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From Corporate Social Responsibility to Organizational Resilience: The Role of Sustainability Control Systems and Governance Heterogeneity

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ABSTRACT

Corporate social responsibility (CSR) has increasingly been recognized as a strategic lever for enhancing organizational resilience. Although CSR literature is abundant, prior research has not fully explained how distinct CSR types, such as altruistic, promotional, and value-creating, influence organizational resilience through sustainability control systems (SCSs). Consequently, the mechanisms linking these CSR types to resilience remain insufficiently understood. This study, grounded in signaling theory, addresses the research gap by empirically investigating the influence of distinct CSR types on organizational resilience and examining the mediating role of SCS, as well as the moderating effect of governance heterogeneity in this relationship. Data were collected from 121 large enterprises in Pakistan and analyzed using structural equation modeling to test the proposed hypotheses. The findings reveal that (1) CSR types positively and directly contribute to organizational resilience, (2) SCS significantly mediates the relationship between CSR types and organizational resilience, and (3) governance heterogeneity negatively moderates the positive effect of SCS on organizational resilience. These results highlight the strategic value of adopting targeted CSR practices and implementing effective sustainability controls to strengthen organizational resilience.

1 | Introduction

In the wake of the global disruption caused by COVID-19, businesses around the world are facing one of the greatest challenges in human history. Global instability and disruption are worsening the global economy (Andersson and Arvidsson 2024; Brammer et al. 2020; Foulon and Marsat 2023). This threat highlights the role of organizational resilience, which is defined as "the ability to maintain viability and recover from crises" (Van Der Vegt et al. 2015). While global disruption cannot always be avoided, resilience has emerged as a critical capability for recovery and the ability to avoid uncertainty, especially that caused by turbulent external environments (Kahn et al. 2018). Despite extensive research on global crises and their impacts on businesses, important gaps remain, particularly regarding the key antecedents of organizational resilience (Hernes et al. 2025). To address this knowledge gap, this study sheds light on the role of corporate social responsibility (CSR) in organizational resilience and further examines the role of sustainability control systems (SCSs) and governance heterogeneity.

In a world characterized by increasing environmental turbulence, global crises, and pressure to act ethically, organizational resilience has emerged as an important capability. Firms can leverage resilience to ensure the sustainability of their organizations and fulfill their ethical responsibilities (Ortiz-de-Mandojana and Bansal 2016; Shin et al. 2012). Beyond survival, resilience can help firms fulfill their commitments to various stakeholders (e.g., employees, customers, and the broader community) and strengthen their ethical duty to protect them during

periods of disruption. Although the concept of resilience has aroused great academic interest, previous studies have mainly limited themselves to analyzing its antecedents in structural, cultural or innovation terms (Van Der Vegt et al. 2015; Kossek et al. 2001; Olekalns et al. 2020), ignoring the strategic and ethical repercussions of CSR as an antecedent. Traditionally, some studies highlight CSR from the perspective of stakeholder theory and signaling theory and demonstrate its impact on legitimacy, reputation, and risk prevention (Fombrun 2005; Hsu 2012). However, these theoretical perspectives tend to ignore the dynamic potential of CSR as a means of developing organizational resilience. Indeed, CSR programs are expected to provide value to all stakeholders and communicate a firm's ethos. However, most firms fail to implement internal processes that enable companies to cope with crises. Furthermore, there is a need to better understand how CSR, beyond symbolic initiatives, can be integrated into practical resilience outcomes.

A relevant mechanism during this translation process is SCS. Based on the control mechanisms of Simons (1995), SCS can be useful in establishing coherence between strategies and working conditions. This mechanism supports the full integration of the CSR initiative into the decision-making process (Arjaliès and Mundy 2013; Bhuiyan et al. 2022). While previous studies have found evidence of SCS and its impacts on performance (Gomez-Conde et al. 2023; Wijethilake 2017), its contribution to transforming CSR strategies into resilience capabilities is insufficient, both theoretically and empirically. The lack of this relationship calls into question whether CSR remains abstract and, therefore, does not reach its ethical potential.

Furthermore, governance structures were found to be another important factor in SCS activities. The ability of governing bodies to promote or inhibit the successful incorporation of SCS into routine organizational procedures depends on governance heterogeneity—that is, the variety of possible perspectives, power relations, and intra-political agendas that different governing institutions may have (Bracci and Tallaki 2021). Strong governance heterogeneity can damage strategic alignment and decrease decision-making agility, thereby weakening the resilience advantages associated with SCS activities. Governance heterogeneity has been little considered in the existing literature, leaving a large gap in our knowledge about the impact of governance dynamics on the SCS-resilience nexus.

Although research on CSR and organizational resilience has expanded, important gaps persist. Prior studies have not adequately explained how different CSR orientations translate into resilience capabilities or the internal mechanisms that enable this transformation (Latif et al. 2022; Ooi and Memon 2025). The role of SCS in operationalizing CSR for resilience outcomes remains underdeveloped, and governance heterogeneity, an influential factor shaping SCS effectiveness, has received limited attention. Moreover, most existing research is concentrated in Western contexts, leaving emerging economies largely unexplored (Hamed et al. 2025; Scelles et al. 2025). To address these gaps, this study examines how philanthropic, promotional, and value-creating CSR contribute to organizational resilience, with SCS as a mediating mechanism and governance heterogeneity as a moderating factor. This framework adopts a process-oriented perspective, illustrating how CSR signals are institutionalized and converted into resilience outcomes. Accordingly, the study seeks to answer two central research questions: (1) How does CSR influence organizational resilience? and (2) Does SCS mediate this relationship, while governance heterogeneity moderates the link between SCS and resilience?

The remainder of the paper is organized as follows. Section 2 develops the theoretical framework and hypotheses, contributing to the literature in three key ways: first, by applying signaling theory to explain the CSR–resilience link; second, by examining how distinct CSR orientations shape resilience; and third, by clarifying the mediating role of SCS and the moderating effect of governance heterogeneity. Section 3 outlines the methodology, Section 4 presents empirical findings, Section 5 discusses implications, and Section 6 concludes.

2 | Theoretical and Hypothesis Development

This study draws on signaling theory to explain how CSR influences organizational resilience through SCS and how governance heterogeneity moderates this relationship. Signaling theory, originally developed by Michael Spence in the early 1970s, addresses how parties communicate information under conditions of asymmetry, where one party (the sender) possesses information that the other (the receiver) lacks (Connelly et al. 2011; Bliege Bird and Smith 2005). In such contexts, signals serve to reduce uncertainty and guide decision-making. Within corporate settings, strategic actions and disclosures act as signals that shape stakeholder perceptions of organizational resilience (Awad and Martín-Rojas 2024; Harwood et al. 2011; Kromidha and Li 2019).

In the context of CSR and organizational resilience, signaling theory explains how a company's CSR initiatives serve as signals of its commitment to sustainable practices and responsible governance (Chandrakant and Rajesh 2023; Rajesh 2024). The engagement in CSR efforts, such as environmental conservation or social impact projects, a company sends a message to stakeholders that it possesses a long-term orientation, a proactive mindset, and a willingness to invest in its own resilience. These signals of CSR commitment can enhance an organization's reputation, fostering stakeholder trust and loyalty (Su et al. 2016). Moreover, stakeholders may perceive such companies as better equipped to navigate disruptions, given their demonstrated dedication to ethical conduct and stakeholder well-being (Rew and Cha 2021). In turn, this positive perception can contribute to bolstering the organization's resilience, as stakeholders are more likely to support, collaborate with, and invest in a company that aligns with their values and demonstrates foresight through CSR initiatives. According to Thorne et al. (2014), one of the signaling practices by which the company is willing to provide more CSR information that is strictly essential to comply with the rules and regulations is CSR disclosure. In this regard, they send a message to other market participants that they are constantly being outperformed.

Beyond its external process, signaling theory also offers a practical approach to internal organizational processes, where managerial communication, monitoring routines, and control systems transmit internal signals that are used to inform

employees' interpretation of organizational priorities and the credibility of CSR commitments. In this regard, SCS are used as an internal signaling mechanism to convert CSR intentions into performance measures and decision-making standards. These internal indicators minimize ambiguity, align employee behavior with sustainability goals, and improve the company's ability to respond to disruptions. Therefore, signaling theory clarifies the role of CSR on external stakeholders, as well as explaining the internal processes through which CSR is institutionalized and converted into organizational resilience.

2.1 | Multidimensions of CSR

The academic literature on CSR has widely identified and discussed the potential implications for various societal goals and commitments (Anagnostopoulou et al. 2021; Cho et al. 2015; Fatima and Elbanna 2023; Huang and Watson 2015; Moser and Martin 2012). In different academic dimensions, CSR is described as the efforts made by companies to improve society and the environment (Chen et al. 2016; Cheng and Kung 2016, 97). Mohr et al. (2001) described that CSR is a term used to describe how companies reduce their environmentally harmful activities and improve the social prosperity of communities. The value of CSR activities has also been discovered in terms of structural growth (Mohr et al. 2001), productivity (Petrick and Quinn 2001), and competitive advantage (Porter and Kramer 2002).

In this study, we adopt a classification that divides CSR into three important types: philanthropic, promotional, and value-creating. Based on signaling theory, different types of CSR convey contradictory messages to stakeholders about a firm's social commitment and strategic intent. Philanthropic CSR involves providing financial and nonfinancial support to social causes and indicates a firm's desire to be a responsible citizen (Laguir et al. 2019). It is also important for creating a positive corporate reputation and gaining the trust of stakeholders (Haji et al. 2022), demonstrating to them that CSR initiatives value community well-being and align with social conscience (Gautier and Pache 2015). In the Pakistani context, philanthropic CSR typically reflects itself in the form of corporate grants and relief efforts during national emergencies, in which manufacturing companies contribute financial assistance, medical supplies, and relief aid following floods, earthquakes, or epidemics that may occur in the community, which are among the signs of the company's social commitment and sensitivity to community needs (Ali et al. 2017; Jamali et al. 2017).

Promotional CSR refers to brand and marketing-related activities, such as sponsoring social or environmental activities and managing charitable or donation initiatives (Chen et al. 2016). Promotional CSR enhances brand equity and increases a firm's social legitimacy by informing key stakeholders about its prosocial behavior. In the Pakistani context, promotional CSR can take the form of cause-based marketing and awareness campaigns, in which companies actively publicize their social and environmental activities, such as sponsoring children's education or encouraging society to be environmentally responsible, to gain stakeholder support and trust in the companies (Ali et al. 2017; Jamali et al. 2017). Value-creating CSR refers to activities aimed at solving a country's social problems. At the same time, generating value for society and the company itself (Visser and Kymal 2015). It fosters ethical leadership, social integration, and sustainable development, which positions the company as a responsible market player, capable of generating long-term value for society and organizations. Based on this classification, we highlight how the various types of CSR can be considered a strategic means of strengthening organizational resilience.

In the Pakistani context, value-creating CSR is increasingly prevalent among manufacturing companies, as reflected in initiatives that integrate social and environmental objectives into core operations. Examples include adopting cleaner technologies, investing in employee development, and improving workplace safety and security, actions that simultaneously create societal benefits and long-term organizational value (Ali et al. 2017; Jamali et al. 2017).

2.2 | Hypotheses Development

2.2.1 | CSR and Organizational Resilience

This study examines how CSR types, including philanthropic, promotional, and value-creating, affect organizational resilience. Philanthropic CSR represents the type of CSR that executes charitable and donation-based activities. Philanthropic CSR programs expand past earnings to emphasize community investment and directly reflect the priorities a company sets within its social responsibilities (Gardberg et al. 2019). There is a point-to-point emotional commitment between stakeholders and philanthropic CSR programs that demonstrate operational alignment with the organization's social responsibility vision. This effect is in line with insights from signaling theory, which describes that CSR philanthropy is the best way to attract stakeholder attention and encourage CSR initiatives. Therefore, CSR philanthropy is known to foster a trusting relationship with stakeholders and promote trust and loyalty among stakeholders toward CSR activities (Glaveli 2021). This positive signal leads to a test of workplace resilience and stimulates stakeholder confidence. Additionally, signaling theory provides support for describing philanthropic actions as strong signals indicating that social welfare has a priority status. The signals sent by organizations allow stakeholders to understand and strengthen their view of the firm's CSR vision (Rim et al. 2020). The company raises its social protection standards and its credibility as a legitimate organization in times of uncertainty by applying its intangible assets.

Promotional CSR is an important and prominent communication tool that is widely used for image development. Promotional CSR initiatives also promote social responsibility among stakeholders and convey a positive message. These activities include advertising campaigns, sponsorships, and cause-related marketing programs (Rim et al. 2020). When a company promotes strong promotional CSR among its stakeholders, it reflects that its activities are aligned with their interests on a broader scale (Su et al. 2016). In this situation, the firm's goals align perfectly with resilience to achieve innovation (Porter and Kramer 2006). According to signaling

theory, in order to send a positive signal to stakeholders, CSR initiatives must effectively align with the organization's core values. This positive message responds to stakeholders that companies have strong resilience to lead in the market and demonstrate that they are an authentic organization. On the other hand, value-creating CSR is an important tool that strengthens company values and attracts stakeholders. When beliefs are high, the company sends a signal to its stakeholders about its dedication and demonstrates long-term social efforts. These efforts generate economic benefits for the company. This message is seen as a sign of resilience by stakeholders, who consider the company to be highly ethical, financially stable, and have a positive outlook for society. Therefore, value-creating CSR is important for creating a virtuous cycle that leads to a positive reputation in terms of financial, social, and environmental impact on society (Song and Rimmel 2021). Signaling theory suggests that value-creating CSR initiatives can play a crucial role in shaping organizational resilience by signaling the company's commitment to creating long-term societal value while generating economic benefits for the company. This can lead to enhanced stakeholder trust and loyalty, increased profits, and competitive advantage for the company. Thus, we propose:

H1. *Philanthropic, promotional, and value-creating CSR positively influence the dimensions of organizational resilience (anticipation, adaptability, and recovery).*

2.2.2 | CSR and SCS

CSR represents a firm's commitment to creating positive social and environmental outcomes through voluntary practices that go beyond regulatory compliance. However, implementing CSR effectively requires more than intent, as it demands structured mechanisms for planning, monitoring, and accountability (Fatima and Elbanna 2023). This is where SCSs come into play given that CSR and SCS are increasingly recognized as interdependent elements of responsible management and ethical business practices (Arjaliès and Mundy 2013; Langfield-Smith 1997). While CSR includes a broad set of practices aimed at generating positive social and environmental outcomes, SCSs provide the mechanisms through which these practices are monitored, measured, and institutionalized (Namazi and Rezaei 2024; Pollanen et al. 2017).

Society often has high expectations for firm's CSR initiatives. These expectations require cooperation with multiple stakeholders on issues such as labor rights, responsible sourcing, and community involvement (Malmi and Brown 2008). Because CSR is such an important and large-scale process, a firm must establish a structured control system to ensure that all activities are carried out in accordance with the firm's objectives. It is also necessary to verify whether these activities are consistent and openly communicated. As companies grow, they should use formal control system to transform their CSR strategy into clear action plans (Arjaliès and Mundy 2013). Formally:

H2. *Philanthropic, promotional, and value-creating CSR positively influence SCSs within organizations (belief systems, boundary systems, diagnostic control systems, and interactive control systems).*

2.2.3 | SCS and Organizational Resilience

An important way to examine the influence of SCS on resilience is to assess whether companies are vulnerable to social and environmental risks and subsequently design strategies to manage them (Ciasullo et al. 2024). Organizations that use SCS platforms anticipate changes such as climate issues, regulatory changes, and supply chain disruptions. SCS also fosters transparency and trust among different stakeholders. In addition, it is committed to SCSs earn the trust of their stakeholders and build a good reputation, especially when challenges are frequent. Similarly, SCS enables companies to learn and innovate. With SCS, companies can identify areas where processes are slow and test sustainability ideas before developing lasting business strategies. Thanks to these capabilities, organizations remain resilient, maintaining their position and flexibility as circumstances change (Bastini et al. 2022).

Furthermore, a strong SCS establishes corporate governance, risk management, and resource allocation to include sustainability objectives. Aligning strategy in this way provides the organization with the ability to weather disruptions and preserve its vital role. Therefore, SCS strengthens the firm's stability by integrating sustainability principles into its daily activities and enabling adaptive and responsible business actions. Thus, we propose:

H3. SCS *(belief systems, boundary systems, diagnostic control systems, and interactive control systems) positively influences organizational resilience (anticipation, adaptability, and recovery).*

2.2.4 | Mediating Role of SCS

While CSR is incorporated into an organization's long-term strategy for value creation and legitimacy, its effectiveness in improving organizational resilience depends on its integration, monitoring, and implementation. In this regard, the role of the SCS is highly relevant. The SCS consists of structured mechanisms for measuring, monitoring, and managing CSR-related activities across the organization (Abernethy and Lillis 1995). It sets objectives, determines key performance indicators, ensures (and facilitates) alignment with sustainability goals, and enables continuous evaluation (Martyn et al. 2016). SCS achieves this through these functions, in which it translates high-level CSR commitments into actionable strategies within the company's daily operations and decision-making framework (Hoque and Hopper 1994; Martyn et al. 2016).

This study highlighted the importance of the mediating role of SCS between CSR and organizational resilience. CSR alone can be ineffective or fragmented without systems that institutionalize its implementation. SCS integrates CSR into control processes, risk management, and strategic objective planning to achieve sustainable and goal-oriented efforts responsibly and transparently (Colling and Ceulemans 2023; Chenhall 2003). Furthermore, SCS plays an important role in organizational

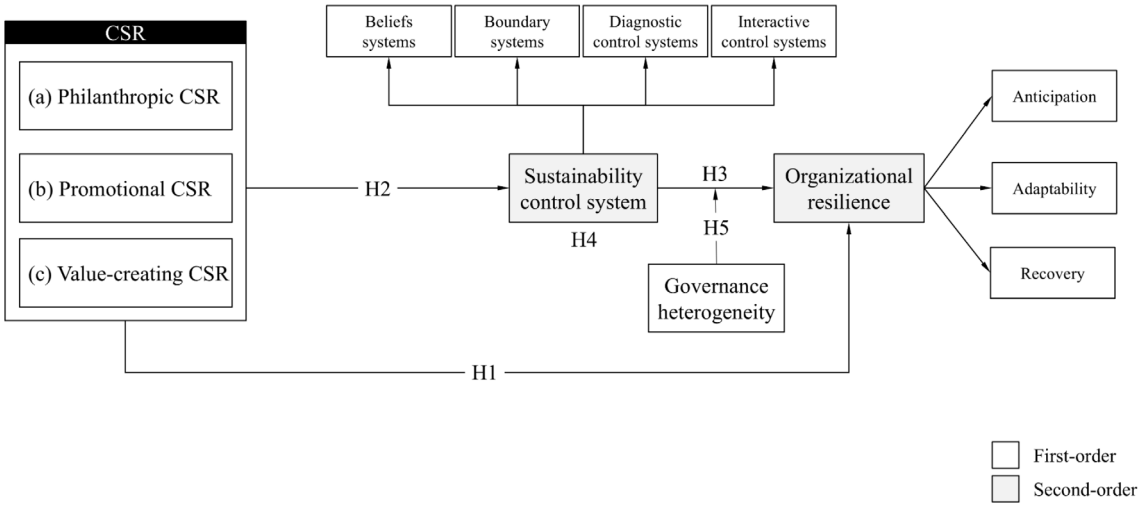

FIGURE 1 | Two time-lagged research model.

resilience. First, the main application of CSR in the field of risk management is to integrate CSR-aligned risks into the firm's holistic risk management mechanisms. This could allow them to proactively address environmental, regulatory, and social risks (Grabner and Moers 2013). Second, the role of SCS is to support resource allocation.

This is critical for allocating resources to the CSR initiatives most critical for developing resilience (Hummel et al. 2019). Third, by aligning CSR initiatives with long-term resilience goals. This could ensure alignment with strategic objectives and facilitate transformation. Fourth, SCS enhances stakeholder engagement by involving them during a crisis through communication and evaluation. This is essential because it builds the trust and legitimacy needed in these times. SCS also supports organizational learning through systematic monitoring of outcomes that incorporate feedback (Pollanen et al. 2017). For this reason, SCS acts as a bridge between the CSR and organizational resilience. In this context, CSR is implemented to enable companies to survive disruption, maintain flexibility, and sustain evolution. Formally:

H4. SCS *mediates the relationship between CSR (philanthropic, promotional, and value-creating) and organizational resilience (anticipation, adaptability, and recovery).*

2.2.5 | Moderating Role of Governance Heterogeneity

Governance heterogeneity refers to the diversity of structures, decision-making processes, and strategic orientations among the governing bodies within an organization's governance, such as boards of directors, executive teams, and committees (Daspit et al. 2018; Schultz et al. 2024). In the current study, we examined governance heterogeneity as moderator between SCS and organizational resilience. Governance heterogeneity often leads to conflicting priorities and goals within an organization (Nordqvist et al. 2014). While such diversity can enrich strategic deliberation and foster innovation, it can also introduce fragmentation and conflict, particularly when pursuing complex, cross-functional initiatives like sustainability and resilience-building. According to Nordqvist et al. (2014), the diversity of governance approaches to sustainability initiatives can create challenges and generate different objectives, without a clear path for the SDG agenda. When there is insufficient consensus, policies aimed at promoting sustainability may not be successfully implemented (Sacchetti 2015). The distribution of responsibilities among managers can slow down the allocation of resources. However, only a few executives have the necessary influence, and they cannot always join forces to jointly improve sustainability and resilience (Pittino et al. 2018). Furthermore, governance heterogeneity can weaken communication and coordination, which are critical for cross-functional SCS. As a result, governance bodies often fail to operate effectively and to share information (Ansell and Gash 2008). Similarly, this does not make them evanescent rather than persistent (Ratzmann et al. 2016). Taken together, these challenges indicate that governance heterogeneity can reduce the capacity of SCS to promote organizational resilience. Thus, we proposed that governance heterogeneity is likely to moderate (weaken) the positive impact of SCS on organizational resilience. Based on these arguments, we propose the following hypothesis:

H5. *Governance heterogeneity negatively moderates the relationship between* SCS *and organizational resilience, such that the positive effect of* SCS *on organizational resilience is weakened under conditions of higher governance heterogeneity.*

Figure 1 illustrates the hypotheses discussed above in a conceptual diagram.

3 | Methods

The target respondents were chief executive officers (CEOs) of the selected large-sized manufacturing firms. All the companies are registered under the Securities and Exchange Commission of Pakistan (SECP).[1] These individuals were chosen due to their strategic leadership roles and comprehensive understanding of the organization's CSR, governance, and operational frameworks. A total of 144 questionnaires were distributed, with one questionnaire sent to each of the 144 large-sized manufacturing

firms operating across six major urban manufacturing hubs in Punjab in October 2022. A single questionnaire was distributed to each manufacturing company representative (CEO). After multiple follow-ups, 124 responses were received out of 144. Following the exclusion of incomplete questionnaires, 121 valid responses were retained for final analysis, in which one respondent represented the one company, resulting in a response rate of 84.02%. Therefore, the demographic profile of the respondent firms is categorized by firm size, industry subsector, and nature of the firm. The selected firms included large-sized enterprises. These firms were deemed particularly relevant due to their extensive resource use, complex operational footprints, and active engagement in sustainability initiatives. Large firms are generally better equipped both financially and structurally to implement formal SCS (Haustein et al. 2014).

To enhance the robustness of the study and mitigate potential biases associated with cross-sectional designs, a two-wave research design was employed (Podsakoff et al. 2012). This approach helped address concerns related to common method bias (CMB) and common source bias (CSB), particularly those arising from self-reported data (Al-Hashimi et al. 2022; Roese and Vohs 2012). In line with the temporal separation technique, data collection occurred in two phases. At Time 1 (T1), participants responded to items measuring the independent variable (CSR), the mediator (SCS), and the moderator (Governance Heterogeneity). At Time 2 (T2), which was conducted 6 weeks later, the same participants completed measures for the dependent variable, organizational resilience. This time-lagged design reduces respondent recall bias and lowers the likelihood of inflated correlations due to shared method variance (Podsakoff et al. 2003).

All measurement items used in this study were adapted from previously validated scales to ensure content validity and comparability with prior research. Each construct was measured using a 7-point Likert scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The use of a 7-point scale, as opposed to a 5-point scale, enhances response variability, measurement precision, and discriminant validity (Joshi et al. 2015; Jamieson 2004; Krosnick 1991).

4 | Data Analysis and Findings

We employed partial least squares structural equation modeling (PLS-SEM) to test the proposed hypotheses. The analysis was conducted using SmartPLS 4.0. Following the standard PLS-SEM framework, two primary models were evaluated: (1) the measurement model and (2) the structural model (by using 5000 bootstrapping techniques; Hair et al. 2019; Chin 1998). All constructs were analyzed using the repeated indicator approach for second-order constructs as suggested by Hair et al. (2019).

4.1 | Common Method Bias

We checked the potential presence of the common method bias in our data using a lateral collinearity test. According to the full collinearity test by checking the variance inflation factor (VIF) by following the methodology of Kock (2015), in which the VIF values for each of the constructs are less than 3.3. Based on VIF values, the results in our study range from 2.346 to 2.873, all below the threshold value of VIF, which indicates the absence of multicollinearity issues. Thus, our model is ready for further analysis (see Table 1). In addition, we conducted Harman's single-factor analysis (Podsakoff et al. 2003), which revealed that no single factor accounted for the majority of the variance, thereby suggesting that common method bias was not a serious concern. We also employed the marker variable technique (Lindell and Whitney 2001), a widely recommended robustness check, and the results confirmed that common method variance did not significantly influence the observed relationships.

4.2 | Assessment of Measurement Model

In this study, we performed the first stage of PLS-SEM in which factor loadings exceeded the threshold value, which is 0.70, and were statistically significant at $p < 0.001$. Meanwhile, 10 indicators were removed due to low outer loadings below the recommended threshold (Hair et al. 2019). After item removal, the measurement model was re-estimated, confirming improved indicator loadings and model fit. Furthermore, the values for composite reliability (CR) and Cronbach's alpha for each construct exceeded the recommended threshold of 0.70, while the average variance extracted (AVE) values surpassed the benchmark of 0.50 (Fornell and Larcker 1981), confirming strong convergent validity and reliability for the measurement scales (Hair et al. 2021). In Table 2, the AVE values for the first-order constructs ranged from 0.607 to 0.869, Cronbach's Alpha values ranged from 0.749 to 0.941, and CR scores ranged from 0.840 to 0.953, all surpassing the threshold value to reinforce the reliability and validity of the measurement model. Therefore, for assessing discriminant validity, both cross-loadings and the Fornell–Larcker criterion were applied, as shown in Table 2 (Chin 1998; Fornell and Larcker 1981). The results indicated that the square root of the AVE for each construct exceeded its correlations with other constructs, thus confirming discriminant validity.

Moreover, in Table 3, all second-order constructs demonstrated acceptable levels of reliability and validity. The CSR construct, modeled reflectively with three dimensions, philanthropic, promotional, and value-creating CSR, achieved an AVE of 0.680, CR of 0.864, and Cronbach's alpha of 0.769, confirming its suitability as a second-order construct. Similarly, the SCS construct yielded strong reliability statistics (AVE = 0.716; CR = 0.910; and $\alpha = 0.868$), supporting its role as a hierarchical control mechanism. The organizational resilience construct, composed of anticipation, adaptability, and recovery, also met the reliability thresholds (AVE = 0.795; CR = 0.921; and $\alpha = 0.873$). To assess the

TABLE 1 | Variance inflation factor (VIF).

Latent variables	OR
CSR	2.541
SCS	2.873
GH	2.347

Abbreviations: CSR, corporate social responsibility; GH, governance heterogeneity; OR, organizational resilience; SCS, sustainability control system.

TABLE 2 | Measurement model and discriminant validity: First-order constructs.

Constructs	1	2	3	4	5	6	7	8	9	10	11	α	CR	AVE
1. Philanthropic CSR	**0.932**											0.924	0.952	0.869
2. Promotional CSR	0.489*	**0.858**										0.815	0.892	0.736
3. Value creating CSR	0.331*	0.757*	**0.851**									0.812	0.887	0.724
4. Belief systems	0.430*	0.762*	0.610*	**0.834**								0.890	0.919	0.696
5. Boundary systems	0.524*	0.723*	0.527*	0.821*	**0.799**							0.858	0.898	0.638
6. Diagnostic systems	0.917*	0.497*	0.345*	0.440*	0.531*	**0.880**						0.941	0.953	0.774
7. Interactive systems	0.903*	0.452*	0.300*	0.397*	0.489*	0.847*	**0.885**					0.909	0.935	0.784
8. Governance heterogeneity	0.212*	0.414*	0.559*	0.471*	0.360*	0.200*	0.196*	**0.859**				0.825	0.893	0.738
9. Anticipation	0.465*	0.490*	0.334*	0.471*	0.536*	0.473*	0.457*	0.230*	**0.779**			0.889	0.902	0.607
10. Adaptability	0.284*	0.318*	0.226*	0.275*	0.288*	0.272*	0.252*	0.059*	0.757*	**0.871**		0.896	0.926	0.759
11. Recovery	0.410*	0.355*	0.302*	0.359*	0.406*	0.415*	0.404*	0.104*	0.699*	0.682*	**0.754**	0749	0.840	0.568

Note: Standard errors in parentheses. Bolded values on the diagonal are the square roots of AVE for each construct.
Abbreviations: α, Cronbach's alpha; AVE, average variance extracted; CR, composite reliability; CSR, corporate social responsibility.
*$p < 0.05$.

discriminant validity, cross-loadings and the Fornell–Larcker criterion were employed (Chin 1998; Fornell and Larcker 1981). As displayed in Table 3, the square roots of AVE for all the second-order constructs exceeded their inter-construct correlations, confirming discriminant validity.

4.3 | Assessment of Structural Model

In the second stage, we performed the analysis by using SmartPLS 4.0, through a bootstrapping procedure with 5000 resamples. In Table 4, we present the structural path relationships that were analyzed in our study. The results show that all main path coefficients are positively significant in the relationship between CSR and organizational resilience, in which CSR dimensions (i.e., philanthropic CSR, promotional CSR, and value-creating CSR) positively influence the organizational resilience dimension (i.e., anticipation, adaptability, and recovery). Therefore, CSR enhances the organizational resilience as outlined in H1, which is accepted. Overall, these results show that each CSR dimension contributes significantly ($p < 0.05$) and has a medium effect size ($0.15 < f^2 > 35$) (Cohen 1992). Furthermore, in support of H2, the results indicate that CSR dimensions are also positively associated with SCS dimensions (i.e., belief system, boundary system, diagnostic system, and interactive system) within organizations. Specifically, the CSR dimension has a significant ($p < 0.05$) effect on SCS dimensions. These results demonstrate that CSR practices play an essential role in enhancing internal sustainability control mechanisms, while H2 is supported and has a medium effect size (Cohen 1992).

Table 4 shows a relationship between SCS dimensions and organizational resilience dimensions. We observe that SCS has a positive influence on overall organizational resilience, which is outlined in H3. However, the analysis reveals that SCS dimensions have a significant relationship with organizational resilience dimensions (i.e., anticipation, adaptability, and recovery), which indicate that these results on dimensions are statistically significant ($p < 0.05$). The results are outlined with H3, which indicates the positive and supported results in Table 4 with a medium effect size, while some of the paths, such as (Boundary System → Adaptability, Diagnostic System → Recovery, and Interactive System → Adaptability), have a small effect size (Cohen 1992). Moreover, in Table 4, the moderating effect test was presented, in which the governance heterogeneity is negatively moderated on the relationship between SCS dimensions and organizational resilience dimensions. Therefore, all hypothesis interaction effects are negative and statistically significant ($p < 0.05$), which indicates that due to the negative effect of governance heterogeneity, the positive effect of SCS on organizational resilience is weakening. Thus, H5 is supported.

4.4 | Test of Mediation

Table 5 presents the results of mediation analysis by using SmartPLS 4.0, through a 5000 bootstrapping procedure in this study. The results related to H4 indicate that the SCS dimensions mediate between the three types of CSR and organizational resilience. Conversely, H4 is consistent on 12 paths, and its coefficient values range from 0.044 to 0.482, with the maximum

TABLE 3 | Measurement model and discriminant validity: Second-order constructs.

Constructs	1	2	3	α	CR	AVE
1. CSR	**0.825**			0.769	0.864	0.680
2. Sustainable control system	0.798***	**0.846**		0.868	0.910	0.716
3. Organizational resilience	0.507***	0.529***	**0.892**	0.873	0.921	0.795

Note: Bolded values on the diagonal are the square roots of AVE for each construct.
Abbreviations: α, Cronbach's alpha; AVE, average variance extracted; CR, composite reliability; CSR, corporate social responsibility.
***$p < 0.001$.

coefficient path. Moreover, the standard error ranges from 0.18 to 0.156. These findings suggest that SCS plays a positive mediating role in linking CSR dimensions to enhance organizational resilience. Thus, H4 is supported.

4.5 | Assessment of Unobserved Heterogeneity

As part of the robustness analysis presented in Table 6, unobserved heterogeneity was analyzed by following the systematic procedures recommended by Sarstedt et al. (2011, 2017a). The sample was divided into two clusters using the FIMIX-PLS procedure in PLS SEM 4.0. The sample size was calculated by using a post hoc power analysis in which the effect size was 0.15 and a power level of 95%. The results confirmed that a minimum sample size of 89 participants per segment was sufficient to meet the analysis requirements (Sarstedt et al. 2017b). In Table 6, the results indicated that the two clusters met the criteria, which suggests the absence of significant heterogeneity and the presence of a single homogenous segment.[2]

4.6 | Further Exploratory Analysis and Robustness Tests

To increase the validity and reliability of this study model, we conducted additional exploratory analysis to present more robust tests to verify our study findings. Therefore, we performed the two additional analyses in this section, in which we analyzed the control paths with our model. First, as shown in Table 7, we incorporated control variables—such as firm size, industry subsector, and nature of the firm—into the second-order structural model. The results confirmed that adding these controls did not alter the significance or direction of the main paths reported in Table 4, thereby supporting the stability of the original model. Second, as presented in Table 8, we extended the model by including additional control paths for independent and moderator variables. These expanded analyses yielded results that matched those in Table 4, reaffirming consistency with the original findings.

5 | Discussion

Grounded in signaling theory, this study examined how CSR influences organizational resilience through SCS and how governance heterogeneity moderates this relationship. Using data from the Pakistani manufacturing sector, the findings offer important theoretical and practical insights. Overall, the results confirm that CSR initiatives enhance resilience by strengthening firms' ability to anticipate, adapt, and recover from disruptions. This effect is particularly relevant in manufacturing, where environmental challenges such as pollution and resource use heighten the need for socially responsible practices. CSR signals not only foster stakeholder trust but also position firms as proactive and ethically committed, improving their capacity to withstand crises.

The analysis further demonstrates that SCS plays a critical role in translating CSR intentions into operational outcomes. By embedding sustainability priorities into control routines, performance measures, and decision-making processes, SCS transforms CSR from symbolic commitments into actionable strategies. This integration enables resource allocation, organizational learning, and adaptive responses, thereby reinforcing resilience.

However, governance heterogeneity emerged as a limiting factor. Diverse and fragmented governance structures, common in Pakistani manufacturing, reduce the effectiveness of SCS by creating conflicting priorities and slowing decision-making. These dynamics underscore the need for clearer governance frameworks to ensure alignment between sustainability controls and resilience objectives. In sum, CSR provides the strategic foundation for resilience, SCS operationalizes this foundation, and governance structures determine the strength of this linkage. These findings highlight the importance of integrated CSR strategies, robust control systems, and cohesive governance for building resilient organizations.

5.1 | Theoretical Implications

The study explores signaling theory by explaining how CSR can renew organizational resilience through reporting, control, and governance mechanisms, although most CSR literature has previously focused on reputation, legitimacy, or performance. This study adds value to the existing literature by clarifying how CSR creates organizational resilience, under what circumstances, and within what limits. This study contributes to enriching current knowledge on CSR and organizational resilience. First, the study uses signaling theory to reveal how CSR contributes to organizational resilience. Specifically, this study extends signaling theory by demonstrating that CSR initiatives are differentiated and strategic signals that inform the stakeholder expectations regarding a firm's resilience under uncertainty. This theory suggests that CSR initiatives can help determine a firm's ability to cope with potential risks and crises. For example, when

TABLE 4 | Results of structural model.

Path	Standardized	*t*	*p*	Hypothesis
H1 PH CSR → AN	0.157	2.883	0.004	Supported
H1 PH CSR → AD	0.168	3.781	0.000	Supported
H1 PH CSR → RE	0.263	4.186	0.000	Supported
H1 PR CSR → AN	0.040	3.255	0.000	Supported
H1 PR CSR → AD	0.046	2.309	0.000	Supported
H1 PR CSR → RE	0.053	2.135	0.011	Supported
H1 VAC CSR → AN	0.035	2.821	0.010	Supported
H1 VAC CSR → AD	0.043	2.059	0.000	Supported
H1 VAC CSR → RE	0.049	2.902	0.01	Supported
H2 PH CSR → BES	0.050	4.793	0.000	Supported
H2 PH CSR → BOS	0.042	8.979	0.000	Supported
H2 PH CSR → DIS	0.017	6.246	0.000	Supported
H2 PH CSR → INS	0.022	4.808	0.000	Supported
H2 PR CSR → BES	0.056	3.485	0.000	Supported
H2 PR CSR → BOS	0.051	9.082	0.000	Supported
H2 PR CSR → DIS	0.027	3.734	0.000	Supported
H2 PR CSR → INS	0.037	4.424	0.000	Supported
H2 VAC CSR → BES	0.050	7.750	0.000	Supported
H2 VAC CSR → BOS	0.049	2.216	0.001	Supported
H2 VAC CSR → DIS	0.025	2.523	0.010	Supported
H2 VAC CSR → INS	0.045	2.196	0.010	Supported
H3 BES → AN	0.063	2.934	0.003	Supported
H3 BES → AD	0.083	2.107	0.000	Supported
H3 BES → RE	0.073	2.287	0.022	Supported
H3 BOS → AN	0.190	3.347	0.014	Supported
H3 BOS → AD	0.111	2.488	0.011	Supported
H3 BOS → RE	0.099	2.340	0.012	Supported
H3 DIS → AN	0.172	3.082	0.003	Supported
H3 DIS → AD	0.191	3.265	0.000	Supported
H3 DIS → RE	0.163	3.922	0.000	Supported
H3 INS → AN	0.110	2.458	0.013	Supported
H3 INS → AD	0.134	2.206	0.000	Supported
H3 INS → RE	0.127	2.876	0.003	Supported
H5 GH × BES → AN	−0.043	2.000	0.045	Supported
H5 GH × BES → AD	−0.082	2.233	0.034	Supported
H5 GH × BES → RE	−0.097	2.117	0.042	Supported
H5 GH × BOS → AN	−0.071	2.630	0.009	Supported
H5 GH × BOS → AD	−0.087	2.289	0.022	Supported

(Continues)

TABLE 4 | (Continued)

Path	Standardized	*t*	*p*	Hypothesis
H5 GH × BOS → RE	−0.078	2.053	0.040	Supported
H5 GH × DIS → AN	−0.103	2.477	0.013	Supported
H5 GH × DIS → AD	−0.117	2.400	0.018	Supported
H5 GH × DIS → RE	−0.131	2.311	0.021	Supported
H5 GH × INS → AN	−0.089	2.184	0.030	Supported
H5 GH × INS → AD	−0.099	2.163	0.029	Supported
H5 GH × INS → RE	−0.116	2.081	0.038	Supported
CSR → OR	0.198	4.560	0.001	Supported
CSR → SCS	0.233	7.845	0.001	Supported
SCS → OR	0.269	6.432	0.001	Supported
GH × SCS → OR	−0.104	2.627	0.009	Supported

Abbreviations: AD, adaptability; AN, anticipation; BES, belief systems; BOS, boundary systems; CSR, corporate social responsibility; DIS, diagnostic control systems; GH, governance heterogeneity; INS, interactive control systems; OR, organizational resilience; PH CSR, philanthropic CSR; PR CSR, promotional CSR; RE, recovery; SCS, sustainability control system; VAC CSR, value-creating CSR.

firms engage in community support activities and care about the environment, they build a positive reputation that benefits their overall resilience (Sajko et al. 2021). Unlike previous CSR research that relied on signaling to explain CSR and conceptualized CSR as a homogeneous signal, this study conceptualizes CSR as heterogeneous signals that differ in their credibility and ability to enhance resilience based on different types of CSR. At the same time, unfortunate events such as uneven product quality, poor resource management, or dubious employee actions can damage an organization's ability to remain resilient. For this reason, signaling theory suggests that strong CSR helps a firm maintain a good reputation in times of risk. This demonstrates the close relationship between CSR and organizational resilience in coping with challenges. Furthermore, signaling theory provides organizations with ways to understand social needs and the influence of regulatory norms.

Furthermore, this study indicates that the positive effects of CSR activities on a firm's resilience are accentuated when the firm has a strong SCS. From a theoretical perspective, this study redefines the characteristics of SCSs as mechanisms that are not simply intended to control compliance but to make organizations resilient to sustainability problems and turn symbolic CSR signals into functional and operationalized organizational practices. When SCS are effective, they help track, adapt, and evaluate CSR practices to maintain resilience goals. According to previous researchers (such as Wijethilake 2017; Baird et al. 2023), SCS help firms manage environmental, social, and governance risks and make them more resilient. Likewise, implementing CSR within formal management controls is important to ensure that ethics are reflected in meaningful business strategies. This means that SCS initiatives help build trust with customers, employees, investors, and communities and result in better relationships and resilience for the firm. Moreover, in developed countries, increased awareness of SCS has been facilitated through training courses and workshops at all hierarchy levels of the organization; such training and workshops influence the resilience of the organization, which is very important to coordinate with the diverse structure of the organization (Ansell and Gash 2008). This result indicates the significance of the institutional and governance context as one of the boundary conditions that define whether the SCSs are effective in the processes of resilience-building. However, developing countries (e.g., Pakistan) do not recognize the coordination problems within the diverse organizational structures where information sharing and interaction are always limited, thereby hindering SCS from recognizing the importance of organizational resilience. Therefore, for effective SCS and resilience, the organization must weaken governance heterogeneity processes through clear communication and coordination. This integration of theoretical perspectives enables CSR research to move beyond outcome-based explanations toward a process-oriented understanding of organizational resilience. By linking signaling theory with SCSs and governance heterogeneity, this study clarifies how, when, and under what conditions CSR fosters resilience, particularly within emerging market contexts.

5.2 | Managerial and Policy-Level Implications

This study reveals the significant role of CSR initiatives in promoting organizational resilience in Pakistani manufacturing firms. We examined the role of CSR in Pakistani multinational and large-sized firms. To promote CSR actions, managers in multinational firms are responsible for carrying out green initiatives such as green training programs. Such actions could help strengthen a firm to build its resilience. The establishment of a CSR initiative is very important to achieve sustainable development goals. The study also emphasizes the important role of management control systems (e.g., SCS). In Pakistani manufacturing firms, top executives should leverage SCS to ensure the effectiveness of CSR strategies. Stronger management control practices could help with greater success of CSR practices. These outcomes could increase the longevity and resilience of a firm. In Pakistan, the governance structure within manufacturing firms can vary, affecting how CSR initiatives are integrated and

TABLE 5 | Result of mediation effect (H4).

Organization resilience	Indirect effect	Coeff.	SE	*t*	*p*	95% CI	Result
Anticipation	PH CSR → BES → AN	0.044	0.018	2.423	0.015	[0.014, 0.085]	Supported
	PH CSR → BOS → AN	0.095	0.035	2.714	0.007	[0.027, 0.162]	Supported
	PH CSR → DOS → AN	0.482	0.156	3.095	0.002	[0.180, 0.788]	Supported
	PH CSR → INS → AN	0.120	0.055	2.182	0.030	[0.012, 0.228]	Supported
Adaptability	PR CSR → BES → AD	0.050	0.020	2.500	0.013	[0.010, 0.090]	Supported
	PR CSR → BOS → AD	0.080	0.035	2.286	0.022	[0.012, 0.148]	Supported
	PR CSR → DIS → AD	0.063	0.027	2.297	0.022	[0.020, 0.127]	Supported
	PR CSR → INS → AD	0.060	0.028	2.143	0.033	[0.005, 0.115]	Supported
Recovery	VAC CSR → BES → RE	0.080	0.036	2.221	0.026	[0.026, 0.150]	Supported
	VAC CSR → BOS → RE	0.060	0.025	2.400	0.016	[0.016, 0.105]	Supported
	VCS CSR → DIS → RE	0.070	0.030	2.333	0.020	[0.020, 0.120]	Supported
	VCS CSR → INS → RE	0.055	0.022	2.500	0.013	[0.013, 0.098]	Supported
	CSR → SCS → OR	0.198	0.045	4.400	0.001	[0.111, 0.285]	Supported

Abbreviations: AD, adaptability; AN, anticipation; BES, belief systems; BOS, boundary systems; DIS, diagnostic systems; INS, interactive systems; PH CSR, philanthropic CSR; PR CSR, promotional CSR; RE, recovery; VAC CSR, value-creating CSR.

TABLE 6 | Fit indices for the one- to two-segment solutions.

Criteria	Segment 1	Segment 2
AIC (Akaike's information criterion)	5096.831	4461.47
AIC_3 (modified AIC with factor 3)	5142.831	4554.47
AIC_4 (modified AIC with factor 4)	5188.831	4647.47
BIC (Bayesian information criterion)	5282.683	4837.214
CAIC (consistent AIC)	5328.683	4930.214
MDL_5 (minimum description length with factor 5)	6394.089	7084.189
EN (normed entropy statistic)	0.000	0.944

TABLE 7 | PLS structural model: Second-order results.

Path	Standardized	*t*	*p*
Corporate social responsibility → Organizational resilience	0.198	4.56	0.001
Corporate social responsibility → Sustainability control system	0.233	7.845	0.001
Sustainability control system → Organizational resilience	0.269	6.432	0.001
Governance heterogeneity → Organizational resilience	−0.104	2.627	0.009
Sustainability control system → Organizational resilience	0.071	2.023	0.044
Firm size → Organizational resilience	−0.038	1.654	0.099
Industry subsector → Organizational resilience	0.064	1.973	0.049
Nature of the firm → Organizational resilience	0.056	2.183	0.03
Firm size → Sustainability control system	−0.021	1.422	0.155
Industry subsector → Sustainability control system	0.049	2.017	0.045

managed. Policymakers, including the SECP, must recognize the need for governance frameworks that align with both global CSR standards and local dynamics. Government CSR standards, such as those announced in 2019, emphasize the importance of aligning firms' practices with ethical and environmental standards. However, full implementation of these standards requires effective governance structures to enforce compliance and enhance the impact of CSR initiatives on organizational resilience.

Additionally, the findings align with global sustainability priorities, including the United Nations Sustainable Development Goals (SDGs), which enhance CSR practices with the support of public and private stakeholders to promote global goals and learning processes to integrate resources and develop industry capacity. Managers can promote transparency and accountability by integrating SDG indicators into their CSR reporting

TABLE 8 | PLS structural model: Second-order results with control paths on all constructs.

Path	Standardized	*t*	*p*
Corporate social responsibility → Organizational resilience	0.205	4.732	0.001
Corporate social responsibility → Sustainability control system	0.241	7.654	0.001
Sustainability control system → Organizational resilience	0.262	6.145	0.001
Governance heterogeneity → Organizational resilience	−0.109	2.491	0.013
Sustainability control system → Organizational resilience	0.067	2.114	0.035
Firm size → Organizational resilience	−0.042	1.761	0.088
Industry subsector → Organizational resilience	0.059	2.01	0.045
Nature of the firm → Organizational resilience	0.045	2.002	0.046
Firm size → Governance heterogeneity	−0.038	1.74	0.082
Industry subsector → Governance heterogeneity	0.066	2.167	0.031
Nature of the firm → Governance heterogeneity	0.061	2.071	0.039
Firm size → Sustainability control system	−0.025	1.501	0.134
Industry subsector → Sustainability control system	0.052	2.021	0.043
Nature of the firm → Sustainability control system	0.057	2.176	0.03
Firm size → Corporate social responsibility	−0.030	1.688	0.091
Industry subsector → Corporate social responsibility	0.063	2.004	0.046

frameworks and providing meaningful input to key stakeholder groups, such as shareholders, employees, and local communities, regarding sustainability expectations. These practices lead to greater credibility and materiality of sustainability reports and increased corporate legitimacy. Policymakers and regulators also play an enabling role in defining more effective reporting guidelines and disclosure standards to enable SDG-oriented governance. Therefore, integrating SDG principles into corporate strategy provides companies with a globally recognized platform capable of connecting internal sustainability efforts to international requirements and contributing to long-term sustainable development.

6 | Conclusion

The present study explored the relationship between CSR and organizational resilience in the manufacturing industry of Pakistan. Supported by signaling theory, this study explores how SCSs mediate this relationship and how governance heterogeneity moderates it. Using a survey method, the current study collected data from 121 large-sized manufacturing firms in Pakistan. The findings demonstrated the importance of CSR in improving organizational resilience. However, SCS evolves as a visionary tool to reinforce CSR and promote organizational resilience. Furthermore, the present study sheds light on the importance of governance heterogeneity within an organization. The contemporary dynamic environment recognizes the relevance of governance heterogeneity in the community of organizations, as well as its vital importance among stakeholders. However, the results suggest that establishing a high priority on CSR is necessary for organizational continuity. To build resilience, managers oversee CSR initiatives and carry out their social responsibilities.

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Ethics Statement

This study was approved by the Institutional Review Board (IRB) of the National College of Business Administration & Economics (approval no. NCBA&E. MEAC.893-22/02/13; approval date: February 13, 2022).

Consent

All participants provided written informed consent before their inclusion in the study.

Data Availability Statement

The data can be provided upon request.

Endnotes

[1] Securities and Exchange Commission of Pakistan (SECP) is a central and reliable governance body that regulates capital markets, insurance, nonbanking financial sector and corporate sector practices. Under the SECP regulatory frameworks, all registered companies seek to establish contemporary and effective business practices.

[2] The results indicated the suitability of the model, whereby AIC_4 and BIC generally work well when used to determine the number of segments in FIMIX-PLS. In this regard, AIC_4 and BIC are a two-segment solution, which appears to be densely clustered according to the EN criterion (Hair et al. 2016). Therefore, AIC_3 and CAIC indicated the

same cluster, which is in the two-segment. However, MDL5 also highlighted the one-segment solution. This section shows a pronounced trend (Hair et al. 2016). Therefore, it is summarized that there was no critical level observed and the results are supported for data set analysis.

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