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The Impact of CSR on Sustainable Innovation Ambidexterity: The Mediating Role of Sustainable Supply Chain Management and Second-Order Social Capital

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Abstract: As the concept of corporate social responsibility advances, it is crucial to recognize the broad roles of sustainability and the Sustainable Development Goals (SDGs) influencing the implementation of corporate social responsibility (CSR) initiatives. This research contributes to the expanding field of CSR, sustainable innovation ambidexterity (SIA), sustainable supply chain management (SSCM), and second-order social capital (SOSC). This research produced a theoretical framework based on social exchange theory, social capital theory, and Carroll's CSP model to investigate the impact of CSR on SIA, SSCM, and SOSC. Furthermore, this study examined the mediating effects of SSCM and SOSC on the correlation between CSR and SIA. Additionally, this study presents a model to explain the impact of SSCM and SOSC on SIA. This study concentrated on top-level managers of several manufacturing businesses situated in Pakistan. A total of 42 manufacturing businesses were chosen utilizing a convenience cluster sampling method. As per the results of this research, CSR was discovered to have a positive impact on SSCM, SIA, and SOSC. Moreover, SOSC and SSCM were found to be in a significant relationship with SIA. Finally, SOSC and SSCM fully mediated the relationship between CSR and sustainable innovation ambidexterity. This research can guide companies by effectively delivering their finances in CSR initiatives. The findings also suggest that companies should concentrate on improving their CSR initiatives because CSR has a significant effect on SIA. The SDGs provide a road map for companies that can assist them to tactically manage their CSR initiatives according to the international and national sustainable development guidelines. Hence, the CSR-SDG tie is essential for the improvement in the role of CSR in sustainable development. Moreover, to improve and measure SSCM, SOSC, and SIA, policymakers and general managers should devote efforts to CSR.

Keywords: corporate social responsibility (CSR); sustainable innovation ambidexterity (SIA); sustainable supply chain management (SSCM); second-order social capital (SOSC); smart PLS; mediation

1. Introduction

Amid the initiation of the United Nations' Sustainable Development Goals (SDGs), the debate regarding global sustainability has expanded rapidly to a point where it is impossible to separate it from the role of the company [1]. Following the introduction of the SDGs, numerous companies have strategically incorporated the international model to attain the linkage between profitability and the common good [2]. The SDGs have suggested a proactive role of CSR in managing stakeholders' obligations and encouraging

sustainability practices [3]. The common good, which is a vital competitive strategy, is an integral component of CSR, thus enabling companies to focus on the methodologies to implement CSR initiatives [1]. A challenge that most companies face while implementing CSR initiatives is that CSR is a global notion, and it is implemented differently in various societal, legal, and financial situations. Variance in regulations, locations, and culture causes issues for the employment of CSR practices. Hence, this gives rise to a demand for globally accepted guidelines to implement a shared concept of CSR. The SDGs provide a shared concept and road map for companies to incorporate them in their business models [2].

The industrial segment is currently determined by worldwide competition and the demand for rapid change of innovative products and technologies by considering clean manufacturing needs. Thus, the fundamental innovations in the industrial segment such as the Industry 4.0 technique are essential. The Industry 4.0 methodology is centered on a combination of manufacturing and business practices and all performers in the corporation's value chain and is strongly associated with clean manufacturing and sustainability concerns. Clean manufacturing and corporate social responsibility (CSR) offer significant propositions for developments of Industry 4.0 worldwide [4–6]. CSR, being employed as a corporate policy, has become a crucial method for resolving ecological challenges and attaining sustainable development for companies in today's competitive corporate field. Numerous researchers indicated that corporate social responsibility employed by businesses as an evolving strategy might boost sustainability, long-term expansion, and strength in specific competitive operating conditions [7]. Currently, companies understand the need to combine different business tactics to gain distinction in the competitive market. Integrating creative and innovative business approaches could enable corporations to be more efficient in meeting the challenges of a competitive market. It has been discovered that groundbreaking business tactics are linked with corporate social responsibility programs. Businesses, particularly those operating in different countries, which are known as multinational corporations, are confronting difficulty in being accountable for ecological complications owing to their neglect to comply with some regulations or guidelines [8]. As they become increasingly informed of the importance of CSR, businesses employ corporate social responsibility as a corporate policy for their sustainable development. Carroll [9] described corporate social responsibility as a framework that accomplishes the economic, ethical, legal, and philanthropic values of people in a specific period. Carroll additionally described these four dimensions in a pyramid. The responsibilities were arranged based on their relative importance in the pyramid. The economic dimension was deemed the fundamental business strategy followed by the legal, ethical, and philanthropic dimensions. There are many models to measure CSR; however, Carroll's pyramid of CSR is always considered the best [10]. Hence, this research study adopted Carroll's CSR model.

CSR is rapidly evolving as a business strategy, and its initiatives have expanded to supply chain partners. CSR in the supply chain has progressively become an investigation focus that researchers are interested in. In recent years, corporations have recognized the significance of working with supply chain associates to enhance their status and CSR implementation. In particular, in Nike's sweatshop case, Nike was unaware of the role of its suppliers' social accountability in influencing its corporate image and reputation. Thus, researchers and executives began to contemplate the strategies to handle CSR concerns in the supply chain to enhance business execution: for instance, devising and executing rules of conduct to resolve them [11]. Hervani and Helms intended to offer a structure for determining sustainable supply chain management (SSCM) procedures to resolve this issue [12]. Though researchers have made significant contributions to SSCM and CSR, some of the research gaps still need to be answered. One of the research gaps is that there is an absence of standardized and practical modeling investigations in this area. Furthermore, a few of the estimation frameworks implement more subjective assessment techniques that are short of articulacy and objectivity [13]. For instance, a research study proposed sustainable supply chain management in the context of biogas and biofuel [14]. Another research study examined the area of SSCM by exploratory Delphi research [15]. This

approach is not persuasive and is not relevant to all circumstances. Furthermore, considering developing economies as the target sample, there is a dearth of estimation models to build SSCM and CSR [11,13]. This research implemented sustainable manufacturing, sustainable procurement, sustainable logistics, and sustainable distribution as essential elements of SSCM procedures expected by industrial segments to achieve exceptional sustainability implementation. A supply chain could be made sustainable by dealing with several elements including procuring and handling raw materials, execution of marketing policies, and safeguarding sustainable change logistics plans [16]. Therefore, this research attempts to explore the relationship between Carroll's CSR model and sustainable supply chain management.

In the current economic situation, the capability of corporations to revolutionize is essential for survival; nevertheless, the improvement results of companies are mixed. There is an exceptionally well-recognized difference between incremental and radical innovations. The former are related to slight modifications to current products, and the latter are related to new product offerings [17]. Though radical improvements are deemed the most advantageous for attaining a long-term sustainable competitive advantage [18], incremental advances are similarly required to participate in short-term market competition [19]. This point implies that companies should engage in an improvement policy that concentrates on both incremental and radical innovation practices, which can be referred to as innovation ambidexterity [17,20,21]. This research analyzes the impact of corporate social responsibility on sustainable innovation ambidexterity.

CSR is related to social contacts, stakeholders' concerns, and ethical principles. Therefore, many researchers target CSR and social capital (SC) to examine the linkages between the two constructs and additionally investigate policies considered significant to improve the CSR of companies and employed as a potential base for the expansion of SC [22]. Earlier researchers accepted social capital as first-order SC. However, a research study revealed the possibility of second-order social capital (SOSC) and described SOSC as the resources and expertise developed from the corporation's indirect SC [23]. This model is capable of being connected to the supply chain. Corresponding to supply chain management practices, a company's SC is its customers and suppliers. It has been observed that expertise and information from customers and suppliers influence the company's innovation [24]. SOSC is divided into two dimensions. The first dimension is related to the SOSC from customers, and the second dimension is related to the SOSC from suppliers. A company implementing SOSC built on social exchange theory will possibly have gained access to resources and expertise ahead of its social network. Once the resources and understanding are developed from customers, it is known as SOSC from customers. Likewise, SOSC from suppliers is the resources and expertise developed from suppliers [25]. Previous research only deemed the importance of first-order SC and neglected the influence of companies' SOSC. The first-order SC of a company can merely obtain limited resources and information. The importance of SOSC should also be deemed crucial. Generally, the social capital of a focal company in a structure is repositioned to another company. The alternate company assigns the focal company's SC to a third company to enhance the functions of the focal company. Therefore, SOSC is distinguished as the resources and knowledge obtained from indirect SC. The company cooperates regularly with its customers and suppliers throughout its procedures [22]. This research attempts to examine the effect of CSR on SOSC.

Moreover, this research also supports innovation initiatives that feasibly enhance the sustainable innovation of corporations, thus introducing a broad evaluation of the importance of sustainable innovation in the SSCM stage. Additionally, this research analyzes the impact of SSCM and sustainable innovation ambidexterity (SIA) on managerial ecological performance. Research that has highlighted direct evaluations is inadequate and provides deficient understanding and evaluation. For example, the association between SSCM and SIA remains unclear, especially in developing countries. There is a tactical connection between SSCM and SIA related to the importance of the product's life cycle in terms of enhancing ecological performance [26]. Likewise, most research merely concentrated on the

correlation between the notions of sustainable innovation and sustainable suppliers, along with their impact on competitive gains and sustainable operations [27,28]. Consequently, the link between SSCM and SIA procedures is still unanswered. Therefore, this research investigates the effect to systematically assess the causal connection.

SC can be defined as a combined good that comprises trust and trust-centered systems. Trust networks enable the distribution of diverse and valuable knowledge. The allocation of knowledge has been established as being essential for innovation pursuits [29]. Corresponding to this belief, a research study claimed that, by enabling communication, collaboration, and knowledge distribution, SC impacts innovation pursuits, thereby affecting economic development [30]. This research aims to provide a theory to this claim with an analytic model that significantly connects SOSC and SIA. Innovation's multi-disciplinary form, increasing intricacy and complexity, calls for growing amounts of support and knowledge involvement among innovators. Another research study stated that innovation initiatives vary on systems of collective understanding, innovation, and idea execution that rely on the presence of trust between innovators, that is, SC [31]. The suggested model in this research systematically outlines a positive impact of SOSC on SIA. Furthermore, this research also investigates the mediating roles of sustainable supply chain management and second-order social capital on the association between CSR and SIA.

Manufacturing industries' pollution is the main source of ecological decline in Pakistan [32]. These manufacturing practices produce toxic air contaminants, dust, and gases [33]. Moreover, the notion of CSR in Pakistan is still vague because of the dearth of its understanding. However, recently, most of the manufacturing industries in Pakistan have focused on volunteering activities. In this context, the government and companies still need to engage in various practices to achieve the Sustainable Development Goals in Pakistan [34]. Consequently, this investigation can aid companies by effectively delivering their finances in CSR initiatives. The findings also suggest that companies should concentrate on improving their CSR initiatives because CSR has a significant effect on SIA. To improve and measure SSCM, SOSC, and SIA, policymakers and general managers should devote efforts to CSR.

This research covers at least six research gaps. First, it explores the effect of CSR on SSCM. Second, it examines the impact of CSR on SOSC. Third, it studies the effect of CSR on sustainable innovation ambidexterity. Fourth, it explores the relationship between SSCM and SIA. Fifth, it analyzes the association between SOSC and SIA. Finally, it assesses the mediation effect of SSCM and SOSC on the relationship between CSR and sustainable innovation ambidexterity.

2. Literature Review and Hypothesis Development

2.1. CSR and Sustainable Supply Chain Management

Corporate social responsibility is described as the initiatives performed by a company to obtain sustainable outcomes by resolving concerns associated with the economic, ethical, legal, and philanthropic effects generated by its activities. Corporate social responsibility incorporates the company and each stakeholder, in both the local and international economy, and the concepts of sustainability and voluntarism [22]. A company's CSR pursuits are described as a factor which can enhance the company's competitive lead [35]. In this study, four components of Carroll's CSP model [36] were implemented that signify that the economic element comprises carrying a profit on the investment of shareholders, creating works, and recompensing personnel with considerate incomes, determining different resources, and marketing the development of up-to-date products. The legal element incorporates satisfying legal requirements, whereas the ethical element concerns preventing moral values from falling below the ethical requirements while achieving the company's goals. Finally, the philanthropic element encompasses enthusiastically participating in compassionate and charitable roles, encouraging volunteering initiatives, and distributing relief to educational institutes to improve the quality of life of society [9]. Carroll reworked the preliminary CSP framework and recommended a pyramid model. The pyramid model

locates the economic dimension at the bottom, hence deeming it as the most important element. The economic dimension is followed by the legal, ethical, and philanthropic dimensions based on their relative importance.

A supply chain is a collection of corporations that encompasses both forward and backward flows of information, services, finance, and products from primary suppliers through channel affiliates to customers or end users. Corresponding to this description of the supply chain, it can be inferred that the supply chain encompasses various corporations and several participants, meaning it is particularly essential to sufficiently cope with these associations [11].

Additionally, the expanded complexity of the supply chain has initiated the development of numerous supply chain tools, but only a few of them deal with sustainability issues [37]. It has also been found that different supply chain partners will have a different level of interaction and participation in supply chain activities depending on their interests and demands [38]. For instance, several supply chain partners might desire to have low-involvement cooperation while dealing with issues related to product design. On the other hand, some supply chain partners might prefer to engage in high-involvement partnerships while dealing with issues related to the transmission of transparent knowledge and expertise. Hence, it can be inferred that the level of involvement in sustainability concerns varies across different supply chain partners [39].

Currently, the sustainable supply chain model is common because of its programs leading to companies' sustainability [40]. Sustainable supply chain policies are applied to deal with all ecological matters such as decreasing the usage of energy, lethal chemicals, and air contamination, and they also create a competitive lead and improve the functioning of the company [41]. Prior research on SSCM highlighted manufacturing industries' implementation of SSCM in their business functions [42–44]. Thus, it can be proposed that SSCM is a valuable component of manufacturing industries aiming to attain efficiency in sustainable development issues [38,45].

SSCM needs expertise among all operational business components and demands the execution of policies established on inbound and outbound logistics. Inbound logistics approaches are centered on activities linked to the internal supply chain and production. On the other hand, outbound logistics approaches are built on customer wants recognition, productivity, and quality. Introducing SSCM systems in the corporate sections will safeguard a well-coordinated sustainable supply chain. SSCM practices generate improved financial and ecological presentations for the supply chain associates that support outcomes in the advancement of the whole company. Furthermore, it should be observed that environmental improvement policies play a vital role in business supply chain management. Numerous researchers have focused on observing SSCM to improve the sustainable efficiency of the complete supply chain. Contrasting conventional supply chain management, SSCM needs a thorough understanding of the financial, environmental, and societal characteristics of the company's methods [46]. SSCM is centered on the idea of handling the capital flow, knowledge flow, and resources. Additionally, it is also implemented to handle the collaboration and alliance among supply chain associates, from stakeholders to customers, while employing all the triple bottom line (TBL) environmental improvement objectives commonly as ecological, societal, and financial components [47]. In this research, we used Khan et al.'s [16] research framework encompassing sustainable manufacturing, sustainable procurement, sustainable distribution, and sustainable logistics to measure SSCM. SSCM not only can decrease ecological hazards and effects, enhancing the environmental productivity of these corporations and their associates, but can also assist in attaining business profits and market share targets [48].

Though supply chain specialists have been slow to implement CSR concerns, the notion of societal accountability in the supply chain is becoming increasingly significant [49]. The importance of societal concern in the supply chain can be traced back to Poist, who added societal problems to the conventional financial driving strength of the supply chain [50]. Subsequently, numerous researchers have examined the types of supply

chain and CSR and their attributes from different facets all through various experimental investigations and highlighted the significance of CSR in the supply chain. Several researchers have attempted to review the aspects of the supply chain and CSR, for instance, procurement social responsibility (PSR) and logistics social responsibility (LSR), and to study approaches to enhance methodologies of supply chain performance [11].

Incorporating sustainable plans into supply chain management, SSCM can assist companies in reducing the waste of materials and enhance environmental effectiveness in the entire supply chain management [51,52]. CSR is directly associated with SSCM. Thus, it may lead to the effective application of SSCM [53]. Moreover, corporate social responsibility is implanted in the corporate culture, and companies practicing corporate social responsibility initiatives are more prone to have a decent corporate culture atmosphere that might support them in continuing their participation in innovation initiatives to protect energy, decrease emissions, and improve productivity [54]. SSCM is one of the managerial policies to reduce the detrimental impacts on the environment [55]. Intellectual factors are deemed as one of the most valuable pre-requirements for SSCM [56]. Consequently, corporate social responsibility may enable companies to alter their prior experiences and execute SSCM. Additionally, companies with corporate social responsibility endure more force from external stakeholders that may push them to execute suitable policies to meet the demands of external stakeholders, placing groundwork for the application of SSCM [55,57]. Based on the above literature, the following hypotheses can be postulated:

Hypothesis 1 (H1). *CSR positively influences sustainable supply chain management.*

2.2. CSR and Sustainable Innovation Ambidexterity

In recent years, investigators have aimed to observe corporate social responsibility, and customers have demanded sustainable products and services [22]. External stakeholders including workers, customers, competitors, and the government have pressurized companies in terms of their concerns related to sustainability [58]. Furthermore, CSR has also been regarded as a substantial corporate policy universally [59]. Businesses are expected to run corresponding to common societal attitudes to be productive. Moreover, companies that are considerate towards the demands of their customers are expected to possess a competitive edge in the market and, in turn, be successful. CSR is related to the company's responsibility to participate in those initiatives and generate value for society [60].

Earlier research emphasized that companies are required to consider sustainable innovation and green technologies regarding the rational use of resources while enhancing sustainability strategies [61]. Investment in sustainable technologies provides two types of benefits to companies. The first one is related to the commercial aspect of attaining an eco-friendly product, while the second one is related to the economic aspect by providing a competitive advantage to companies [62]. Companies employing environmental management strategies are prone to accept sustainable innovation [63]. Additionally, sustainability guidelines are deemed as crucial for the successful implementation of sustainable innovation [64,65].

We suggest exploitative and exploratory innovation related to sustainable safety and improvement and hence propose sustainable exploitative innovation (SEP) and sustainable exploratory innovation (SET) in this research. SEP suggests that an existing product can be modified and made sustainable for the environment, whereas SET refers to businesses creating a new sustainable product. Businesses concentrate on preservation and the mentioned sustainability issues. Contemplating "sustainable" concerns has previously been a key driving force for practitioners [66,67]. Nevertheless, the studies conducted on CSR and innovation ambidexterity are insufficient. A recent research study by Khan et al. [22] studied CSR and SIA. As per the outcomes of the study, only the philanthropic element of CSR was in a significant association with SIA, whereas the legal, economic, and ethical elements did not have any impact on SIA. Therefore, the following hypothesis can be postulated:

Hypothesis 2 (H2). *CSR positively influences sustainable innovation ambidexterity.*

2.3. CSR and Second-Order Social Capital

The theory of SC originates from the idea that people that participate in activities together will form an enduring relationship over time. These “stored” relationships can be beneficial in terms of supporting resource allocation or moral support. [68]. First-order SC is considered to be deficient in locating resources and expertise beyond the firm [69]. SOSC is developed on social exchange theory. This concept states that a company can obtain access to resources and expertise beyond its social relationship networks. SOSC is divided into two components, namely, SOSC from customers, and SOSC from suppliers, for the company’s numerous interactions with customers and suppliers. It has been shown that expertise from customers and suppliers influences the expansion and innovation skills of a company [22]. In a manufacturing company, the implementation of sustainability guidelines by suppliers and customers might be affected by several external stakeholders, especially if the external stakeholders require them to enhance their sustainability performance [70] and their fulfillment of ecological policies, such as ISO 14,000 [38,71].

Furthermore, societal accountability in the field of SC is established as a benefit of resources and the moral capital of stakeholders, determined by employing mutual trust that is required to be continued in the development of the trust and commitment of stakeholders. The moral values of stakeholders are found to have a significant impact on SC and CSR [72]. It has been found that customers are progressively keener to recognize the product manufacturing environments [73,74]. Furthermore, they are prone to demanding consumer products manufactured in a sustainable way [38,75].

Moreover, according to the findings of another study, CSR and SC create mutual trust, commitment, and socialization between the company’s managers and stakeholders. They also fulfill the legal accountabilities, form economic stability, and safeguard employment of the ethical rules in associations among competitors, consumers, and associates; reduce expenditures; promote stable relationships within the company; and increase awareness regarding the methodologies of interacting with a competitive market [76]. Consequently, there is a significant association between CSR and SOSC. We established the following hypothesis.

Hypothesis 3 (H3). *CSR positively influences second-order social capital.*

2.4. Sustainable Supply Chain Management and Sustainable Innovation Ambidexterity

The connection between SSCM methods and sustainable innovation is backed by two concepts. The first one is co-creation, and the second one is the evolutionary method of innovation. These theories suggest that the communication among partners or shareholders, which are engaged in businesses’ supply chain procedure, will generate additional sustainable innovation to abide by the high pressures from external elements, particularly from government regulation and officials [26]. Sustainable suppliers promote additional sustainable innovations that imply that the SSCM tactics are the essential driving forces in generating sustainable innovation methods. Numerous findings have proved the role of SSCM in creating sustainable innovation, though they have not studied the vast effects of SSCM on green innovation [77]. According to the finding of Lee and Kim [27], sustainable innovation can be accelerated through sustainable collaboration between corporations and their vital suppliers in creating an innovative sustainable product. Several other investigations have specified that developing the suppliers will significantly impact sustainable innovation [77,78].

Additionally, research conducted in Taiwan suggested that corporate sustainability management, for instance, SSCM, is significantly related to sustainable processes and product innovation. The underlying principle in the wake of the connection between SSCM and SIA is acceptable. The increasing fear regarding sustainability policies and concerns from several participants, for instance, society, customers, and suppliers, encourages

businesses to work effectively with them in the product improvement procedures [79]. This partnership will then be valuable to enterprises in creating innovation, generating the product layout and production process, and improving complete conformity with ecological guidelines [26]. The SIA concept can assist the execution of SSCM by proposing innovative proposals, methodologies, and skills to manufacturers in creating new products. Lastly, SIA is supposed to offer a constant means to innovate every step of the supply chain to obtain a competitive lead and reduce the ecological difficulties in the industry [80]. Consequently, it was postulated that:

Hypothesis 4 (H4). *There is a positive and direct relationship between GSCM and green innovation ambidexterity.*

2.5. Second-Order Social Capital and Sustainable Innovation Ambidexterity

A substantial amount of investigation has demonstrated that SC and relationships between businesses impact innovation by obtaining and attracting knowledge and expertise [81,82]. Corresponding to the firms' perspective, earlier research suggested a positive significant impact of SC from suppliers [24,81,83] and SC from customers on sustainable innovation [84,85]. The SC highlighted in earlier research describes first-order SC. Second-order social capital (SOSC) symbolizes indirect SC for a firm. Overall, the central firm has progressive indirect SC; however, it can be further investigated in the course of the external expertise or knowledge. Developing and recognizing indirect information or knowledge through SOSC might support new combinations or recombination. The significance of obtaining knowledge from customers for prolonged attainment has been emphasized in innovation research [24]. This type of research deals with knowledge or expertise from customers as social capital. Once direct customers seize a key position in SC, they will have the benefit of having various tactical supplies and managing resources and knowledge. Furthermore, with the help of this key position in SC, they can have access to gain beneficial resources and knowledge instantly and quickly [25]. Additionally, direct customers can collect types of knowledge linked to precise customer sustainable needs from their SC. Knowledge of customer preferences and needs is valuable to the focal firm's sustainable innovation [85]. Acquiring knowledge from suppliers is similarly crucial in supply chain management [24,83]. Once the direct supplier fills a vital position in its SC, this will encourage the supplier to rapidly acquire substantial and innovative knowledge and technology [83]. Likewise, suppliers with a dominant position can guarantee the reliability and certainty of acquiring sustainable knowledge, decreasing the risk of sustainable knowledge deformation. Moreover, suppliers with key positions can confirm the consistency of sustainable information, which is exchanged in suppliers' SC by networking with various associates [25]. Additionally, suppliers with a great average concentration provide a stable intelligence-sharing network that promotes interaction carefully inside the network and distributes implicit expertise and technologies [83]. Suppliers can obtain knowledge regarding product design, components, and mechanisms from their SC [86] that can be crucial for the focal firm's sustainable innovation ambidexterity (SIA).

Social exchange theory believes that the central firm and customers or suppliers can attain shared advantages through the conduct of exchange. Established through social exchange theory, if the company offers information and resource capitals and material to continuing customers and suppliers, on the other hand, they also send sustainable information and resources developed from their SC to a focal firm; consequently, the exchange conduct might encourage the focal firm's sustainable innovation [87]. Sustainable information from SOSC may combine or recombine with the field expertise of the focal firm, while knowledge relationships record the experience and content of the knowledge linkage in earlier developments. New combination refers to the usage of sustainable information of the focal firm that has not previously been combined. It comprises the present sustainable information or new sustainable knowledge. The combination of present information is known as sustainable exploitative innovation, while the combination of

innovative information is known as sustainable exploratory innovation. Furthermore, sustainable knowledge gained from SOSC from suppliers or customers may enable the communication of a set of unique ideas [25]. Additionally, these collaborations may lead to different ideas that are valuable to sustainable innovation ambidexterity. Thus, the following hypothesis can be postulated.

Hypothesis 5 (H5). *Second-order social capital positively influences sustainable innovation ambidexterity.*

2.6. The Mediating Role of Second-Order Social Capital

Little research has been conducted on the association between CSR and SC. Nevertheless, some researchers have discovered CSR to generate trustworthy social associations for businesses and social power. Business initiatives that help society can improve the degree of societal involvement, create constructive feelings in the company, and be a vital element in financial success and sustainable growth. SC is collected as a result of real human relationships and collaborations that originate and enable powerful internetwork relations and standards that increase collaboration and mutual action [88]. Such a system of connections can be created deliberately by individuals and other social events. The concept of SC is inserted into various managerial actions so it can help with information transmission and innovation. Additionally, it creates productivity in the formation of innovative enterprises, societal growth, and CSR. Businesses' internal and external associations offer the prospect for social contracts. A worker may take advantage of his official and informal associations within and outside of the business to organize resources [89]. Workers can offer suggestions and prospects to improve informal networks for the firm to implement and take advantage of their social associations to collect resources. Enterprise initiatives that promote society can improve the degree of societal involvement and create a constructive feeling for the private and public segments. Additionally, this social structure can generate efficiency in the industry [90].

According to Durlauf and Fafchamps, SC is described as a collection of network-centered practices, developed upon general trust, which affect the capability of a country's citizens to communicate, collaborate, and organize actions [91]. Briefly, SC comprises general trust and its associations. It enables collaboration and knowledge sharing among economic representatives, consequently being essential for innovation initiatives. Innovation is the primary engine of development for several growing economies. While the innovation economy strengthens, SC increases endogenously with the development of monopolistic competitors' production and profits. Mutual SC develops spontaneously and affects economic development across the innovation segment. In agreement with the observed studies, it is found that economic development improves with the proportion of output, from employees to innovators [29]. Hence, it can be inferred that second-order social capital has a mediating effect on the relationship between CSR and sustainable innovation ambidexterity. The following hypothesis can be postulated:

Hypothesis 6 (H6). *Second-order social capital mediates the relationship between CSR and sustainable innovation ambidexterity.*

2.7. The Mediating Role of Sustainable Supply Chain Management

Stakeholder theory claims that companies have a win-win association with their shareholders and attain improved performance results by enthusiastically and efficiently managing their relations. Stakeholder theory offers a sufficient theoretical viewpoint to describe stakeholder relationships that have been established as the predominant concept in CSR research [92]. Nevertheless, it is required to solve issues such as the way SSCM originates and the possible result of SSCM. This can offer useful understandings for companies in implementing and executing SSCM that could support them in implementing SSCM by utilizing CSR as the driving force and effectively enhance their operations [55]. Additionally, ecological procedures such as SSCM and sustainable innovation are advantageous

for these companies to implement in order to achieve sustainable processes. SSCM and sustainable innovation initiatives within company processes are assumed to enhance their corporate functioning [26].

Utilizing the methods of forming sustainable suppliers in the framework of SSCM would promote sustainable supplies and improve their sustainable innovation [77]. In short, the application of SSCM improves the quality of sustainable innovation initiatives that are accomplished to create sustainable products. The implementation of these procedures can also relieve ecological difficulties from governmental policies and regulations, as well as communities, buyers, suppliers, and customers [93]. Sustainable innovation is a different idea of environmental management that has been newly supported to reduce adverse ecological effects [94]. To improve the potential development of businesses, sustainable innovation is particularly needed to create new markets, keeping in mind its expected astounding development in the coming decade that presents various possibilities and prospects [95]. The sustainable innovation ambidexterity model encourages the application of SSCM with innovative methodologies and suggestions to manufacturers. Similarly, sustainable innovation ambidexterity can improve the application of ecological management, particularly SSCM, to fulfill the conservation needs of businesses. Sustainable innovation ambidexterity also offers a general platform for manufacturing companies and their suppliers to collaborate that possibly improves sustainable innovation pursuits and improves sustainable products [26]. Hence, this involves continuous sustainable innovation for the execution of SSCM for the current ecological goals. Consequently, it can be hypothesized that sustainable supply chain management has a mediating effect on the relationship between CSR and sustainable innovation ambidexterity. The following hypothesis can be postulated:

Hypothesis 7 (H7). *Sustainable supply chain management mediates the relationship between corporate social responsibility (CSR) and sustainable innovation ambidexterity.*

Table 1 indicates researchers' contributions in prior studies and the research gaps covered by the current study, whereas Figure 1 indicates the research framework of this study.

Table 1. Comparison of the contributions of previous works.

Author(s)	CSR	SSCM	SIA	SOSC
Saeed et al. [88] (2012)	✓			✓
Jha and Cox [96] (2015)	✓			✓
Thompson [29] (2018)			✓	✓
Shahzad et al. [65] (2019)	✓		✓	
Seman et al. [26] (2019)		✓	✓	
Lu et al. [10] (2020)	✓			
Wang et al. [55] (2020)	✓	✓		
Khan et al. [16] (2021)		✓		
Sarkar et al. [14] (2021)		✓		
Huang et al. [38] (2021)	✓		✓	
Yadav [97] (2021)		✓		
Luo et al. [11] (2021)	✓	✓		
Zhao et al. [25] (2021)			✓	✓
Present Study	✓	✓	✓	✓

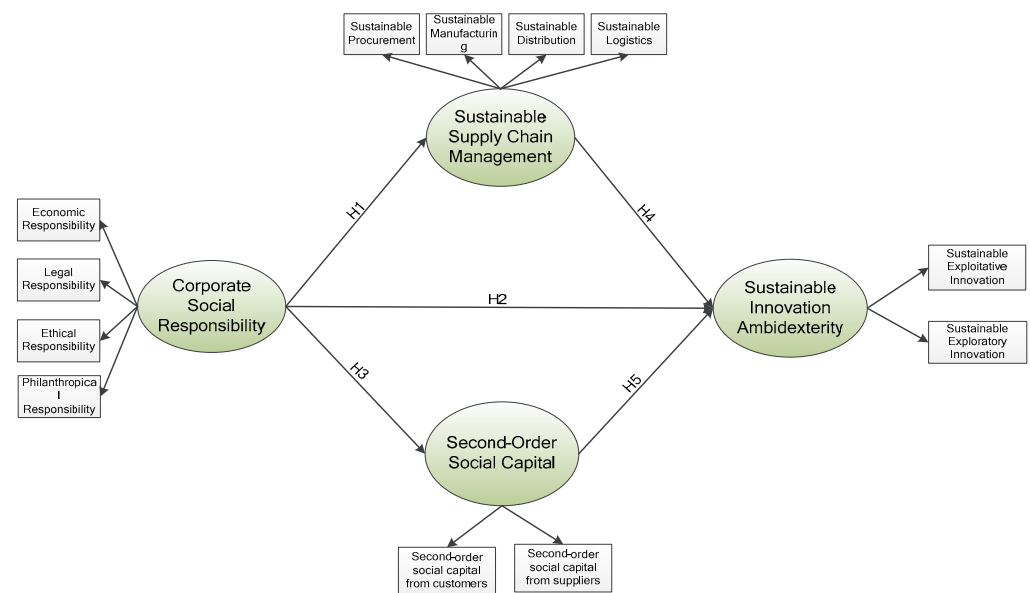


Figure 1. Research framework.

3. Methodology

Sample and Procedure

The data for this study were collected from manufacturing firms in Pakistan. This study concentrated on top-level managers of several manufacturing businesses situated in Pakistan. A total of 42 manufacturing businesses were chosen utilizing a convenience cluster sampling method according to their closeness in the chosen cluster. Cluster sampling is beneficial if the population is broadly distributed, and it is unrealistic to choose a representative sample [98]. Clusters are usually a natural set of individuals, for instance, schools, hospitals, and businesses. In this study, clusters were industries. Furthermore, to engage in an efficient cluster sampling technique, a sampling frame is deemed to be essential. However, the selection of clusters from a sampling frame is conducted randomly, which can be time consuming and inefficient. Hence, to tackle these issues, it is suggested to select the clusters based on their geographic location [99]. In this research study, the clusters from the sampling frame of industries located in the cities of Islamabad and Peshawar were selected based on their industry type and geographical proximity.

The data for the study were collected from different manufacturing businesses, in order to eliminate the discrepancies among industries. These firms were chosen from the KP and Punjab provinces of Pakistan. These provinces imply distinctive environments of manufacturing development and market economy; therefore, they were more suitable. Peshawar city in the country's northwest region was chosen, demonstrating an average level of economic development, whereas Islamabad city, which is the country's capital, was chosen to signify an advanced level of economic development. By selecting samples from distinct geographical regions, the potential cause of regional biases was decreased [25]. The sample included manufacturing SMEs operating in a variety of industries, for instance, shoes, FMCG, and textiles. A close-ended self-administered questionnaire was circulated to the top management of manufacturing businesses, and valid responses were collected with a response rate of 94.62%, which is usually considered to be an optimum response rate [100,101].

Instead of asking the respondents merely whether they agree with a statement, Likert scale elements queried how strongly they agree or disagree with it, normally on a 7-point scale from 1 (=strongly disagree) to 7 (=strongly agree), with 4 linking to a neutral category.

There are several findings related to the scale format's reliability and validity. According to these studies, the validity and reliability of the scale are improved by using 5- to 7-point Likert scales instead of using scales with fewer points. Nevertheless, having a more

thinly pointed scale, for instance, a 10-point Likert scale, will not contribute to improving the reliability; however, it might generate a slightly low score as compared to the upper limit of the scale.

CSR was calculated by items proposed by Kim et al. [102], while the items to measure sustainable supply chain management were adopted from Khan et al.'s study [16]. Furthermore, SOSC and SIA were adopted from Zhao et al.'s research [25]. Before initiating the formal research survey, a pilot test was conducted on seven randomly selected representative sample companies. The survey items were tested and validated with the help of this test. The items of this study are provided in Appendix A. The hypothesis of this research was analyzed using a partial least square method.

4. Data Analysis

4.1. Data Analysis

The partial least squares (PLS) were calculated by implementing two steps. The reliability analysis was calculated in the first step, whereas the research framework was analyzed in the second step. These steps were implemented to analyze the variables' reliability and validity and calculate the relationships between them [103,104]. PLS is best known for being able to manage the measurement items and conduct an efficient analysis of the research framework; hence, it is considered to be one of the best research analysis tools [105]. Additionally, PLS has features to control uncertainty; therefore, it is perfect to evaluate variables when they are irregularly distributed. It has the benefit of evaluating dynamical assessment frameworks [106]. PLS was therefore more applicable for this research than prior SEM assessment techniques to evaluate the relationships between constructs, decrease measurement errors, and avoid collinearity.

4.2. Convergent and Discriminant Validity

The structural equation modeling technique was employed to evaluate the expected hypotheses formed in the preceding segment of this research, and as a result, Smart PLS 3.2.8 was applied. The partial least square structural equation modeling (PLS-SEM) technique is exceptionally suitable for uncomplicated and complex frameworks [107]. Similarly, the researchers concluded that PLS-SEM is a viable method for measurement as compared to CB-SEM. There are numerous arguments to perform PLS-SEM. For example, PLS-SEM is considered to be sufficient in handling and evaluating estimations in contrast to regression for determining mediation [108]. Likewise, the researchers confirm that while employing PLS-SEM, the authentication of the normality assumption is not compulsory [107].

The research model of this study contains four second-order constructs, where CSR is measured by economic, legal, ethical, and philanthropical constructs. The second construct is SSCM, having four constructs, namely, sustainable procurement, sustainable manufacturing, sustainable distribution, and sustainable logistics. The third construct is SOSC, having two constructs, namely, SOSC from customers and suppliers. Finally, the fourth construct is SIA, containing two constructs, namely, sustainable exploratory innovation and exploitative innovation.

PLS-SEM incorporates both the inner and outer frameworks. Three types of examinations, including individual item reliability and convergent validity, were employed to determine the reflective constructs of the outer research framework. According to the findings highlighted in Table 2, the smallest factor loading was 0.608, while the greatest factor loading was 0.904, which is greater than the recommended threshold value of 0.50 [107]. Corresponding to these outcomes, it can be inferred that the study has acceptable individual item reliability. The composite reliability (CR) of all the constructs was calculated by determining the internal consistency reliability. The CR value of each construct should be larger than 0.60 [107]. According to the findings, it was found that the CR value of all the research constructs was larger than 0.60, demonstrating homogeneity, internal consistency, and reliability (see Table 2) [109]. Average variance extracted (AVE) was used to measure the convergent validity, which indicates the degree to which an item of the variables exam-

ines a related construct. Corresponding to the outcomes shown in Table 2, the smallest AVE was 0.543, whereas the largest AVE was 0.864. As a result, this study fulfills the convergent validity requirement of having an AVE threshold value of more than or equal to 0.50 [107]. Detailed descriptions of the items provided in Table 2 are provided in Appendix A.

Table 2. Convergent validity of first-order constructs.

Construct	Item Code	Factor Loading	Composite Reliability	Average Variance Extracted (AVE)
Economic CSR (first order)	Eco1	0.749	0.882	0.653
	Eco2	0.793		
	Eco3	0.871		
	Eco4	0.814		
Legal CSR (first order)	Leg1	0.819	0.845	0.645
	Leg2	0.776		
	Leg3	0.813		
Ethical CSR (first order)	Ethi1	0.834	0.824	0.615
	Ethi2	0.876		
	Ethi3	0.619		
Philanthropical CSR (first order)	Phi1	0.904	0.912	0.776
	Phi2	0.888		
	Phi3	0.850		
Sustainable Procurement (first order)	SP1	0.797	0.922	0.704
	SP2	0.847		
	SP3	0.832		
	SP4	0.857		
	SP5	0.861		
Sustainable Manufacturing (first order)	SM1	0.846	0.899	0.748
	SM2	0.896		
	SM3	0.853		
Sustainable Distribution (first order)	SD1	0.688	0.908	0.555
	SD2	0.729		
	SD3	0.823		
	SD4	0.865		
	SD5	0.747		
	SD6	0.697		
	SD7	0.608		
	SD8	0.776		
Sustainable Logistics (first order)	SL1	0.901	0.931	0.818
	SL2	0.921		
	SL3	0.892		
SEP (Sustainable Exploratory Innovation) (first order)	SEP1	0.751	0.907	0.620
	SEP2	0.738		
	SEP3	0.772		
	SEP4	0.845		
	SEP5	0.783		
	SEP6	0.824		
SET (Sustainable Exploitative Innovation) (first order)	SET1	0.788	0.922	0.704
	SET2	0.844		
	SET3	0.837		
	SET4	0.858		
	SET5	0.866		

Table 2. Cont.

Construct	Item Code	Factor Loading	Composite Reliability	Average Variance Extracted (AVE)
SOCC (Second-Order Social Capital from Customers) (first order)	SOCC1	0.751	0.924	0.604
	SOCC2	0.808		
	SOCC3	0.808		
	SOCC4	0.839		
	SOCC5	0.855		
	SOCC6	0.792		
	SOCC7	0.696		
	SOCC8	0.646		
SOSS (Second-Order Social Capital from Suppliers) (first order)	SOSS1	0.802	0.839	0.723
	SOSS2	0.853		
	SOSS3	0.881		
CSR (Corporate Social Responsibility) (second order)	ECO	0.806	0.865	0.672
	LEG	0.802		
	ETHI	0.776		
	PHIL	0.880		
Sustainable Supply Chain Management (second order)	SP	0.838	0.771	0.543
	SM	0.865		
	SD	0.741		
	SL	0.904		
Sustainable Innovation Ambidexterity (second order)	SEP	0.785	0.927	0.864
	SET	0.838		
Second-Order Social Capital (second order)	SOCC	0.774	0.881	0.663
	SOSS	0.845		

The goodness of fit (*GOF*) for this research study was analyzed by Equation (1), using the model proposed by Tenenhaus et al. [110], in order to determine the quality of the proposed research model, which is calculated as follows:

$$GOF = \sqrt{AVE} \times \sqrt{R^2} = \sqrt{0.685 \times 0.705} = 0.694 \quad (1)$$

Corresponding to the above-mentioned calculation, the *GOF* was 0.694, which achieves the 0.305 cut-off conditions for a significant impact size [111].

4.3. Empirical Results

Smart PLS 3.2.8 was utilized for the evaluation of the path analysis of the research framework. In this segment, the inner model was calculated. Scholars calculate the *p*-values and *t*-values to examine the suggested hypotheses in the inner model. The suggested hypotheses are supported if the *p*-value is lower than 0.05, or if the *t*-value is higher than 1.96.

As per the results of this research, as shown in Table 3 and Figure 2, CSR was discovered to have a positive impact on SSCM, hence supporting H1 ($\beta = 0.579$, *t*-value = 11.532).

Furthermore, CSR also had a significant impact on SIA; therefore, H2 ($\beta = 0.121$, *t*-value = 4.214) was supported. Moreover, CSR significantly influenced SOSS; therefore, H3 ($\beta = 0.626$, *t*-value = 11.851) was supported.

SOSS was found to be in a significant relationship with sustainable innovation ambidexterity, hence supporting H4 ($\beta = 0.529$, *t*-value = 12.857). Finally, sustainable supply chain management was also in a significant relationship with sustainable innovation ambidexterity, supporting H5 ($\beta = 0.385$, *t*-value = 8.389).

This study applied activity theory developed by Kofod-Petersen and Cassens [112], and the indirect effects indicated in Table 4, generated by Smart PLS, to test the mediation

results. According to the results shown in Table 4, SOSC and sustainable supply chain management fully mediate the relationship between CSR and sustainable innovation ambidexterity.

Table 3. Hypothesis results.

Hypothesis	Path Coefficient	t-Statistics	p-Values	Results
H1: CSR → SSCM	0.579	11.532	0.000	Supported
H2: CSR → SIA	0.121	4.214	0.000	Supported
H3: CSR → SOSC	0.626	11.851	0.000	Supported
H4: SSCM → SIA	0.385	8.389	0.000	Supported
H5: SOSC → SIA	0.529	12.857	0.000	Supported

Note: CSR = corporate social responsibility; SSCM = sustainable supply chain management; SIA = sustainable innovation ambidexterity; SOSC = second-order social capital.

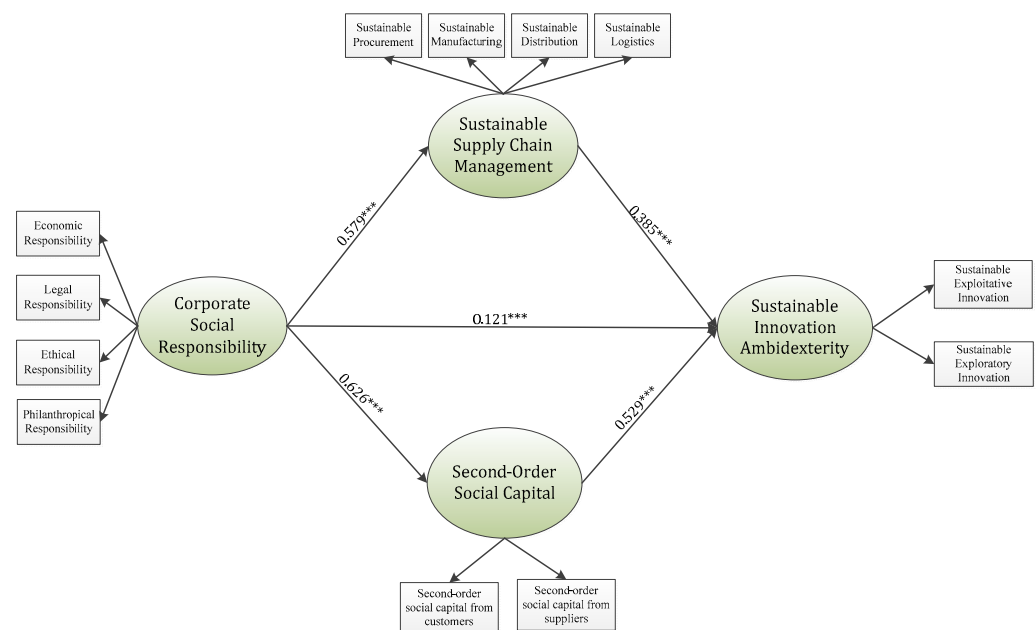


Figure 2. Results of the inner model. Note: *** p -value ≤ 0.001 .

Table 4. Hypotheses and mediating effects.

Hypothesis	Path Coefficient	t-Statistics	p-Values	Results
H6: CSR → SOSC → SIA	0.330	10.188	0.001	Full mediation
H7: CSR → SSCM → SIA	0.223	7.020	0.000	Full mediation

Note: CSR = corporate social responsibility; SSCM = sustainable supply chain management; SIA = sustainable innovation ambidexterity; SOSC = second-order social capital.

5. Discussions

According to the findings of this study, CSR was observed to have a positive and significant association with SSCM. These results are found to be somewhat similar to those of a study conducted by Wang et al. [55]. Their research measured the impact of CSR, SSCM, and firm performance within the context of big data. According to their results, CSR was found to be in a significant relationship with SSCM. Furthermore, SSCM was also in a significant relationship with firm performance. Likewise, the correlation between corporate social responsibility and SSCM was moderated by big data analytics.

Moreover, CSR was also observed to be in a significant relationship with SIA. These results are comparable to those of a recent investigation which used a multi-dimensional CSR construct. According to the findings, CSR's economic, ethical, and legal dimensions had no impact on SIA, although the philanthropic dimension had a significant impact on SIA [22]. Another research study aimed to examine CSR, sustainable development, and

sustainable innovation in the manufacturing industries of Pakistan. The findings indicated a significant impact of all CSR dimensions on sustainable development, which, in turn, was found to have a positive significant influence in enhancing sustainable innovation [65].

Furthermore, the results of this paper further indicate that CSR had a significant relationship with second-order social capital. These results are also somewhat similar to those of some research studies conducted previously. A previous study measuring the impact of CSR on social capital proposed a research framework based on the strategic management viewpoint. The study was based on a resource-based viewpoint and social identity theory. The article theorized CSR as a resource-producing action by establishing support systems, associations, and supervision of insights in the shape of reputation capital and SC [88]. Additionally, another study measuring the impact of firms' CSR on social capital found that a business from a high-SC region demonstrated higher CSR. The outcome indicated that the importance of stakeholders or managers does not clarify all of the business's CSR, but that the philanthropic tendency from the area might also play a role [96].

Additionally, second-order social capital was in a significant association with SIA. These results are in accordance with Thompson's research [29], which introduced an innovation-built development framework with shared SC that took the argument that SC impacts innovation and subsequently economic development hypothetically. SC promotes innovation pursuits that lead to greater monopolistic profits and causes a higher SC, in a self-strengthening system. As the innovation economy expands, SC increases endogenously with the development of monopolistic competitors' earnings and manufacture.

Additionally, according to the results of this study, SSCM significantly impacted SIA. This result is comparable to research performed by Seman et al. that aimed to offer empirical support demonstrating that SSCM and sustainable innovation initiatives considerably enhanced ecological operation to help companies execute these procedures. Moreover, the outcomes also showed that there is a significant association between SSCM and sustainable innovation, and SSCM and sustainable performance. Furthermore, sustainable innovation had a significant impact on sustainable performance. Likewise, sustainable innovation had a mediating impact between SSCM and sustainable performance [26].

Finally, these positive findings offer the approach ahead for developing economies such as Pakistan to incorporate CSR initiatives into their industries for the attainment of the SDGs and environmentally friendly goals.

6. Conclusions

The SDGs provide a road map for companies that can assist them to tactically manage their CSR initiatives according to the international and national sustainable development guidelines. Hence, the CSR–SDG tie is essential for the improvement in the role of CSR in sustainable development. This research intended to examine the correlation of CSR with sustainable innovation ambidexterity, SSCM, and SOSC. This research produced a theoretical framework which investigated whether CSR impacted sustainable innovation ambidexterity, SSCM, and second-order social capital based on social exchange theory, social capital theory [63], and Carroll's CSP model (1979; 1998). Furthermore, this study also studied the mediating effects of SSCM and SOSC on the correlation between CSR and SIA. Moreover, this study presented a model to explain how SSCM impacts SIA and, finally, the impact of SOSC on SIA. This research model will support researchers in distinguishing companies' activities toward SIA, SSCM, and second-order social capital created based on their point of view related to CSR.

Pollution from manufacturing industries is the biggest environmental issue faced by Pakistan. This pollution is especially detrimental to human well-being and the ecosystem. Manufacturing industries' pollution is the main source of ecological decline in Pakistan [32]. Pakistan's manufacturing sector is wide ranging, with electric commodities, synthetic production, fabrics, chemicals, base alloys, non-alloys, cement, cars, heavy/light manufacturing, etc. These manufacturing practices produce toxic air contaminants, dust,

and gases [33]. Moreover, the notion of CSR in Pakistan is still vague because of the dearth of its understanding. However, recently, most of the manufacturing industries in Pakistan have focused on volunteering activities. The Pakistan Environmental Protection Agency (PEPA) is the leading organization that participates in activities related to environmental preservation. Currently, there are some actual mediations carried out by the PEPA to structure ecological regulations for businesses to diminish their ecological risks. In this context, the government and companies still need to engage in various practices in order to achieve the Sustainable Development Goals in Pakistan [34].

7. Theoretical Implications

Theoretical contribution requires particular forms of breakthroughs in research that can offer innovative insights about an issue, which is believed to be essential for improving managerial significance. This research made a number of theoretical contributions. This research explored stakeholder theory in SSCM by offering innovative perspectives on the association between CSR and SSCM. Though earlier findings have suggested various theoretical perspectives to study the antecedents of SSCM, for instance, evolutionary game theory [113] and resource-based viewpoint theory [52], these findings only concentrate on reactive reactions to shareholder force [51,114,115]. Stakeholder theory offers an additional understanding of keenly taking CSR as an approach to gathering the needs of stakeholders [55,92]. This study introduces stakeholder theory into the area of SSCM that discovers formerly unidentified assumptions regarding the significant impact of CSR on SSCM.

This research also adds to the existing knowledge structure of SOSC and SIA. It increases understanding concerning the significance of SC by enhancing social exchange theory and social capital theory. Additionally, it evaluated the outcomes of CSR on SOSC, incorporating SOSC from suppliers, and SOSC from customers. Moreover, this study explored the impact of CSR on sustainable innovation ambidexterity, having two dimensions, namely, sustainable exploratory innovation, and sustainable exploitative innovation. This research enhances social exchange theory, and it used SOSC instead of the conventional first-order SC. Additionally, this study measured the mediating effect of SSCM and SOSC on the association between CSR and SIA. This study expanded analyses on the role of CSR in helping sustainable innovation ambidexterity, SSCM, and SOSC in manufacturing businesses. Moreover, this study acknowledges the methodology for manufacturing companies to handle their CSR initiatives, in order to attain SSCM, SIA, and SOSC.

8. Managerial Implications

The practical implications of this research are as follows. Companies must properly recognize the approach of SSCM. Companies are accountable for corporate and societal procedures in their surroundings, and also for the ecological and societal operations through the supply chain. Employing SSCM can assist companies in taking on universal conservation matters and accommodate the requirements of external participants, thus enhancing the company's performance. Consequently, companies must keep the right viewpoints on SSCM and carry out SSCM initiatives. For example, the company can believe in energy conservation and decreasing waste in operations and supply chain management [55]. Furthermore, supply chain managers can generate a profitable sustainable supply chain management by waste reduction, which can be attained by optimizing the production, batch size, and the number of shipments [97]. Companies should aggressively satisfy CSR. CSR has a significant impact on enhancing societal and sustainable advantages and is conducive to the employment of SSCM. Companies are required to take on several activities to support the development of CSR. For instance, in relation to internal shareholder workers, companies are essential in order to strengthen their well-being, concentrate on their requirements, and deliver additional instructions; in terms of external shareholders, companies must encourage the welfare of the people and lessen the adverse impact on the environment, along with producing an improved life for upcoming generations. This research indicates that companies attempting to improve SOSC should assign importance

to CSR pursuits. SOSC from customers is able to assist companies in obtaining accurate knowledge considering the requirements and inclinations of customers [116]. SOSC from suppliers can support the company in obtaining knowledge about ecological protection skills and innovative materials [117]. The legislators or managers of companies can express their resources in philanthropic programs such as establishing a variety of volunteer societal welfare schemes, experiences, and education strategies for the society's youth to improve SIA. Moreover, in order to develop SIA, they can focus on CSR initiatives by creating guidelines for the company's actions, attempting to reduce inequalities, and safeguarding fair management of all their shareholders [22].

It is also recommended for top leadership and the government to attain sustainability by their commitment regarding the implementation of CSR initiatives into their systems. Organizations' commitment to incorporate CSR initiatives will enhance their ecological sustainability and their ability to attain the Sustainable Development Goals [65]. CSR and TBL lack awareness in Asian developing economies [118]. Hence, policymakers are required to conduct corrective measures to safeguard sustainable innovation in emerging economies such as Pakistan. CSR is also deemed as essential along with product and process innovation in technology-oriented companies to achieve sustainability [65].

Additionally, the efficacy of several CSR strategies focusing on poverty relief and the fundamental factors required for implementation can be examined by managers. Consequently, this can enable companies to improve their incorporation of societal SDGs, particularly the ones related to poverty relief. A company can engage in assigning short-term societal targets across the company [1,119]. The high level of commitment toward a single goal can lead companies to engage in positive spillover conduct and enable them to attain more SDGs [120]. Furthermore, long-term sustainable improvement can also be achieved by investigating and implementing the most efficient CSR initiatives. Practitioners can manage major societal and sustainability concerns by effectively linking CSR initiatives and the SDGs [121].

Consequently, this investigation can aid companies by effectively delivering their finances in CSR initiatives. The findings also suggest that companies should concentrate on improving their CSR initiatives because CSR has a significant effect on SIA. To improve and measure SSCM, SOSC, and SIA, policymakers and general managers should devote efforts to CSR.

9. Limitations and Future Research

This research has some of the following limitations. First, this study used a single dimension of CSR measurement. However, some studies have shown that CSR has multiple dimensions. CSR was used as an individual construct in this study; hence, for a complete and detailed investigation, future researchers are advised to use a multi-dimensional CSR construct and add several attitudinal and cognitive antecedents of CSR in future potential research. Therefore, future studies can use multi-dimensional CSR instruments. Secondly, this study used cross-sectional data for the research design instead of longitudinal research, which can produce time-oriented perspective results. Therefore, it is recommended that future researchers use the longitudinal intertemporal design for research. In addition, the subject of this research was mainly Pakistan. Future research may select a wide range of subjects from other areas for research. Furthermore, Pakistan is an emerging country; therefore, future researchers can target developed countries and compare the results.

The SDGs indicate major sustainability issues; hence, future researchers can identify the SDGs required by companies for improvement across different industries and contexts. In general, it is crucial to obtain awareness regarding the integration of SDGs in policy and recognize the possible value generation offered by the SDG model. This can help future researchers to investigate the CSR strategies required to identify and attain the SDGs [1].

Lastly, future researchers can modify the model to incorporate the current pandemic situation and empirically examine the impact of COVID-19 on CSR and SIA.

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Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Survey Items:

Economic CSR

ECO 1: The organization improves the business industry.

ECO 2: The organization generates employment through their operations.

ECO 3: The organization strives to activate the local economy.

ECO 4: The organization strives to achieve sustainable growth.

Legal CSR

LEG 1: The organization properly implements health and safety rules and regulations.

LEG 2: The organization has established appropriate regulations for customers to abide by.

LEG 3: The organization strives to abide by regulations related to their customers well-being.

Ethical CSR

ETHI 1: The organization has established ethical guidelines for business activities.

ETHI 2: The organization tries to become an ethically trustworthy company.

ETHI 3: The organization makes efforts to fairly treat customers.

Philanthropic CSR

PHI 1: The organization participates in a variety of volunteer activities by starting the company's volunteer group.

PHI 2: The organization supports social welfare projects for the underprivileged.

PHI 3: The organization supports education programs.

Second-Order Social Capital from Customers

SOCC 1: Our major customers have many direct relationships with their partners.

SOCC 2: The relationship between the partners of our main customer shall be established mainly through our customer.

SOCC 3: Our primary customers are more closely related to other members of the industry than to its competitors in the same industry.

SOCC 4: Our main customers have a closer relationship with a university or research institute than its peers.

SOCC 5: Most peer companies of our major customers know the technical capabilities and products of our major customers.

SOCC 6: Our main customers are intermediaries for technical exchanges between other enterprises in the same industry.

SOCC 7: Peer companies of our major customers expect our major customers to provide new knowledge or technologies when they need technical advice.

SOCC 8: The change of business behavior or strategy of our major customers has a great impact on other companies in the same industry.

Second-Order Social Capital from Suppliers

SOSS 1: Our major suppliers have many direct contacts with their partners.

SOSS 2: The relationship between the partners of our main suppliers shall be established mainly through our suppliers.

SOSS 3: Our primary suppliers are more closely related to other members of the industry than to its competitors in the same industry.

SOSS 4: Our main suppliers have a closer relationship with a university or research institute than its peers.

SOSS 5: Most peer companies of our major suppliers know the technical capabilities and products of our major suppliers.

SOSS 6: Our main suppliers are intermediaries for technical exchanges between other enterprises in the same industry.

SOSS 7: Peer companies of our major suppliers expect our major suppliers to provide new knowledge or technologies when they need technical advice.

SOSS 8: The change of business behavior or strategy of our major suppliers has a great impact on other companies in the same industry.

Sustainable Exploitative Innovation

SET 1: We usually strive to improve the environmental quality of our existing products (services).

SET 2: We always strive to provide more and better supporting services for existing green and environment-friendly products.

SET 3: We often try to reduce the production cost of existing products (services) by choosing low energy consuming materials.

SET 4: We often try to refine the types of green products (services) available.

Sustainable Exploratory Innovation

SEP 1: We often try to improve the quality of the existing green products.

SEP 2: We often try to create or introduce new green products (services).

SEP 3: We often try to introduce new environmental protection technology.

SEP 4: We often try to develop new green products (services) into emerging markets.

SEP 5: We often try to adjust our product structure to make our products (services) more environmentally friendly.

SEP 6: We often try to improve our business processes to make our products (services) more environmentally friendly.

Sustainable Procurement

SP 1: We follow the principles of the 3Rs: reuse, recycle, and reduce in the process of green procurement in terms of paper and parts container (plastic bag/box).

SP 2: We place purchase orders through email (paperless).

SP 3: We use eco-labeling on our products.

SP 4: We ensure our suppliers' environmental compliance certifications.

SP 5: We conduct auditing for suppliers' internal environmental management.

Sustainable Manufacturing

SM 1: We as a manufacturer, design products that facilitate the reuse, recycle and recovery of parts and material components.

SM 2: We avoid or reduce the use of hazardous products within the production process.

SM 3: We minimize the consumption of materials as well as energy.

Sustainable Distribution

SD 1: We use strategies to downsize packaging.

SD 2: We use "green" packaging materials.

SD 3: We promote recycling and reuse programs.

SD 4: We cooperate with vendors to standardize packaging.

SD 5: We encourage and adopt returnable packaging methods.

SD 6: We minimize material uses and time to unpack.

SD 7: We use recyclable pallet system and lastly.

SD 8: We save energy in warehouses.

Sustainable Logistics

SL 1: We collect used products and packaging from customers for recycling.

SL 2: We return packaging and products to suppliers for reuse.

SL 3: We require suppliers to collect their packaging materials.

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