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# Review Toward a sustainability organizational culture model



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## ABSTRACT

The relationship between organizational culture and corporate sustainability initiatives and practices, such as cleaner production, is widely recognized, yet little is known about an organizational culture conducive to sustainability. Cleaner production entails managing the physical aspects of production and transforming the organization's culture. However, the existing research primarily investigates a corporate culture that focuses on enhancing productivity. While research on sustainability-productive culture is scanty, it concentrates on the cultural level of artifacts of sustainability practices, leaving much unknown about the deeper cultural levels of conscious and unconscious assumptions and beliefs that constitute the essence of organizational culture. The present study aims at discovering cutting-edge knowledge on sustainability-productive organizational culture. It adapts the Integrated Systematic Literature Review framework to identify scholars from the Scopus database who have played a significant role in creating the knowledge base and their documents during the past 27 years. As a result, relevant descriptive statistics of the collective body of knowledge, two schools of thought, influential scholars, and methodological issues are derived from the literature. Two frameworks on sustainable cultural transformation and sustainability organizational culture are derived from the cutting-edge knowledge, as informed by the work of the recognized key scholars. These frameworks highlight the hitherto unacknowledged importance of a normative grounding in cultural assumptions and values, delivering cutting-edge knowledge in the field of sustainability organizational culture. Research, theoretical and managerial implications from the review are also discussed.

## 1. Introduction

Organizational culture has been emphasized as a way to integrate sustainability within an organization in cleaner production (e.g., Leite et al., 2019; Li and Hamblin, 2016) and strategic management literature (e.g., Bansal and Song, 2017; Engert et al., 2016). Cleaner production involves not just managing physical aspects of production but also transforming the culture and attitudes of organizational members (Leite et al., 2019; Vieira and Amaral, 2016). While a robust organizational culture is widely regarded as fundamental to cleaner production initiatives (Leite et al., 2019; Vieira and Amaral, 2016) and sustainability enterprises (e.g., Avery, 2005; Baumgartner, 2009; Ketprapakorn and Kantabutra, 2022), our knowledge of sustainability-productive culture is limited. Existing research on organizational culture tends to concentrate on the culture that enhances productivity (Paais and Pattiruhu, 2020; Turner, 2017) rather than sustainability (e.g., Avery, 2005; Baumgartner and Zielowski, 2007; 2009; Ketprapakorn and Kantabutra, 2022).

Sustainability-productive organizational culture is defined as shared assumptions, values, and beliefs about sustainability that shape the behavior of an organization through its decision-making and practices (Ketprapakorn and Kantabutra, 2022). This definition is based on Schein's multilayered cultural framework, which consists of three levels: underlying assumptions and beliefs, norms and values, and artifacts that reflect these (Chatman and O'Reilly, 2016; Schein, 1985).

All three facets of the culture are vitally important, but they have received unequal academic attention. Scholars have extensively investigated sustainability practices at the level of artifacts (e.g., Yadav et al., 2018; Wiljen, 2022), including cleaner production practices (Neto et al., 2017, 2017de Oliveira Neto et al., 2021). At the level of norms and values, the importance of motivations and values such as social and environmental responsibility and innovation have been recognized as critical to cleaner production (Hens et al., 2018; Nunhes et al., 2016) and corporate sustainability (e.g., Avery, 2005; Ketprapakorn, 2019). However, there has been little research into organizational vision, a value-level construct (e.g., Aung and Hallinger, 2022; Rout et al., 2021).

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The cultural level of assumptions and beliefs is essential for a holistic picture of a culture that promotes sustainability (Chatman and Choi, 2022). Still, this level has received the least attention (Isensee et al., 2020). Because assumption-level research is qualitative and immersive, some scholars believe it is context-specific, less systematic, and less reproducible (Chatman and Choi, 2022; Schein, 1985). However, solving the challenge of integrating sustainability into businesses' core operations may involve understanding the rich details and illustrations of assumptions at a deeper level that can explain behaviors associated with norms and values at a more visible level (Chatman and O'Reilly, 2016; Schein, 1985). Some researchers have proposed a conceptual framework (Tata and Prasad, 2015) and new research methodologies leveraging data technology (Chatman and Choi, 2022) that help systematically incorporate cultural assumptions and beliefs in future research. To inform our subsequent review and ensure the lack of research into the cultural level of assumptions, we conduct a preliminary review of key literature, as discussed in the next section.

## 2. Preliminary review

Our preliminary examination of different approaches to sustainability strategic management suggests an investigation into the normative basis at the assumption level of organizational culture that justifies the sustainability strategy. This finding is illustrated in Table 1, which provides examples of sustainability strategic management approaches, their underlying assumptions, and normative grounding (or lack thereof).

Sustainability integration is challenging due to competing yet interdependent economic, environmental, and social objectives (Kitsios et al., 2020). The current dominant approach, business-case logic, has not effectively addressed tensions that arise from balancing the three dimensions (Baumgartner and Rauter, 2017; Landrum and Ohsowski, 2018). An alternative approach, the paradox theory for corporate sustainability (Dzhengiz and Hockerts, 2022; Luo et al., 2020), offers potential methods to address these tensions and contribute positively to society-level sustainability. Despite multiple approaches, challenges of sustainability integration are frequently overlooked in research (Hahn et al., 20189; Kitsios et al., 2020) and practice (Heras-Saizarbitoria et al., 2022; Landrum and Ohsowski, 2018). Given that strategy is an expression of organizational assumptions (Baumgartner, 2009; Darling, 2017; Ketprapakorn and Kantabutra, 2022), research into normative assumptions in organizational culture connected to sustainability may be necessary.

Therefore, this paper's main contribution is to discover cutting-edge knowledge on sustainability-productive organizational culture and integrate it into coherent sustainability organizational culture frameworks by focusing on normative assumptions.

After the preliminary literature review, in the remainder of this paper, we start our subsequent systematic review by defining the sustainability organizational culture concept and introducing the knowledge gaps from which we create research questions. We follow by explaining the methodology used to answer the research questions. Specific findings from each analysis are reported and critically discussed, followed by the presentation of two new sustainability organizational culture frameworks derived from the review. We next conclude our study by providing an overall discussion of the review to portray the landscape of the SOC field, followed by research, theoretical, and managerial implications drawn explicitly from the study. Specific implications for theory and practice on cleaner production are also discussed.

## 3. Defining sustainability organizational culture (SOC)

Given that there is ongoing definitional confusion concerning the various associated concepts such as philosophy, culture, vision, mission, and even business ideas (Hickman, 2010; Kantabutra, 2020), we need to

<b>Fable 1</b> Various sustaina	bility strategic management perspectives and underlying assu	mptions.		
Approach	UNGC 2014	Baumgartner and Rauter (2017)	Williams et al., (2017)	Hahn et al., (2018)
	Ethics and responsibility	Strategic management	Systems perspective	Paradox theory
Core concepts	Corporate sustainability is a company delivering long-term value in financial, environmental, social, and ethical terms. It entails operating with integrity and respecting fundamental human	The strategy process, content, and context work together to encourage businesses to integrate sustainability issues into their	Sustainability is defined by persistence, adaptation, and transformation or transition in the face of dynamic environmental	Corporate sustainability is a business's contribution to sustainable development at the societal level by simultaneously achieving interdependent, conflicting
Underlying	rights, labor, environment, and anti-corruption responsibilities. Businesses' societal duties should be governed by virtue and	operations. Business-case or win-win scenarios satisfy	pressures. Basic assumptions are the management	sustainability objectives. Businesses have broader responsibility for
Assumptions	morality, distinguished between right and wrong.	three criteria: environmental integrity, economic prosperity, and social equity.	philosophy and emerging sustainability issues that can influence management philosophy and trigger changes.	environmental and social concerns, which are objectives in and of themselves, regardless of their effect on the bottom line
Normative Basis	Maximizing a moral principle (deontology)	Economic mandates of firms as a means of survival	Organizations are complex systems that need constant maintenance of equilibria.	NA

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define "sustainability organizational culture" for the present review in this section.

Most researchers agree with Schein (1985)'s framework, which states that there are three levels at which an organizational culture can be conceptualized: basic assumptions and beliefs, norms and values, and cultural artifacts (Chatman and O'Reilly, 2016). Organizational culture is learned responses in which basic assumptions and beliefs are shared and "taken-for-granted" by organizational members from the perspective of the organization and its operating environment (Schein, 1985). Assumptions and beliefs materialize as social controls implemented via norms or social expectations regarding appropriate attitudes and behaviors that will allow the organization to realize its objective (Chatman and O'Reilly, 2016; Schein, 1985).

The 1990s saw the beginning of organizational culture's pivotal significance in corporate sustainability research. Some scholars contend that for businesses to respond to social and environmental challenges effectively, they must undergo a fundamental cultural revolution (Howard-Grenville, 2006; Lok and Crawford, 1999) and abandon their traditional profit-first orientation. To ensure a smooth transition, organizations must cultural characteristics that contribute to or detract from organizational sustainability is essential for achieving corporate sustainability (Pennington and More, 2016). Based on these findings, Baumgartner (2009) concludes that a sustainable business must first establish a culture that promotes long-term success.

Although there are different definitions of sustainability-productive organizational culture (Ketprapakorn and Kantabutra, 2022), they all point to a balance between social, environmental, and economic outputs as the driving force behind an organization's mindset. Most recently, Kantabutra (2021) has coined the term "sustainability organizational culture" as an organizational culture that is especially productive in terms of delivering sustainability performance. Accordingly, this study defines a sustainability organizational culture as one with underlying shared assumptions, values, and beliefs about solving sustainability problems that nurture organizational behavior via corporate decision-making and practices (Ketprapakorn and Kantabutra, 2022). The ultimate goal of sustainable development is to foster an organizational culture that contributes to making a company sustainable.

## 4. Gaps in knowledge and research questions

Regarding specific knowledge gaps for research, a challenge for future research is that SOC research focuses on particular areas or is based on case studies or grounded theory. For example, Linnenluecke and Griffiths (2010) and Linnenluecke et al. (2009) demonstrated the subculture's influence on sustainability understanding in an organization. Concerning research methodology, Galpin et al. (2015) drew on practitioner experience and empirical evidence to build a process for creating sustainability-oriented culture. Kantabutra (2021) identified cultural components from a case study focusing on vision, shared values, and practices. These diverse methodological approaches result in several distinct and sometimes idiosyncratic SOC frameworks (Eisenhardt, 1989), making it challenging for business leaders and scholars to comprehend the SOC knowledge base easily. As a result, there is a need to develop a unified framework on SOC, the first knowledge gap.

Second, a multidimensional understanding of organizational culture is necessary to integrate sustainability into an organization. Organizations are multifaceted because they obtain legitimacy and support from the institutional settings (Meyer and Rowan, 1977), trade resources with their environment as a survival requirement (Pfeffer and Salancik, 2003), and are constrained by networks of organizational actors (Baker et al., 1992). However, a sustainability organizational culture framework that considers organizations multifaceted is very rare, making it difficult to understand the sustainability organizational culture phenomenon since, by nature, organizational culture is highly dynamic (Ketprapakorn and Kantabutra, 2022). This insufficient knowledge points out a necessity to discover to which extent the existing SOC research takes the multifaceted aspect into account, another knowledge gap.

Third, Schein's multilayered organizational culture model describes a culture in depth (Schein, 1985). Culture manifests itself at three levels through a variety of phenomena. There are overt visible manifestations at the artifact level, whereas there are deep, concealed, and unconscious assumptions at the underlying assumption level. Between these two levels reside expressed beliefs, values, norms, and governing behavioral rules. Because of the underlying assumptions, what occurs at the artifact level may or may not correspond to the proclaimed or espoused values. While some are known about the SOC artifact and values and beliefs levels, very little is known about the SOC assumptions (Ketprapakorn and Kantabutra, 2022), the fundamental level of culture.

Finally, although our preliminary search shows that the existing systematic reviews of "sustainability organizational culture" research have uncovered normative aspects that influence sustainability, no comprehensive theoretical framework has been offered to explain this relationship (see Table 2). As shown in Table 2, some of the factors that promote corporate sustainability include national cultural values (Elbaz and Iddik, 2020), transformational leadership (Cicea et al., 2022), employees' and leaders' mental states and attitudes (Isensee et al., 2022), and social factors (Cicea et al., 2022). The well-established multi-layered cultural model (Schein, 1985) and related cultural processes (Hatch, 1993) may provide a comprehensive framework for understanding the relationships between these various factors that impact an organization's motivations and management of sustainability integration (Vásquez-Rivera, 2017).

Some scholars address organizational culture's role from an ethics and CSR perspective, and others do so from a sustainability perspective. For example, McWilliams and Siegel (2001) point out from a CSR perspective that the firm needs to go beyond compliance and engage at a deeper level in "actions that appear to further some social good, beyond the interests of the firm and that which is required by law." Brammer et al. (2007) further point out the importance of religious denominations and attitudes toward CSR, while Hahn et al. (2018) outline the descriptive, instrumental, and normative aspects of a paradox perspective to improve the prospect of corporate sustainability. None of these scholars addresses a holistic view of the focal sustainability organizational culture by explicitly providing the input, throughput, and output knowledge about the sustainability organizational culture phenomenon, which is critical to enhancing our understanding of the cultural phenomenon (Bertalanffy, 1969).

With an overarching goal of discovering cutting-edge SOC knowledge, the present study seeks to explore the knowledge of scholars who have produced research work on SOC during the past 27 years. We seek the answers to the following research questions:

RQ 1. What are the growth trajectory, volume, and distribution of the SOC literature?

RQ 2. Who are the highest-impact authors, and what are the highest-impact articles on SOC?

- RQ 3. What is the intellectual structure of SOC literature?
- RQ 4. What concepts and theories have been most influential in shaping the SOC knowledge base?
- RQ 5. What are the methodological issues in the existing SOC knowledge base?
- RQ 6. What is the cutting-edge body of SOC knowledge?

## 5. Methodology

The Integrated Systematic Literature Review or ISLR framework (Ketprapakorn, 2019) is adapted for the present study. In order to address the drawbacks of existing review methodologies, the ISLR framework combines the bibliometric analysis procedure and the

Systematic review studies of organizational culture relating to sustainability.

Period	Cicea et al., (2022)	Elbaz and Iddik (2020)	Isensee et al., (2020)
	1991–2020	2001–2020	2009–2019
Sample size Method Purpose Theory components (	397 Bibliometric analysis To update the existing cultural research in a changing environment governed by sustainability goals. Determinants Impact	46 Bibliometric analysis To examine the role of culture in green supply chain management. Process knowledge	80 Meta-analysis & quantitative path analysis To develop an integrative view of organizational culture in SME, environmental sustainability, and digitalization. Process knowledge
Dubin, 1976) Cultural elements	Transformational leadership Social factors	National cultural values Organizational values	Employees' and leaders' mental states and attitudes

grounded theory methodology to create a cutting-edge model. Our adapted ISLR procedure starts with a preliminary search for relevant keywords, then identifies qualified SOC literature, analyzes the distribution and growth of the SOC literature, performs a bibliometric analysis, identifies main results from the analyses, research gaps, and challenging opportunities for future research.

As part of the ISLR framework, the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) are adopted. In our bibliometric analysis, we use VOSviewer to visualize the literature. We also adopt the Grounded Theory methodology to derive the main accumulated bodies of SOC knowledge and guide our SOC framework development accordingly. Each stage is explained below.

## 5.1. Preferred Reporting Items for Systematic Reviews and Meta-analysis

According to Page et al. (2021), the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines for reporting systematic reviews can be used to report the identification of sources for the study (Page et al., 2021). Accordingly, the Scopus database is chosen to collect bibliometric data because it meets three criteria for answering the research questions: broad and reliable citation coverage, robust author identification, and compatibility with bibliometric analysis software packages (Baas et al., 2020; Gasparyan et al., 2017; Guz and Rushchitsky, 2009; Harzing and Alakangas, 2016; Martín-Martín et al., 2021; Mongeon and Paul-Hus, 2016). Several studies have compared the commonly used sources of documents used in bibliometric analyses: Thomson Reuters' Web of Science or WoS (Gasparyan et al., 2017), Elsevier's Scopus, and Google Scholar (Falagas et al., 2008; Harzing and Alakangas, 2016; Martín-Martín et al., 2021; Mongeon and Paul-Hus, 2016). Although Scopus and WoS share a high percentage of citations, Scopus has more article citation coverage than WoS (Martín-Martín et al., 2021). Thus, the WoS is not chosen because of its limited coverage (Li et al., 2010). We exclude Google Scholar from our present study because its citation information is insufficient, less frequently updated, and has inconsistent accuracy (Martín-Martín et al., 2018; Walters, 2007).

Compared to newer database sources, Scopus overlaps with Microsoft Academic and Dimension in business, economics & management (Martín-Martín et al., 2021). Scopus provides unique identifications and searchable profiles for all authors, institutions, and periodicals (Gasparyan et al., 2017; Pranckutė, 2021) and works with MS Excel, VOS viewer, and Tableau. Consequently, the Scopus database meets the needs of the current review of SOC literature. The Scopus database is also frequently chosen for a meta-synthesis of bibliometric reviews of research specifically on managing for sustainability (Hallinger, 2020).

The search scope is restricted to peer-reviewed journal publications (articles and reviews in the Scopus database) to ensure that only credible and high-quality documents are included (Kelly et al., 2014). Only English is the language of sources. Given that we want to review the entire field of SOC, the Scopus search timeframe was left undefined, allowing the Scopus search engine to locate all relevant documents regardless of publication date. The first relevant Scopus-indexed document was published in 1995. The search is restricted to 2021 because it is when we

collected the data (October 2021). In particular, the sustainability management literature grew slowly in the 1980s and 1990s, accelerated in the 2000s, and rapidly after 2010, with 78% of the Scopus-indexed literature on sustainability management published since 2010 (Hallinger, 2020). Therefore, the starting year of 1995 likely encompasses all relevant SOC literature.

To accommodate the SOC topic's multidisciplinary nature, we define the scope of the study using keywords rather than journals. The keyword "sustainability organizational culture" is chosen to reflect organizational culture's conceptual evolution that aligns with business strategies (Darling, 2017; De Long and Fahey, 2000; Rashid et al., 2003; Slater and Narver, 1995). While the terms organizational culture and corporate culture share the same meaning according to Schein's definition (Schein, 1985), we do not include "corporate culture" in the keyword search. Corporate culture is occasionally used to emphasize something other than organizational cultures, such as a tool for profit maximization, a set of understood rules with normative implications, or a source of corporate reputation (Camerer and Vepsalainen, 1988; Ogbor, 2001; Ray, 1986). By excluding the term corporate culture, the study prevents outliers from undermining the validity of the results.

The study starts by including 1327 documents from the Scopus database that consists of the search terms "sustainability organizational culture," "sustainability-oriented organizational culture," or "sustainability-productive organizational culture" in the title, abstract, or keywords.

Scopus filters narrow the database to 1005 documents based on the specified time frame, language of sources, and document types. We manually evaluate full-text articles for eligibility and remove 70 articles that primarily focus on the sustainability of specific health or medical "programs," yielding a final database of 935 documents. The search database was collected on October 16, 2021.

## 5.2. The bibliometric analysis

The present study adopts the bibliometric analysis to pinpoint relevant descriptive statistics of the knowledge. A science map is also constructed using bibliometric analysis. Statistical techniques are employed in the bibliometric analyses to identify, characterize, analyze, and track the accumulation of knowledge in the SOC field through time in a systematic, transparent, and repeatable way (Kulakli, 2021; Merton and Storer, 1974; Zupic and Čater, 2015). Subjective bias is removed by studying aggregated bibliographic data rather than by evaluating research output or scrutinizing specific findings (Zupic and Čater, 2015). Because the concept of SOC is derived from several fields of study, such as sustainable development, corporate sustainability strategy, organizational behavior, and organizational culture, bibliometric analysis is an appropriate tool for defining the conceptual limits of the SOC field, its place within the domains of strategy, management, and organizational behavior, as well as the evolving cognitive structure (Börner et al., 2003; Zupic and Cater, 2015). We use VoSviewer to construct a science map because it provides us with distance-based visualizations of bibliometric networks. With Vosviewer, we can also explore a variety of visualizations of the science mapping to ensure a clear mapping illustration (van

Eck and Waltman, 2014), making it appropriate for the present SOC study.

Bibliographic data of the 935 documents are downloaded and exported to an MS Excel file. Titles, article types, authors, affiliations of authors, keywords, abstracts, citations, journal names, publication years, volumes, issues, and a list of references are all included in the file. We clean the data by combining different spellings and abbreviations of authors, journals, and words into a single spelling, removing all others, and saving them in a thesaurus file. The file is then used to filter data during VOS viewer analysis (van Eck & Waltman, 2014). Irrelevant keywords in the SOC field are removed, including "article," "adult," "male, 'female," and others.

A science map consists of nodes representing journals, authors, or keywords. Since science maps are typically weighted bibliometric networks, edges demonstrate a relation between one node and another (van Eck and Waltman, 2014). By performing citation and co-citation analyses, the bibliometric analysis methodology offers an overall picture of knowledge trends via a science map (Cobo et al., 2011).

The citation analysis is adopted as a measure of impact in the present study because only a certain number of journals provide distinctive download numbers (Plume and Kamalski, 2014; Watson, 2009). As opposed to the bibliographic coupling and direct citations, the co-citation approach is chosen to identify research fronts, given the following reasons: (a) the direct citation approach was empirically identified as the least precise approach (Boyack and Klavans, 2010); (b) the co-citation approach produces topically coherent and distinctive research fronts (Braam et al., 1991); and (c) the bibliographic coupling approach is usually appropriate for extrapolating the similarity of a matter concerning two subjects (Surwase et al., 2011), irrelevant for the present study.

We use document and author co-citation analysis units to measure the sustainability organizational culture knowledge base because they directly guide us in identifying the cutting-edge SOC knowledge in terms of its relational features and structure (Zupic and Cater, 2015). Finally, the citation analysis is adopted to compute the occurrence with which a Scopus document has been cited.

## 5.3. The grounded theory approach

This section discusses how to derive a cutting-edge SOC framework via the grounded theory methodology. Grounded theory is an approach to constructing a theory based on systematically collected and analyzed data (Glaser and Strauss, 1967). Given the key body of knowledge derived from the preceding bibliometric analysis, journal articles are chosen from influential SOC authors identified from author and document co-citation and citation analyses, forming the base for our study in this last stage.

Adopting the grounded theory approach, we interactively compare, contrast, catalog, and classify the SOC literature. We read all identified articles to derive emerging data themes from the Open coding technique. We then combined these codes into concepts called open codes. Usually, this process results in multiple open codes, which we need to recombine closely linked codes into integrated main concepts or core codes. This process is called Axial coding. Next, the selective coding process involves the identification of focal and influential core codes.

It can be expected that the focal core code emerging from the body of knowledge derived from the axial coding process is about corporate sustainability since it is the fundamental phenomenon of the present study. All other core codes are influential core codes associated in one way or another with the focal core code. Based on the literature we have read, how the focal core and influential core codes are related is identified. These identified relationships form the SOC framework, the cutting-edge knowledge derived from our study.

Finally, as described in ISLR, implications for researchers and managers have been identified and discussed.

## 6. Discussion of the results

Our analyses bring the following results as the answers to the research questions. The SOC literature's growth trajectory and distribution are first presented and discussed. Then, we discuss the results of the author and document citation and co-citation analyses, offering significant insights into the SOC knowledge base.

### 6.1. Analysis of growth trajectory and literature distribution

To answer Research Question 1, we consider the collective body of SOC knowledge. From our analysis, there are four phases of SOC scholarship development, as shown in Fig. 1.

The first phase is the pre-growth period (1995–2001), with 12 documents found (less than two each year). The second phase is called the emergent stage (2002–2008), with 80 papers founded (11 each year), followed by the steady growth stage (2009–2016), with 357 documents founded (45 each year). The final stage is the fast growth stage (2017–2021), with 486 papers (97 each year).

These four phases coincide with the global initiatives aimed at achieving sustainable development that began in 1990. The announcement of the 17 Sustainable Development Goals (UN SDGs) at the United Nations Sustainable Development Summit in 2015 sparked a rise in business adoption (Emelianova, 2020). The acceleration stage appears to correspond to an increased awareness of the climate crisis and the urge for business groups to respond to it (Wright and Nyberg, 2017). The impact of global sustainability initiatives, as well as the corresponding knowledge generation and accumulation, is, however, imbalanced geographically (see Table 3).

The SOC scholarships began in a few developed nations and have grown in other developed countries. The 2015 UN SDG declaration increased the number of contributing countries to SOC scholarships from 58 to 91. The contribution of the top three countries (the United States, the United Kingdom, and Australia) has declined from steady growth to fast growth periods. In contrast, contributions from other developed and developing countries increased by 89 and 513 percent, respectively. However, developed countries (32 percent of the contributing countries) still account for 89 percent of total SOC articles.

It can be concluded that the SOC field has continued to generate significant interest among researchers globally. Although much of the knowledge development is contributed by the developed nations, we begin to see some contribution from the less developed world.

## 6.2. Analyses of citation and co-citation

The results of citation and co-citation analyses are presented and discussed below to answer Research Question 2. We adopt the author and document as the two units of analysis.

#### 6.2.1. Analyses of author citation and co-citation

According to McCain (1991), bibliometric analysis can identify scholars who have produced vital knowledge and documents. To find scholars, research focus, nations of origin, and a number of documents, citations, and co-citation analyses are employed. We finally rank the scholars by the number of citations (see Table 4).

As informed by the citation analysis, the United Kingdom, Europe, and Australia are home to the most influential SOC researchers. Among the top-ten scholars, Van Dierendonck (684) (van Dierendonck, 2011) is a recognized authority on servant leadership; Baumgartner (573) (Baumgartner, 2009, 2014; Baumgartner and Ebner, 2010; Baumgartner and Zielowski, 2007), Linnenluecke (510) and Griffiths (510) (Linnenluecke and Griffiths, 2010; Linnenluecke et al., 2009) are recognized authorities on sustainable strategy and management; and Garetti (450) and Taisch (450) (Garetti and Taisch, 2012) are recognized authorities on sustainable manufacturing and supply chain management. From this analysis, we conclude that the SOC field is associated with servant



Fig. 1. Growth trajectory of SOC, 1995–2021. Note: N = 935.

Table 3Number of SOC documents by contributing countries, 1995–2021.

	Stage/Period			
Countries	Pre-growth 1995–2001	Emergent 2002–2008	Steady growth 2009–2016	Fast growth 2017–2021
US	2	25	124	97
UK	2	16	53	60
Australia	-	9	48	43
Other developed countries	3	16	106	201
Other developing countries	1	9	16	82
Undefined	4	5	10	9
Total documents	12	80	357	486
Total countries	6	29	58	91

Note: N = 935.

leadership, sustainable strategy and management, and sustainable manufacturing and supply chain management, possibly because, in general, the concepts of leadership, organizational culture, strategy, and sustainability have long been closely related. The beliefs, values, and behaviors of corporate leaders influence the formation of organizational cultures (Schein, 1983), and the leadership role is to stabilize the organization amidst changing environments (Sharaaz, 2014). A well-designed organizational culture is considered an effective strategic tool for responding to such changes (Sharaaz, 2014). Organizational culture also affects "the way we do things around here" (Deal and Kennedy, 1982), influencing the management of manufacturing and supply chain, a core business operation. In particular, the servant leadership theory emphasizes creating and nurturing a serving culture with the underlying values of trust, honesty, and consideration. In the serving culture, leaders maintain the value of community and provide growth opportunities for its members (Setvaningrum, 2017). Sustainability is considered an outcome of Servant Leadership (van Dierendonck, 2011).

Almost every notable author on the top ten list has only a few (one to two) publications, except for Baumgartner, who has nine. This notion is understandable since none of the primary contributors is a known expert on organizational culture, given their publications record. Van Dierendonck (684) holds the greatest number of citations from a single review paper focusing on servant leadership's qualities and its mediating roles on SOC (van Dierendonck, 2011). The remaining academics are experts in sustainability management and strategy, sustainable manufacturing and supply chain management, and other relevant fields. They are identified because their work has, in one way or another, contributed to the SOC field. They are indeed scholars who form the foundation for the SOC field.

We use author co-citation analysis to find influential scholars in the SOC field (Table 5). The results of the co-citation analysis can give a complete picture of the effect on SOC articles from sources other than the Scopus-indexed database (Hallinger and Nguyen, 2021; White and McCain, 1998). The author co-citation analysis also offers us an understanding of the foundation knowledge of the SOC field. Based on the author co-citation analysis, only three scholars on the list of top-20 scholars for citations appear on the list of top-20 authors for co-citations: Griffiths; Baumgartner; and Gunasekaran, making them the most influential scholars in the SOC field.

Given that the field of SOC is in its nascent stage and neither Griffiths, Baumgartner nor Gunasekaran is considered an organizational culture scholar, we analyze further for more influential authors by identifying scholars with more than 50 citations. Our further analysis reveals that three additional scholars appear on the top list for citations: Jabbour, Lozano, and Kantabutra. Based on our author citation and cocitation analyses, Griffiths, Baumgartner, Gunasekaran, Jabbour, Lozano, and Kantabutra have emerged as the most influential SOC scholars. The result is broadly consistent with one of the most recent reviews (Ketprapakorn and Kantabutra, 2022) on SOC, where the SOC models by Baumgartner (2009), Linnenluecke and Griffiths (2010) and Ketprapakorn and Kantabutra (2019a) were identified as the few SOC models available.

When we look into the work of these six scholars more closely, they either work in the areas of corporate sustainability strategy and management (Griffiths, Baumgartner, Lozano), sustainable supply chain (Gunasekaran, Jabbour), or leadership and organization (Kantabutra). It is not a surprise that scholars in these areas were co-cited in the SOC field because organizational culture is based on the behavior of the organization's leader and the larger culture of which the organization is a part (Krapfl and Kruja, 2015). In addition, scholars who work in sustainability strategy management and sustainable supply chain management also view organizational culture and supply chain culture as a

Top scopus citation authors on SOC, 1995–2021.

#	Author	Nation	Focus	# of Publications	Scopus Citation
1	Van Dierendonck, D.	NL	Leadership	1	684
2	Baumgartner, R. J.	AT	Sustainability management & strategy	9	573
3	Linnenluecke, M. K.	AU	Sustainability management &strategy	2	510
3	Griffiths, A.	AU	Sustainability management &strategy	2	510
4	Garetti, M.	IT	Sustainable manufacturing & SCM	1	450
4	Taisch, M.	IT	Sustainable manufacturing & SCM	1	450
5	Dixon-woods, M.	UK	Medical sociology	1	286
5	Martin, G.	UK	Medical sociology	1	286
5	McNicol, S.	UK	Medical sociology	1	286
6	Papadopoulos,	UK	Sustainable	3	240
	Τ.		manufacturing & SCM		
7	Burch, S.	CA	Sustainability management & strategy	1	239
8	Childe, S. J.	UK	Sustainable manufacturing & SCM	2	235
8	Dubey, R.	UK	Sustainable manufacturing & SCM	2	235
8	Gunasekaran, A.	US	Sustainable manufacturing & SCM	2	235
8	Roubaud, D.	FR	Finance	2	235
9	Crane, A.	UK	Sustainability management & strategy	1	229
9	Harris, L. C.	UK	Sustainability management & strategy	1	229
10	Henn, R.	US	Creative industry organization	1	221
10	Hoffman, A. J.	US	Sustainability management & strategy	1	221
11	Azpagic, A.	UK	Sustainable chemical engineering	1	191

strategic approach to improve operational effectiveness (Ketprapakorn, 2019).

#### 6.3. Analyses of a document citation and co-citation

To further answer Research Question 2, we perform a similar analysis on publications for citations and co-citations to identify the most influential documents in the SOC literature. The list of the top 20 SOC articles for citations (Table 6) provides an understanding of the organizational locus of these articles. As expected, more than half of the most frequently cited papers are those written by the top citation authors. Of the top 20 articles, only five by Linnenluecke, Harris, Hoffman, Baumgartner, and Denison are about SOC. Only Baumgartner is identified by the author citation and co-citation analyses as an influential SOC scholar. However, Linnenluecke has produced SOC knowledge with Griffiths, another influential SOC scholar.

Based upon the top-cited documents by Linnenluecke, Harris,

Table 5

Top Co-citation authors on SOC, 1995–2021.

#	Author	School of Thought	Co-citations
1	Schein, E. H.	Org culture, leadership, and change	204
2	Hofstede, G.	Org culture, leadership, and change	128
3	Griffiths, A.	Sustainability management & strategy	122
4	Sarkis, J.	Sustainable manufacturing & SCM	116
5	Jabbour, C. J. C.	Sustainable manufacturing & SCM	107
6	Senge, P. M.	Org culture, leadership, and change	105
7	Lozano, R.	Sustainability management & strategy	104
8	Porter, M. E.	Sustainability management & strategy	100
9	Hair, J. F.	Frameworks and methods	96
9	Quinn, R. E.	Org culture, leadership, and change	96
10	Barney, J. B.	Frameworks and methods	89
11	Yin, R. K.	Sustainability management & strategy	88
12	Schaltegger, S.	Sustainability management & strategy	84
13	Baumgartner, R. J.	Sustainability management & strategy	82
13	Gunasekaran, A.	Sustainable manufacturing & SCM	82
14	Elkington, J.	Sustainability management & strategy	69
15	Kantabutra, S.	Sustainability management & strategy	67
16	Eisenhardt, K. M.	Sustainability management & strategy	65
16	Freeman, R. E.	Org culture, leadership, and change	65
17	Zhu, Q.	Sustainable manufacturing & SCM	63

Hoffman, Baumgartner, and Denison, it is clear that SOC scholars have been on their quest to improve corporate sustainability performance via different cultural levels. In particular, all the highly-cited documents are about espoused beliefs and values, suggesting that SOC scholars have focused their research on this level. Among the few that focus on the assumption or the unconscious, taken-for-granted belief level, they are influenced by business logic. Their business thinking only focuses on sustainability initiatives that pay off economically. The cultural level of artifacts has also been demonstrated as a focus of SOC scholars since many of the highly cited documents address sustainability practices, encapsulating sustainability beliefs and values (Kantabutra and Ketprapakorn, 2020). This critical review of the highly cited papers here endorses our view that the cultural level of shared basic assumptions has not so far been the focus of SOC scholars.

Compared to trends observed in other sustainability management literature (Hallinger, 2020), the top-cited SOC publications' citation counts are in the moderate range. Eighty-five percent of the most cited publications were published after 2009 by primarily Western scholars. Interestingly, between 2017 and 2021, two documents were produced by authors from developing nations: Masri from Palestine (Masri and Jaaron, 2017) and Lopes from Brazil (Lopes et al., 2017). Although the top-cited SOC publications were published after 2009, our additional analysis indicates that organizational culture was studied in the sustainability context long before. Not least, Avery (2005) has been reporting the role of a strong organizational culture in sustainable enterprises since 2005 in her Leadership for Sustainable Futures textbook, currently with Google Scholar citations of 261. Many other studies have also found similar results elsewhere and reported them as a robust, coherent, or cohesive organizational culture (e.g., Kantabutra, 2017; Ketprapakorn and Kantabutra, 2019a; Suriyankietkaew, 2019). Nonetheless, the SOC field is still in its infancy.

Based on their titles and abstracts, the top-cited publications focus on identifying the enablers and barriers to corporate sustainability and developing frameworks for integrating organizational culture into sustainability management. These top-cited papers are grouped into three categories: one research review, seven conceptual papers, and twelve empirical studies (Table 6). We explore the methods used in the empirical research. Over half of the empirical research adopts qualitative methods such as case studies, comparative case studies, interviews, textual analysis, and grounded theory building (Baumgartner, 2009; Burch, 2010; Harris and Crane, 2002; Hoffman and Shipper, 2018; Lopes et al., 2017; Siebenhüner and Arnold, 2007). This finding suggests that SOC scholarship is at the conceptual development rather than the assessment stage (Ketprapakorn and Kantabutra, 2022). Particularly,

Top cited articles on SOC, 1995-2021.

#	Author and Title	Focus	Year	Scopus Citations	Туре
1	Van Dierendonck. Servant leadership: A	Servant leadership characteristics	2011	684	Rev
2	Garetti. Sustainable manufacturing: trends and research	A roadmap for future manufacturing	2012	450	Con
3	challenges Linnenluecke. Corporate sustainability and	research The link between organizational culture and	2010	384	Con
4	organization culture. Dixon-woods. Ten challenges in improving quality in	sustainability Lessons from the Health Foundations' improvement	2012	286	Con
5	health care: Baumgartner. Managing corporate sustainability and CSB:	Management framework for sustainability	2014	249	Con
6	Burch. Transforming barriers into enablers of action on climate	Barriers and levers for climate actions	2010	239	Emp
7	change: Harris. The greening of organization culture:	Values and beliefs in green management	2002	228	Emp
8	Hoffman. Shared core values of high performing employee- owned enterprise.	Core values in performing employee-owned enterprises	2008	221	Emp
9	Azapagic. Systems approach to corporate sustainability:	A systems framework for sustainability management	2003	191	Con
10	Denison. Culture in family-owned enterprises:	Family business culture and performance	2004	180	Emp
11	Siebenhüner. Organizational learning to manage sustainable development	Sustainability- oriented learning	2007	169	Emp
12	Dubey. Can big data and predictive analytics improve social and environmental	Big data and social, ecological performance	2019	144	Emp
13	sustainability? (#123) Baumgartner. Organizational culture and leadership:	Management framework for sustainability	2009	143	Emp
14	Di Fabio. Positive, healthy organizations:	Healthy organization concept	2017	140	Con
14	Davis. Advancing socio-technical systems thinking	Broadening the socio-technology framework	2014	140	Emp
15	Masri. Assessing green human resources management practices	Green HRM empirical study	2017	124	Emp
15	Linnenluecke. Subcultures and sustainability practices:	Subcultures and corporate sustainability practices	2009	124	Emp
16	Smith. The shift needed for sustainability	Organizations' shift towards the triple bottom line	2011	116	Emp
17	Bonn. Sustainability: the missing ingredient in strategy	Sustainability strategy framework	2011	106	Con
18	Lopes. An analysis of the interplay between	Knowledge management and	2017	104	Emp

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Table 6 (continued)

# Author and Title Focus Year Scopus Citations Type Citations   organizational open innovation sustainability, driving driving knowledge sustainability   management, and open innovation - - - - -		- (				
organizational open innovation sustainability, driving knowledge sustainability management, and open innovation	#	Author and Title	Focus	Year	Scopus Citations	Туре
		organizational sustainability, knowledge management, and open innovation	open innovation driving sustainability			

(Rev: Review, Con: Conceptual, Emp: Empirical).

how an organizational culture in sustainable organizations affects sustainability performance is relatively mysterious (Isensee et al., 2020; Srisathan et al., 2020), requiring the qualitative approach to research. Further, Miska et al. (2018) agree that empirical knowledge in this area is fraught with critical issues, preventing scholars from gaining a holistic understanding. This argument necessitates the conceptual paradigm of research.

In addition to the citation analysis, we employ the co-citation analysis to provide a complete view of the publications that influenced SOC literature development (Table 7). The co-citation analysis also provides a better understanding of the foundation knowledge in the SOC field. Based on the analysis, it is not surprising that the SOC field is built upon knowledge predominantly from the strategic management field, including those from Barney, Dyllick, and Muff. Only two articles by Linnenluecke and Baumgartner are directly about SOC. The rest of the articles are concerned with the methodology used to develop the SOC field, such as thematic analysis, theory building, and structural equation modelling.

Based on the document citation and co-citation analyses, we can identify two documents that appear on both rankings. The first is "Organizational learning to manage sustainable development" by Siebenhüner and Arnold (2007). The second one is "Organizational culture and leadership" by Baumgartner (2009). We can conclude that both documents are the most influential in the SOC field. To our surprise, Siebenhüner and Arnold do not appear on both author citations and co-citations rankings. This finding suggests that, while their work is fundamental to the SOC field, their published research has not directly addressed the role of organizational culture in sustainable development. After our closer examination of their published work, it is about processes of learning and changes to integrate sustainability in companies. Similarly, the most influential document by Baumgartner (2009) is about how to integrate sustainability in business operations via organizational culture since it provides a framework on how corporations can incorporate sustainability in the levels of organizational culture: artifacts, values, and basic assumptions. We can conclude at this stage that the interest among SOC scholars has so far been about the strategic integration of sustainability in an organization.

From these top highly co-cited documents, we can draw that organizational culture is viewed as a strategic tool to improve economic, natural, and social capital. That is possibly why the SOC literature has been built upon the strategic management literature, particularly the Resource-based View by Barney. Specific to SOC, it is clear from the highly co-cited documents by Linnenluecke and Baumgartner that SOC scholars have been searching for a culture development framework that helps to enhance corporate sustainability practices and performance.

Regarding the development timeframe, almost half of the most frequently referenced articles were published before 1995 and are thus not indexed in the Scopus database. However, three of the top 20 articles for co-citations by Baumgartner (2009), Linnenluecke and Griffiths (2010), and Siebenhüner and Arnold (2007) are included in the top-cited document list (Table 7), making them the most influential documents in the SOC field. Indeed, they indicate an early effort to define the conceptual boundaries of the SOC domain. Within the three most influential papers in the SOC field, only Baumgartner (2009) discussed cleaner production activities as part of a conservative strategy

Тор	Co-cited	references	for	SOC	research,	1995–2021.
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#	Author (Year) and Title	Focus	Year	Co- citations
1	Linnenluecke. Corporate sustainability and organization culture	The link between organizational culture and sustainability	2010	31
2	Barney. Firm resources and sustained competitive advantage	The link between firm resources and competitive advantage	1991	19
3	Dyllick. Beyond the business case for corporate sustainability	Three types of capital relevant to corporate sustainability	2002	15
4	Muff. Rethinking corporate sustainability with the "well-being" context: (, #199)	"COGWHEEL" framework for corporate sustainability	2014	13
5	Braun. Using thematic analysis in psychology.	Rigorous guidelines to use qualitative thematic analysis	2006	12
6	Eisenhardt. Building theories from case study research.	The process of inducting theory using case studies	1989	10
7	DiMaggio. The iron cage revisited: Institutional isomorphism	Three isomorphic processes of organizations	1983	9
7	Fornell. Structural equation models with unobservable variables	The argument for the structural equation model	1981	9
8	Quinn. A spatial model of effectiveness criteria:	Competing Value Framework for organizational analysis	1983	8
8	Schein. Coming to a new awareness of organizational culture.	Definition of organizational culture	1984	8
8	Siebenhuner. Organizational learning to manage sustainable development.	Explanatory factors for sustainability-oriented learning	2007	8
8	Tranfield. Toward a methodology for developing evidence- informed management knowledge	Application of the systematic review in the management field	2003	8
9	Anderson. Structural equation modelling in practice:	Use of structural equation modelling for theory testing	1988	7
9	Bansal. Evolving sustainably: a longitudinal study of corporate	Examination of organizational determinants for	2005	7
9	Baumgartner. Organizational culture and leadership:	Sustainability management framework	2009	7
9	Podsakoff. Self-reports in organizational research:	Classifications of self- reports and remedies for biases	1986	7
10	Armstrong. Estimating nonresponse bias in mail surveys	Methods to improve the quality of mail surveys	1977	6
10	Carter. The role of purchasing in corporate social responsibility:	An empirical study of CSR issues in the purchasing function	2004	6
10	Collier. Corporate social responsibility and employee commitment	Discussion of employee's commitment to CSR	2007	6
10	Dahlsrud. How corporate social responsibility is defined:	Analysis of 37 definitions of corporate social responsibility	2008	6

that requires cultural values reflecting the efficient and effective use of resources and the minimization of waste and emissions. The finding calls for more attention from future research into the relationships between cleaner production and organizational culture.

Based on our additional analysis, some well-cited documents about

the role of organizational culture in sustainable enterprises have appeared in the Scopus database at least since 2011 by Kantabutra, one of the six authors emerging as the most influential SOC scholars in the Author Citation and Co-citation Analyses section. Although Kantabutra (e.g., 2011a, 2011b, 2012) has been reporting the role of organizational culture in sustainable enterprises, he has simply addressed the organizational culture, as discussed earlier, as a strong or cohesive organizational culture that is not a search keyword for this review. Because of this limitation, the present investigation does not include these documents.

## 6.4. Intellectual structure of the SOC knowledge base

The analysis of the intellectual structure of the SOC knowledge base shows that there are 148 authors in the author co-citation network who had at least 26 co-citations out of a total of 59,751 authors who were cited as references in the reference lists of all documents in the SOC database. The author co-citation map (Fig. 2) answers Research Question 3 by revealing four primary 'schools of thought' in the SOC knowledge base (van Eck & Waltman, 2010, 2010v, 2014an Eck and Waltman, 2014; White and McCain, 1998; Zupic and Čater, 2015).

The four different schools of thought on SOC emerge as follow: (1) organizational culture, leadership, and change (the red cluster), (2) corporate sustainability strategy and management (the green cluster), (3) technological innovation in sustainable manufacturing and supply chain (the yellow cluster), and (4) frameworks and methods (the blue cluster). Each school of thought offers a unique perspective on SOC management.

From our analysis, the largest cluster in red indicates a perspective on organizational culture, leadership, and change. Schein (204 cocitations), Senge (105), and Lozano (104) are all foundation scholars in this school of thought. This cluster has published articles on organizational culture (Schein, 1984), leadership, and change (Lozano, 2006; Senge et al., 1999). With a deeper analysis, three sub-schools can be identified: sustainable leadership (e.g., Avery, Kantabutra), transformational leadership (e.g., Avolio, Bass, Kotter), and organizational learning (e.g., Argyris, Senge). They are the influential theories that influence the SOC field, the answer to Research Question 4.

The green cluster is the second largest, representing a corporate sustainability strategy and management perspective. Hofstede (128), Griffiths (122), Porter (100), and Schaltegger (84) are among the most notable researchers. Research in this school of thought is about strategic management of sustainability (Griffiths, 2010; Porter and Kramer, 2011; Schaltegger, 2011) and assessment of cultural differences and their impact on organization strategies (Hofstede, 1983, 1998, 2001). The Hofstede node is quite far away from the other nodes in this school of thought, possibly because his work has focused on national cultures instead of organizational culture.

The yellow cluster is a school of thought focusing on sustainable manufacturing and supply chains. Sarkis (116), Jabbour (107), Gunasekaran (82), and Zhu (82) are among the most influential authors. This finding is endorsed by an earlier review that identified Sarkis as the most co-cited scholar in a school of thought called Asian Sustainable Supply Chain Management (Ketprapakorn, 2019). These authors' example publications in this cluster emphasize an organizational perspective on green supply chains and circular economies (Jabbour et al., 2019; Sarkis et al., 2011), sustainable manufacturing, and big data (Dubey et al., 2016; 2019).

The blue cluster is associated with a school of thought concerned with frameworks, research directions, and methods used in the SOC field. Quinn (96), Hair (96), and Podsakoff (49) are among the most influential authors in this Frameworks and Methods school. The scholars in this cluster have produced publications on organizational behaviors, such as the competing value framework (Cameron and Quinn, 2011) and literature review on organizational citizenship behavior (Podsakoff et al., 2000) and quantitative research methods (Fornell and Larcker,



Fig. 2. Author Co-citation Map on SOC, 1995–2021. Note: N = 59,751 authors in the co-citation network; threshold 26 citations per author, display 148 authors.

#### 1981; Hair et al., 2010).

The most influential co-cited documents in this school of thought suggest that the SOC field is built upon organizational behavior frameworks and knowledge, which makes much sense. In addition, this school of thinking means that the SOC field is predominantly quantitative, which indicates the SOC field lacks a solid theoretical foundation that requires qualitative research and theory-building approaches (Kantabutra, 2021; Ketprapakorn and Kantabutra, 2022); the answer for Research Question 5.

The red, green, and blue clusters are more connected, whereas the vellow set stands alone. In other words, the organizational culture, leadership, and strategy schools of thought connect inextricably with corporate sustainability management and strategy, as well as organizational frameworks and methodologies. This intellectual structure corresponds to the efforts of the most cited documents in defining the conceptual boundaries of organizational culture within the realm of corporate sustainability. As a result, the topic of the supply chain for sustainable manufacturing stands out on its own. However, our interpretation of the analysis here does not suggest that sustainable supply chain management has nothing to do with the SOC field. Instead, the Asian Sustainable Supply Chain Management framework (Ketprapakorn, 2019) requires a sustainable supply chain vision commonly espoused by many stakeholders. In addition, sustainable supply chain strategies and operations are also required. Essentially, the shared vision, strategy, and operations are at the cultural levels of value, beliefs, and artifacts.

We can conclude from the author co-citation map that the SOC scholars' cultural typology is closed together. They use the typology to define and categorize organizational culture and match the culture with sustainability orientation. We can also draw from the author co-citation map that the business-case logic has dominated the field (Bansal, Griffiths, Porter, Schaltegger), and the normative logic is not as influential (e.g., normative core strategists by Freeman, Dyllick; normative leadership by Avery, Kantabutra). In essence, this is our core argument drawn from the intellectual structure of the SOC knowledge base. The findings echo the calls from the four strategic management approaches for greater research into the normative assumption of organizational culture that facilitates sustainability integration (see Table 1).

#### 6.5. Cutting-edge SOC knowledge: the framework development

To answer Research Question 6, we first identify influential scholars

producing knowledge in the SOC field. Based on the author citation and co-citation analyses, we recognize six influential scholars in the SOC field: Griffiths, Baumgartner, Gunasekaran, Jabbour, Lozano, and Kantabutra. Looking more closely into the schools of thought analysis, only Lozano and Kantabutra belong to the Organizational Culture, Leadership, and Change school of thought. Griffiths and Baumgartner belong to the Corporate Sustainability Strategy and Management school of thought. In contrast, Jabbour and Gunasekaran belong to the Technological Innovation on Manufacturing and Supply Chain school of thought. Therefore, the grounded theory approach is adopted to identify the boundary of cutting-edge knowledge on SOC by taking into account the SOC work done by Lozano and Kantabutra.

## Lozano's Sustainability Cultural Transformation framework

Lozano's contribution to sustainability organization culture (SOC) is cultural transformation toward sustainability, the focal core code of his research between 2008 and 2022. Lozano has consistently incorporated a time dimension and change management (Lozano, 2007a, 2007b, 2013b, 2018b; Lozano and Barreiro-Gen, 2022; Lozano and von Haartman, 2018) in his work on corporate sustainability (Lozano, 2007b; Lozano and Barreiro-Gen, 2022), organizational sustainability (Lozano, 2018a; Lozano et al., 2021), and the business model for sustainability (Lozano, 2018b). Research on change management for sustainability highlights the relationships between economic, social, and environmental dimensions and time (Lozano, 2018a, 2018b; Lozano and Barreiro-Gen, 2022; Lozano et al., 2016). Lozano has suggested that organizational culture acts as both a barrier and enabler to the organizational systems' change toward sustainability (Lozano, 2007b, 2008; Lozano and von Haartman, 2018). Organizational culture is also subject to transformative dynamics associated with the dynamism of sustainability.

Based on Schein's multilevel cultural model, culture transformation is formed by three cultural layers as the focal core code (Schein, 1985). According to Lozano, the first layer is cultural assumption transformation, which links cultural assumptions, internalization, and interlinkages with other organizational and cultural layers (Lozano, 2007a, 2007b, 2013a). Cultural assumptions include three concepts: informational attitudes (Lozano, 2007b, 2008, 2013a), mental models and assumptions (Lozano, 2007a, 2007b, 2008), and ethical assumptions (Lozano, 2008).

Cultural value transformation is the second layer of cultural transformation, and it is the interconnection among emotional attitudes

(Lozano, 2007b, 2008), alignment and motivation (Lozano, 2008), and interlinkages across organizational and cultural levels (Lozano, 2007a, 2007b, 2013a). The third layer is cultural artifact transformation, which connects cultural artifacts and interlinkages with other organizational and cultural layers (Lozano, 2007a, 2007b, 2013a). Cultural artifacts are a sub-category consisting of behavioral attitudes (Lozano, 2007b, 2008, 2013a, 2018b) and empowerment (Lozano, 2008).

Context, another emerging influential core code, is based on the argument that an organization is made up of interconnected elements that are constantly changing and that these elements influence and are influenced by the four sustainability dimensions as part of larger systems (Lozano, 2007a, 2007b, 2018b; Lozano and Barreiro-Gen, 2021). They are individuals, groups, and organizations as systems, the time dimension, and change. Another context component that supports stabilizing change until the system is prompted to engage in the next shift is the institutional framework (Lozano, 2007b, 2013a, 2014). According to Lozano, the element of the influential context affects the entire cultural transformation toward sustainability.

From Lozano and von Haartman (2018) empirical research, causal conditions are another emerging influential core code that includes internal, connecting, and external drivers. Economic factors, culture, and leadership are internal drivers. Reputation and sustainability reporting, crises, and market are connecting factors. Stakeholder pressure, collaboration and awareness, and regulation and policies are external factors. Lozano's research highlighted how each driver affects organizational attitudes toward sustainability, as well as the reciprocal connections between the drivers and organizational systems and cultural elements, which is essential for building effective transformation strategies (Lozano, 2018a; Lozano et al., 2016; Lozano and Reid, 2018; Lozano and von Haartman, 2018).

The interaction between causal conditions and organizational culture transformation is influenced by two emerging influential core codes: enabler conditions and barrier conditions. Hard organizational issues, soft organizational issues, and sustainability-related company activities are part of enabler conditions (Lozano, 2018b; Lozano et al., 2016; Lozano and von Haartman, 2018). While hard issues such as company objectives, technical, structural, and managerial changes are essential, Lozano contended that change management must also address soft issues enablers, which are related to leadership and psychological and social aspects of humans (Lozano, 2013a, 2018a; Lozano et al., 2016). Lozano et al. (2016) empirical research elucidated how sustainability-related company actions, such as sustainability reporting, can facilitate the cultural shift.

Lozano's work also explains the relationships between different organizational layers and different levels of attitudes, which may form barriers to change, another emerging influential core code (Lozano, 2007b, 2008, 2013a). For a successful and sustainable transformation, it is crucial to recognize the barrier conditions and develop appropriate strategies to overcome them (Lozano, 2007b, 2013a). This statement leads to another emerging influential core code, cultural transformation strategies.

Cultural transformation strategies consist of five categories derived from Lozano's conceptual and empirical studies. The first strategy, orchestrated and iterative change, was described in the Orchestrated Change for Corporate Sustainability Model (Lozano, 2012, 2013a) and observed in empirical research (Lozano, 2007a, 2007b, 2013a; Lozano and Barreiro-Gen, 2020). The second strategy is implementing simultaneous and holistic change. Lozano (2008) suggested that change management planning takes a holistic view of organizational systems and their environment and addresses barriers concurrently based on observations of inter-relations across organizational and cultural aspects (Lozano, 2007b, 2008). Congruence between organizational and cultural layers is the third and fourth strategy. They are based on the work discussed earlier on barrier conditions (Lozano, 2008, 2013a, 2014, 2018a). Organizational learning, the fifth strategy, is the most important in breaking the status quo and shifting deeply rooted mental models and informational attitudes, which influence emotional and behavioral attitudes (Lozano, 2007a, 2007b, 2008, 2014).

Collaboration is another emerging influential code that serves as "a pathway for sustainability." Lozano (2007a) asserts that collaboration is the only approach to attain the optimal balance of sustainability. A long-term, shared purpose, self-regulation, diversity, differences, dissent, and multi-stage strategies are suggested for successful collaboration (Lozano, 2007a, 2008, 2018b; Lozano et al., 2021). Collaboration helps deliver sustainability culture outputs by reducing conflicts, enabling access to knowledge and innovation, and increasing resource efficiency (Lozano, 2007a).

Cultural outputs are the following emerging influential core code. Organizations achieve long-term behavioral change (Lozano, 2008) and new insights and ideas (Lozano, 2007a, 2018b) through cultural transformation and collaboration. In addition, organizational outcomes emerge as another influencing core code. Organizations achieve sustainability innovations, improve their reputation, are more resilient, and influence industry transformation (Lozano, 2008; Lozano and Barreiro-Gen, 2020; Lozano et al., 2016).

Finally, individualistic culture, the antithesis of sustainability organizational culture, is another emerging influential code worth mentioning. Individualistic culture stifles collaboration by fostering conflict, competition without regard for others, and short-termism (Lozano, 2007a, 2008, 2013a). Individualistic culture can potentially impede organizational culture transformation and collaboration.

Based on the coding analysis of Lozano's collective work, a sustainability organizational culture transformation framework can be drawn, as shown in Fig. 3 below.

As informed by the Grounded Theory approach, cultural transformation strategies must be formulated to successfully transform an organization toward sustainability by considering meaningful context, causal conditions, barrier conditions, and enabler conditions. Once the strategies are developed, the cultural levels of assumptions, values, and artifacts must be realigned toward sustainability. Collaboration among organizational members must be promoted via common long-term goals, self-regulation, diversity, and multi-stage tactics. In this process, the degree of an individualist culture, characterized by conflicts, competition, lack of self-regulation, and short-termism, may intervene to impede the cultural transformation.

According to Lozano, a successful cultural transformation toward sustainability can be indicated by the outputs of new insights and ideas, long-term behavioral change, sustainability outcomes of sustainability innovations, reputation, resilience, and industry transformation. "Implicit in the Lozano framework is the normative assumption that drives collaborative values. The model shows that internal drivers and soft issue enablers influence the cultural transformation toward sustainability and that collaborative culture, as opposed to the individualistic culture, is the pathway toward a successful shift toward sustainability.

#### Kantabutra's sustainability organizational culture framework

Our findings suggest that Kantabutra's primary contribution to the SOC field occurred at the values and beliefs level of culture. Between 2002 and 2022, corporate sustainability was unmistakably the central theme of his work's core code. Kantabutra began his study by investigating how a company's culture shaped by its leader's vision might impact its long-term success (e.g., Kantabutra, 2008; Kantabutra, 2011a; Kantabutra and Avery, 2002, 2007; Kantabutra and Rungruang, 2013; Kantabutra and Saratun, 2011). The vision-based leadership paradigm was widely believed to be the most effective means by which leaders could address the challenges of globalization and position their organizations for sustained success. Improving customer stakeholder and organizational member satisfaction is a primary performance indicator. Vision-based leadership and its culture are emerging, influential core codes that contribute to this goal.

Another influential core code emerging from Kantabutra's collective work is sustainable leadership, which arrived later, possibly due to the



Fig. 3. Lozano's sustainability organizational culture transformation framework.

vision-based leadership paradigm's narrow focus on a selected group of stakeholders. To ensure an organization's long-term success and survival, the vision-based leadership paradigm does not directly address society and the environment. Our findings show that beginning in the early 2010s, Kantabutra shifted his attention from studying vision-based leadership to studying two emerging paradigms of running an enterprise: Sustainable Leadership (e.g., Kantabutra, 2011b, 2012, 2014a, 2017; Kantabutra and Avery, 2011; Kantabutra and Saratun, 2013; Kantabutra and 2013; Suriyankietkaew, Kantabutra and Thepha-Aphiraks, 2016) and the philosophy of Sufficiency Economy (Kantabutra, 2014b, 2019; Kantabutra and Ketprapakorn, 2020, 2021; Kantabutra and Siebenhüner, 2011: Ketprapakorn and Kantabutra. 2019a, 2019b, 2022). Based on our research into Kantabutra's work during this period, the collective findings reveal that adopting sustainable practices is directly tied to a robust organizational culture with a shared vision and values. Although Kantabutra has recognized the role of organizational culture in ensuring corporate sustainability since 2011, he did not use the term "sustainability organizational culture" until 2021, when he introduced the first Sustainability Organizational Culture model (Kantabutra, 2021).

Kantabutra has made a significant contribution to the second of Schein's three layers of organizational culture, the beliefs and values level, which influences the third level, the artifacts. Two other influential core codes emerge from his collective work: organizational vision and values. Kantabutra (2009) introduced a theory of organizational vision that, in principle, improves member satisfaction and productivity throughout an organization. According to the organizational vision theory, an organization's performance will improve if its leaders develop a concise, clear, abstract, challenging, future-oriented, stable, desirable, or inspiring vision. In 2020, the theory of organizational vision (Kantabutra, 2020) was transformed into the organizational theory of sustainability vision to address many stakeholders' needs better. According to the sustainability vision theory, a vision should be concise, clear, abstract, challenging, future-oriented, stable, desirable, or inspiring and incorporate imagery that ensures stakeholder satisfaction.

In terms of shared organizational values, five influential core codes emerge perseverance, social and environmental responsibility, innovation, generosity, and ethics/integrity (e.g., Kantabutra, 2011a, 2011b, 2012, 2014a, 2014b, 2017, 2019; Kantabutra and Avery, 2011; Kantabutra and Ketprapakorn, 2020, 2021; Kantabutra and Saratun, 2013; Kantabutra and Suriyankietkaew, 2013; Kantabutra and Thepha-Aphiraks, 2016; Ketprapakorn and Kantabutra, 2019a, 2019b, 2022). Espousing these values is postulated to bring about improving the prospect of corporate sustainability.

Another common thread in the collective work of Kantabutra is the theme of organizational practices concerning the cultural level of artifacts. Adopting a long-term perspective, cultivating leaders from within the company, nurturing a robust organizational culture, encouraging incremental and radical innovation, and embracing social responsibility and ethical behavior are the first six influential core codes of practices to emerge (e.g., Kantabutra, 2011a, 2012, 2014a, 2017; Kantabutra and Avery, 2011; Kantabutra and Saratun, 2013; Kantabutra and Suriyankietkaew, 2013; Kantabutra and Thepha-Aphiraks, 2016). Notably, one practice is "nurturing a strong organizational culture." He refers to these practices as sustainable leadership practices.

From Kantabutra's work in the later period, five different influential core codes of practices emerge: Perseverance, Resilience Development, Moderation, Geosocial Development, and Sharing (Kantabutra, 2014b, 2019; Kantabutra and Ketprapakorn, 2020, 2021; Kantabutra and Siebenhüner, 2011; Ketprapakorn and Kantabutra, 2019a, 2019b, 2022). He calls them sustainability practices. Both sets of practices are postulated to improve the prospect of corporate sustainability.

Notably, at the cultural level of artifacts, Kantabutra, along with Ketprapakorn, has pointed out specifically that the cleaner production concept is consistent with the five corporate sustainability practices of Perseverance, Resilience Development, Moderation, Geosocial Development, and Knowledge Sharing (Ketprapakorn and Kantabutra, 2022) as shown in Table 8 below.

Following the Grounded Theory methodology, we theorize the relationships between the influential core codes of organizational vision,

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No.	Corporate Sustainability Practices	Relevance to Cleaner Production
1	Perseverance	Promote continuous improvements in processes, services and products for their wide range of stakeholders.
2	Geosocial Development	Integrate social and environmental responsibility in the entire operation and genuinely take care of a wide range of stakeholders.
3	Resilience	Development Always monitor and invest to prepare for change.
4	Moderation	Balance between long-term and short-term performance.
5	Knowledge Sharing	Share knowledge among organizational members and with external stakeholders, leading to minimized risks, lower costs and innovation.

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values, and practices and the focal core code of corporate sustainability, as demonstrated graphically in Fig. 4 below.

In summary, Kantabutra's collective work between 2002 and 2022 demonstrates that a vision-based leadership and the culture it fosters are insufficient to guarantee the long-term viability of a business. Corporate sustainability can only be achieved with the help of sustainable leadership and the culture of sustainability it fosters within a firm. Sustainable leadership practices and sustainability practices are essential for establishing and sustaining a culture of sustainability within a company.

#### 7. Overall discussions and research implications

In the above analysis sections, we have provided specific discussions related to findings from each analysis. In this section, we give the landscape of the SOC field by highlighting the overall findings from our review above and future directions for SOC research drawn from the study.

From a bird's eye view, our review has indicated that the organizational culture scholars have put most of their efforts into the productive organizational culture, as opposed to sustainability organizational culture. Across the three cultural levels of shared basic assumptions, values, beliefs, and artifacts, much about the organizational culture conducive to sustainability is still relatively unknown. The cultural artifacts are also relatively unknown, and of specific interest is how organizational culture influences cleaner production practices.

First, our review has indicated that the existing SOC research has considered that organizations are multifaceted, but only in the context of cultural transformation toward sustainability, as Lozano has demonstrated. Much more research must be undertaken to develop a sustainability organizational culture model that considers the highly dynamic external environment effects on such a culture. After all, to transform, organizations need to have a destination.

Given the scanty research into SOC, our review has indicated two coherent bodies of research by SOC scholars: Sustainability Organizational Culture and Sustainability Organizational Culture Transformation. Although the two bodies of knowledge have demonstrated continuing efforts of the two scholars in the SOC field, the bodies of knowledge are still very much limited. Other scholars may join forces by exploring or examining the relationships in the Sustainability Organizational Culture Transformation and Sustainable Organizational Culture frameworks. The results will either validate the frameworks or provide an anomaly for future theory building, more details of which are discussed in the following section on theoretical implications.

In particular, the following research potential is to increase the number of studies from developing countries. According to Schwartz (2006) research, there are differences in cultural value orientations, such as traditional morality and political engagement, which may influence perspectives and attitudes toward sustainability (Schwartz, 2014). In addition, rapid urbanization in developing countries poses



Fig. 4. Kantabutra's sustainability organizational culture framework.

tremendous challenges to sustainable development (Cohen, 2006). Increasing contributions from researchers in developing countries ensure that the knowledge base accurately represents and tackles these issues.

Methodology-wise, our review has indicated a lack of qualitative research to decipher the sustainability organizational culture. Even though Schein (1985) was the most influential scholar in the sustainability organizational culture scholarship, the qualitative research method he advocated for understanding culture is still rarely used (Baumgartner, 2009). On the other hand, quantitative cultural typology instruments such as Hofstede's cultural dimension (Hofstede et al., 2005) and Cameron's Competing Value Framework (Cameron and Quinn, 2011) are reflected as a prominent influence in the author co-citation map.

Our review has revealed a significant gap at the cultural level of shared basic assumptions. We have highlighted the need for additional studies into the normative assumption of sustainability organizational culture. The normative assumptions should consider the broader social and ecological context in which the firm operates and consider stakeholders' needs, particularly fringe stakeholders, including community and underrepresented groups. Inferred from the co-author citation map, the business-case or win-win perspectives (Bansal, 2005; Porter and Kramer, 2011; Schaltegger et al., 2016) permeates sustainability organizational culture research. The widespread application of the quantitative cultural typology approach, as opposed to the assumption-level qualitative analysis, may explain this phenomenon. Also, the normative core of sustainability management (Dyllick and Hockerts, 2002; Freeman, 1984) and leadership (Avery, 2005; Kantabutra, 2011b) have had less impact. Lozano's Sustainability Organizational Cultural Transformation Framework (Fig. 3) also emphasized the transformation starting at the assumption level, endorsed by our review of the different roles of organizational culture from the various sustainability management perspectives in Table 1.

Collective works by Lozano and Kantabutra have identified normative cultural assumptions and espoused values based on the grounded theory analysis. Kantabutra explicitly identifies sustainability-oriented values (assumption level) and vision (espoused values) in his publications. Lozano highlights the value-laden collaboration pathway as the only way to achieve sustainability and explicitly argues against individualistic culture. He clarifies the importance of cultural transformation that starts from the assumption level and remains congruent across all cultural and organizational hierarchy levels. However, there is still a need to bring explicit sustainability assumptions to the front to justify the four sustainability strategic management approaches (Table 1).

Given the need for further research on the underlying basic sustainability assumptions, another challenge for future studies is to develop measures for sustainability assumptions, given that they are challenging to recognize. The underlying basic assumptions (Schein, 1985) exist primarily at the unconscious level, developed over time around deeper dimensions of human existence (e.g., human nature, life experience, relationships). The resulting measures of the underlying sustainability assumptions will help scholars to understand why organizational members do not behave sustainably.

#### 8. Theoretical contributions and implications

As corporate sustainability research is predominantly empirical (Kantabutra and Ketprapakorn, 2020) and no full-blown theory of sustainability organizational culture exists (Ketprapakorn and Kantabutra, 2022), scholars need a sustainability organizational culture theory to guide the development of the field. More importantly, Abbott (1988)'s work signals to scholars who suggest we abandon theory in favor of more data and the creation of causal mechanisms (Abbott, 1988) that to cede theory means to give up the legitimacy of the knowledge. Scholars need a sustainable organizational culture theory to legitimate SOC

#### knowledge (Suddaby, 2014).

Although the research implications discussed above contribute to the SOC theory building since they will help to enhance our understanding of processes and outcomes related to sustainability organizational culture (Dubin, 1976), we specifically highlight our core theoretical contributions and implications in this section. Following leading theory-building scholars (Dubin, 1976; Whetten, 1989), a theory in the present study has the same meaning as a theoretical model.

Theory development is "the purposeful process or recurring cycle by which coherent descriptions, explanations, and representations of observed or experienced phenomena are generated, verified, and refined" (Lynham, 2000, p. 161). Effective theory building should result in two types of knowledge (Dubin, 1976): (a) the knowledge that can explain and predict; (b) the knowledge that helps enhance our understanding of what something means and how it works.

The frameworks of Sustainability Organizational Culture and Sustainability Cultural Transformation offer ideas about outcome and process knowledge, our significant contributions to the SOC field.

Our Sustainability Organizational Culture framework provides some initial ideas about Sustainability Organizational Culture components and how they interplay to bring about sustainability performance. Our Sustainability Culture Transformation framework also provides some initial thoughts about transforming an organizational culture into a sustainability one. Both scholars and practitioners can adopt/adapt these frameworks to guide their future theory-building. In doing so, they can challenge or progress with them to advance the current theoretical knowledge in these specific SOC areas. More interestingly, as discussed earlier, scholars and practitioners need to know about the destination organizational culture and what it entails to transform into a sustainability organizational culture successfully. In their future research efforts, scholars may consider integrating the two frameworks into one to develop an integrated theory of sustainability organizational culture that contains both the destination organizational culture and the "how to" reach there.

A theory is frequently valued for capturing and summarizing the phenomenal world (Adams, 1975). Over time via empirical studies, a single unified theory should emerge as an idea progresses in its ability to proximate and predict reality (Suddaby, 2014). As the sustainability organizational culture theory continues to be refined, researchers will have a whole theory to understand, explain and predict events, actions, and surrounding circumstances concerning the role of organizational culture in sustaining long-term organizational success.

## 9. Managerial implications

The present study provides important implications for corporate leaders and managers in enhancing corporate sustainability via a sustainability organizational culture. First, corporate leaders must ensure that four essential sustainability components of vision, values, leadership practices, and organizational practices are aligned. Second, leaders must be aware of the enabling and inhibiting conditions for the transformation of the sustainability culture to ensure that they adjust their management practices in response to them. Thirdly, in terms of the cultural shift toward sustainability, corporate leaders should grasp the benefits, challenges, and success factors of establishing collaborative processes to drive the transformation toward sustainability. Lastly, cultural transformation strategies help leaders comprehend what actions must be taken inside the organization to facilitate the cultural transition toward sustainability.

## 9.1. Implications for theory and practice in cleaner production

Since (a) cleaner production is about managing raw materials, production processes, and services/products and transforming organizational culture and the attitudes of organizational members, the present study offers specific implications for the theory and practice of cleaner production.

As an implication for theory on cleaner production, the findings, particularly from the two derived models on sustainable organizational culture and sustainability organizational transformation models, help enhance our understanding of processes and outcomes related to cleaner production as the cultural level of artifact (Dubin, 1976). One area that cleaner production scholars may consider is exploring and examining the cultural assumptions that drive the values of beliefs of organizational members toward adopting cleaner production practices. The cleaner production theorists can also adapt the Sustainability Organizational Culture and the Sustainability Organizational Culture Transformation models as a tool to improve our understanding of the dynamics of organizational change relevant to implementing the cleaner production concept to enhance the potential for success (Stone, 2000).

Open adoption and integration of cleaner production concepts within the business require a particular organizational culture. The present study offers some ideas about such a culture, the Sustainability Organizational Culture model. Corporate leaders who want to implement cleaner production practices in their organization should consider adopting/adapting the sustainability vision and values in the Sustainability Organizational Culture model as a driver for all cleaner production initiatives contributing to sustainable development. The vision can incorporate the efficient management of resources and energy, the development of new and intelligent technologies, new ways of assisting policy development, and organizing supply chains, sectors, and individual companies (Giannetti et al., 2020). These developments are supported by the sustainability vision that focuses on satisfying many stakeholders and the sustainability values of environmental and social responsibility and innovation.

#### 10. Conclusions

We have presented the growth trajectory, volume, and distribution of the SOC literature and identified the most influential authors and documents on SOC. The SOC field has continued to grow. The most influential SOC authors are Griffiths, Baumgartner, Gunasekaran, Jabbour, Lozano, and Kantabutra. There are two most influential documents on SOC: "Organizational learning to manage sustainable development" by Siebenhüner and Arnold (2007); and "Organizational culture and leadership" by Baumgartner (2009). It is clear from both author and document analyses that the research interest among SOC scholars has been on how to integrate sustainability in business organizations. Although they have addressed the integration at different cultural levels, the cultural level of shared basic assumptions is the most lacking. We have also pointed out the methodological issues in the existing SOC knowledge base.

Through the co-citation analysis, we have also shown the intellectual structure of the current SOC literature. It comprises four schools of thought on SOC: (1) organizational culture, leadership, and change; (2) corporate sustainability strategy and management; (3) technological innovation in sustainable manufacturing and supply chain; and (4) frameworks and methods.

We have also derived two SOC frameworks as the cutting-edge knowledge in the field: the Sustainability Organizational Culture Transformation by Lozano and Sustainable Organizational Culture framework by Kantabutra.

Finally, we have drawn the research and theoretical and managerial implications from the review. Specific implications for the theory and practice of cleaner production have also been discussed. Although our review has some important implications, it is limited by choice of our keyword search. We advise that future studies into SOC include keywords of "strong organizational culture," "cohesive organizational culture," and "sustainable enterprise." We have discovered the SOC work by Avery and Kantabutra, at the least, which did not fall within our identified keywords for the present study. Instead of sustainability organizational culture, Avery and Kantabutra call such a culture a strong or cohesive one.

#### **Declaration of competing interest**

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

#### Data availability

Data will be made available on request.

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