friendly manner.

V. CONCLUSION

Our study examines the driving effects of firm environmental pressures, internal sustainability capabilities, and their interactions on SSCM practices. The empirical results suggest that stakeholder's pressures, sustainability capabilities and their interactions influence the adoption of SSCM practices. These findings suggest that management performance enables firms to proactively learn from competitors who succeed in SSCM practices and that firms are more likely to leverage the advantage of technical capabilities to develop SSCM practices. The findings provide several valuable insights into developing SSCM practice in developing countries like Romania in order to explain the driving forces of SSCM, which provide implications for managers who should establish indicators in order to measure performance and environment protection and make more effort s on developing environment-related technologies.

This study has some limitations that provide directions for further research. First, this study examined only two types of internal drivers (management performance and technical capability) of SSCM practices; however, many internal factors may also affect the adoption of SSCM practices. Future studies could investigate how other internal factors interact with firm environmental pressures to drive SSCM practices. Second, this study did not consider differences across industries. Firms in different industries may exhibit dissimilar responses to stakeholders' environmental requirements. Future work could conduct an in-depth industry study or compare sustainability strategies across different industries. Third, this study was based on survey data, which cannot reflect changes over time; however, the process of implementing SSCM practices includes multiple stages: start, development, and maturity. Longitudinal studies based on time series data and/or panel data could be conducted to explore the changes in the SSCM implementation process and compare them across different stages.

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