Shirking in supply chain collaborations: do circular economy entrepreneurship and technical capability moderate impacts for circular economy performance?

Anita Rijal
Canterbury Institute of Management, Darwin, Australia

Charles Baah
Business and Accounting Discipline, Faculty of Arts and Society,
Charles Darwin University, Darwin, Australia

Yaw Agyabeng-Mensah
Curtin University, Perth, Australia

Ebenezer Afum
University of Bristol, Bristol, UK, and

Innocent Senyo Kwasi Acquah
Department of Marketing and Supply Chain Management, University of Cape Coast,
Cape Coast, Ghana

Abstract

Purpose – Small and medium-sized enterprises (SMEs) in emerging economies are encouraged to form supply chain collaborations (SCC) for better circular economy (CE) performance. Yet, the literature remains silent on SMEs' susceptibility to opportunistic behaviors of supply chain (SC) partners. This study draws on the transaction cost theory (TCT) and the resource-based view (RBV) to investigate the impact of shirking on SCC and CE performance while exploring how circular economy entrepreneurship (CEE) can curb the impacts of shirking on SCC as well as drive technical capability (TC) to moderate the relationship between SCC and CE performance.

Design/methodology/approach – The TCT and RBV are used as a theoretical lens to investigate the direct, mediation and moderation effects tested via partial least square structural equation modeling (PLS-SEM) using survey data from 152 managers of SMEs in Nepal.

Findings – Contrary to past findings, the study results show that shirking, directly and indirectly, has a positive and significant impact on SCC and CE performance, respectively. The results also show that as CEE, which positively and significantly drives TC, moves from low to high levels, the effect of shirking on SCC dampens, and as TC moves from low to high levels, the effect of SCC on CE performance intensifies.

Originality/value – This study's contribution lies in extending the shirking debate to the CE domain and also in identifying CEE and TC as potent means for SMEs in emerging economies to mitigate shirking impacts and induce SC partner commitments in CE-driven SCC. This study provides relevant theoretical and practical insights.

Keywords Shirking, Supply chain collaboration, Circular economy performance, Circular economy entrepreneurship, Technical capability, SMEs

Paper type Article

1. Quick value overview

Interesting because: Intensifying global pressures toward achieving CE have induced SMEs to enter SCC due to resource constraints. While SCC is needed to establish alliances to

compensate for resource scarcity, the issue of shirking, defined as deliberately underperforming one's agreed-upon duties, adds significant hidden costs to SCC and poses significant challenges for SMEs in achieving CE performance. Despite this, the SME-supply chain literature remains silent on SMEs' susceptibility to the shirking behaviors of supply chain partners. Bridging this gap, this study presents and tests a comprehensive framework in the context of Nepal to examine shirking influences on SCC and CE performance under the moderating effect of CEE and TC.

Theoretical value: According to the TCT, economic transactions present platforms for opportunistic behaviors that require planning and investments in governing structures to protect transactions for mutual gains. However, since the literature remains silent on how SMEs can tackle shirking concerns due to the lack of ability to invest in governing structures, this study adopts the RBV to suggest that SMEs can develop and bundle CEE and TC as rare, inimitable, and unique resources to facilitate CE performance while mitigating shirking. By integrating the TCT and RBV, this study provides a theoretical lens for resource-constrained firms to limit SCC opportunism and realize mutual advantages.

Practical value: Given shirking concerns in SCC, SME managers in today's dynamic business environment should; (1) focus their limited resources and efforts on developing CEE and TC to identify and exploit new CE opportunities, (2) draw on the synergies of CEE and TC to gain essential environmental information that can be shared with SCC partners to build trust and transparency, and (3) exercise caution in choosing or switching SCC partners'.

2. Introduction

Firms must be sustainable not only within their organizations but also throughout their supply chains due to intensifying global pressures toward achieving a circular economy (CE) (Mishra *et al.*, 2021; Chavez *et al.*, 2023). This has created a need to reconfigure supply chains towards the formation of supply chain collaborations (SCC) to pool together resources to meet CE demands, especially for small and medium-sized enterprises (SMEs) who lack the required resources to engage CE initiatives on their own (Sudusinghe and Seuring, 2022; Maskey *et al.*, 2020). While such SCC is needed, issues of opportunism defined as "self-interest seeking with deviousness (e.g. lying, stealing, and cheating) or the incomplete or distorted disclosure of information to mislead, distort, disguise, obfuscate, or otherwise confuse" (Williamson, 1985, p. 47), continue to pose significant challenges in achieving CE performance. For instance, Maskey *et al.* (2020) in examining supply chain firms in Nepal, found that when sharing information some firms deliberately misguided or mislead other supply chain members for their personal benefit, thus breaking trust and derailing SCC efforts. Despite this, studies investigating how specific opportunistic behaviors impact SCC and CE performance of SMEs operating in a developing economy context and how SMEs respond to opportunism are lacking.

From a transaction cost theory (TCT) perspective, Pathak *et al.* (2020) explain that while all actors in a collaboration ecosystem aim to create value and seek mutual benefits, some partners' engagement in opportunism impedes knowledge circulation, trust building, and technology development resulting in value co-destruction. Chavez *et al.* (2023) add that CE is radical and requires strong collaborations to achieve continuous resource restoration in supply chains. However, how does SCC achieve CE objectives when partners exhibit opportunistic behavior? The literature suggests that while SMEs, due to resource constraints and increasing CE-related stakeholder pressures, enter SCC to achieve better CE outcomes (Baah *et al.*, 2023; Agyabeng-Mensah *et al.*, 2022; Mishra *et al.*, 2021), they also fall victim to opportunism although empirical evidence supporting this claim remains sparse (Skowronski *et al.*, 2020).

Opportunism has been examined from multiple perspectives namely, poaching and shirking (Handley and Benton, 2012; Aron *et al.*, 2005). Our focus on shirking in this study is motivated by past research that finds that shirking is dominant in the upstream of supply chains in

developing countries due to the lack of transparency, monitoring, and control (Bhattacharya *et al.*, 2015; Skowronski *et al.*, 2020). Shirking, defined as deliberately underperforming one's agreed-upon duties (Skowronski *et al.*, 2022), is a significant hidden cost in collaborations that leads to some SCC partners, notably suppliers stealing benefits from other supply chain partners. Handley and Benton (2012) add that in a collaboration where firms solely rely on other parties for specific resources or investments, the collaboration takes on characteristics similar to a monopoly where dependent firms become increasingly hostage in the collaboration. This further creates a conducive environment for shirking, especially in emerging economies (Silwal and Mool, 2020; Skowronski *et al.*, 2022). Given the growing SMEs' effort to achieve CE performance via SCC and their heavy reliance on SCC partners for CE investments, this study examines how shirking impacts SCC and CE performance and further highlights potential means via which SMEs can mitigate shirking impacts.

Furthermore, mitigating shirking effects in supply chains has gained traction (Skowronski *et al.*, 2022). While one school of thought suggests that shirking is shaped by the cultural and institutional contexts (Handley and Angst, 2015; Skowronski *et al.*, 2020), another stream of research argues that firms can leverage knowledge and capabilities in monitoring and controlling shirking behaviors among SCC partners (Skowronski *et al.*, 2020, 2022). Pathak *et al.* (2020) add that when SCC partners develop capabilities, it adds to their competitiveness and bargaining power thereby affecting other partners' propensity to shirk. Adding to this, Mishra *et al.* (2021) suggest that SMEs in SCC can leverage their capabilities to gain commitment from other SCC partners. Given this backdrop, Le *et al.* (2022) posit that SMEs in their effort to respond to stakeholder CE demands should develop circular economy entrepreneurship (CEE) defined as the process of discovering and exploiting opportunities in the CE domain. Cullen and De Angelis (2021) add that acquiring CEE positions SMEs to develop technical capabilities (TC) which drive competitive strategies and advantage. This study argues that SMEs can deploy CEE to develop TC and leverage the same to mitigate shirking concerns in SCC.

Drawing on the resource-based view (RBV), Le *et al.* (2022) posit that CEE is a rare, inimitable, and unique strategic resource that facilitates CE performance. Lynde (2020) adds that exploiting new opportunities through CEE drives the acquisition of TC to create social and environmental values. del Mar Alonso-Almeida *et al.* (2021) explain further that CEE leads to the acquisition of knowledge, creativity and innovation in SCC which is vital in ensuring monitoring and control. Given the potential of CEE in facilitating SCC and CE outcomes, we argue that CEE can curb the impacts of shirking in SCC and drive the development of TC to influence the relationship between SCC and CE performance. From the discourse, this study draws on the TCT and RBV to add to the SC-opportunism literature by answering the following research questions:

RQ1. What is the effect of shirking on SCC and CE performance?

RQ2. Does CEE drive TC and moderate the relationship between shirking and SCC?

RQ3. Does TC moderate the relationship between SCC and CE performance?

Using data from 152 managers of SMEs in Nepal, this study examines and tests a theoretical framework based on how shirking, an opportunistic behavior, influences SCC and CE performance. This study also investigates the moderating potential of CEE in mitigating shirking effects on SCC and how CEE further drives the development of TC for improved SCC and CE outcomes. The main theoretical and practical contributions of the study are highlighted for scholars and managers. The rest of the paper is structured as follows. Section 2 presents the literature review, theoretical background and research hypothesis, and Section 3 presents the methodology. Results are presented in section 4, followed by discussions in section 5 highlighting theoretical and managerial implications, and limitations and future research and finally, section 6, which offers the conclusion.

3. Literature review

Opportunism is pivotal in supply chain research and thus, has gained traction (Handley and Angst, 2015; Skowronski et al., 2020; Lumineau and Oliveira, 2020). Despite the traction, understanding of the effect of opportunism in the supply chains of SMEs operating in developing countries remains limited. Lumineau and Oliveira (2020) add that the recent inconsistencies of empirical findings on opportunism and its forms in supply chains warrant further probe into the concept, its antecedents, and outcomes. In the context of SCC, the TCT posits that economic transactions present platforms for opportunistic behavior which require planning of governing structures that safeguard transactions for mutual gains (Handley and Angst, 2015). Additionally, while developed countries according to scholars (Skowronski et al., 2020, 2022) have the necessary structures and measures that govern interfirm relationships and alliances, little can be said of developing countries. Moreover, large firms due to their resource endowment and power may be able to monitor and control SCC partners' behaviors whereas SMEs may struggle to do the same.

Scholars such as Zhao et al. (2008) and Skowronski et al. (2022) indicate that building expertise and knowledge improves the power base of firms. The authors further explain that these power bases or capabilities can be leveraged in SCC to stimulate relationship commitments which in turn reduces opportunistic behaviors. Drawing on the RBV, this study adds that SMEs can develop CEE to acquire relevant knowledge to build TC which in turn will improve SMEs expertise and power base. By answering the research questions mentioned in Section 1, we add to the literature in three significant ways. First, the traditional TCT emphasize that opportunistic behavior such as shirking among partners in a transactional relationship is minimized in contexts with effective governing and monitoring structures (Moschandreas, 1997). While previous studies confirm this is true in the context of developed countries, empirical evidence from developing countries remains lacking.

Thus, this study presents novel insights from Nepal, a developing country characterized by ineffective governing institutions, corruption, lack of transparency, and ineffective monitoring and control structures (Maskey et al., 2020; Mishra and Paudel, 2023). These insights add to the opportunism-supply chain literature by promoting a comprehensive, holistic, and practical understanding of opportunism in SCC. Second, the study contributes to the literature on CEE by drawing on the RBV to explain how CEE is potentially an effective strategy for SMEs in attenuating the effects of shirking in SCC. Third, the study adds to the supply chain management and the CE literature by exploring the moderating role of TC in the relationship between SCC and CE performance and by investigating the indirect effect of shirking on CE performance via the mediating influence of SCC, respectively. The following sections highlight the theories that underpin this research and further develop the research hypotheses.

4. Theoretical background and research hypothesis

4.1 TCT and RBV

The TCT extends the literature on interfirm relationships and collaboration management issues by highlighting two essential assumptions: opportunism and bounded rationality (Pathak et al., 2020). Wathne and Heide (2000) posit that in collaborations, the opportunistic behaviors of partners will increase transaction costs and affect the governance of the partnership. Pathak et al. (2020) suggest that opportunism whether in a weak form (e.g. relational norm violation) or a strong form (e.g. contractual norm violation) can cause a redistribution of created wealth leading to an adverse impact on collaborative value creation and advantage. Wathne and Heide (2000) add further that opportunistic behaviors, such as shirking in SCC, increase information and transaction costs via direct management and opportunity costs that arise due to raw material quality and contractual breach issues.

Skowronski et al. (2022) emphasize that to reduce the transaction cost associated with shirking, parties in a collaboration should make significant investments in monitoring and governance. The question is how do SMEs facing financial and other resource constraints make such investments to reduce shirking effects? This question motivates us to explore the potential of the RBV in providing alternative means for SMEs to develop certain resources and capabilities in the CE domain to negate shirking impacts. The RBV espouses that firms should bundle resources in a manner that enables competitive heterogeneity to extend competitiveness (Pan et al., 2015; Barney, 1991). Chavez et al. (2023) highlight that tangible and intangible resources can improve effectiveness and efficiency and help develop TC. Le et al. (2022) indicate that CEE drives the acquisition of TC in that CEE creates a learning environment through scoping and exploiting the CE environment for opportunities. Through CEE, there is learning and knowledge exchange. This knowledge exchange regarding CE opportunities within the firm augments collaborations and promotes collaborative partners' ability to create and extend competitive resource bases (Chavez et al., 2023; Teece, 2000).

From the above, the TCT is used to address RQ1 because it supports the direct effect of shirking on SCC and SCC's impact on CE performance as well as shirking's indirect effect on CE performance. The RBV also addresses RQ2 and RQ3 because it supports the direct impact of CEE on TC and further underlies the moderating impacts of CEE and TC on the relationships between shirking and SCC as well as on SCC and CE performance, respectively. Integrating the TCT and RBV is essential because while TCT reveals the shirking influence in SCC and on CE performance, the RBV identifies CEE and TC as potential mechanisms that generate maximum rent to reverse shirking impacts while boosting CE outcomes.
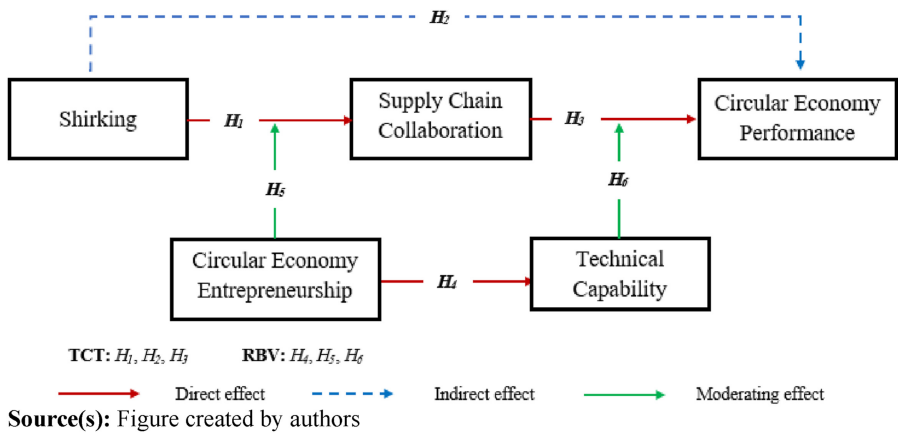
4.2 The effect of shirking on SCC and CE performance

The decision to enter SCC to achieve greater CE performance is the result of a cost-benefit (economic) calculus (Yan and Kull, 2015; Mishra et al., 2021; Chavez et al., 2023). According to Agyabeng-Mensah et al. (2022), SMEs enter SCC to be able to amass resources and acquire capabilities to meet internal CE objectives and external stakeholder demands. While Mishra et al. (2021) posit that SCC stimulates the knowledge spillover effect which drives innovation and capability development, Yan and Kull (2015) highlight the need for partners to safeguard against shirking. The authors argue that shirking behaviors such as one-sided knowledge flows, intentionally assigning less competent staff to collaborative tasks, and supplying low-quality inputs significantly reduce innovation, trust, and suppress confidence in partner cooperation. Skowronski et al. (2020) further highlight that shirking in SCC restricts creativity and value creation since it increases transaction and information costs. Adding to this, Pathak et al. (2020) suggest that the higher the transaction cost the higher the propensity of collaborative partners to seek out their self-interest, thereby increasing shirking and other opportunistic behaviors.

From the discourse, we argue that SMEs, driven to achieve higher CE performance via SCC, fall victim to shirking from partners due to the lack of financial capacity to engage in monitoring and control. Barringer and Greening (1998) indicate that this lack of monitoring serves as an incentive for opportunism in SCC. Moreover, Nygaard (2022) highlights that shirking in SCC impedes achieving stronger CE performance because SC partners withhold vital information related to CE process improvements, delay human expertise development, and delay CE technology investments. Primarily, we argue from the TCT lens, that shirking increases transaction costs in SCC which have profound impacts on SCC partners and consequently on SCC and CE outcomes. While the impact of shirking on SCC is modeled as a direct effect, shirking's effect on CE performance is modeled as an indirect effect via SCC, as presented in Figure 1. Thus, we hypothesize that:

H1. Shirking is negatively associated with SCC.

Figure 1.
Conceptual model
showing hypotheses

TCT: H_1, H_2, H_3 RBV: H_4, H_5, H_6

Direct effect - - - - Indirect effect Moderating effect

Source(s): Figure created by authors

  H2. Shirking is negatively associated with CE performance via the mediating influence
  of SCC.

4.3 The effect of SCC on CE performance

According to Yuan and Pan (2023), SCC enables cooperation between focal firms and SC
partners to formulate and implement CE strategies to achieve CE performance via resource
sharing, risk sharing, and benefit sharing. De Angelis *et al.* (2018) suggest that SCC promotes
CE transitions since it allows multiple supply chain partners to share resources towards
closed-loop logistics, product recovery, recycling, and green manufacturing. Berardi and de
Brito (2021) add that SCC members can generate complementarities that can substantially
improve the fit of CE solutions. Such collaborations are essential for SMEs because achieving
CE performance requires initial capital investments to integrate green processes, conduct CE
training, and acquire CE technologies which might be difficult for SMEs to achieve on their
own (Zheng *et al.*, 2021; Baah *et al.*, 2023; Agyabeng-Mensah *et al.*, 2022). Thus, SMEs via SCC
can maximize CE information sharing and develop expertise for resource recycling and joint
CE technology use. Kiefer *et al.* (2019) suggest that SCC is needed to be able to integrate
knowledge and facilitate initiatives towards finding new pathways for CE processes and
product designs. Sudusinghe and Seuring (2022) also indicate that SCC provides the platform
for CE experience sharing which might prove essential for SME partners in dealing with CE
bottlenecks. Such joint efforts result in the co-development of processes and products that
utilize CE principles and guidelines to achieve greater CE performance. In line with Chavez
et al. (2023), this study argues that SCC improves CE information sharing among partners and
provides a platform to pool resources and effectively allocate resources for greater CE
performance. From the discourse, we propose that:

  H3. SCC is positively associated with CE performance.

4.4 The effect of CEE on TC

According to Cullen and De Angelis (2021), the integration of entrepreneurship and CE can
move supply chains closer to sustainability because such an integration will lead to the
acquisition of CEE. Le *et al.* (2022) explain that CEE is a strategic resource that helps identify
and exploit business opportunities that align with CE. Explaining further, Baah *et al.* (2023)
indicate that when firms identify CE opportunities via CEE, they initiate the protocols

required to develop the technical know-how required to exploit the identified opportunity. Hence, CEE can breed creativity, innovation, and knowledge-building which also promotes the development of TC. Le *et al.* (2022) add further that CEE does not only promote innovation and improve CE business models but also drives TC for greater CE and sustainable supply chain outcomes. Similarly, Suchek *et al.* (2022) add that CEE is key to promoting new circular business opportunities and capabilities development. Koryak *et al.* (2015) emphasize that SMEs can integrate entrepreneurial and CE systems to develop TC in the forms of substantive and dynamic capabilities. Zahra *et al.* (2006) define substantive capability as the technical ability to solve problems and dynamic capability as the technical ability to change how a firm resolves its problems. Specifically, Baah *et al.* (2024) posit that CEE has a strong association with TC because firms will determine and acquire technical know-how based on identified business opportunities. The authors assert further that CEE also ensures CE thinking, continuous discovery and exploration of CE-related entrepreneurial opportunities and improves knowledge regarding resource circularity in supply chains. From the discourse, SMEs via CEE can develop TC to utilize new CE-related business opportunities to deliver CE value propositions within the SCC members among other stakeholders. Thus, we hypothesize that:

H4. CEE is positively associated with TC.

4.5 The moderating roles of CEE and TC

The exact mechanisms that can be used to mitigate shirking in SCC are still in debate in the SC literature. Skowronski *et al.* (2022) highlight coercive power as a means through which SC partners could mitigate shirking impacts. However, the findings suggest that the use of coercive power, such as the threat of punishment for non-compliance, only results in conflict. Handley and Benton (2012) also add reward power to coercive power to resolve shirking and found that the combination of both forms of power had a negative impact on interfirm collaborations by increasing conflict. Extending the debate, Chen *et al.* (2016) found that expert power increases SC partners' motivation to share information and avoid opportunistic behavior. This is because expert power which originates from focal firms' knowledge and technical competencies tends to benefit and attract SC partners (Handley *et al.*, 2019) and thus, strengthen commitment leading SC partners to exhibit good behaviors to keep the collaboration. Chen *et al.* (2016) noted however that when dependence is high (as is the case for SMEs) the effect of expert power in reducing opportunistic behaviors such as shirking is weakened. This is because due to the high dependence on SC partners, there is a high cost of switching SC partners in SCC leading to lock-in situations for focal firms. The inconsistency of past findings on shirking and means to mitigate impacts as well as the lack of studies from SMEs' perspective drives our need to provide an alternative approach to mitigate impacts using the RBV lens.

The RBV looks inside a firm for resources and capabilities that can be leveraged for competitive advantage (Dutta *et al.*, 2005; Barney, 1991). Particularly, the RBV emphasizes the exploration of contingency factors that impact and support a firm's strategy (Lioukas *et al.*, 2016). In the shirking-SC literature, contingency variables that mitigate opportunism have focused on power and culture. However, we argue that in this CE stakeholder-pressured era, the ability of a firm to deploy CE-related resources (CEE) and capabilities (technical) can result in the acquisition of legitimacy which may heighten reputation and prove relevant in mitigating shirking impacts in SCC and improving CE performance. Consistent with the RBV, we argue that CEE a driver of TC has the potential to strengthen or weaken the shirking-SCC relationship and TC also can strengthen and weaken the SCC-CE performance relationship. We discuss this further below.

CEE through scanning the environment for CE opportunities enables CE knowledge acquisition for environmental product development (Le *et al.*, 2022). SMEs by deploying this

resource (CEE) can be able to accumulate product-specific information and precise consumption data which deepens their competitiveness and further motivates SC partners to be committed to the SCC due to the valuable information SMEs wield. This relevant information obtained through CEE can help further develop competencies in the form of TC which can help in the design of green products aimed at extending product life cycles, recycling to eliminate waste, and preserving natural resources (Chavez *et al.*, 2023; Le *et al.*, 2022). In line with Handley *et al.* (2019), we believe that CEE in the long term will reduce SMEs' heavy dependence on SC partners since they will develop TC which will substantially boost their expert power resulting in reduced shirking impacts. Practically, as SMEs build CEE, SC partners will value the SCC and will aim to learn to also achieve higher capabilities inducing their commitment towards the SCC. Chen *et al.* (2016) posit that when SC partners are eager to learn in SCC there is less chance for opportunistic behavior such as shirking. Thus, we posit that:

H5. For SMEs, the adoption of CEE ameliorates the relationship between shirking and SCC such that CEE will have a negative impact on the shirking-SCC relationship.

Moreover, we argue that the acquisition of TC based on CEE strengthens SCC for CE performance. This is because as SMEs build TC, they become better at integrating CE principles into business strategies and production processes resulting in CE efficiency (Chavez *et al.*, 2023; Agyabeng-Mensah *et al.*, 2022). TC is pivotal to the achievement of CE performance because some capabilities such as innovation and technological or digital know-how, according to Schroeck *et al.* (2012), can be leveraged by SMEs to create as well as coordinate new product designs and developments that optimize raw material and energy use efficiencies to support CE results. For example, by integrating TC in SCC, SC partners can collaboratively draw on each other's resources to convert by-products and waste into valuable products or secondary raw materials resulting in a sustainable close loop SC. Thus, we posit that TC can facilitate the synchronization and integration of CE processes of SC partners in SCC to reduce adverse environmental impacts while boosting CE performance. The above discourse suggests that the SCC-CE performance relationship in our proposed model could be moderated by TC. We deem TC relevant in moderating the relationship between SCC-CE performance because Lioukas *et al.* (2016) using the RBV lens assert that resources by themselves cannot create value unless they are uniquely bundled with TC. Thus, while SCC enables SC partners to pool together resources, the TC distinctly combines these resources to create value for SC partners. Hence, we hypothesize that:

H6. For SMEs, the development of TC improves the relationship between SCC and CE performance such that TC will have a positive impact on the SCC-CE performance relationship.

5. Research methods
5.1 Context and data collection
The study context, Nepal, like most developing countries has taken initiatives to promote CE transitions towards SDGs. Lohani *et al.* (2021) refer to the "Solid Waste Management (SWM) Act (2011)" to highlight how the local government has taken up the role of managing solid waste systematically and effectively using the 3 Rs: reducing, reusing, and recycling. Additionally, Bharadwaj *et al.* (2020) emphasize how regulatory stakeholders are pushing for firms to reduce and be accountable for their plastic use. In light of these initiatives, most SMEs in Nepal having a low capital base, poor access to finance, and lacking access to technology are pressured to engage CE strategies in SC to improve circularity resulting in SCC (Upadhayay and Alqassimi, 2019; Pandey, 2004; Kharel and Dahal, 2020). Adding to the

increasing entry into SCC by SMEs, the Nepal context is also characterized by the lack of effective governing institutions, corruption, less transparency, ineffective monitoring and control, and less developed technology infrastructures (Bhattarai, 2015; Mishra and Paudel, 2023; Maskey *et al.*, 2020). These characteristics make Nepal a novel context that is conducive for shirking and thus, can provide new insights into shirking in SCC which may be completely different from previous studies conducted in developed countries and other contexts that vary in terms of the highlighted characteristics. Lastly, studies that explore supply chain-related issues in Nepal are lacking and hence, using Nepal as the context will add to the literature.

This study adopts a quantitative and survey approach in collecting data from 152 managers of SMEs using a simple random sampling technique. The SMEs included in this study were identified from the Federation of Nepalese Chambers of Commerce and Industry online platform and were selected using the following criteria: (1) should be implementing CE in some form; (2) must be a manufacturing firm; and (3) should have complete contact information available. Using these criteria, we reached out to about 600 managers in different SMEs but only 340 managers agreed to participate in the study. To obtain a broad and diverse dataset, a multi-source data collection strategy was employed, which involved the utilization of internet-based surveys (LinkedIn and emails) and hand-distributed questionnaires. This strategy was implemented from February to June 2023. The development of this comprehensive approach was undertaken with the primary aim of promoting extensive engagement among managers, to augment response rate. In addition, the incorporation of various data collection techniques helps to address the issue of common method bias (CMB) thereby minimizing the risk of common method variance, hence enhancing the reliability and external validity of the study's results.

The study questionnaire was developed based on the theoretical and our proposed model discussed in Sections 1 and 2. We developed the questionnaire using Google Forms and sent the questionnaire to three academics and three industry experts for pre-testing as recommended by Jabbour *et al.* (2020). The questionnaire was assessed for face validity (i.e. if the measurement items measure the construct) and content validity (i.e. if all relevant aspects of the constructs are measured). From the feedback received, we made minor corrections concerning the word choices, sentence phrasing, and length to refine the measurement instrument. Out of the 340 managers to whom the final questionnaire was sent, 152 useable responses were received indicating a response rate of 44.7%. Using the G*Power software, we find that to attain a medium effect size of 0.3 and a statistical power of 0.95, the minimum required sample should be 134. So, the received 152 responses are still valid for this study.

5.2 Common method bias (CMB)
The questionnaire was developed following the guidelines of Podsakoff *et al.* (2003) to reduce issues of CMB. The exploratory factor analysis (EFA) in Harman's one-factor test showed that the single factor explained 35.8% of cumulative variance below the 50% accepted threshold indicating no CMB issues. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's test of Sphericity with acceptable values of 0.899 and 0.000 indicate that the sample is good for factor analysis. Furthermore, the *t*-test analysis presented an insignificant difference between early and late responses suggesting no issues of non-response bias.

5.3 Characteristics of respondents
The majority (38.8%) of the respondents are in other sectors, followed by 30.9% in food and beverage processing. 11.2% were involved in producing aluminium/metal products, then

9.9% were in timber/wood processing. This is followed by 4.6%, 2.6%, 1.3%, and 0.7% who are into textile making, pharmaceuticals/chemicals, rubber/plastic products, and electronics, respectively. Regarding job qualifications, 36.2% were operations/production managers, 29.6% were in other positions, and 16.4% were procurement/purchasing managers. This was followed by 12.5 and 5.3% who were supply chain and logistics managers, respectively. Concerning educational qualification, 25.7%, 25.7%, 25%, 23%, and 0.7% had master's, intermediate/+2, SLC/SEE, bachelor's, and doctoral degrees, respectively. Firms with the number of employees within 1–60 (64.5%) dominated the sample, followed by 61–500 (19%), then above 500 (16.5%).

5.4 Measurement of constructs

This study employs a five-point Likert scale (1: strongly disagree and 5: strongly agree) to assess the adopted constructs. Shirking was measured using six items adapted from Handley and Benton (2012) and Skowronski et al. (2020). SCC was measured using seven items adapted from Baah et al. (2022) and Ramanathan and Gunasekaran (2014). CE performance was also examined using six items adapted from Agyabeng-Mensah et al. (2022) and Jabbour et al. (2020). This study measured CEE using six items adapted from Le et al. (2022) and Cullen and De Angelis (2021). Lastly, TC was measured using six items obtained from Dai and Liang (2022) and Rajadhyaksha (2005), respectively (See Appendix). We further included three control variables to account for their impact on our proposed model. These control variables were firm industry, firm age, and firm size. Firm size was assessed using the number of employees (Adomako et al., 2022). We further assessed firm age using the number of years the firm has been operational. This is because Shane et al. (2003) asserts that the number of years a firm has been operational influences its performance. Accordingly, firm industry was measured by the industry in which the firm was operating (Adomako et al., 2022; Agyabeng-Mensah et al., 2022).

6. Results

6.1 Assessment of model validity and reliability

Hair et al. (2019) recommend that for models using variance-based structural equation modeling (VB-SEM) or partial least square structural equation modeling (PLS-SEM), there is the need to (1) assess the validity and reliability of the measurement model and (2) to evaluate the structural model. Thus, we first performed a confirmatory factor analysis (CFA) in Smart PLS software 3 to ascertain the reliability and validity of the constructs. In running the model, we selected the weighting scheme in the PLS algorithm with the stop criterion $(10^\wedge-X) = 7$ and the maximum number of iterations set at 300. During bootstrapping, we also chose a bias-corrected and accelerated (BCa) bootstrap with 3000 subsamples and a two-tailed significance level of 5%. Hair et al. (2019) recommend that, during CFA, items with factor loadings less than (<) 0.70 should be deleted to enhance the model's quality. Additionally, Henseler et al. (2015) indicate that in examining a model's reliability and validity, the Cronbach's alpha (CA), composite reliability (CR), average variance extracted (AVE), and heterotrait-monotrait ratio (HTMT) should have ≥0.70, ≥0.70, >0.50 and < 0.85, respectively to be considered satisfactory. Measured items were above 0.70 except items SH4, SH5, and CEE6 which were 0.634, 0.641, and 0.697, respectively, as presented in Table 1. While Hair et al. (2019) recommend such items be deleted, these were left in the model since they contributed to the model's predictive power and quality.

The model achieves reliability since the CA and CR were within the range of 0.841–0.894 and 0.864–0.919, respectively. The validity of the measurement model was also examined using the AVE. The CFA results indicate that the model achieves convergent validity since the AVEs were within 0.517–0.654. The outer variance inflation factors (VIFs) show that the

Construct	Item	Factor loading	Outer VIF	Reliability and validity	Predictive power and relevance
Shirking (SH)	SH1	0.836	1.427	CA: 0.841	–
	SH2	0.702	2.254	CR: 0.864	
	SH3	0.767	2.241	AVE: 0.517	
	SH4	0.634	1.906		
	SH5	0.641	1.573		
	SH6	0.714	1.707		
Supply chain collaboration (SCC)	SCC1	0.757	1.851	CA: 0.885	R^2: 0.338
	SCC2	0.743	2.014	CR: 0.911	R^2 Adjusted: 0.325
	SCC3	0.788	2.237	AVE: 0.593	Q^2: 0.184
	SCC4	0.709	1.756		
	SCC5	0.778	2.060		
	SCC6	0.811	2.142		
	SCC7	0.800	2.092		
Circular economy performance (CEP)	CEP1	0.804	2.179	CA: 0.894	R^2: 0.501
	CEP2	0.862	2.636	CR: 0.919	R^2 Adjusted: 0.480
	CEP3	0.777	2.017	AVE: 0.654	Q^2: 0.292
	CEP4	0.851	2.534		
	CEP5	0.725	1.735		
	CEP6	0.826	2.381		
Circular economy entrepreneurship (CEE)	CEE1	0.772	1.891	CA: 0.870	–
	CEE2	0.814	2.244	CR: 0.902	
	CEE3	0.811	2.241	AVE: 0.607	
	CEE4	0.800	2.313		
	CEE5	0.776	1.959		
	CEE6	0.697	1.590		
Technical capability (TC)	TC1	0.761	2.020	CA: 0.867	R^2: 0.381
	TC2	0.718	1.732	CR: 0.901	R^2 Adjusted: 0.377
	TC3	0.814	2.366	AVE: 0.602	Q^2: 0.208
	TC4	0.791	1.964		
	TC5	0.782	1.803		
	TC6	0.786	2.089		

Source(s): Table created by authors

Table 1.
Model and structural
assessment

model is free from multicollinearity issues because all values were below the ideal threshold of 3. Regarding predictive power, which we examined using the R Squared (R^2), the results indicate that the structural model has predictive power since the model explains 0.501, 0.338, and 0.381 of the variances of CE performance, SCC, and TC, respectively. Additionally, using the blindfolding procedure to investigate the predictive relevance of the model, the result shows that there is predictive relevance because Stone-Geisser's Q^2 ranged between 0.184–0.292 which is above the recommended threshold of 0. We further assessed the discriminant validity of the model using the HTMT ratio. The HTMT ratio shows the model achieves discriminant validity since all values were below the ideal threshold of 0.850, as presented in Table 2.

6.2 Hypothesis testing
The hypothesis testing was conducted using the bias-corrected bootstrapping function with 3000 subsamples at a two-tailed significance level of 0.05 in SmartPLS 3. The bootstrapping results show that shirking has a significant positive impact ($\beta = 0.302$, $f^2 = 0.102$, T = 2.361, $p < 0.05$) on SCC which is contrary to H1. Hence, H1 is not supported. Testing the indirect effect of shirking on CE performance, we find that H2 is not supported because shirking via

SCC has a significant positive effect ($\beta = 0.132$, T = 2.156, $p < 0.05$) on CE performance contrary to our hypothesis. H3 states that SCC is positively associated with CE performance. We found support for this hypothesis according to the positive and significant Beta coefficient ($\beta = 0.439$, $f^2 = 0.175$, T = 5.223, $p < 0.01$). In line with our expectation, the analysis further confirmed support for H4 since CEE has a positively significant impact ($\beta = 0.617$, $f^2 = 0.615$, T = 10.403, $p < 0.01$) on TC. H5 states that the effect of shirking on SCC would be negatively moderated by CEE such that when SMEs engage in CEE to identify and exploit new CE opportunities, the impact of shirking on SCC will reduce. The results presented in Table 3 and Figure 2 show that H5 is supported because the interaction between shirking and CEE exerts a negatively significant effect ($\beta = -0.158$, $f^2 = 0.033$, T = 2.056, $p < 0.05$) on SCC.

The results further show support for H6 which states that the effect of SCC on CE performance would be positively moderated by TC such that when SMEs build TC in SCC to facilitate CE initiatives, the impact of SCC on CE performance will intensify. We find that the interaction between SCC and TC has a positively significant effect ($\beta = 0.177$, $f^2 = 0.074$, T = 2.708, $p < 0.01$) on CE performance. Additionally, the results show that while firm age and size had an insignificant impact on CE performance, the firm industry's impact is significant ($\beta = 0.164$, $f^2 = 0.051$, T = 2.967, $p < 0.05$). This result is in line with previous studies (Agyabeng-Mensah *et al.*, 2022; 2022) that found that the industry significantly influenced environmental initiatives and CE performance, respectively. The result demonstrates that industry influences CE performance. Specifically, manufacturing industries have been coerced

Construct	1	2	3	4	5
1. CEE					
2. CEP	0.818				
3. SCC	0.588	0.680			
4. SH	0.110	0.117	0.189		
5. TC	0.701	0.663	0.822	0.126	
Source(s): Table created by authors					

Table 2.
Discriminant validity
(HTMT ratio)

| Paths	Beta (β)	f^2	Standard Deviation	T Statistics (|O/STDEV|)	p values	Inner VIFs
Direct effect						
H1(ns): SH → SCC	0.302	0.102	0.128	2.361	0.018	1.344
H3(s): SCC → CEP	0.439	0.175	0.084	5.223	0.000	2.210
H4(s): CEE → TC	0.617	0.615	0.059	10.403	0.000	1.000
Indirect effect						
H2(ns): SH → SCC → CEP	0.132	–	0.061	2.156	0.031	–
Moderation effect						
H5(s): SH*CEE → SCC	−0.158	0.033	0.077	2.056	0.040	1.497
H6(s): SCC*TC → CEP	0.177	0.074	0.066	2.708	0.007	1.048
Control effect						
Firm age → CEP	0.037	0.003	0.059	0.625	0.532	1.033
Firm industry → CEP	0.164	0.051	0.055	2.967	0.003	1.067
Firm size → CEP	0.088	0.013	0.067	1.312	0.190	1.155
* **Note(s):** s – supported; ns – not supported						
Source(s): Table created by authors						

Table 3.
Hypotheses testing
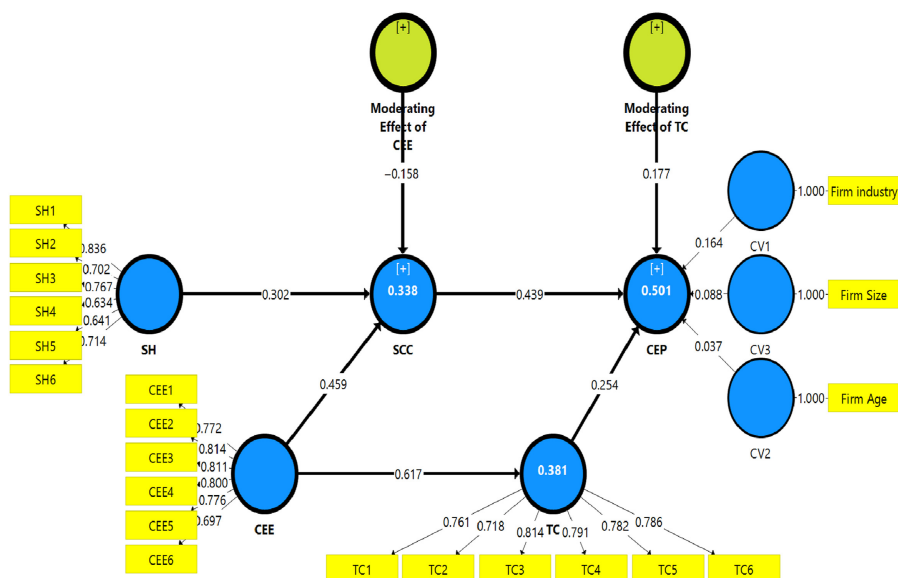
Figure 2.
Structural model

Source(s): Figure created by authors

to adopt sustainable and environmental quality standards such as waste management requirements, ISO 14001, and ISO 9001 certifications due to enormous contributions to environmental pollution, and excessive energy/resource consumption among others which deteriorates the environment. These sustainable and environmental quality standards have aided in the implementation of CE practices that result in improved CE performance.

Furthermore, we follow the recommendation of Hoetker (2007) and Cohen *et al.* (2003) in graphically assessing and interpreting the directionality of the interactions plotted at $\pm$ 1 SD using the mean-centered values. Figure 3 shows that at low levels of CEE (-1 SD), the impact of
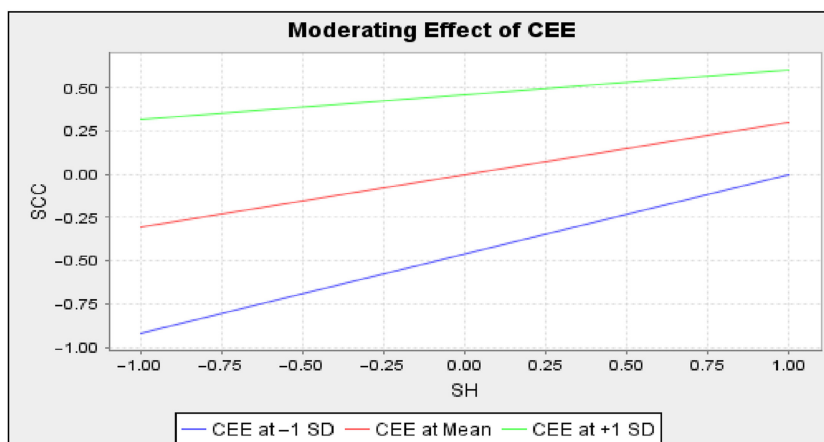
Figure 3.
Interaction effect of
shirking and CEE
on SCC

Source(s): Figure created by authors

shirking on SCC is stronger but as CEE increases to high levels (+1 SD), the impact of shirking decreases. This indicates that when SMEs CEE increases it dampens shirking impacts on SCC. Also, the results in Figure 4 show that even at low levels of TC (−1 SD), there is an increase in the effect of SCC on CE performance. However, this effect becomes stronger or intensifies at high levels of TC (+1 SD) suggesting that as SMEs build TC, they become better at collaboratively implementing CE initiatives with SC partners to improve CE performance.

7. Discussion

In this study, we integrate the TCT and RBV to build and test a novel model investigating the impact of shirking on SCC and CE performance while also examining the potencies of CEE and TC in reducing shirking impacts and improving the effect of SCC on CE performance, respectively, in the context of Nepal (an emerging economy) since past studies have mostly focused on developed countries. Prior research (Skowronski *et al.*, 2020, 2022; Yan and Kull, 2015; Pandey *et al.*, 2023; Handley and Benton, 2012) highlights that shirking results in negative impacts such as reduced innovation, poor trust, and suppressed confidence in partner cooperation in SCC. However, in our study context, we find that shirking has a direct positive impact on SCC and a positive indirect effect on CE performance. Explaining this finding, we highlight that most SMEs in the context of Nepal due to high dependence on SC partners tend to be locked in SCC regardless of the shirking behaviors of SC partners. A possible underlying reason why SMEs remain glued to shirking SC partners is the opportunities given to SMEs to source raw materials or get access to CE technologies on credit as highlighted by Silwal and Mool (2020) in their examination of financial resource constraints of SMEs in Nepal. Furthermore, the high cost of switching SC partners who are crucial to the operationality of SMEs as well as provide minimum resources for CE practices may deter breaking away from such SCC as suggested by Handley and Benton (2012). Our study also shows that forming SCC is an effective approach for SMEs in emerging economies to better their CE performance. However, SMEs should try to adopt CEE which will drive the development of TC. By investigating CEE and TC, we contribute to understanding the contingency factors that are relevant to the shirking-SCC-CE performance relationships. The examination of such contingencies for SMEs is relevant given researchers' recommendation for SMEs to explore various means to safeguard performance and compensate for resource scarcity (Adomako *et al.*, 2022; Baah *et al.*, 2023;
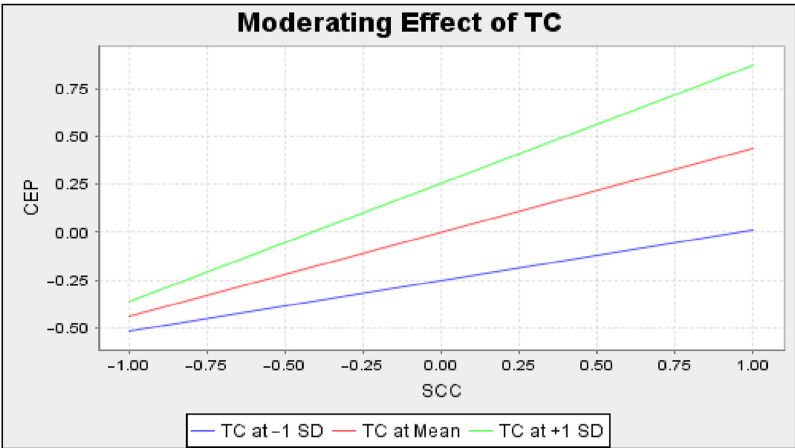

Figure 4.
Interaction effect of SCC and TC on CE performance

Source(s): Figure created by authors

Agyabeng-Mensah *et al.*, 2022; Afum *et al.*, 2023). We draw on the RBV to emphasize that SMEs should adopt and build CEE because it can help them reduce the shirking behaviors of SC partners in their CE-driven SCC and also develop the TC to substantially improve their SCC impacts on CE performance. Our study contributes to theory and practice in several ways, as captured below.

7.1 Theoretical implication

First, our study adds to the shirking and CE performance literature, which remains under-researched. Particularly, while several studies examine shirking impacts in SCC, less emphasis has been placed on shirking impacts on CE performance given the several calls to form CE-driven SCC (Chavez *et al.*, 2023; Baah *et al.*, 2023; Mishra *et al.*, 2021; Agyabeng-Mensah *et al.*, 2022). Via mediation, this study supports the view that SCC is a medium through which shirking can impact CE outcomes. Thus, to achieve CE objectives in this sustainability-driven era, there is the need to ensure that SC partners engage in SCC practices devoid of opportunism. Moreover, past studies present shirking as having negative impacts on SCC, but we find in our study that certain factors can account for the positive direct and indirect impacts of shirking on SCC and CE performance, respectively. These novel findings provide a holistic understanding or conceptualization of the effects of shirking on CE outcomes. Second, this study adds to the literature by highlighting CEE as a potent means through which SMEs can tackle issues of opportunistic behavior such as shirking of SC partners in SCC. Particularly, prior research highlights how difficult it is to deal with the shirking behavior of SC partners (Pandey, 2004; Skowronski *et al.*, 2020, 2022). However, investigations from the perspectives of SMEs are lacking despite their resource constraints. Given the lack of clarity in the literature about how SMEs can mitigate shirking effects, our investigation of CEE and TC enables us to have a comprehensive understanding of firm-specific factors that impact the shirking-SCC-CE performance relationship. Third, our study uses data from the context of Nepal, an emerging economy. SCC, CE-related entrepreneurship, and CE performance studies remain extremely under-researched in the context of Nepal. CE and SCC in developing countries are different from those in developed countries. This can be attributed to the lack of governing and supporting institutions as well as the extensive prevalence of corruption in emerging economies such as Nepal. Thus, Nepal is a novel context to investigate SMEs' orientation toward CE and CEE initiatives in the face of shirking. Moreover, it is essential to extend studies like ours in other emerging economies to identify all the firm-specific strategies and capabilities that can be adopted to drive higher CE orientation and performance. By studying firms beyond the popular developed contexts such as Europe and the Americas, we add to enhancing the generalizability of SC and CE-related theories and results.

7.2 Managerial implication

This study presents insightful managerial implications. First, recent business environments are dynamic and fiercely competitive and as such, managers must consider SCC to be able to pool resources as well as develop capabilities that will guarantee CE performance. However, in considering SCC, SME managers focus their limited resources and efforts on building and improving CEE which will not only help identify and exploit new CE opportunities but will also stimulate the acquisition of TC and increase their expertise to improve SCC and CE performance. Additionally, the study further suggests that managers via CEE and TC can reduce the effects of shirking behaviors in SCC because scholars suggest that the more knowledge and expertise a firm develops the more committed SCC partners become. Second, the results indicate that managers should synergistically deploy CEE and TC, especially with resource-providing SC partners to offset resource scarcity concerns. By drawing on the synergies of CEE and TC, managers can share new CE-related opportunities with other SCC partners which will enhance supply chain transparency and build trust for greater SCC and CE performance. Third, given the

presence and significant influence of shirking in the Nepal context, managers should exercise caution in choosing SCC partners'. This is possible by scrutinizing the behaviors of SC partners, especially suppliers. Additionally, instead of being quick to switch suppliers and other SC partners after detecting shirking behaviors, managers should rather reflect on the root causes of such behavior, identify the problems impeding supply chain systems and then helps develop effective approaches towards improving efficiency.

7.3 Limitations and future research

Notwithstanding the novel insights in the study, there are some limitations of this present study that can be addressed by future studies. First, we rely on cross-sectional data which is limiting in terms of understanding the long-term causality effects. Thus, future studies should try using longitudinal approaches to data collection to provide more insight regarding the long-term impacts of the adopted study variables. Second, we use data from SMEs. While SME perspectives are important, we also recommend future studies to explore perspectives from large firms or combine both large and SMEs to provide rich insights. Third, while we examine CEE and TC as essential contingency factors, several other factors may serve as vital contingency variables in the hypothesized relationships. Thus, future studies can investigate how other factors or variables serve as moderating factors. Fourth, given that the study focused on the manufacturing industry and firms, the findings may not be generalized to other SMEs operating in other sectors. Future studies should therefore use firms across multiple industries to provide a comprehensive perspective on shirking, SCC, CEE, TC and CE performance interactions. Last, since we use data from the Nepal context, it may be hard to generalize the findings to other contexts. Thus, future studies should investigate if our results hold in other emerging economy contexts.

8. Conclusion

Reconfiguring supply chains for the formation of SCC to pool together resources and capabilities to meet CE and environmental pressures of stakeholders is crucial for SMEs. While such collaborations are critical to unlocking CE performance, issues of opportunistic behavior such as shirking from SCC partners poses significant challenges to achieving CE performance. Despite this, empirical studies that investigate the effect of shirking in the supply chains of SMEs operating in developing countries remains lacking. Thus, this study focuses on how shirking directly and indirectly impacts SCC and CE performance of SMEs operating in Nepal, a developing country and also examines how by developing CEE, SMEs can mitigate shirking effects as well as develop TC for improved CE performance. Using sample data from 152 managers of SMEs, the results reveal that shirking directly and indirectly, has a positive and significant effect on SCC and CE performance, respectively contrary to past studies that indicate negative effects. Additionally, the results illustrate that CEE positively and significantly drives the development of TC. Particularly, while CEE moves from low to high levels, the effect of shirking on SCC dampens, and as TC moves from low to high levels, the effect of SCC on CE performance strengthens. To conclude, while it is critical for SMEs to enter SCC for CE investments, the study suggests that by developing CEE SMEs can also develop TC and leverage both for greater CE performance while mitigating shirking impacts in SCC. The theoretical and managerial implications of the study results have been emphasized.

References

Adomako, S., Amankwah-Amoah, J., Donbesuur, F., Ahsan, M., Danso, A. and Uddin, M. (2022), "Strategic agility of SMEs in emerging economies: antecedents, consequences and boundary conditions", *International Business Review*, Vol. 31 No. 6, 102032, doi: 10.1016/j.ibusrev.2022. 102032.

Afum, E., Issau, K., Agyabeng-Mensah, Y., Baah, C., Dacosta, E., Essandoh, E. and Agyenim Boateng, E. (2023), "The missing links of sustainable supply chain management and green radical product innovation between sustainable entrepreneurship orientation and sustainability performance", *Journal of Engineering, Design and Technology*, Vol. 21 No. 1, pp. 167-187, doi: 10.1108/jedt-05-2021-0267.

Agyabeng-Mensah, Y., Afum, E., Baah, C. and Essel, D. (2022), "Exploring the role of external pressure, environmental sustainability commitment, engagement, alliance and circular supply chain capability in circular economy performance", *International Journal of Physical Distribution & Logistics Management*, Vol. 52 Nos 5/6, pp. 431-455, doi: 10.1108/ijpdlm-12-2021-0514.

Aron, R., Clemons, E.K. and Reddi, S. (2005), "Just right outsourcing: understanding and managing risk", *Journal of Management Information Systems*, Vol. 22 No. 2, pp. 37-55, doi: 10.1080/07421222.2005.11045852.

Baah, C., Acquah, I.S.K. and Ofori, D. (2022), "Exploring the influence of supply chain collaboration on supply chain visibility, stakeholder trust, environmental and financial performances: a partial least square approach", *Benchmarking: An International Journal*, Vol. 29 No. 1, pp. 172-193, doi: 10.1108/bij-10-2020-0519.

Baah, C., Agyabeng-Mensah, Y., Afum, E. and Kumi, C.A. (2023), "Do circular economy practices accelerate CSR participation of SMEs in a stakeholder-pressured era? A network theory perspective", *Journal of Cleaner Production*, Vol. 394, 136348, doi: 10.1016/j.jclepro.2023.136348.

Baah, C., Opoku-Agyeman, D., Acquah, I.S.K., Agyabeng-Mensah, Y., Afum, E., Faibil, D. and Abdoulaye, F.A.M. (2021), "Examining the correlations between stakeholder pressures, green production practices, firm reputation, environmental and financial performance: evidence from manufacturing SMEs", *Sustainable Production and Consumption*, Vol. 27, pp. 100-114, doi: 10.1016/j.spc.2020.10.015.

Baah, C., Rijal, A., Agyabeng-Mensah, Y., Afum, E. and Acquah, I.S.K. (2024), "Does circular economy entrepreneurship drive technical capabilities for circular economy performance? The moderating role of environmental dynamism", *Management of Environmental Quality*, Vol. 35 No. 3, pp. 567-586, doi: 10.1108/meq-07-2023-0233.

Barney, J. (1991), "Firm resources and sustained competitive advantage", *Journal of Management*, Vol. 17 No. 1, pp. 99-120, doi: 10.1177/014920639101700108.

Barringer, B.R. and Greening, D.W. (1998), "Small business growth through geographic expansion: a comparative case study", *Journal of Business Venturing*, Vol. 13 No. 6, pp. 467-492, doi: 10.1016/s0883-9026(97)00038-4.

Berardi, P.C. and de Brito, R.P. (2021), "Supply chain collaboration for a circular economy-from transition to continuous improvement", *Journal of Cleaner Production*, Vol. 328, 129511, doi: 10.1016/j.jclepro.2021.129511.

Bharadwaj, B., Baland, J.M. and Nepal, M. (2020), "What makes a ban on plastic bags effective? The case of Nepal", *Environment and Development Economics*, Vol. 25 No. 2, pp. 95-114, doi: 10.1017/s1355770x19000329.

Bhattacharya, A., Singh, P.J. and Nand, A.A. (2015), "Antecedents of buyer opportunistic behavior in outsourcing relationships", *International Journal of Production Economics*, Vol. 166, pp. 258-268, doi: 10.1016/j.ijpe.2015.03.011.

Bhattarai, R.K. (2015), "Supply chain development under conflict conditions: case of Nepal", *Supply Chain Design and Management for Emerging Markets: Learning from Countries and Regions*, pp. 283-309, doi: 10.1007/978-3-319-05765-1_11.

Chavez, R., Malik, M., Ghaderi, H. and Yu, W. (2023), "Environmental collaboration with suppliers and cost performance: exploring the contingency role of digital orientation from a circular economy perspective", *International Journal of Operations & Production Management*, Vol. 43 No. 4, pp. 651-675, doi: 10.1108/ijopm-01-2022-0072.

Chen, S., Lee, H. and Moinzadeh, K. (2016), "Supply chain coordination with multiple shipments: the optimal inventory subsidizing contracts", *Operations Research*, Vol. 64 No. 6, pp. 1320-1337, doi: 10.1287/opre.2016.1529.

Cohen, J., Cohen, P., West, S.G. and Aiken, L.S. (2003), *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*, 3rd ed., Lawrence Erlbaum, New York.

Cullen, U.A. and De Angelis, R. (2021), "Circular entrepreneurship: a business model perspective", *Resources, Conservation and Recycling*, Vol. 168, 105300, doi: 10.1016/j.resconrec.2020.105300.

Dai, B. and Liang, W. (2022), "The impact of big data technical skills on novel business model innovation based on the role of resource integration and environmental uncertainty", *Sustainability*, Vol. 14 No. 5, p. 2670, doi: 10.3390/su14052670.

De Angelis, R., Howard, M. and Miemczyk, J. (2018), "Supply chain management and the circular economy: towards the circular supply chain", *Production Planning and Control*, Vol. 29 No. 6, pp. 425-437, doi: 10.1080/09537287.2018.1449244.

del Mar Alonso-Almeida, M., Rodriguez-Anton, J.M., Bagur-Femenías, L. and Perramon, J. (2021), "Institutional entrepreneurship enablers to promote circular economy in the European Union: impacts on transition towards a more circular economy", *Journal of Cleaner Production*, Vol. 281, 124841, doi: 10.1016/j.jclepro.2020.124841.

Dutta, S., Narasimhan, O. and Rajiv, S. (2005), "Conceptualizing and measuring capabilities: methodology and empirical application", *Strategic Management Journal*, Vol. 26 No. 3, pp. 277-285, doi: 10.1002/smj.442.

Hair, J.F., Risher, J.J., Sarstedt, M. and Ringle, C.M. (2019), "When to use and how to report the results of PLS-SEM", *European Business Review*, Vol. 31 No. 1, pp. 2-24, doi: 10.1108/ebr-11-2018-0203.

Handley, S.M. and Angst, C.M. (2015), "The impact of culture on the relationship between governance and opportunism in outsourcing relationships", *Strategic Management Journal*, Vol. 36 No. 9, pp. 1412-1434, doi: 10.1002/smj.2300.

Handley, S.M. and Benton, J., W. (2012), "The influence of exchange hazards and power on opportunism in outsourcing relationships", *Journal of Operations Management*, Vol. 30 Nos 1-2, pp. 55-68, doi: 10.1016/j.jom.2011.06.001.

Handley, S.M., de Jong, J. and Benton, J., W. (2019), "How service provider dependence perceptions moderate the power–opportunism relationship with professional services", *Production and Operations Management*, Vol. 28 No. 7, pp. 1692-1715, doi: 10.1111/poms.13013.

Henseler, J., Ringle, C.M. and Sarstedt, M. (2015), "A new criterion for assessing discriminant validity in variance-based structural equation modeling", *Journal of the Academy of Marketing Science*, Vol. 43 No. 1, pp. 115-135, doi: 10.1007/s11747-014-0403-8.

Hoetker, G. (2007), "The use of logit and probit models in strategic management research: critical issues", *Strategic Management Journal*, Vol. 28 No. 4, pp. 331-343, doi: 10.1002/smj.582.

Jabbour, C.J.C., Seuring, S., de Sousa Jabbour, A.B.L., Jugend, D., Fiorini, P.D.C., Latan, H. and Izeppi, W.C. (2020), "Stakeholders, innovative business models for the circular economy and sustainable performance of firms in an emerging economy facing institutional voids", *Journal of Environmental Management*, Vol. 264, 110416.

Kharel, P. and Dahal, K. (2020), "Small and medium-sized enterprises in Nepal: examining constraints on exporting", No. 1166, ADBI Working Paper Series.

Kiefer, C.P., Del Río González, P. and Carrillo-Hermosilla, J. (2019), "Drivers and barriers of eco-innovation types for sustainable transitions: a quantitative perspective", *Business Strategy and the Environment*, Vol. 28 No. 1, pp. 155-172, doi: 10.1002/bse.2246.

Koryak, O., Mole, K F., Lockett, A., Hayton, J.C., Ucbasaran, D. and Hodgkinson, G.P. (2015), "Entrepreneurial leadership, capabilities and firm growth", *International Small Business Journal*, Vol. 33 No. 1, pp. 89-105, doi: 10.1177/0266242614558315.

Le, T.T., Behl, A. and Pereira, V. (2022), "Establishing linkages between circular economy practices and sustainable performance: the moderating role of circular economy entrepreneurship", *Management Decision*, ahead-of-print, doi: 10.1108/md-02-2022-0150.

Lioukas, C.S., Reuer, J.J. and Zollo, M. (2016), "Effects of information technology capabilities on strategic alliances: Implications for the resource-based view", *Journal of Management Studies*, Vol. 53 No. 2, pp. 161-183, doi: 10.1111/joms.12179.

Lohani, S.P., Keitsch, M., Shakya, S. and Fulford, D. (2021), "Waste to energy in Kathmandu Nepal—a way toward achieving sustainable development goals", *Sustainable Development*, Vol. 29 No. 5, pp. 906-914, doi: 10.1002/sd.2183.

Lumineau, F. and Oliveira, N. (2020), "Reinvigorating the study of opportunism in supply chain management", *Journal of Supply Chain Management*, Vol. 56 No. 1, pp. 73-87, doi: 10.1111/jscm.12215.

Lynde, R. (2020), "Innovation & entrepreneurship driving food system transformation", *Physiology & Behavior*, Vol. 220, 112866, doi: 10.1016/j.physbeh.2020.112866.

Maskey, R., Fei, J. and Nguyen, H.O. (2020), "Critical factors affecting information sharing in supply chains", *Production Planning & Control*, Vol. 31 No. 7, pp. 557-574, doi: 10.1080/09537287.2019.1660925.

Mishra, J.L., Chiwenga, K.D. and Ali, K. (2021), "Collaboration as an enabler for circular economy: a case study of a developing country", *Management Decision*, Vol. 59 No. 8, pp. 1784-1800, doi: 10.1108/md-10-2018-1111.

Mishra, R.P. and Paudel, I.H. (2023), "Agribusiness and supply chain development policies in Nepal: a review from temporal dynamics", *Nepal Public Policy Review*, Vol. 3 No. 1, pp. 141-168, doi: 10.59552/nppr.v3i1.60.

Moschandreas, M. (1997), "The role of opportunism in transaction cost economics", *Journal of Economic Issues*, Vol. 31 No. 1, pp. 39-58, doi: 10.1080/00213624.1997.11505890.

Nygaard, A. (2022), "From linear to circular economy: a transaction cost approach to the ecological transformation of the firm", *Circular Economy and Sustainability*, Vol. 2 No. 3, pp. 1127-1142, doi: 10.1007/s43615-022-00158-w.

Pan, G., Pan, S.-L. and Lim, C.-Y. (2015), "Examining how firms leverage IT to achieve firm productivity: RBV and dynamic capabilities perspectives", *Information & Management*, Vol. 52 No. 4, pp. 401-412, doi: 10.1016/j.im.2015.01.001.

Pandey, R. (2004), "Solid waste management practice and health implication: a case of Kathmandu Metropolitan City, Nepal", *Himalayan Review*, pp. 33-47.

Pandey, R., Rungtusanatham, M. and Oppong-Tawiah, D. (2023), "Asymmetric investments in exchange relationships, perceived supplier shirking and cross-functional information sharing as a moderator", *International Journal of Operations and Production Management*, Vol. 43 No. 6, pp. 849-878, doi: 10.1108/IJOPM-05-2022-0312.

Pathak, B., Ashok, M. and Tan, Y.L. (2020), "Value co-destruction: exploring the role of actors' opportunism in the B2B context", *International Journal of Information Management*, Vol. 52, 102093, doi: 10.1016/j.ijinfomgt.2020.102093.

Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y. and Podsakoff, N.P. (2003), "Common method biases in behavioral research: a critical review of the literature and recommended remedies", *Journal of Applied Psychology*, Vol. 88 No. 5, pp. 879-903, doi: 10.1037/0021-9010.88.5.879.

Rajadhyaksha, U. (2005), "Managerial competence: do technical capabilities matter?", *Vikalpa*, Vol. 30 No. 2, pp. 47-56, doi: 10.1177/0256090920050204.

Ramanathan, U. and Gunasekaran, A. (2014), "Supply chain collaboration: impact of success in long-term partnerships", *International Journal of Production Economics*, Vol. 147, pp. 252-259, doi: 10.1016/j.ijpe.2012.06.002.

Schroeck, M., Shockley, R., Smart, J., Romero-Morales, D. and Tufano, P. (2012), "Analytics: the real-world use of big data", *IBM Global Business Services*, Vol. 12 No. 2012, pp. 1-20.

Shane, S., Locke, E.A. and Collins, C.J. (2003), "Entrepreneurial motivation", *Human Resource Management Review*, Vol. 13 No. 2, pp. 257-279, doi: 10.1016/s1053-4822(03)00017-2.

Silwal, P.P. and Mool, S. (2020), "Small-medium enterprises and credit accessibility in kathmandu valley", *International Research Journal of Management Science*, Vol. 5 No. 1, pp. 110-129, doi: 10.3126/irjms.v5i1.35866.

Skowronski, K., Benton Jr, W. and Hill, J.A. (2020), "Perceived supplier opportunism in outsourcing relationships in emerging economies", *Journal of Operations Management*, Vol. 66 Nos 7-8, pp. 989-1023, doi: 10.1002/joom.1123.

Skowronski, K., Benton Jr, W. and Handley, S. (2022), "The moderating influence of supplier culture on the relationship between buyer power and supplier shirking", *Journal of Operations Management*, Vol. 68 No. 3, pp. 270-301, doi: 10.1002/joom.1178.

Suchek, N., Ferreira, J.J. and Fernandes, P.O. (2022), "A review of entrepreneurship and circular economy research: state of the art and future directions", *Business Strategy and the Environment*, Vol. 31 No. 5, pp. 2256-2283, doi: 10.1002/bse.3020.

Sudusinghe, J.I. and Seuring, S. (2022), "Supply chain collaboration and sustainability performance in circular economy: a systematic literature review", *International Journal of Production Economics*, Vol. 245, 108402, doi: 10.1016/j.ijpe.2021.108402.

Teece, D.J. (2000), "Strategies for managing knowledge assets: the role of firm structure and industrial context", *Long Range Planning*, Vol. 33 No. 1, pp. 35-54, doi: 10.1016/s0024-6301(99)00117-x.

Upadhayay, S. and Alqassimi, O. (2019), "A survey on understanding the perception and awareness towards a circular economy: a comparative study between Nepal and the USA", *Westcliff International Journal of Applied Research*, Vol. 3 No. 1, pp. 37-46.

Wathne, K.H. and Heide, J.B. (2000), "Opportunism in interfirm relationships: forms, outcomes, and solutions", *Journal of Marketing*, Vol. 64 No. 4, pp. 36-51, doi: 10.1509/jmkg.64.4.36.18070.

Williamson, O.E. (1985), *The Economic Institutions of Capitalism*, Free Press, New York.

Yan, T. and Kull, T.J. (2015), "Supplier opportunism in buyer–supplier new product development: a China-US study of antecedents, consequences, and cultural/institutional contexts", *Decision Sciences*, Vol. 46 No. 2, pp. 403-445, doi: 10.1111/deci.12130.

Yuan, S. and Pan, X. (2023), "The effects of digital technology application and supply chain management on corporate circular economy: a dynamic capability view", *Journal of Environmental Management*, Vol. 341, 118082, doi: 10.1016/j.jenvman.2023.118082.

Zahra, S.A., Sapienza, H.J. and Davidsson, P. (2006), "Entrepreneurship and dynamic capabilities: a review, model and research agenda", *Journal of Management Studies*, Vol. 43 No. 4, pp. 917-955, doi: 10.1111/j.1467-6486.2006.00616.x.

Zhao, X., Huo, B., Flynn, B.B. and Yeung, J.H.Y. (2008), "The impact of power and relationship commitment on the integration between manufacturers and customers in a supply chain", *Journal of Operations Management*, Vol. 26 No. 3, pp. 368-388, doi: 10.1016/j.jom.2007.08.002.

Zheng, Y., Zhao, Y. and Meng, X. (2021), "Market entrance and pricing strategies for a capital-constrained remanufacturing supply chain: effects of equity and bank financing on circular economy", *International Journal of Production Research*, Vol. 59 No. 21, pp. 6601-6614, doi: 10.1080/00207543.2020.1821926.

Appendix

Construct	Item	Source
Shirking (SH)	*If undetected, our supply chain members would* SH1: provide resources below agreed levels SH2: not assign the best and right people to perform collaborative tasks SH3: not share process improvement benefits even if they can SH4: withhold vital information beneficial to supply chain operations SH5: delay technology investments SH6: delay investments or development of their human resources	Handley and Benton (2012) and Skowronski *et al.* (2020)
Supply chain collaboration (SCC)	*Our supply chain suppliers and partners work closely in* SCC1: developing technologies SCC2: ensuring collaborative communication SCC3: creating joint knowledge SCC4: sharing or exchanging valuable resources SCC5: developing key processes and systems SCC6: achieving goal congruence SCC7: project planning	Baah *et al.* (2021) and Ramanathan and Gunasekaran (2014)
Circular economy performance (CEP)	CEP1: Our firm has improved the quality and durability of its products CEP2: Our firm has reduced supply-related risks CEP3: Our firm has decreased energy consumption, and its associated cost CEP4: Our firm has reduced waste generation and treatment, and its associated cost CEP5: Our firm has decreased material usage and its associated cost CEP6: Our firm has reduced environmental accidents and fines	Agyabeng-Mensah *et al.* (2022) and Jabbour *et al.* (2020)
Circular economy entrepreneurship (CEE)	CEE1: We continuously explore new opportunities in the domain of circular economy CEE2: We exploit novel firm-level opportunities in the circular economy to make the society and the environment better CEE3: We constantly think that proactively innovating circular-based business models is the responsibility of our firm to stakeholders CEE4: We always think that adopting and implementing alternative initiatives that are more resource-efficient, economic, environmental and social efficiency will make a substantial contribution to achieve national and global sustainable development targets CEE5: We always believe that sharing resources with supply chain partners to improve the performance of communities involved in the supply chain is the responsibility of the business	Le *et al.* (2022) and Cullen and De Angelis (2021)

Table A1.
Measurement items

Construct	Item	Source
	CEE6: We emphasize the necessity of avoiding waste based on the principles of circular economy	
Technical capability (TC)	TC1: We have the ability to design and develop environmentally friendly products	Dai and Liang (2022) and Rajadhyaksha (2005)
	TC2: We have the technical capacity to utilize renewable resources	
	TC3: We have the ability to reduce pollution in the production process	
	TC4: We have the ability to dispose of harmful materials	
	TC5: We have the capabilities to generate innovative ideas for the success of the collaboration	
	TC6: We have the ability to consistently improve our technical resources	

Table A1.   **Source(s):** Table created by authors

Corresponding author
Charles Baah can be contacted at: Charlieba3@gmail.com