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Decoupling Institutional Pressure on Green Supply Chain Management Efforts to Boost Organizational Performance: Moderating Impact of Big Data Analytics Capabilities

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This paper aims to empirically examine the impact of institutional pressure on green supply chain management (GSCM) efforts and the moderating role of big data analytics capabilities (BDAC) on organizational performance. This study greatly develops a research model by integrating institutional theory, the natural resource-based view (NRBV), and dynamic capability theory to explore this relationship. This article is based on structured questionnaire data of 347 supply chain personnel. We employed structural equation modeling to verify the research hypotheses. The findings provide empirical support for institutional pressures affecting GSCM efforts and organizational performance. The results also showed that the moderating effect of BDAC positively strengthened the impact of GSCM effort on organizational performance. The findings extend and refine the existing GSCM literature, providing new insights for scholars to explore this view further. Practitioners can turn their attention to incorporating institutional pressures and advanced technologies into organizational decision-making, even in times of crisis such as Covid-19.

Keywords: institutional pressure, technology innovation, GSCM, BDAC, SEM

1 INTRODUCTION

Growing social and ecological degradation puts pressure on the supply chain (SC) to prioritize green sustainability (Zhu et al., 2022). However, the organizational environment is volatile, especially during "black swan events" such as Covid-19, which was declared a pandemic in March 2020 (Adhanom Ghebreyesus, 2020), causing uncertainty and panic across the globe. The rapid and unprecedented outbreak of Covid-19 has seriously disrupted the organizations' SC. Despite the volatility, organizations may not stay away from the market as they still need different SCs and services to effectively use their investable surplus (Talwar et al., 2021). With the rise in ecological consciousness during Covid-19, green supply chain management (GSCM) has gotten plenty of attention from scholars and practitioners (Lee et al., 2012; Zhu et al., 2016; Wang et al., 2020; Wang and Yang, 2021). GSCM reduces the environmental impact of industrial activities (Wu, 2013), improves energy efficiency, assists in the environmental implications of SC activities (Li et al., 2020), develops collaboration among stakeholders (Kitsis and Chen, 2021), and leads to organizational performance (Geng et al., 2017; Shahzad et al., 2020). Even though prior findings have pointed to the need of integrating diverse GSCM practices, less research has been done into the prospective interdependences and application consequences of institutional factors and capabilities to identify organizational performance.

The institutional pressure inside a corporation allows initiatives to dominate social, financial, and environmental values (Liu et al., 2010; Thong and Wong, 2018; Anthony, 2019). For the growth and sustainability of the organization, managers conform to the system and are isomorphic with the institutional environment, as this is the central tenet of institutional thinking, following social expectations and gaining legitimacy (Latif et al., 2020). Theoretical and empirical research has explored the implementation and effect of GSCM practices using financial, operational, and environmental measures on selected performance outcomes (Glover et al., 2014; Gupta et al., 2020; Ghosh et al., 2021; Zhang et al., 2021), but has not discussed the isomorphic view of engaging organizations in promoting GSCM efforts and performance. Therefore, to fill the research gap, the research seeks to conceptualize a structural model of Institutional pressure—GSCM efforts and their causal relationships with associated performance indicators.

Due to the rapid expansion of information technology, big data analytics (BDA) can help organizations to apply the "large-scale group decision-making" (LSGDM) strategy, which lowers relational and task conflicts among different SC stakeholders (Liu et al., 2020; Wu et al., 2017) and becoming the backbone of the current progressive growth. BDA capabilities (BDAC) have acquired strategic significance and have become one of the most precious assets of multiple organizations (Van De Wetering et al., 2019; Shamim et al., 2020). In a similar vein, organizations in many countries have been undergoing a surge in digitizing and acceptance of BDA technologies over the past few years (Wang et al., 2018; Gong and Janssen, 2020; Mikalef et al., 2020; Cetindamar et al., 2021; Shahbaz et al., 2021). The link between BDA and SCM has also been studied in the literature to support internal and external integration for effective operational performance (OP) decision-making processes (Hazen et al., 2014; Fosso et al., 2017; Hofmann, 2017; Maheshwari et al., 2021). However, the impact of BDAC on GSCM and environmental performance (EP) decision-making processes is not entrenched in the literature (Benzidia et al., 2021). Considering the broad importance of BDA, there is a need to study the significant involvement of BDAC in the link between GSCM efforts and organizational performance (OP and EP).

We conducted this study because there is little research on the relationship between institutional pressure, GSCM effort, and organizational performance. This relationship requires investigation to expose the specific efforts of organizations that advance future development to achieve the SDGs. While recognizing the above gaps and the need to fill them, we propose to address two core research questions: 1) How have GSCM's efforts been influenced by the institutional pressure and thereby organizational performance during Covid-19? 2) What role does BDAC play in associating GSCM efforts and organizational performance? To answer these questions, the content of this study is as follows: First, it examines institutional pressures on GSCM efforts in emerging nations confronting environmental issues. Second, the influence of GSCM effort on organizational performance and the moderating role of BDAC are explored. It then collects data from organizations at various phases of planning and implementing GSCM efforts. The data gathered is then examined, and the results' theoretical and practical contributions are discussed.

2 THEORY UNDERPINNING

GSCM has received more and more attention in the literature (Lee et al., 2012; Zhang and Yang, 2018) and the studies trying to link resource-based view (RBV) theory to GSCM clarify firms' competing stance and improve performance (Barksdale and Pratt, 1980; Gavronski et al., 2011; Choi and Hwang, 2015). The RBV believes that the company's resource combination determines the company's competitive position, not the product configuration of these resources (Wernerfelt, 1995). The basic assumptions of RBV theory are related to the heterogeneity and immobility of resources of enterprises. To address this challenge of integrating the natural environment, the natural resource-based view (NRBV) helps understand the basic view of natural resources (Hart, 1995). Pollution prevention, product management, and sustainable performance are interconnected approaches that necessitate essential resources and play an important part in achieving long-term competitive advantage (Shaw et al., 2021). According to the company's NRBV, organizational resources and dynamic capabilities play a crucial role in achieving environmental SCM (Samad et al., 2021). NRBV believes that applying a series of special efforts consistent with the proactive approach of environmental management will improve organizational performance (Wong et al., 2012). Many researchers have connected RBV theory with GSCM to explain enterprises' performance development, but significant issues remain to be identified (Dao et al., 2011; Sayeed and Onetti, 2018; Mojumder and Singh, 2021). Essentially, it is unclear how the institutional pressure to enhance the SCM efforts will translate into strategic resources for firms, leading to competitive advantage and improved performance (Shahzad et al., 2020). The researchers concur with the NRBV, highlighting the relevance of environmental elements to a firm's internal capabilities in obtaining sustainable advantage (Hart, 1995; Yunus and Michalisin, 2016). Through the GSCM efforts, organizations can have the ability to improve OP and EP.

In the current competitive environment, organizations must deal with several pressures, new challenges in sustainable manufacturing, and energy consumption challenges that span multiple domains beyond production, including construction and manufacturing (Glover et al., 2014). Therefore, organizations must start binding the potential of SC collaboration to accomplish their sustainability goals (Ilyas et al., 2020). Furthermore, an enterprise is a socio-cultural system directly connected with the wider environment (Altayar, 2018). Companies have a desire and a need to conform to the norms and practices imposed by their external environment due to their social and cultural existence. In institutional theory, social reality is governed by a series of different and specialized cultural-cognitive, normative and regulatory controls (Kros et al., 2020). The institutional theory describes three driving forms that generate isomorphic pressures, having coercive pressure (CP), normative pressure (NP), and mimetic pressure (MP), which can affect the competition and coordination between the organization and the environment (DiMaggio and Powell, 1983). The institutional theory proves that the integration of GSCM activities within the organization depends on institutional pressure or stakeholder pressure (Thong and Wong, 2018; Tolmie et al., 2020).

On the contrary, institutional pressure may produce consistency in business processes throughout the SC and hinder GSCM's efforts to integrate into the SC (Samad et al., 2021). An institutional theory emphasizes the importance of institutional pressure on SC partners and the organization itself. To establish this theory, this study determines the role of institutional pressure (CP, NP, and MP) in promoting the organization's GSCM efforts. As a result, depending on the type of institutional pressure applied, several criteria for GSCM adoption have been developed (Carbone and Moatti, 2011; Gupta et al., 2020; Kros et al., 2020). Meanwhile, it may encourage producers to adopt special GSCM (Ainin et al., 2016) and significantly affect the supplier's evolution of higher sustainability (Gupta et al., 2020). This is because CP has a positive association with internal environmental control measures, while less CP indicates a positive relationship with external GSCM decision-making (Samad et al., 2021). Institutional pressure affects GSCM decisions in manufacturing and GSCM decisions in other industries, such as the SC of large stores. Therefore, it is desired to recognize the impact of institutional pressure on GSCM efforts performed by the superstore to meet the environmental goals. These strong arguments are that institutional theory should be chosen as the second overall organization theory because it clarifies the operational and environmental attributes of SC efforts and performance. Therefore, we proposed and tested a theoretical model capable of untying the impact of CP, NP, and MP on GSCM efforts that lead to organizational performance.

3 HYPOTHESES DEVELOPMENT

3.1 Institutional Pressure and GSCM Efforts

3.1.1 Coercive Pressure and GSCM Efforts

CP can be characterized as pressure on the enterprise by others on which the enterprise relies (DiMaggio and Powell, 1983). According to institutional theory, CP can impact an organization's ecological sustainability and regulatory authorization and also takes into account multifactor complications such as internal behaviors (Roxas and Coetzer, 2012). External stakeholders, like government entities and non-governmental organizations, apply formal and informal pressure on organizations to comply with specific environmental standards (Dubey et al., 2015; Latif et al., 2020). Regulatory standards are generally deemed the most valuable resource of outside influence on the corporate GSCM function (Samad et al., 2021), and CP is typically a major factor affecting environmental management decisions. Every organization must abide by these regulations but must be severely sanctioned and punished by these authorities (Latif et al., 2020). Research by (Ye et al., 2013) pointed out that firms facing considerable CP will face more possibilities to improve GSCM efforts, including environmental protection measures. In addition, when the organization faces CP, it may affect GSCM's efforts to improve organizational performance. Thus, we posit:

H1a: CP is positively influencing GSCM efforts.

3.1.2 Normative Pressure and GSCM Efforts

NP comes from suppliers, customers, corporate unions and other associations, social groups, end-users, and downstream SC partners (Ye et al., 2013). In addition, NP is considered the main predictor of GSCM adoption, especially in emerging nations (Saeed et al., 2018). Because NP influences social compliance behavior, it is a driving force in emerging countries that shifts norms and responsibilities (Latif et al., 2020). If the company does not manage the pressure of regulation, the company's image and reputation are affected. A company with a corrupted reputation will suffer outer losses and drop its competitive advantage (Roxas and Coetzer, 2012). In addition, through the efforts of GSC, a collaboration between enterprises, suppliers, and customers can be promoted, and the impact of organizational features on the environment can be minimized (Thaib, 2020). In addition, due to the organization's green design, green products, and green manufacturing processes, when purchasing services and products, it may be affected by consumer behavior, with minimal impact on ecology and the environment (Samad et al., 2021) and discussed the relationship between the pressure of manufacturing regulations and the practice of GSCM. Under the current research background, the following hypotheses are proposed:

H1b: NP is positively influencing GSCM efforts.

3.1.3 Mimetic Pressure and GSCM Efforts

Due to imitative institutional pressures, companies imitate their competition agencies, which may be a normal response to uncertain conditions (DiMaggio and Powell, 1983). The company needs to respond to the actions and behaviors of competitors. The MP may be related to the standards and rules of competition, especially those competitors who appear to emulate at least maintain current competitive terms (Zhu et al., 2016). Strong MP can influence the government and stakeholders, ensuring that organizations adopt advanced environmental management and technology, such as subsidiaries of foreign and multinational companies, to produce excellent performance in local organizations (Latif et al., 2020). Therefore, environmental and social tactics that mimic green and social champions will invariably outperform competitors (Samad et al., 2021). While solving the ethical factors of environmental problems, maximizing profits is a new challenge for environmental protection workers. Previous studies have shown that simulated pressure has a potentially positive effect on organizational willingness to execute GSCM activities (Tate et al., 2012; Gholami et al., 2013; Samad et al., 2021). Therefore, we posit that:

H1c: MP is positively influencing GSCM efforts.

3.2 GSCM Efforts and Organizational Performance

GSCM effort is a strategic step adopted by a business to strengthen its long-term operations and ecological protection skills, which may significantly influence its strategies (Chin et al., 2015; Dhull and Narwal, 2016). In the meantime, GSCM efforts have gained attraction in the literature (Lee et al., 2012; Khan et al., 2017), it demonstrates how institutional pressure, goals, expertise, culture, and payment systems all play a role in the effective integration of GSCM operations across SC partners (Rajaguru and Matanda, 2019). An organization's value system affects ecological sustainability (Hu et al., 2022), and external institutions can drive companies to participate in developing GSCM efforts. The activities of GSCM may be able to foster the creation of exclusive ITCs, hence boosting organizational performance (Shahzad et al., 2020). Some academics argue that the GSCM's efforts may be divided into three categories: "eco-design" (committed to improving environmental care in product design), "SC process" (committed to rationalizing SC operations to improve its ecological efficiency), and "internal environmental management" (in this way, the company strives to advance its sustainability-oriented internal management) (Lee et al., 2012; Jabbour et al., 2015; Yang et al., 2019). Although organizations in emerging and mature economies are at various phases of ecological sustainability, they engage in the market; therefore, their approaches to industrial ecology problems and challenges are different (Wu and Li, 2020). Similarly, the maturity of GSCM activities varies, particularly in emerging nations. Therefore, the author uses a second-order formation scale established on three key constructions (ECD, SCP, and IEM) to quantify the efforts of GSCM to measure its impact on organizational performance.

Operational performance (OP) involves the effectiveness of the company's operating aspects, involving reducing debris rate and delivery period, reducing inventory levels, and better utilization of capacity (Zhu et al., 2012; Yu et al., 2014; Samad et al., 2021). In addition, GSCM's efforts will result in the greater efficiency of the processes and recycling waste, processing fees, and more potential compliance expenses (Lee et al., 2012). GSCM is committed to reducing waste, reducing production costs, and enhancing the organization's OP (Yang et al., 2019). Furthermore, integrating ECD, SCP, and IEM activities benefit OP by lowering SC partners' costs and boosting coordination and synchronization throughout the SC (Shahzad et al., 2020). Therefore, according to this study, OP-focused GSCM activities give a competitive edge, validated by numerous other studies (Lee et al., 2012; Mousa and Othman, 2020; Samad et al., 2021).

Adopting the idea of sustainable development, especially triple bottom line (TBL), which incorporates the organizational financial, ecological, and societal performance is essential for effective operation (Hussain et al., 2018). The goal of GSCM is to design reusable products, improve recycling operations, reduce consumption, and ultimately increase the organization's EP (Yu et al., 2014; Abu Seman et al., 2019). Organizations seeking GSCM also preserve their suppliers' specifications and urge them to provide eco-friendly mechanisms and supplies (Al-Ghwayeen and Abdallah, 2018). Through environmental management procedures, including the efforts of GSCM, a significant point of view can be noticed in the advancements in organizational performance (Shahzad et al., 2020). Employing GSCM can strengthen the EP of organizations and stakeholders who implement environmental standards (Green et al., 2012; Al-Ghwayeen and Abdallah, 2018; Samad et al., 2021). Therefore, this research suggests the following hypotheses:

H2a: GSCM efforts are positively influencing OP.

H2b: GSCM efforts are positively influencing EP.

3.3 The Moderating Impact of Big Data Analytics Capability

BDA is modern technology and design that intends to efficiently extract value from a huge dataset through high-speed acquisition, detection, and analysis (Mikalef et al., 2019b). The organizational capacity to gather and evaluate data to develop insights by efficiently employing its data, technologies, and skills in company-wide operations, responsibilities, and structures are referred to as BDAC (Gupta and George, 2016; Fosso et al., 2017). It takes novel types of information processing technologies for improved comprehension and decision-making (Hofmann, 2017), thus allowing organizations to gain competitive advantages, resulting in improved performance and competitive advantage (Shahbaz et al., 2020; Benzidia et al., 2021; Shahbaz et al., 2021). By integrating tools, technology, and procedures, BDA lets enterprises make successful decisions on green operations in the SC (Mikalef et al., 2020). It is currently a critical aspect in increasing efficiency and effectiveness, with strategic and commercial implications. However, the effect of big data on the green SC and EP decision-making process has not been well recognized in the literature (Benzidia et al., 2021).

BDAC refers to an organization's capacity to compile, integrate, and execute analytic data sources in conjunction with marketing knowledge and abilities (Fosso et al., 2017), representing a new paradigm in the realm of SCM (Benzidia et al., 2021). It also aids employees in perceiving radical changes in immediate settings (Dubey et al., 2016) and strengthens their capability to detect flaws in existing business processes to achieve overall organizational performance. In addition, BDAC can help companies precisely calculate and forecast GSCM information (Tiwari et al., 2018). This may help companies improve GSCM's efforts to improve performance. In this case, BDAC enhanced the positive impact of GSCM efforts and organizational performance. BDAC can assist organizations in obtaining comprehensive data, improving predictive accuracy, and strengthening decision-making abilities (Cetindamar et al., 2021). Similarly, in this study

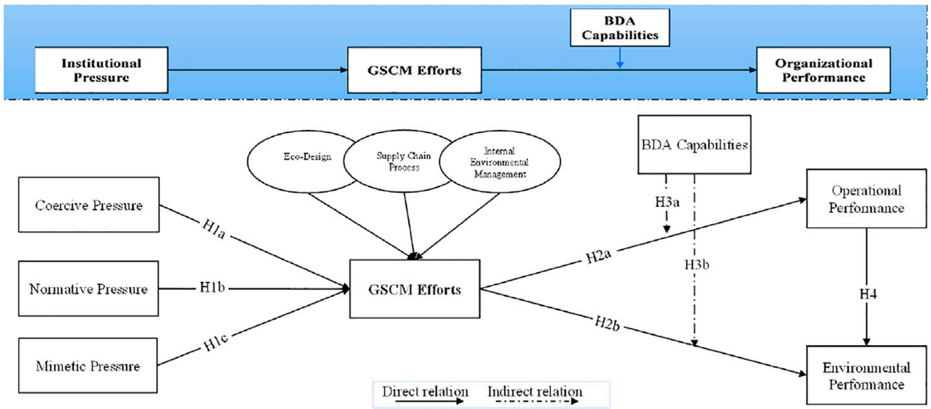

FIGURE 1 | Proposed model

context, BDAC boosts the positive impact of GSCM efforts and organizational performance. Hence, we hypothesized:

H3a: BDAC positively moderates the impact of GSCM Efforts on OP.

H3b: BDAC positively moderates the impact of GSCM Efforts in EP.

H4: The OP of a company is positively influencing its EP.

Figure 1 represents the research framework.

4 MATERIAL AND METHOD

4.1 Contextualization

The author obtained survey data from employees (closely related to SC activities) working in superstores in Pakistan to investigate the link between the hypotheses. Irrespective of the widespread ecological issues, Pakistan is yet in the early stage of eco-sustainability. The latest "International Environmental Performance Index" (EPI) indicators provide methods for identifying problems, setting goals, tracking trends, understanding results, and determining best policy practices (Wendling et al., 2020). The overall environmental protection index ranking indicates which countries are best able to cope with each country's series of environmental challenges. Although EPI's best-performing companies focus on all areas of sustainable development, their lagging counterparts often perform unevenly. The index ranked Pakistan at 142, with a score of 33.1 in 2020 (Wendling et al., 2020), at 169th, with a score of 37.50 in 2018 (Wendling et al., 2018). This improvement may be due to different strategies implemented by the government and the organization to achieve the global sustainable development goals. As a developing country, Pakistan faces a huge challenge to balance its economic and environmental requirements. Thus, the target population of this investigation includes SC personnel of major superstores in Pakistan.

4.2 Construct Operationalization

The author has conducted a structured survey of the above-mentioned targeted study population to validate the suggested research model. All measuring items were obtained from data from literature and were updated to suit the scope of this study. This survey employed a 7-point Likert scale, with responses ranging from 1 to 7 (strongly disagree to strongly agreed). A research team also assessed the questionnaire to test the face validity of the questionnaire created for this research. Once the questionnaire is approved, it is distributed to collect data. In addition, the author quantified the work of GSCM utilizing a second-order formation scale comprised of three key indicators (ECD, SCP, and IEM).

4.3 Data Collection, Sampling, and Analysis

The data collection process is as follows. First, we contacted the top management of Pakistani superstores and described the research aims. At this point, the researchers had addressed all the managers' inquiries, and no formal data had been obtained. After getting approval to investigate, the author sends the survey to the top management and is requested to distribute it via email or an organization's official blog to relevant employees. Due to the current Covid-19 situation, the author prefers to use computer-assisted Web Interview (CAWI) technology to collect data (Ziemba et al., 2016). This is a poll data collection technique in which respondents answer questions on computers rather than being instructed by interviewers. This will happen in July 2021. According to Hair et al. (2014), the 10-fold rule mandates that "the partial least square (PLS) sample size be at least ten times the maximum number of formative indicators in the hypothetical model" that comprise the basic route particular to a certain construct. GSCM efforts aim to have three formative indexes by using the repeated index technique to the formative second-order method. The sample size required is 30. However, when doing structural equation modeling (SEM), the scientific literature indicates that a sample size of 200 or larger is appropriate (Kline, 2005).

As of October 2021, the author has received 359 responses. Among them, 12 non-participated/incomplete replies were disqualified from the last analysis, affecting the results. Therefore, 347 valid responses were used in the final assessment. To check the statistical strength of the gathered

TABLE 1 | Respondent characteristics.

Characteristics		Frequency	Valid percent
Gender	Male	220	63.4
	Female	127	36.6
	Total	347	100.0
Experience	1–3 years	97	28.0
	4–6 years	149	42.9
	7–10 years	51	14.7
	Above 10 years	50	14.4
	Total	347	100.0
Education	Undergraduate	62	17.9
	Graduate	147	42.4
	Master's	77	22.2
	Other (Diploma/Professional education)	61	17.6
	Total	347	100.0

TABLE 2 | Reliability and validity analysis.

Constructs	Cronbach's alpha	rho_A	CR	AVE
BDAC	0.851	0.858	0.899	0.691
CP	0.916	0.919	0.937	0.749
ECD	0.894	0.896	0.927	0.760
EP	0.898	0.901	0.924	0.710
IEM	0.824	0.825	0.895	0.740
MP	0.859	0.869	0.905	0.706
NP	0.804	0.811	0.884	0.718
OP	0.949	0.951	0.957	0.738
SCP	0.877	0.883	0.924	0.803

sample, the authors used the post-hoc G*power test for all exogenic factors, which include the formative indicators, e.g., "the significance threshold was set at 0.05, the effect size was 0.15, and the sample size was 347". The results of the G*power post-hoc test show that the statistical strength is substantially greater than the 0.8 criteria (Cohen, 1998).

Employing Smart-PLS v3 software, this analysis evaluated the data using the PLS-SEM to quantify the association between variables. This tool is better suited to handling formative and reflective fundamental routes than covariance-based SEM, and it is also capable of doing moderation analysis (Hair et al., 2019; Sarstedt et al., 2019). When calculating the results of the SEM analysis, the formative indicators of GSCM efforts use a two-stage method, i.e., the "repeated indicator approach".

5 RESULTS AND FINDINGS

5.1 Respondent Characteristics

Table 1 highlights the profiles of the participants. 63.4 percent of those polled were men, while 36.6 percent were women. According to the findings, 28 percent of participants had one to three years of work experience in their sector, 42.9 percent had four to six years of experience, and 29.1 percent had more than six years of job experience. Most respondents had a high level of education: 17.9 percent had an undergraduate degree, 42.4 percent had graduate degrees, 22.2 percent had master's degrees, and a residual 17.6 percent had some other professional education.

5.2 Measurement Model Assessment

Convergent validity assesses the degree of association between several variables within a similar framework (Hair et al., 2014). Cronbach's alpha was applied to examine the reliability of all variables as well as the validity of the data. The resulting values for the entire dataset ranged from 0.804 to 0.949, as shown in **Table 2**, suggesting that they were above the 0.70 criteria given by (Hair et al., 2017). Convergent validity was measured by the "Composite Reliability" (CR), rho A, and "Average Variance Extracted" (AVE) of all constructs. The CR of the constructs surpassing 0.7 suggested that the scales have strong internal consistency and reliability. The AVE for each concept surpasses 0.5, suggesting that the convergent validity is accepted (Fornell and Larcker, 1981; Hair et al., 2017, 2020).

Furthermore, three techniques have been used to test discriminant validity. First, the square root of each construct's AVE is compared to its correlation coefficients with other factors. The concept showed adequate discriminant validity when its square root was the highest in contrast to its correlations with other factors in the model (Fornell and Larcker, 1981). In **Table 3**, all constructs in the research model met this criterion and demonstrated satisfactory discriminant validity.

Second, the discriminant validity of the variables was assessed by loadings and cross-loadings of the measuring items. A cross-loading table shows that scale items have strong loadings on their theoretically assigned variables but not on other variables (Fornell and Larcker, 1981). The cross-loadings in **Table 4** show that each element has a larger loading on its assigned construct, with one other construct matching this criterion and displaying satisfactory discriminant validity.

Finally, the Heterotrait-Monotrait (HTMT) ratio criteria were devised to characterize the sensitivities of the "Fornell-Larcker" and "cross-loadings" criteria (Fornell and Larcker, 1981). The estimate of the correlation of factors is known as HTMT (to be more exact, the upper boundary). To discriminate between the

TABLE 3 | Fornell-Larcker criterion.

Constructs	BDAC	CP	ECD	EP	IEM	MP	NP	OP	SCP
BDAC	**0.831**								
CP	0.188	**0.865**							
ECD	0.403	0.217	**0.872**						
EP	0.365	0.258	0.366	**0.842**					
IEM	0.256	0.349	0.472	0.326	**0.860**				
MP	0.161	0.339	0.281	0.291	0.263	**0.840**			
NP	0.209	0.273	0.306	0.274	0.292	0.293	**0.848**		
OP	0.311	0.260	0.338	0.569	0.276	0.279	0.162	**0.859**	
SCP	0.299	0.292	0.389	0.410	0.399	0.272	0.277	0.347	**0.896**

"Diagonal and bold values are the square root of the average variance extracted from each construct. Pearson correlations are shown below the diagonals. $p < 0.05$*."*

TABLE 4 | Measuring items' Loadings and Cross-Loadings.

Items	BDAC	CP	ECD	EP	IEM	MP	NP	OP	SCP
BDAC 1	**0.838**	0.203	0.350	0.361	0.234	0.144	0.275	0.215	0.285
BDAC 2	**0.807**	0.115	0.394	0.265	0.226	0.121	0.148	0.314	0.284
BDAC 3	**0.886**	0.133	0.317	0.342	0.221	0.133	0.158	0.264	0.226
BDAC 4	**0.791**	0.179	0.272	0.230	0.164	0.139	0.099	0.241	0.192
CP1	0.178	**0.838**	0.193	0.197	0.336	0.335	0.288	0.205	0.289
CP2	0.134	**0.870**	0.171	0.232	0.248	0.244	0.235	0.179	0.227
CP3	0.147	**0.879**	0.225	0.231	0.310	0.322	0.188	0.265	0.249
CP4	0.175	**0.863**	0.178	0.246	0.271	0.257	0.243	0.218	0.261
CP5	0.175	**0.874**	0.165	0.213	0.334	0.294	0.226	0.251	0.228
ECD1	0.354	0.214	**0.847**	0.334	0.365	0.249	0.258	0.320	0.310
ECD2	0.320	0.155	**0.877**	0.322	0.468	0.245	0.294	0.299	0.365
ECD3	0.354	0.164	**0.887**	0.342	0.383	0.214	0.252	0.290	0.363
ECD4	0.380	0.227	**0.875**	0.280	0.425	0.273	0.263	0.270	0.317
EP1	0.309	0.213	0.322	**0.799**	0.258	0.225	0.262	0.446	0.323
EP2	0.299	0.207	0.306	**0.841**	0.275	0.247	0.248	0.494	0.347
EP3	0.290	0.205	0.296	**0.835**	0.286	0.263	0.236	0.480	0.314
EP4	0.262	0.198	0.289	**0.873**	0.231	0.209	0.190	0.501	0.327
EP5	0.362	0.255	0.323	**0.862**	0.311	0.274	0.217	0.478	0.405
IEM1	0.289	0.284	0.431	0.294	**0.853**	0.255	0.254	0.284	0.367
IEM2	0.159	0.306	0.380	0.276	**0.825**	0.207	0.258	0.166	0.340
IEM3	0.209	0.312	0.406	0.270	**0.901**	0.213	0.241	0.258	0.321
MP1	0.068	0.215	0.158	0.246	0.219	**0.728**	0.260	0.228	0.228
MP2	0.143	0.300	0.252	0.227	0.216	**0.893**	0.255	0.272	0.232
MP3	0.147	0.300	0.251	0.237	0.225	**0.864**	0.230	0.229	0.213
MP4	0.171	0.315	0.272	0.269	0.226	**0.867**	0.243	0.214	0.243
NP1	0.144	0.249	0.235	0.215	0.217	0.215	**0.825**	0.151	0.246
NP2	0.180	0.226	0.283	0.248	0.291	0.262	**0.874**	0.130	0.244
NP3	0.206	0.222	0.258	0.234	0.228	0.266	**0.843**	0.132	0.214
OP1	0.275	0.214	0.263	0.501	0.252	0.231	0.143	0.871	0.280
OP2	0.266	0.166	0.318	0.515	0.224	0.222	0.136	**0.866**	0.314
OP3	0.264	0.250	0.307	0.474	0.230	0.220	0.163	**0.840**	0.270
OP4	0.287	0.197	0.301	0.495	0.238	0.274	0.075	**0.857**	0.306
OP5	0.212	0.258	0.230	0.446	0.230	0.233	0.085	**0.869**	0.247
OP6	0.283	0.274	0.290	0.425	0.245	0.260	0.219	**0.800**	0.226
OP7	0.249	0.180	0.318	0.531	0.211	0.219	0.178	**0.880**	0.298
OP8	0.290	0.252	0.283	0.512	0.261	0.256	0.111	**0.885**	0.419
SCP1	0.272	0.231	0.296	0.346	0.307	0.202	0.213	0.283	**0.867**
SCP2	0.252	0.251	0.374	0.352	0.365	0.198	0.248	0.323	**0.898**
SCP3	0.280	0.299	0.372	0.404	0.395	0.325	0.280	0.326	**0.923**

The bold-faced values are the item loadings.

two components, HTMT is even less than one (Henseler et al., 2014; Fassott et al., 2016). Therefore, the researchers used the HTMT ratio; the results in **Table 5** reveal that the greatest value is 0.616, which is less than the above-mentioned predefined threshold and suggests that this study's discriminant validity is appropriate.

TABLE 5 | HTMT ratio.

Constructs	BDAC	CP	ECD	EP	IEM	MP	NP	OP
CP	0.214							
ECD	0.461	0.239						
EP	0.409	0.283	0.407					
IEM	0.301	0.399	0.548	0.376				
MP	0.185	0.376	0.318	0.330	0.313			
NP	0.248	0.318	0.359	0.322	0.356	0.354		
OP	0.344	0.278	0.366	0.616	0.309	0.310	0.186	
SCP	0.344	0.322	0.437	0.458	0.467	0.312	0.328	0.375

TABLE 6 | Results of hypotheses testing.

Hypotheses	Original sample (O)	Sample mean (M)	S. D	T statistics (|O/STDEV|)	*p* values
H1a: CP -> GSCM Efforts	0.217	0.214	0.046	4.762	0.000
H1b: NP -> GSCM Efforts	0.255	0.253	0.049	5.231	0.000
H1c: MP -> GSCM Efforts	0.200	0.197	0.053	3.753	0.000
H2a: GSCM Efforts -> OP	0.336	0.332	0.085	3.952	0.000
H2b: GSCM Efforts -> EP	0.239	0.238	0.063	3.773	0.000
H3a: BDAC*GSCM Efforts ->EP -> EP	0.087	0.089	0.034	2.512	0.012
H3b: BDAC*GSCM Efforts ->OP -> OP	0.097	0.099	0.043	2.252	0.024
H4: OP -> EP	0.410	0.408	0.055	7.432	0.000

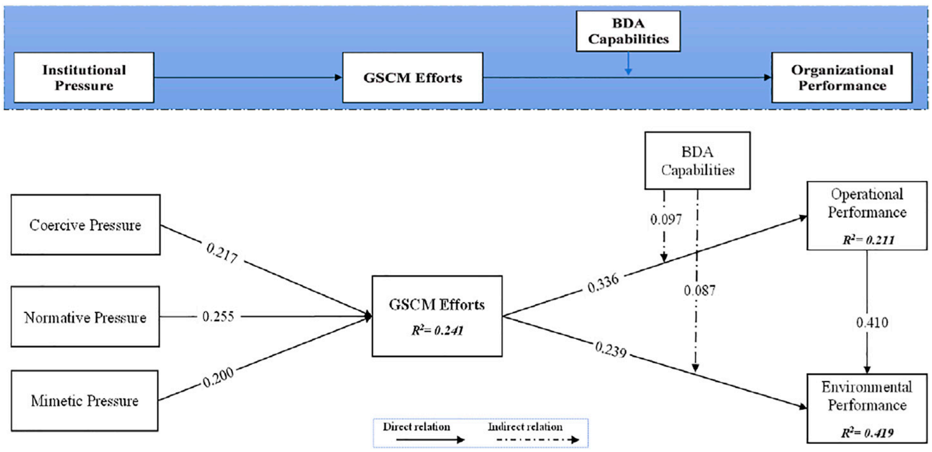

FIGURE 2 | SEM results.

5.3 Structural Model Assessment

For hypothesis testing, path coefficients (PLS findings) were examined, as well as *p*-values and t-statistics (bootstrapping results). The path values were used to assess the strength of the relationships between the variables. **Table 6** summarizes the findings of the hypothesis examination. The bootstrap estimates in this research were based on 5,000 bootstrap samples (Hair et al., 2017), and the model explained 24.1 percent of the variation in GSCM efforts, and 21.1 percent of the variation in OP, and 41.9 percent of the variation in EP.

All direct hypotheses were statistically significant and positive in the predicted direction. The path coefficient findings and the significance level of the correlations in the path model are shown in **Table 6** and **Figure 2**. Based on the findings, CP, NP, and MP substantially impact the GSCM efforts. Additionally, GSCM efforts have had a substantial influence on OP and EP.

Moreover, the moderating role of BDAC on the aforementioned impact was investigated. **Table 6** shows that BDAC has a strong moderating influence on OP and EP. The moderating impact of BDAC on the association between GSCM efforts and OP is described in **Figure 3**. Moderation is significant and positive.

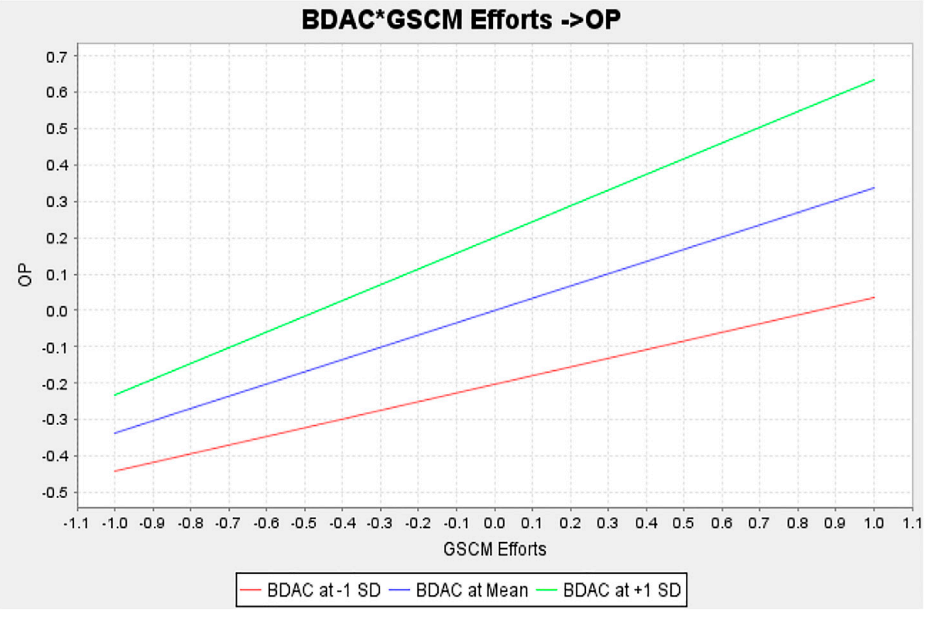

FIGURE 3 | Moderating of BDAC on GSCM efforts and OP.

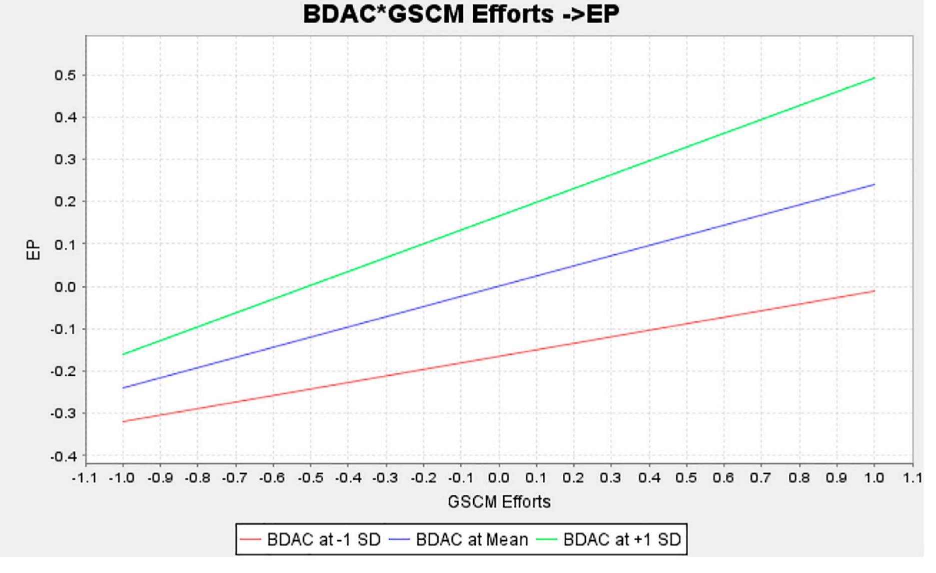

FIGURE 4 | Moderating of BDAC on GSCM efforts and EP.

Figure 4 represents the positive moderation effect of BDAC on the impact of GSCM efforts on EP.

5.4 Common Method Bias and Multicollinearity

Common method bias (CMB) can undermine the efficacy of studies. The poll instructions inform respondents that there are no correct or incorrect choices and that their responses will be kept confidential and anonymous. Harman's single factor test is frequently used to detect CMB in research (Podsakoff et al., 2012). The first component accounted for 29.8 percent of the variance, according to the findings. In line with the social sciences literature, values less than 50% constitute the cutoff for CMB (Gentry and Calantone, 2002; Podsakoff et al., 2003; Kock, 2015). Furthermore, we analyzed the inner variance inflation factor (VIF) to report the CMB issue. The authors discovered that the values varied from 1.212 to 1.484, indicating that CMB was not a problem in this study as suggested by (Kock, 2015). The survey items' multicollinearity was further analyzed utilizing outer VIF. The maximum VIF score in this investigation was 4.295, indicating no severe problems with multicollinearity in this sample as suggested (Mason and Perreault, 1991; Hair et al., 1998; Shieh, 2010). According to the findings, the research model has no concerns with CMB or multicollinearity, implying that the considerable diversity across the components may be employed for the structural model.

6 DISCUSSION

This article examines the effect of institutional pressure on GSCM efforts that boost two types of organizational performance, such as OP and EP. This research also measures the moderating influence of BDAC on the relationship between GSCM efforts and organizational performance under the umbrella of dynamic capability theory. We found that most of our hypotheses were significantly accepted; our findings and implications are discussed below. Based on institutional theory, this study measures the institutional pressure (e.g., CP, NP, and MP) that contributes to developing the GSCM efforts. The results show that organizations are more likely to improve their GSCM efforts if they feel institutional pressure. When comparing outcomes with previous studies, we found that the implication of NP and the irrelevance of CP were prevalent in studies, while the results were blended when evaluating the role of MP (Chu et al., 2017; Anthony, 2019; Latif et al., 2020). This disparity in experience can be attributed to variations in data and empirical methodologies. However, we find a significant impact of institutional pressure indicators on GSCM efforts in the current research context. Therefore, H1a, H1b, and H1c have been accepted.

The results indicate the positive impact of GSCM efforts on OP and EP. It stated that if a company is willing to boost its GSCM efforts to better conserve the global environment, it would also improve its OP and EP. Prior studies also found that GSCM efforts can benefit OP and EP, leading to higher organizational performance (Shahzad et al., 2020). Therefore, H2a and H2b is also accepted. This research also analyzed the moderating role of BDAC on the impact of GSCM efforts on organizational performance. The results show that BDAC positively moderates the impact of GSCM efforts on organizational performance (OP and EP). Organizations focusing on establishing strong BDACs can support strategies and guide decision-making, potentially improving organizational performance. By investing in their BDACs, organizations may speed up the rate at which they develop insights, detect complicated and fast-paced ecologies, build real-time monitoring capabilities with their clients and rivals, and categorize flaws, bottlenecks, and ecological issues. In this way, an organization's efforts to GSCM will effectively lead to organizational performance. The previous studies also pointed out that BDAC can improve incremental and radical creativeness by impacting an organization's dynamic capabilities (Fosso et al., 2017; Mikalef et al., 2019a; Cetindamar et al., 2021). Therefore, H3a and H3b is accepted. Finally, the findings show that the rise of organizations' OP can improve its EP as aligned with prior studies (Zhu et al., 2010, 2012; Shahzad et al., 2020). Therefore, H4 is also accepted.

7 CONCLUSION

7.1 Theoretical Implications

This study examined the impact of institutional pressures such as CP, NP, and MP on an organization's GSCM efforts to achieve performance goals during Covid-19. The study combines institutional pressures, GSCM practices, operational and environmental performance into a dynamic model of Pakistan's manufacturing sector. Moreover, this study determines the development trend of GSCM efforts and practice research from the initiative to the instinctive level. There seems to be no question that the higher-level construct of GSCM efforts and its interrelationships can improve decision-making abilities. Furthermore, considering the dynamic capability theory, the impact of BDAC in the association between GSCM effort and organizational performance is also identified. As SC becomes widely dispersed globally, BDAC is an increasingly major area of rational decision research. This paper proposes a research framework and conducts an empirical test centered on the data gathered through a questionnaire from SC employees of superstores in Pakistan.

7.2 Managerial Implications

The study results are imperative for SC managers and policymakers to understand and measure the importance of institutional pressures in developing GSCM efforts. It also helps to focus on developing BDACs that can improve decisions to implement GSCM efforts and lead toward organizational performance during or after such a pandemic. This study have is important for managerial decision making in real-world scenario. The SC instability has had an impact on global commerce, particularly in emerging nations remote from manufacturing swivels. Meanwhile, the pandemic-driven digitalization necessitates that organizations prioritize their digital infrastructure and SC expenditures. Massive organizational investment is required to establish a diverse low-carbon economy based on renewable energy and green technology. Techniques like BDA help facilitate organizational GSCM efforts that may lead to organizational performance.

7.3 Limitations and Future Directions

Besides the implications, this research addresses certain limitations that future researchers can address. First, the current study is based on cross-sectional data, i.e., a single piece of data from every SC employee of superstores in Pakistan; in the future, longitudinal data may better analyze the potential impacts of multiple organizational factors on GSCM efforts by assessing their influences before and after GSCM efforts are implemented after this pandemic. Second, the future study may help determine more concrete organizational factors that influenced GSCM efforts at each step based on institutional theory to provide a more vivid explanation of the concept in a variety of situations. Third, this research gathered survey data from SC employees working at retail-level stores in a developing country. Future researchers can use data gathered from different nations to test our proposed model or conduct a comparative analysis to determine the actual status of institutional pressure in developing GSCM efforts. Fourth, future researchers could expand their scope by collecting data from all SC partners that connect suppliers, companies, and customers and focus on different levels of GSCM in various industrial setups such as manufacturing, food, and construction.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusion of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Department of Management Science, The Islamia University of Bahawalpur, Bahawalnagar, Pakistan. Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

AUTHOR CONTRIBUTIONS

Conceptualization, FS, and JD; methodology, IK, and FS; software, FS, and IK; formal analysis, FS, and JW; data curation, IK; writing—original draft preparation, FS; writing—review and editing, JW and IK; supervision, JD; validation, JD; funding acquisition, JD. All authors have read and agreed to the published version of the manuscript.

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