

Institutional pressure and circular supply chain management: The mediating role of top management commitment

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Abstract

The transition of supply chain management to a circular economy requires strategic alignment through top management commitment and institutional pressures to solve grand challenges. This study examines how top management commitment, integrated with institutional pressures, facilitates the operationalization of circular supply chain management (CSCM) and enhances sustainability performance. To address research questions, a survey-based quantitative method on manufacturing companies within developing nations was carried out. The results reveal that the successful application of CSCM and the accomplishment of sustainability performance are positively influenced and mediated by all three types of institutional pressures. Moreover, as a direct driver and a mediator in the adoption process of CSCM, top management commitment is essential to bolstering these institutional influences. This study highlights management's crucial role in fostering circular supply chains and the varying impacts of institutional pressures. It also discusses theoretical and managerial implications, offering practical insights and future research directions.

Key words: Institutional Pressures, Circular Supply Chain Management, Manufacturing Companies, Developing Nations, Sustainability Performance.

1. Introduction

Operations management (OM) research and practice have been shifted and re-evaluated for decades. OM practitioners have a record of change that is often, though not always, linked to the process of rendering organizations more profitable, yet not always the process directly tied to organizational change and sustainability (DiMaggio & Powell, 1983; Lüscher & Lewis, 2008). Consequently, circular forms of production, such as the circular economy (CE), which substitute linear (take-make-dispose) forms of production, have surfaced in political and business circles as a model for addressing the limitations of traditionally constructed environments (De Angelis et al., 2018). CE is not only a key element in management (Kristoffersen et al., 2021), but also a permanent solution for many grand challenges (Kunisch et al., 2023) and has already been adopted officially in China via the CE promotion law (Xue et al., 2010) and Europe with the CE package (Hughes, 2017). Therefore, CE works with supply chain management (SCM) principles to establish a circular supply chain management (CSCM), aiming to achieve zero waste (Zhang et al., 2021).

Integrating CE principles into SCM (CSCM) plays a key role in accelerating the transition to the circular business model and realizing its emerging and potential benefits to sustainability (Alghababsheh, 2024). Based on this transition, CSCM integrates the thinking of the CE into SCM and offers a new and compelling perspective to the SCM (Farooque et al., 2019). Therefore, CSCM is coupled with a systematic change in the structure and process of companies and supply chains, increasing the likelihood of using more legal, social, political, and economic structures and factors (Hutchins & Sutherland, 2008; Klassen & Vereecke, 2012). More specifically, the CSCM depends on contingency factors, such as regulatory requirements (De Lima & Seuring, 2023); contextual factors, such as locations (Farooque et al., 2022); technological factors, such as technical capability, technological maturity, and

technological feasibility (Huang et al., 2022), and overcoming of implementation barriers (Mangla et al., 2018).

It is quite challenging to redesign the supply chain without joining with other stakeholders in the transition to CSCM. This is because implementing CSCM is not straightforward and requires external pressures and management commitment from the top management (Alghababsheh, 2024; Udin et al., 2014). Moreover, developing a fully CSCM is costly and time-consuming, especially for small and medium-sized firms (Tseng et al., 2023). Consequently, implementing and disseminating CSCM is essential, as this has significant implications for theory, practice, and policy (Alghababsheh, 2024). Additionally, empirical studies are fragmented based on legitimacy-based pressures (coercive, mimetic, and normative) that support institutional theory (DiMaggio & Powell, 1983) and how these pressures can significantly impact firms' decisions to adopt a CE strategy (Calzolari et al., 2023) and the mediating role of top management commitment for CSCM, and their impact on holistic sustainability dimensions, i.e., social sustainability, economic sustainability, and environmental sustainability (Sahoo & Upadhyay, 2024).

While CSCM is increasingly recognized as crucial for boosting sustainability performance, notable gaps remain in understanding how institutional pressures, along with top management commitment, collectively influence the adoption of CSCM and subsequently enhance sustainability outcomes. Although previous research has examined institutional pressures in sustainable supply chains (Zhu et al., 2018) and the role of leadership in sustainability transitions (Linnenluecke et al., 2017), the mediating role of CSCM in transforming these external and internal drivers into concrete sustainability performance remains underexplored (Genovese et al., 2021). Current studies often consider institutional pressures and managerial commitment in isolation, neglecting their interactive effects and the specific pathways through which CSCM applies circularity principles (Govindan & Hasanagić, 2018).

Furthermore, empirical evidence on whether CSCM adoption fully or partially mediates these relationships is limited, particularly in diverse industrial contexts, where regulatory, competitive, and normative forces vary (Kirchherr et al., 2017). Addressing these gaps is crucial for developing a comprehensive theoretical framework that integrates institutional theory with resource-based perspectives, while offering actionable insights for policymakers and business leaders aiming to expedite the transition to a circular economy. Therefore, the objective of this study is to operationalize CSCM that depends on the institutional pressures as well as management willingness (commitment) that are likely to ensure a holistic approach to sustainability.

This paper bridges the gap by empirically exploring management perspectives on OM and institutional pressures in CSCM, aiming to answer the following research questions (RQs).

RQ1: How do coercive, normative, and mimetic institutional pressures influence the adoption of Circular Supply Chain Management (CSCM)?

RQ2: To what extent does top management commitment drive the implementation of CSCM practices?

RQ3: Does CSCM mediate the relationship between (a) institutional pressures, (b) top management commitment, and sustainability performance?

To address these RQs, a quantitative study was conducted among various manufacturing companies in Bangladesh, including the garments, textiles, plastics, and steel industries, encompassing diverse functional areas such as supply chain management, commercial operations, quality assurance, production, product engineering, and research and development. The study employed a questionnaire-based quantitative approach to test the research hypotheses. The findings indicate that all three forms of institutional pressures, i.e., coercive, mimetic, and normative, positively influence and mediate the achievement of CSCM and the realization of sustainability objectives. Additionally, top management

commitment was found to have a significant positive and mediating effect on CSCM implementation. This study contributes to the existing literature in two aspects. First, it reveals that normative and mimetic pressures exert a stronger influence than coercive pressure in facilitating CSCM implementation and achieving sustainable performance. Second, beyond institutional pressures, without the critical role of top management commitment, it's quite challenging to promote circularity and sustainability.

The paper is organized as follows: The next section 2 presents the theoretical background of institutional theory. Section 3 describes the hypothesis development and conceptual framework, Section 4 details the methodology, and Section 5 reports the results of data analysis. Section 6 discusses contributions to theory and practice, limitations, and future research directions. Finally, Section 7 provides concluding remarks.

2. Theoretical Development

In this study, we used institutional theory (later IT) as a theoretical lens to describe the research questions. Institutional theory has been proposed for its potential value in OM and SCM research (Ketokivi & Schroeder, 2004; Liu et al., 2010). It emerges as a portable theory for CE (Liu et al., 2018). In the context of the social sciences domain, IT refers to the exploration of how social choices are influenced and directed by the institutional environment (Pinto, 2017). Furthermore, it aids in comprehending how organisational structures and processes gain significance and continuity beyond their technical objectives (Tina Dacin et al., 2002). Drawing on IT, the decision to implement CSCM and the choice between them will be contingent upon institutional pressures, i.e., mimetic, normative, and coercive (Hoejmose et al., 2014). Coercive pressures are linked to gaining legitimacy by aligning with institutional forces that shape organisational actions (McQuarrie et al., 2013). Currently, coercive pressures, such as regulations exemplified by the EU Circular Economy Action Plan, compel firms to adopt Circular Supply Chain Management (CSCM) practices to adhere

to legal standards (Zhu et al., 2018). Normative pressures, driven by industry standards and stakeholder expectations, motivate firms to align with sustainability best practices, including zero-waste certifications (DiMaggio & Powell, 1983). Finally, mimetic pressures involve organisations adopting widely accepted beliefs and practices by emulating successful social actors who have established themselves through prevailing dynamics and best practices (DiMaggio & Powell, 1983). This pressure prompts firms to emulate competitors' successful circular strategies, particularly in industries where uncertainty regarding the benefits of CSCM persists (Govindan & Hasanagic, 2018). Future studies must evolve to elucidate how these forces transform CSCM implementation across diverse regulatory and cultural contexts (Genovese et al., 2021).

3. Literature Review

3.1 Coercive Pressure

Historically, government regulations and policies have forced and encouraged companies to shape manufacturing behaviour and supplier practices, particularly concerning sustainability. Coercive pressure is primarily driven by regulations and policies that compel organizations to adopt circular supply chain management (CSCM) practices (Azevedo et al., 2012). This aligns with the broader shift toward a circular economy, where the emphasis is on extending product life cycles through reuse, remanufacturing, and recycling, rather than adhering to traditional linear consumption patterns (Stahel, 2016). Regulatory measures aimed at decreasing resource consumption push organizations to rethink their supply chain models, integrating more sustainable practices across production, procurement, and product lifecycle management (Lacy & Rutqvist, 2015; Ellen MacArthur Foundation, 2019).

Governments can implement regulatory frameworks that incentivize the adoption of waste sorting, recycling, and resource recovery practices, which are vital for closing the loop in circular economies (Ghisellini et al., 2016). Additionally, policies offering tax breaks,

subsidies, or financial incentives for businesses adopting environmentally friendly technologies encourage investments in cleaner production processes (Zhu et al., 2013; Martínez-Jurado & Moyano-Fuentes, 2014). These economic incentives not only drive firms to reduce their environmental footprint but also promote public health by lowering harmful emissions and fostering environmentally responsible behaviors (Porter & van der Linde, 1995). In this context, coercive pressures stemming from regulations and policies are essential for creating a favorable environment for the widespread adoption of CSCM practices, enabling businesses to transition toward a more sustainable CE (Geng et al., 2013).

3.2 Normative Pressure

Manufacturers' willingness to implement Circular Supply Chain Management (CSCM) methods is greatly influenced by normative pressure, which is fuelled by public expectations and industry conventions. By encouraging environmentally conscious practices, establishing sustainability standards, and facilitating knowledge sharing among businesses, trade associations like the Chamber of Commerce (COC) and the Federation of Bangladesh Chambers of Commerce and Industry (FBCCI) are essential to this process (González-Benito & González-Benito, 2006; Martínez-Conesa et al., 2017). By requiring their members to adhere to environmental and social standards, these organisations foster an accountability culture and strengthen the notion that businesses must act sustainably to stay competitive (Helfat & Peteraf, 2003).

According to Martínez-Conesa et al. (2017), trade associations help businesses adopt circular practices, including resource recovery and waste reduction in addition to promoting cooperation and assisting in the shift to a circular economy. Education systems around the world are progressively integrating sustainability into their curricula in addition to these industry-driven demands, which is improving student awareness and creating a workforce with strong environmental values (Santos et al., 2015). In addition to encouraging businesses

to embrace circular and socially responsible business practices, this change in education develops future professionals who carry their dedication to sustainability into their jobs (Delmas & Toffel, 2004; Fischer et al., 2019). Therefore, by bringing organisational behaviour into line with more general societal and environmental objectives, normative pressure is essential in promoting the broad adoption of circular supply chain methods (Bocken et al., 2016; Jabbour et al., 2013).

3.3 Mimetic pressure

Mimetic pressure is the term used to describe an organization's propensity to copy the tactics of prosperous businesses, particularly in times of complexity or uncertainty. This pressure is a major motivator in CSCM, as businesses look at leaders in the field who have previously shown success through socially and environmentally responsible methods (DiMaggio & Powell, 1983; Glover et al., 2018). By putting circular methods like waste reduction, ethical sourcing, and sustainable product design into practice, these industry leaders set the standard. Improved reputation, customer loyalty, and operational efficiency are among the benefits noted, and these encourage other businesses to adopt similar strategies to stay credible and competitive in their sector (Haider et al., 2020; Lieder & Rashid, 2016).

Moreover, mimetic pressure is especially powerful in fields where social and environmental performance are highly valued or apparent (Svensson & Wagner, 2013). For other businesses looking to acquire credibility and stakeholder confidence, market leaders who dedicate themselves to projects like closed-loop supply chains, the adoption of renewable energy, or inclusive labour practices set the standard (Awaysheh et al., 2020; Jabbour et al., 2011). Businesses copy these practices as they become more commonplace to conform to social standards, enhance their brand image, and maintain their market position (Rizos et al., 2016). Sustainability is now not just a competitive advantage but also a reputational need because of

the expansion of such practices, which speeds up the adoption of circular strategies across industries (Batista et al., 2019).

3.4 Top Management Commitment

An organization's strategy, alignment with sustainability objectives, and development of a culture that encourages circular economy activities are all greatly influenced by top management. Top management provides the example for incorporating sustainability into organisational procedures by actively supporting circular initiatives, which promotes a change to circular practices at all levels of the organisation (Bocken et al., 2016). To encourage the adoption of circular supply chains, this entails allocating the required funds and resources for technological advancements, including digital tracking tools, recycling technology, and waste management systems (Lieder & Rashid, 2016). Additionally, transparent leadership encourages employees to embrace new sustainable management techniques, which stimulates innovation and widespread adoption of circular economy ideas throughout the company (Hoffman & Jaeger-Erben, 2020).

In addition to offering strategic guidance, senior management plays a crucial role in staff training, guaranteeing that workers have the abilities needed to successfully use circular economy principles (Bocken et al., 2016). Furthermore, the effective implementation of closed-loop processes, including material recycling and remanufacturing, depends on close supplier coordination. Top management guarantees that circular practices are integrated across the value chain by cultivating strong partnerships and cooperative activities with suppliers, resulting in a circular economy that is more robust and sustainable (Sarkis et al., 2011; Urbinati et al., 2017).

3.5 Circular Supply Chain Management

A new method to supply chain management (SCM) called circular supply chain management (CSCM) stresses the ongoing use of resources through recycling, remanufacturing, and reuse

(Bocken et al., 2016). The goal of CSCM is to establish closed-loop supply chains that prolong the lifecycle of materials and products, minimise waste, and consume less finite resources (Govindan & Hasanagic, 2018). Businesses can enhance economic performance and operational efficiency while simultaneously reaping substantial environmental benefits by implementing CSCM (Lieder & Rashid, 2016). Aligning managerial procedures with these sustainable principles is essential to CSCM performance, as it guarantees that choices about recycling, remanufacturing, and reuse are incorporated across the supply chain (De Angelis, Howard, & Miemczyk, 2018). To reduce waste and promote continuous development, this entails keeping an eye on and optimising material flows, redesigning products, and working with outside partners (Urbinati et al., 2017).

Selecting suppliers is also vital because a successful CSCM depends on working with suppliers who support remanufacturing or offer recyclable materials (Rizos et al., 2016). Furthermore, HRM practices must concentrate on educating and motivating staff members to embrace sustainable practices and cultivate an innovative culture in sustainability (Jabbour et al., 2011; Batista et al., 2019).

3.6 Economic Performance

Research has demonstrated that enhanced economic performance is positively correlated with Circular Supply Chain Management (CSCM). Businesses can cut expenses by reducing waste and dependency on virgin materials by integrating resource recovery, remanufacturing, and product-life extension (Govindan & Hasanagic, 2018; De Angelis, Howard, & Miemczyk, 2018). Additionally, by extending product lifecycles and increasing consumer value through services like maintenance and resale, circular models present income potential (Bocken et al., 2016; Urbinati, Chiaroni, & Chiesa, 2017).

Profitability may be delayed, though, as these advantages necessitate large upfront expenditures for infrastructure and product modification (Lieder & Rashid, 2016; Batista et

al., 2019). Additionally, CSCM reduces price volatility and resource scarcity threats, shielding businesses from interruptions in supply and changes in input costs (Rizos et al., 2016). Businesses that implement circular practices gain a competitive edge and increase their profits by stabilising costs, improving their market positioning, and capitalising on the growing customer demand for sustainable products (Kirchherr, Reike, & Hekkert, 2018; Geissdoerfer et al., 2018). The extent to which CSCM is adopted and aligned with consumer expectations—while maintaining product quality or value—determines its financial performance (Hofmann & Jaeger-Erben, 2020).

3.7 Social Performance

Particularly in the manufacturing sector, social sustainability has emerged as a critical component of corporate sustainability. Improving safety and working conditions to increase employee well-being is a top priority. Businesses that support ergonomic workplaces and engage in occupational health initiatives lower injury rates while increasing worker satisfaction and productivity (Jabbour et al., 2011; Vickers, 2015). Individual well-being inside the organisation and the community at large is prioritised in a culture of safety, which is in line with larger societal sustainability objectives (Kramar, 2014). Additionally, in order to create socially sustainable workplaces that benefit both individuals and organisational performance, mental health and inclusivity are becoming more and more crucial (Harrison & Freeman, 2004).

Furthermore, manufacturing companies are giving their connections with stakeholders and local communities more importance. Trust and support are increased by interacting with local communities through open communication, community development programs, and stakeholder involvement (Freeman, Harrison, & Wicks, 2007; Lacey, 2013). According to studies, a company's competitive advantage and social license to operate are strengthened by proactive community engagement (Haugh & Talwar, 2010; Martínez-Conesa et al., 2017).

Businesses support societal well-being and generate long-term value for all stakeholders by integrating social sustainability concepts into internal operations and external community partnerships (Dyllick & Muff, 2016).

3.8 Environmental Performance

A major business strategy in manufacturing is environmental sustainability, which aims to maximise resource usage and reduce the adverse environmental effects of production. Lean production, waste reduction, recycling, and energy efficiency are important ways to improve sustainability since they reduce operating costs and environmental impacts (Seuring & Müller, 2008). Investing in these practices puts manufacturing companies in a better position to handle environmental issues and lessen their ecological imprint. A key component of environmental sustainability is resource efficiency. Businesses that maximise the utilisation of energy, water, and raw materials during production lessen their carbon footprints and the damage they cause to the environment. Environmental effect is greatly reduced using eco-design, energy-efficient equipment, and renewable energy sources (Sarkis, Zhu, & Lai, 2011). In an increasingly environmentally concerned market, adherence to environmental standards and regulations also guarantees business continuation, improves public perception, and prevents fines (Hart, 1995). Environmental compliance not only lowers regulatory risks but also promotes corporate advantage through enhanced stakeholder interactions and reputation, according to Sarkis, Zhu, and Lai (2011).

4. Hypothesis Development and Conceptual Framework

4.1 Coercive pressure for circular supply chain management

Based on institutional theory (IT), coercive pressure (CP) has a significant impact on CE performance, green supply chain management (GSCM) practices, and eco-innovation (Bag et al., 2021; Centobelli et al., 2020). Coercive pressures primarily originate from governments at various levels, which have developed laws, regulations, and policies related to sustainable

development and CE (Zeng et al., 2017; Zhu & Sarkis, 2007). Therefore, CP supports CSCM in aligning supply chain practices with CE principles to achieve sustainability goals and minimise environmental impact (Farooque et al., 2019). Based on the above, we hypothesise that:

H1: CP will have a positive impact on CSCM.

4.1.1 The mediating role of top management commitment on coercive pressure for circular supply chain management

Transforming supply chains to CSCM runs into the issues related to supply chain efficiency gains based on competitive resources (logistics, insulation, and coordination of many parties in the supply chain network) that require power and trust through which resources are allocated to suppliers (Bressanelli et al., 2019; Pulles et al., 2014). Resources are required from the top management to accept the circular economy (Govindan & Hasanagic, 2018). In addition, top management commitment (TMC) has a positive effect on firms' cognitive intention to adopt supply chain new practices (Alaskar et al., 2021). IT and the interaction between institutional pressures and supply chain integration actively encourage the adoption of CE practices (Calzolari et al., 2025). Thus, we can hypothesise:

H1a: TMC mediates the positive relationship between CP and CSCM.

Based on the IT, CP generally leverages the organisation's resources to achieve CE performance, especially to foster environmental and economic performances (Jain et al., 2020). Moreover, CPs are also essential enablers for CE and social performance within supply chain management. Based on the prior literature, we can hypothesise:

H1b: CP is significantly mediated by CSCM for achieving economic performance.

H1c: CP is significantly mediated by CSCM for achieving environmental performance.

H1d: CP is significantly mediated by CSCM for achieving social performance.

4.2 Normative pressure for circular supply chain management

Normative pressure (NP) plays a crucial role in shaping sustainable SCM practices and CE capabilities within organizations (Zeng et al., 2017). Consequently, the CSCM requires a holistic approach that considers the interplay between sustainability, innovation, and stakeholder engagement (De Angelis et al., 2018). Prior research suggests that NP promote green innovation for GSCM and CE implementation (Hsu et al., 2013; Singh & Joshi, 2024). Drawing on IT, firms might adopt higher levels of normative pressure to implement CE practices (Calzolari et al., 2025). Based on these, we can propose:

H2: NP will have a positive significant impact on CSCM.

4.2.1 The mediating role of top management commitment on normative pressure for circular supply chain management

IT argues that management pro-environmental attitudes have the potential to moderate the relationship between normative pressure and CSCM (Alghababsheh, 2024). Additionally, top management support affects the green supply chain management practices, and supply chain competitive advantage on corporate environmental performance, showing positive and significant impacts on environmental performance (Wiredu et al., 2024). We can argue that institutional pressure positively influences companies to enhance social SSCM practices and collectively contributes to the CSCM (Zhou et al., 2024). Thus, we can suggest that:

H2a: TMC mediates the positive relationship between NP and CSCM.

Moreover, among the institutional pressures, NP is the most frequently identified for promoting CE and sustainable production and consumption through continuous growth and the efficient use of resources (Ouro-Salim & Guarnieri, 2023). Consequently, NP is more likely to affect the CSCM for economic, social, and environmental benefits for a company (Zeng et al., 2017). Hence, we can hypothesize:

H2b: NP is significantly mediated by CSCM for achieving economic performance.

H2c: NP is significantly mediated by CSCM for achieving environmental performance.

H2d: NP is significantly mediated by CSCM for achieving social performance.

4.3 Mimetic pressure for circular supply chain management

Institutional pressures, including market, regulatory, and competitive pressures, play a crucial role in shaping organisations' decisions regarding sustainable supply chain practices (Zhu & Sarkis, 2007). Moreover, the role of institutional pressures, including mimetic pressure (MP), in promoting green innovation within the context of green supply chain management (Agnusdei & Del Prete, 2022). Moreover, the literature suggests that the successful implementation of CSCM requires an understanding of the critical success factors (CSFs) for integrating digital technologies with CSCM to achieve sustainable operations (Kumar et al., 2023). Thus, we can hypothesise:

H3: MP will have a significant positive impact on CSCM.

4.3.1 The mediating role of top management commitment on mimetic pressure for circular supply chain management

Prior research demonstrated that top management support, along with green supply chain management practices and competitive advantage, positively impacts corporate environmental performance (Wiredu et al., 2024). Moreover, top management support is a key factor that positively influences firms' intentions to adopt new technologies in supply chain management, particularly under competitive pressure (Alaskar et al., 2021). Furthermore, mimetic pressure and top management support in motivating firms to adopt socially sustainable supply chain management practices ((Zhou et al., 2024). Thus, we can propose:

H3a. TMC mediate the positive relationship between MP and CSCM.

MP held firms accountable for sustainable supply chain management (SSCM) for achieving social performance (Zhou et al., 2024). Moreover, competitive (mimetic) pressure existence significantly improves the economic benefits from the adoption of several GSCM practices

with no deleterious influences on environmental performance (Zhu & Sarkis, 2007). Thus, we can hypothesise that:

H3b: MP is significantly mediated by CSCM for achieving economic performance.

H3c: MP is significantly mediated by CSCM for achieving environmental performance.

H3d: MP is significantly mediated by CSCM for achieving social performance.

4.4 Top management commitment (TMC) for circular supply chain management

Management involvement, support, and commitment play a vital role in adopting and implementing sustainable practices within supply chains, especially in the manufacturing industry (Luthra & Mangla, 2018). Drawing on IT, management support such as commitment from senior managers, motivates manufacturing companies to pursue GSCM practices and commensurate performance outcomes (Liu et al., 2018). Based on the literature, we can propose:

H4: TMC positively supports the implementation of CSCM.

4.5 Circular supply chain management for economic performance

Extensive literature has been conducted on the relationship between SSCM and CE to foster economic performance. CSCM by its nature is a promising way to achieve economic (Tseng et al., 2023). New business models and implementing CE in the supply chain need to be adopted over traditional supply chain structures, leading the companies to enhance economic performance. Thus, we can hypothesise that:

H5: CSCM is positively associated with increasing economic performance.

4.6 Circular supply chain management for environmental performance

Several studies have explored the relationship between green supply chain management (GSCM) practices and environmental performance (Rasit et al., 2019). Empirical research suggests that CSCM is significantly deals with the waste problem to ensure environmental sustainability (Tseng et al., 2023). Moreover, strategies like green innovation, institutional

pressures, and technological advancements can lead to implementing CSCM, which leads to improved environmental performance within organisations (Dong et al., 2024). Based on the above literature, we hypothesise:

H6: CSCM is positively associated with increasing environmental performance.

4.7 Circular supply chain management for social performance

CSCM has attempted to achieve an opportunity to optimise and promote sustainable production and consumption with CE principles (Govindan, 2018). The reason is that CSCM increases social performance through the best use of resources (materials, water, energy) with the requirements of the supply chain that minimize waste and enable returns and recovery after end-of-use, resource-efficient production, sustainable packaging, waste disposal, buy-back, and take-back programs (Vegter et al., 2020). Based on the above, we can hypothesise:

H7: CSCM is positively associated with social performance.

Based on the above literature and hypothesis, we can draw the following conceptual frameworks in Figure 1.

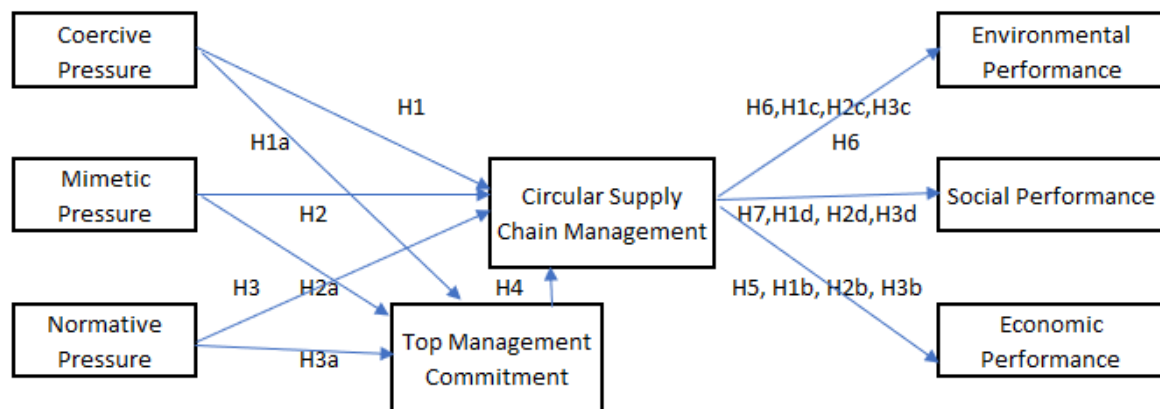


Figure 1: Conceptual Framework

5. Method

5.1 Data Collection

In this study, a survey-based quantitative method is being used with Bangladeshi manufacturing companies. For the survey, manufacturing firms that have experience in sustainability practices due to the nature of their operations, i.e., working with sustainable firms. Two criteria were used to get the targets: (1) respondents who have at least one year of experience, and (ii) only manufacturing firms that have circular types of production, except service organisations like banks. Moreover, we make a consensus that manufacturing practices should be based on their practices of recycling, reusing, or reducing any of their resources. Based on the above two criteria, a list of garments and textiles, and professional bodies like ICMAB and CUMBA were selected as the proposed sampling population.

Thus, online survey links to 750 online questionnaires were distributed to the appropriate respondents. Data arrived in several periods in 2024, having been collected between June and October. The target sample encompasses both male and female professionals, covering different age groups. Finally, 321 responses were collected within these time intervals. A total of 313 responses were taken into consideration after deducting six service-based organisations, like banks, and two responses from small-sized banks. The following table 1 demonstrates the demographic characteristics of the respondents from the quantitative interview.

Table 1: Demographic profile of the respondents

Gender			Types of Industry		
Male	267	85.3	Garments	83	26.5
Female	46	14.7	Textiles	73	23.3
Age			FMCG	28	8.9
18-25 Years	5	1.6	Steel	25	8.0
26-33 Years	144	46.0	Plastics	49	15.7
34-41 Years	113	36.1	Dyeing and Thread Manufacturing	3	1.0
42-49 Years	39	12.5	Food and Beverage	10	3.2
50 and more	12	3.8	Ship Building	4	1.3
Academic Qualification			Pharmaceuticals	4	1.3
Degree/Honours/Bachelor	129	41.2	Tyre and Leather Industry	3	1.0
Masters/MBA	181	57.8	Power Plant	3	1.0
Others	3	1.0	Paper and Packaging	10	3.2
Working Department			Glass	9	2.9
Marketing and Sales	14	4.5	Others	9	2.9
Production Engineering	64	20.4	Total Job Experiences		
Supply Chain	103	32.9	1-6 Years	143	45.7
General Management	70	22.4	7-12 Years	88	28.1
Commercial	18	5.8	13-18 years	60	19.2
Quality and Research Team	13	4.2	19 and more	22	7.0
Merchandising	9	2.9	Experiences within the Current Company		
Others	22	7.0	1-6 Years	194	62.0
Age of the Company			7-12 Years	86	27.5
1-6 Years	15	4.8	13-18 Years	17	5.4
7-12 Years	26	8.3	19 and more	16	5.1
13-18 years	83	26.5	Size of the Company		
19 and more	189	60.4	Medium Size (50 -249 employees)	31	9.9
N=313			Large Size (More than 250 employees)	282	90.1

5.2 Non-Response Bias and Common Method Bias

As data is collected over different time frames, there will be a possibility of non-response bias. We begin by analysing non-response bias to examine the validity of the data. However, to reduce the likelihood of non-response, we follow the guidelines given by (Werner et al., 2007) and calculate the differences between early and late respondents. We compare respondents to a random sample of 100 respondents concerning gender, academic backgrounds, size of the company, and age of the company. The t-test results show no statistical difference in terms of gender ($t=-.545$, $p>0.10$), academic backgrounds ($t=-1.993$, $p>0.10$), size of the company ($t=-.943$, $p>0.10$), and age of the company ($t=-.313$, $p>0.10$). Thus, non-response bias is not a concern in this case.

To reduce common method bias, we implemented a two-step approach. First, we took preventive measures before distributing the questionnaire. Second, we conducted post-data collection analyses to assess and address potential bias. In the first step, according to (Podsakoff et al., 2003), we conducted a pilot study of 5 different individuals as a preventive

measure from academics and industry professionals who have experience in supply chain management and the operational field. Based on their suggestions and comments, the questionnaire was subsequently revised to ensure that the questionnaire was easy to understand and comprehend. Second, we conducted post-data collection analysis using Harman's (1967) one-factor test. The exploratory principal components factor analysis showed no factor exceeded a maximum cut-off of 50%. Thus, the common-method bias is not likely to be a concern in this research.

5.3 Scale Development

The measurement of items in this study is based on established scales from existing literature. Coercive pressures (CP1–CP5) are measured using instruments developed by (Pinto, 2017; Zeng et al., 2017). Normative pressures (NP1–NP4) are assessed using items from (Zhu & Sarkis, 2007). Similarly, mimetic pressures (MP1–MP3) are evaluated using scales from (Zhu & Sarkis, 2007). Top management commitment (TMC1–TMC5) is measured using items from (Despeisse et al., 2017). Circular supply chain management (CSCM1–CSCM4) is assessed using the instrument developed by (De Lima & Seuring, 2023). Finally, economic performance (ECOP1–ECOP4), environmental performance (ENP1–ENP3), and social performance (SOP1–SOP4) are measured using scales from (Abdul-Rashid et al., 2017). All constructs are operationalised using a five-point Likert scale.

5.4 Reliability and Validity

We assessed the reliability using Cronbach's Alpha and composed reliability. We conducted a reliability analysis to evaluate the internal consistency of the factors. It has been recommended that the Cronbach's Alpha coefficient be greater than 0.7 (Fornell & Larcker, 1981). In our study, all Cronbach's Alpha coefficients were above 0.7. Table 2 presents the Cronbach Alpha and composite reliability of the study.

Table 2: Reliability and Validity

Construct	Items	Standardized Loading	Composite Reliability	Cronbach Alpha
Coercive Pressure (CP)	CP1	0.693	0.884	0.881
	CP2	0.770		
	CP3	0.872		
	CP4	0.879		
Normative Pressure (NP)	NP1	0.696	0.890	0.883
	NP2	0.905		
	NP3	0.834		
	NP4	0.830		
Mimetic Pressure	MP1	0.854	0.894	0.886
	MP2	0.918		
	MP3	0.799		
Top Management Commitment (TMC)	TMC1	0.690	0.916	0.916
	TMC2	0.858		
	TMC3	0.876		
	TMC4	0.868		
	TMC5	0.834		
Circular Supply Chain Management (CSCM)	CSCM1	0.810	0.903	0.900
	CSCM2	0.757		
	CSCM3	0.884		
	CSCM4	0.877		
Economic Performance (ECOP)	ECOP1*	0.598	0.764	0.763
	ECOP2	0.663		
	ECOP3	0.806		
	ECOP4	0.757		
Environmental Performance (ENVP)	ENVP1	0.770	0.840	0.843
	ENVP2	0.821		
	ENVP3	0.806		
Social Performance (SOCP)	SOCP1	0.830	0.873	0.858
	SOCP2	0.739		
	SOCP3	0.807		
	SOCP4	0.802		

* Item dropped for further Analysis

For validity, we calculate both convergent validity and discriminant validity. Exploratory Factor Analysis (EFA) was conducted to evaluate convergent validity. As shown in Table 2,

all factor loadings for the measurement items exceed 0.50, indicating an adequate level of convergent validity (Hair et al., 2012).

Discriminant validity was evaluated by comparing the average variance extracted (AVE) with the squared correlation between constructs. The AVE values exceeded 0.50 and were greater than the inter-construct correlations, indicating no issues with discriminant validity, as shown in Table 3 (Fornell & Larcker, 1981). Consequently, discriminant validity is established.

We also calculate variance inflation factors (VIFs) to assess potential multicollinearity among the explanatory variables. The VIF scores, ranging from 1.27 to 2.56, remain well below the threshold of 4 (Hair et al., 2011), indicating that multicollinearity is not a concern.

Table 3: Average Variance Extracted (AVE)

Constructs	AVE	1	2	3	4	5	6	7	8
1. Economic Performance	0.520	0.721							
2. Circular Supply Chain Management	0.701	0.570	0.837						
3. Coercive Pressure	0.657	0.471	0.511	0.810					
4. Normative Pressure	0.671	0.489	0.545	0.709	0.819				
5. Mimetic Pressure	0.739	0.456	0.423	0.475	0.478	0.860			
6. Economic Performance	0.687	0.537	0.514	0.645	0.636	0.582	0.829		
7. Environmental Performance	0.637	0.683	0.598	0.468	0.531	0.458	0.593	0.798	
8. Social Performance	0.632	0.615	0.515	0.543	0.576	0.484	0.621	0.715	0.795

5.5 Data Analysis

For data analysis, AMOS-based structural equation modelling (SEM) has been used as the sample size is adequate to meet the criteria for SEM suggested by researchers (Felix, 2015). First, the sample size should be 10 times the number of items listed in the construct with the highest number of items (Hu & Bentler, 1999). Second, the sample size should be 10 times the number of paths directed to any endogenous variable in the model (Felix, 2015). Finally, we performed bootstrapping with 5,000 samples using AMOS software (Version 28.0) and constructed structural equation models to assess the relationships among the study variables.

4.6 Control Variables

We controlled for individual and organisational factors. Individual factors included gender, age, academic background, and work experience (Riketta, 2005). Organisational factors encompassed company age, industry type, and firm size, measured by the number of employees: small (<50), medium (50–249), and large (>250) (Braun & Clarke, 2006). Larger and older firms may have more resources to enhance business and operational performance (Miller & Le Breton-Miller, 2005). Additionally, we accounted for experience within the current company, which may influence circular supply chain management practices.

6. Results

The results of AMOS-SEM are organized into the following two sub-sections: 'Measurement Model' and 'Structural Model Testing'.

6.1 The Measurement Model

The measurement model describes the conception of latent variables based on the observed items. In our model, we have eight latent variables that use 31 items. The measurement model indicates good fits based on fit indices (χ^2 (552.254, df=367, $p<0.001$) and χ^2 /df of 1.505, RMSEA=0.040, SRMR=0.0370, GFI=0.897, NFI=0.917, IFI=0.971, TLI=0.965, CFI=0.970) and indicates an excellent fit (Hu & Bentler, 1999).

6.2 Structural Model

The structural model in this study was used to test the hypothesised associations between the study variables; path coefficients, t-values, and p-values were calculated by employing the bootstrapping technique over 5000 subsamples. The structural model fitness indices (χ^2 (592.569, df=376, $p<0.001$) and χ^2 /df of 1.576, RMSEA=0.043, SRMR=0.660, GFI=0.891, NFI=0.911, IFI=0.966, TLI=0.960, CFI=0.965) indicate good fits (Hu & Bentler, 1999).

Table 4: Regression Analysis and Hypothesis Testing

H. No	Paths	Estimate	S.E.	C.R.	P	Comments
H1	CP > CSCM	.162	.054	2.985	.003	Supported
H2	NP > CSCM	.297	.065	4.583	***	Supported
H3	MP > CSCM	.169	.047	3.635	***	Supported
H4	TMC > CSCM	.188	.068	2.763	.006	Supported
H5	CSCM> ECOP	.405	.051	7.892	***	Supported
H6	CSCM> ENVP	.508	.056	8.995	***	Supported
H7	CSCM> SCOP	.860	.099	8.666	***	Supported
CP = Coercive Pressure NP = Normative Pressure MP = Mimetic Pressure TMC = Top Management Commitment CSCM = Circular Supply Chain Management ECOP = Economic Performance ENVP = Environmental Performance SCOP = Social Performance						

Table 4 exhibits the path coefficient and p-values of our proposed hypotheses. Hypothesis testing based on path analysis has shown that CP is positively associated with CSCM, and the association is significant at a level of 0.01 ($\beta = 0.162$, $p = 0.003$). The results also showed that NP is positively and significantly associated with CSCM ($\beta = 0.297$, $p = 0.000$). Moreover, institutional pressure like MP is also positively and significantly associated with CSCM ($\beta = 0.169$, $p = 0.000$). Management attitudes in the name of TMC are likely to be positively and significantly associated with CSCM ($\beta = 0.297$, $p = 0.006$). Three sustainability dimensions: ECOP is positively and significantly ($\beta = 0.405$, $p = 0.000$), ENVP is positively and significantly ($\beta = 0.508$, $p = 0.000$) and SCOP is also positively and significantly ($\beta = 0.860$, $p = 0.000$) associated with CSCM respectively. Thus, the mediating-based hypotheses, H1a, H1b, H1c, H1d, H2a, H2b, H2c, H2d, H3a, H3b, H3c, and H3d, are all supported.

6.3 Mediation Analysis

Table 5 demonstrated the mediation results with the dependent, mediator, and independent variables. The result shows that TMC partially mediated the relationship between CP and CSCM ($\beta = .046$, $p < .05$). Moreover, TMC also partially mediated the relationship between

NP and CSCM ($\beta = .049, p < .05$). Results also show that TMC partially mediates the relationship between MP and CSCM ($\beta = .042, p < .05$). Furthermore, CSCM partially mediated the relationship between CP and ECOP ($\beta = .068, p < .05$). Additionally, CSCM partially mediated the relationship between CP and ENVP ($\beta = .087, p < .05$). Likewise, CSCM partially mediated the relationship between CP and SCOP ($\beta = .079, p < .05$).

Similarly, CSCM fully mediated the relationship between NP and ECOP ($\beta = .110, p < .001$).

Besides, CSCM fully mediates the relationship between NP and ENVP ($\beta = .141, p < .001$).

Again, CSCM fully mediates the relationship between NP and SCOP ($\beta = .128, p < .001$).

Correspondingly, CSCM moderately mediated the relationship between MP and ECOP ($\beta = .055, p < .01$). Indeed, CSCM moderately mediated the relationship between MP and ENVP ($\beta = .070, p < .01$). Again, CSCM moderately mediated the relationship between MP and SCOP ($\beta = .064, p < .01$). Thus, our proposed hypotheses, H1, H2, H3, H4, H5, H6, and H7, are supported.

Table 5. Mediation Analysis

H. No	Paths	Total Effects	Direct Effects	Indirect Effects	Comments
H1a	CP>TMC > CSCM	0.192	.146	.046 *	Partial Mediation
H1b	CP> CSCM>ECOP	.068	.000	.068*	Partial Mediation
H1c	CP> CSCM>ENVP	.087	.000	.087*	Partial Mediation
H1d	CP> CSCM>SCOP	.079	.000	.079*	Partial Mediation
H2a	NP>TMC > CSCM	.309	.260	.049*	Partial Mediation
H2b	NP> CSCM>ECOP	.110	.000	.110***	Full Mediation
H2c	NP> CSCM>ENVP	.141	.000	.141***	Full Mediation
H2d	NP> CSCM>SCOP	.128	.000	.128***	Full Mediation
H3a	MP>TMC > CSCM	.154	.112	.042*	Partial Mediation
H3b	MP> CSCM>ECOP	.055	.000	.055**	Moderate Mediation
H3c	MP> CSCM>ENVP	.070	.000	.070**	Moderate Mediation
H3d	MP> CSCM>SCOP	.064	.000	.064**	Moderate Mediation

***<.001, **<.01, *<.05

CP = Coercive Pressure

NP = Normative Pressure

MP = Mimetic Pressure

TMC= Top Management Commitment
ECOP= Economic Performance

CSCM= Circular Supply Chain Management
ENVP= Environmental Performance

5.4 Control variables

We used the control variables meaningfully in our study. The regression analyses revealed that employees' total experiences have a negative and significant effect on CSCM ($\beta = -.229$, $p < 0.05$). Moreover, employees who are working within the same company have a positive and significant association with CSCM ($\beta = .149$, $p < 0.05$). Finally, employees' academic qualifications have been found to have a positive and significant association with environmental performance ($\beta = .206$, $p < 0.05$). The other control variables are not significantly associated with CSCM and the sustainability domain. We, therefore, did not consider the other control variables for further analysis to avoid measurement errors.

7. Discussion

The manufacturing practices of Bangladesh towards circularity and sustainability are evolving. However, CSCM practices are still in the nascent stages within the manufacturing industry in Bangladesh; the exploratory results provide valuable insight for policymakers, practitioners, and the theory.

7.1 Theoretical Implications

This study contributes to institutional theory by highlighting how the combination of various pressures significantly influences CSCM and sustainability performance. From a theoretical perspective, normative and mimetic pressures play a crucial role in facilitating the transition to CSCM, ultimately enhancing sustainability outcomes. These findings align with existing research emphasizing the critical role of stakeholders in driving the adoption of sustainable practices (Lei et al., 2023). Furthermore, this study provides empirical evidence on stakeholder pressures for CSCM (Alghababsheh, 2024), demonstrating how effective and sustainable top management commitment enhances CSCM performance (Mangla et al., 2018). Additionally, CSCM contributes to multiple circularity performance objectives,

including economic, environmental, and social sustainability (Subhash, 2022). Therefore, this research underscores the importance of institutional pressures, coupled with top management commitment, in advancing CSCM and promoting various dimensions of sustainability. By integrating coercive, normative, and mimetic pressures with top management commitment, CSCM, and sustainability performance, this study offers a valuable theoretical contribution.

7.2 Practical Implications

This study provides practical recommendations for supply chain and operations managers seeking to implement Circular Supply Chain Management (CSCM) practices. The findings highlight the critical role of institutional pressures in influencing firms' adoption of CSCM and emphasize the importance of management commitment in facilitating this transition. Given Bangladesh's position as a leading global exporter of garments, firms in the sector are subject to considerable pressure from international buyers, who, in turn, influence governmental bodies, industry associations such as the Bangladesh Garment Manufacturers and Exporters Association (BGMEA), and other regulatory organizations to enforce sustainable practices.

Furthermore, growing environmental concerns and the increasing impact of climate change have heightened awareness among stakeholders, necessitating the adoption of CSCM practices to maintain access to key international markets. To remain competitive, manufacturers must integrate circular economy principles, and those yet to do so should initiate this transformation without delay. The presence of numerous certified companies in Bangladesh provides a benchmark for others, facilitating the adoption and replication of CSCM practices across the industry.

Additionally, this study identifies the educational background and professional experience of executives as significant factors in the successful implementation of CSCM. These attributes contribute to the development and execution of innovative ideas, processes, and products that

align with circular economy goals, ultimately supporting the achievement of zero waste in manufacturing operations.

7.3 Policy Implications

For policymakers, this study provides advanced insights based on the exploratory and descriptive conclusions, based on the findings where CSCM practices are greatly affected by institutional pressures from inside and outside of the stakeholders. Based on the results, policymakers should identify and consider the coercive, normative, and mimetic pressures that transform the current supply chain into a more sustainable and circular one. The following section also outlines the managerial and theoretical implications.

8. Conclusion

However, CSCM is widely considered the solution for climate change, waste handling, and resource scarcity and ensures economic, social, and environmental performance across the supply chain (Mangla et al., 2018; Khan et al., 2022); the study of how CSCM is being implemented is limited within Bangladeshi manufacturing companies. This study is based on institutional theory (coercive, normative, and mimetic) that puts pressure on manufacturing companies to adopt CSCM for economic, social, and environmental sustainability. A quantitative method is applied to the data of 313 who care about working for sustainability and sustainability. The regression results revealed that all three institutional pressures positively and significantly affect the implementation of CSCM. Moreover, top management commitment (TMC) also positively supports the circularity in supply chain management. The results also indicate that coercive, normative, and mimetic are mediated by both CSCM and TMC for overall organisational performance related to economic, social, and environmental performance.

This study has several contributions. Firstly, this is the first empirical management perspective based on the institutional theory and mediating role of TMC for CSCM

implication. Second, this study also provides evidence from control variables like experiences within the same company and academic backgrounds, which support the implementation of CMCM.

8.1 Limitations and Directions for Future Research

This research project has its limitations that necessitate new research avenues. First, this study was conducted through the theoretical framework of institutional theory. However, this theory is not always consistent and uniform among all phenomena (Tina Dacin et al., 2002). Alternative theories may provide other possibilities for improved CSCC implementation that this study did not provide. Second, operational and strategic factors are as important to CSCM as the management perspective, besides institutional pressures and top management commitment. Future research might analyse eco-friendly product systems, a study on the material loops in closed and open biological and technology cycles, as well as deepened cooperation with supply chain partners (De Angelis et al., 2018) and business model innovations that factor in environmental degradation and circular supply chain management, product design, and organisational values that support sustainability (Burke et al., 2023).

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