



Review article

Toward a sustainability performance management framework

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ABSTRACT

Although the United Nations (UN) has continued to introduce the Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs) to address global sustainability, the world is becoming less sustainable. This is not surprising since our knowledge about effective sustainability performance management is scanty. The present study attempts to develop a sustainability performance management framework to deal effectively with the prevailing sustainability problems. It starts by introducing the “wicked” nature of sustainability problems, followed by a research methodology to build the sustainability performance management framework. The review suggests that the framework’s components are related to the organizational culture of sustainability, the sustainability strategy employed by the firm, the corporate sustainability practices implemented, and the resulting outputs and outcomes in terms of sustainability performance. The connections between these elements are fundamentally critical, along with a feedback loop to address the dynamic, wicked sustainability problems. Finally, a Sustainability Performance Management framework and its associated propositions are derived, followed by future research directions and practical implications.

1. Introduction

From the North Pole to the South Pole, the National Geographic Society [1] reports global warming. Recently, climate change has been characterized by rising temperatures due to human activities intensifying the natural greenhouse effect [2]. When including land and ocean surfaces, global temperatures rose 0.85 °C from 1880 to 2012 [3]. In addition, average surface temperatures are expected to rise by 0.4–2.6 °C between 2046 and 2065 compared to 1986–2005, with further rises predicted throughout the 21st century [3]. Based on event type, extreme weather events have major health and socioeconomic implications [4] and are projected to vary due to climate change. Some extremes, such as cold extremes, are expected to decrease in frequency under current and future climate compared to pre-industrial conditions [5], but anthropogenic greenhouse gas emissions are expected to increase the frequency and severity of most extreme events [6].

Clearly, global warming affects ecosystems [7]. In many dry habitats, greater temperatures increase evaporative water loss, resulting in dryer soils, which may substantially constrain soil and plant processes and prevent temperature-driven process rate increases. Finally, temperature fluctuations can affect species’ competitive interactions and herbivore and pathogen activity [8,9], affecting light, water, and nutrient availability [10]. Sea levels may rise, storms, floods, and droughts may increase, freshwater may become scarcer, and malaria and other insect-borne diseases may spread. Although the United Nations (UN) has continued to introduce the Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs) to address global sustainability, the world is evidently becoming less sustainable. How effectively we have managed sustainability, especially in business and industry as a major

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contributor to the global sustainability issues, is the question.

Since 2015, the UN Sustainable Development Goals have called for governments, businesses, and civil society organizations to work together to achieve shared and sustainable prosperity, but the corporate sector has made slow progress [11]. Clearly, the means in which managers can lead and position their firms to be more sustainable remains uncertain [12], including production and use of products and services in a manner that is socially beneficial, economically viable and environmentally benign over their whole life cycle. Although corporate sustainability has been a top priority for decades, this unpleasant fact raises questions about how effectively the business sector has managed for its sustainability performance.

Specifically, many corporations have created the position of Chief Sustainability Officer (CSO) to supervise their sustainability initiatives such as production of environmentally friendly products/services and marketing that promotes sustainable consumption. These Chief Sustainability Officers are solely responsible for enhancing the corporate sustainability performance outlook. However, empirical evidence suggests that they are not always effective in managing for corporate sustainability performance [13]. In particular, the findings indicate that there is no correlation between CSO appointments and subsequent sustainability performance for corporations that were already weak sustainability performers, pointing out a lack of an effective approach to sustainability performance management. Obviously, it is highly challenging for corporate executives to effectively manage for enhanced corporate sustainability performance.

The high-velocity environment presents everyday uncertainties or "wicked problems" [14] that must be overcome for their companies to succeed. Sustainability problems are wicked, so fixing one creates others. The deep interconnections between society, the environment, and the economy, which were once seen as separate entities, are often characterized by contradiction and multiple tensions [15–17] due to imbalanced development, mounting social pressure, and stricter regulations. Corporate leaders must use a holistic, system-based approach [12] to meet these various, contradictory demands to survive and prosper. Sustainability performance management systems can help organizations engage stakeholders and deal with the wicked sustainability challenge [18]. While researchers in the field of sustainability performance have primarily concentrated their scholarly endeavors on sustainability indicators and sustainability reporting [19,20], this approach fails to adequately address the complex and multifaceted nature of sustainability challenges, commonly referred to as "wicked" problems. In addition, a recent review by Malesios et al. [21] reveal no holistic framework for corporate leaders to manage for their organizational sustainability performance as a system as mandated by the wicked challenges. To be competitive, organizations today need systemic sustainability approaches [12].

In recent years, researchers have conducted studies on sustainability performance management within various specific domains, including the circular economy [22], supply chain management [23], and specific industries such as tourism [24] and oil and gas [25]. In particular, researchers have recently involved a value-based system such as sustainability organizational culture [e.g., 26,27] and stakeholder-based brand equity [e.g., 28] as an element of a new paradigm of managing for sustainability, regarded as an effective way to deal with the wicked sustainability problems, because the identification of the wicked sustainability problems is frequently accompanied by conflicting norms, value frames, and beliefs [14,29]. The absence of a holistic and systematic framework for managing organizational sustainability performance is evident, as highlighted by Malesios et al. [21]. This deficiency can be attributed to the complex and multifaceted nature of sustainability issues, which are characterized as dynamic and "wicked" challenges, as originally described by Rittel and Webber [14]. These are the reasons to conduct this integrative review.

The current study commences by examining the characteristics of sustainability issues, identifying areas of limited knowledge, and highlighting the notable contributions of the present study. It then proceeds to outline the methodology employed in constructing the sustainability performance management framework, elucidating the various components of the framework and their interconnectedness. Subsequently, we present the resultant sustainability performance management framework, followed by an exploration of its practical implications. Finally, we conclude by summarizing the key findings, and managerial and research implications.

2. Nature of sustainability problems

Before we develop a solution, we need to thoroughly understand the sustainability problems first. The concept of sustainability presents itself as a complex and multifaceted issue. Wicked problems are characterized by their high level of complexity, primarily due to the presence of unknown or uncertain cause and effect relationships. In addition, the identification of the fundamental problems is frequently accompanied by conflicting norms, value frames, and beliefs [14,29]. According to Rittel and Webber [14], wicked issues possess a dynamic nature characterized by the absence of a definitive stopping rule.

Therefore, effectively addressing complex sustainability challenges necessitates the active engagement of several internal and external stakeholders [30]. The incorporation of stakeholder feedback can provide companies with a valuable opportunity to address sustainability challenges and improve the development of sustainable products and services [31–35]. This is particularly important as the responsibility for sustainability is distributed among various actors in society.

In theory, business organizations frequently face sustainability challenges that are generally attributed to external factors, particularly institutional constraints. The resolution of these issues necessitates internal handling via processes of adaptation and integration. The aforementioned challenges pertaining to external adaptation and internal integration pertain to the concept of sustainability. According to Kantur and İşeri-Say [36], business failure is often attributed to several factors such as alterations in the market environment, unforeseen crises, and mismanagement within corporations. Numerous instances of bankruptcy proceedings, such as those involving Enron, Lehman Brothers, and Kodak, have been seen. Several multinational firms have experienced a decline in their operations. Numerous experts have identified a range of sustainability challenges that necessitate urgent action in order to foster and preserve sustainable industries [37].

Taking into consideration the inherent character of sustainability issues, we have identified important contributions of the current

study through an overview of the existing sustainability performance literature below.

3. Overview of the existing literature on sustainability performance

As discussed earlier, the present study fundamentally contributes to the sustainability performance literature because the body of knowledge on sustainability performance lacks knowledge on an effective sustainability performance management, a fundamental gap the present study fills in. We support our argument by conducting author co-citation and author keyword cooccurrence analyses of the peer-reviewed, English literature in Scopus. Each is discussed below.

First, an author co-citation analysis is conducted to understand the intellectual structure of the sustainability performance literature and determine if there is sufficient knowledge to form a school of thought on sustainability performance management [38]. The results as shown in Fig. 1 below indicate that there is not sufficient knowledge on sustainability performance management in the literature, endorsing the fundamental gap in the sustainability performance body of knowledge.

Looking more closely, the largest school is full of scholars who have been investigating sustainability performance measures/indicators and the reporting of them. The second largest school of thought is on supply chain sustainability performance, which in line with our initial literature review discussed earlier that scholars appear to focus their sustainability performance management on a specific sector or area. Since the corporate sustainability field is primarily empirical [e.g., 27, 38] and in dire need of generalization to have a large-scale impact, it is not surprising that the next school of thought comprises scholars who have focused their efforts on quantitative research methods. Finally, the smallest group of scholars has focused their research efforts on environmental sustainability performance, particularly in China.

At this stage, it is clear that scholars do not have sufficient knowledge about sustainability performance management to form a school of thought in the intellectual structure of sustainability performance knowledge domain, reaffirming the fundamental gap in the literature.

Finally, we conduct an author keyword cooccurrence analysis, shown in Fig. 2, to understand the collective content and trend of the existing literature on sustainability performance and to endorse our argument that the knowledge the present study attempts to create about the systematic, dynamic and holistic sustainability performance management required to deal with the wicked sustainability problems [36,39] is relatively new.

Our author keyword cooccurrence analysis reveals that scholars have started to investigate sustainability performance recently in the late 2010s. The results of the keyword cooccurrence analysis corroborate our earlier conclusion that scholars have focused their research on sustainability performance indicators. However, they have moved away from sustainability performance indicators toward viewing sustainability performance as a dynamic matter as evidenced by their recent efforts on integrating dynamic capabilities and circular economy, the two recent keywords, in their research. This finding indicates that the knowledge on the dynamic, systematic nature of sustainability performance management in an organization is emerging.

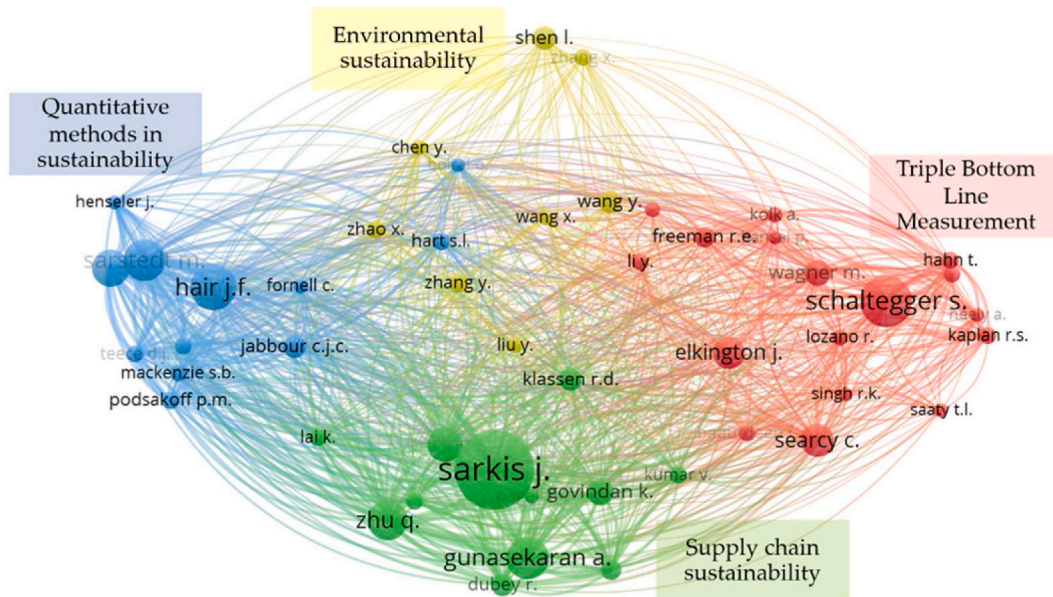


Fig. 1. Author co-citation analysis of the sustainability performance literature.

Note: The following search criteria were used as of August 16, 2023. In a nutshell, we have identified 169 journal articles in English. (KEY ("sustainability performance") AND TITLE ("sustainability performance")) AND (LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "re")) AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (SRCTYPE, "j")) AND (LIMIT-TO (PUBSTAGE, "final") OR LIMIT-TO (PUBSTAGE, "aip")) AND (LIMIT-TO (OA, "all")).

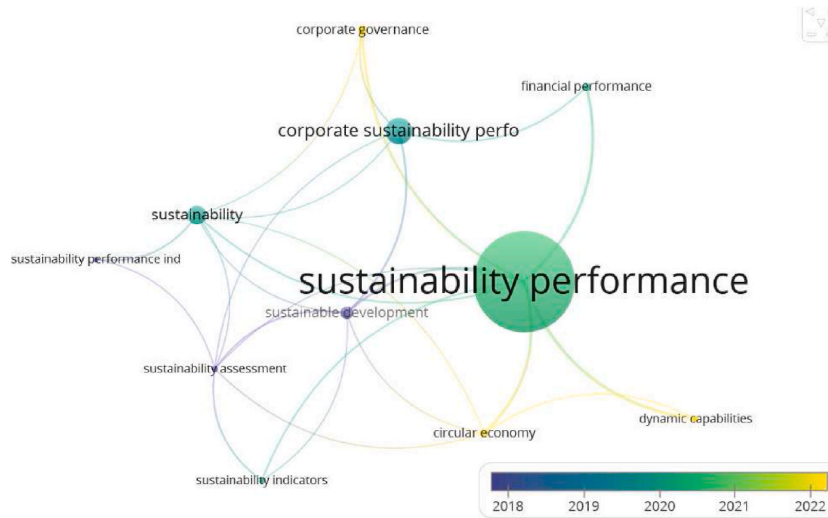


Fig. 2. Author keyword co-occurrence analysis of the sustainability performance literature.

At this stage, we can conclude that the sustainability performance literature is filled to the brim with sustainability indicators and the reporting of them. While there have been research efforts into sustainability performance management, they appear to focus on a specific area or an industry setting. There is no reported study on sustainability performance management within an organization as a holistic, dynamic system, given that the nature of sustainability problems is dynamic and “wicked problems” [12,18]. An effective sustainability performance management framework must be systematic and dynamic, allowing for organizational adaptation and integration [36,39]. Thus, the present study contributes to the body of knowledge on sustainability performance by proposing a holistic, systemic and dynamic sustainability performance management framework.

In terms of theoretical contributions, our newly proposed Sustainability Performance Management framework contributes to theory development in the knowledge domain because it functions as a simple theory by providing the essential ingredients of a simple theory: “what”, “how” and “why” [40], serving as a tool to enlightenment, and clearing away conventional notions to make room for artful and exciting insights [41] and guiding future research since social science theory construction is an ongoing process [42,43].

In the next section, we explain the research methodology to build our sustainability performance management framework.

4. Research methodology

The prime objective of the present study is to build an effective sustainability performance management framework. A framework or model in the present study is defined as a network of interlinked concepts that together provide a comprehensive understanding of a phenomenon or phenomena [44]. In the present study, this phenomenon is about sustainability performance management. The framework’s constituent concepts provide mutual support, articulate their respective phenomena, and establish a framework-specific philosophy. We intend to make the resulting framework a response to the complex nature of sustainability issues as we develop it. The overall process of the framework development is shown in Fig. 3 below.

A framework is distinguished by its ontological, epistemological, and methodological assumptions, with each concept within the framework serving either an ontological or epistemological purpose [44]. As described by Guba and Lincoln [45], the ontological assumptions pertain to the comprehension of the fundamental nature of knowledge, reality, existence, and action. The epistemological assumptions pertain to the comprehension of reality’s fundamental nature and the underlying mechanisms that regulate its operation.

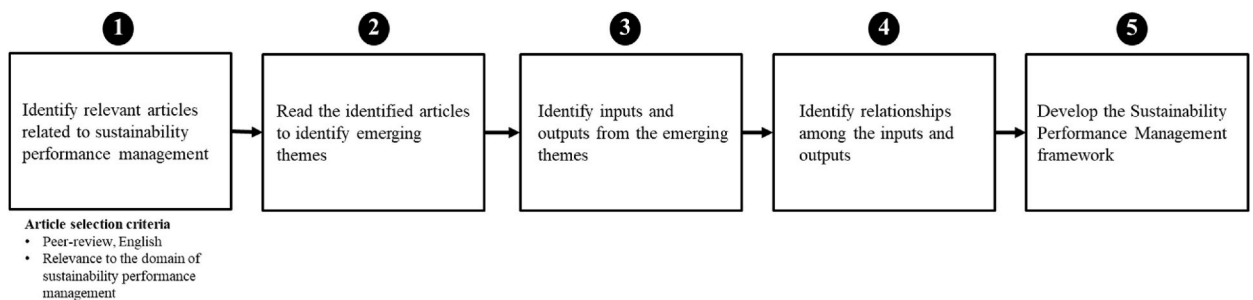


Fig. 3. Overall framework development process.

Source: author.

The current study focuses on the ontological and epistemological assumptions pertaining to sustainability performance management. A framework is not simply a compilation of ideas, but rather a structure in which each idea serves a crucial function. According to Miles and Huberman [46], a conceptual framework “lays out the key factors, constructs, or variables, and presumes relationships among them” (p. 440). We follow this framework concept in reviewing relevant literature.

Since a framework including the three fundamental components of a simple theory—“what,” “how,” and “why”—is a type of theory [40], we use the theory building approach while creating the framework for sustainability performance management. During the theory-building process, a wide range of plausible, logical, empirical, and/or epistemological conjectures [40] are compared and contrasted, resulting in highlighting of emerging themes. Because theory development is an ongoing process, the proposed sustainability performance management framework may be improved in the future by theorists who uncover new relevant knowledge [42]. Furthermore, because theorizing is viewed as the formation of new propositions for empirical inquiry [42], a set of basic theoretical assertions implying research questions and generalizations is created to guide future study [43]. In the end, a framework for sustainability performance management is developed as a rhetorical strategy to provoke insights.

Whetten [40] states that a basic theory consists of the fundamental elements of “what”, “how”, and “why”. Initially, we ascertain the components that should logically be included in the sustainability performance management phenomena by evaluating their comprehensiveness and parsimony. Next, we ascertain the correlation between these factors. During this stage, organization is applied to the conceptualization process and causality is established, resulting in the development of a framework. The theoretical presumptions that hold the framework together are the underlying psychological, economic, or social dynamics that justify the choice of components and the causal links.

The initiation of the sustainability performance management framework involves conducting a comprehensive examination of the scholarly literature. This process entails employing a systematic, explicit, and reproducible approach to identify, assess, and evaluate the extant corpus of documented research [47]. Cooper [48] asserts that the process of developing connections between research works that are connected aids in the identification of current advancements within a certain sector, while also emphasizing significant concerns that require resolution. A preliminary screening of the papers’ contents is conducted to determine their eligibility for inclusion or exclusion. In order to be considered for inclusion, a paper must meet two specific criteria. Firstly, it must originate from a peer-reviewed publication, indicating that it has undergone rigorous evaluation by experts in the field. Secondly, the paper must demonstrate relevance to the domain of sustainability performance management, ensuring that it pertains to the measurement, evaluation, management and development of sustainability practices.

In reviewing the literature, we, with the wicked sustainability problems in mind, use the following questions to guide the development of our sustainability performance management framework.

1. What are organizational components that lead to the delivery of sustainability performance?
2. How are the components related?
3. How do the components and their relationships respond to the dynamic nature of the wicked sustainability problems?

5. Fundamental components of the sustainability performance management framework

Through a meticulous examination of scholarly sources, we have identified a complex web of interconnected ideas that collectively contribute to a holistic comprehension of the phenomenon known as sustainability performance management [44]. These concepts are sustainability organizational culture, sustainability strategies, corporate sustainability practices, and sustainability performance [44]. The aforementioned elements comprise the framework for managing sustainability performance. These elements are interdependent,

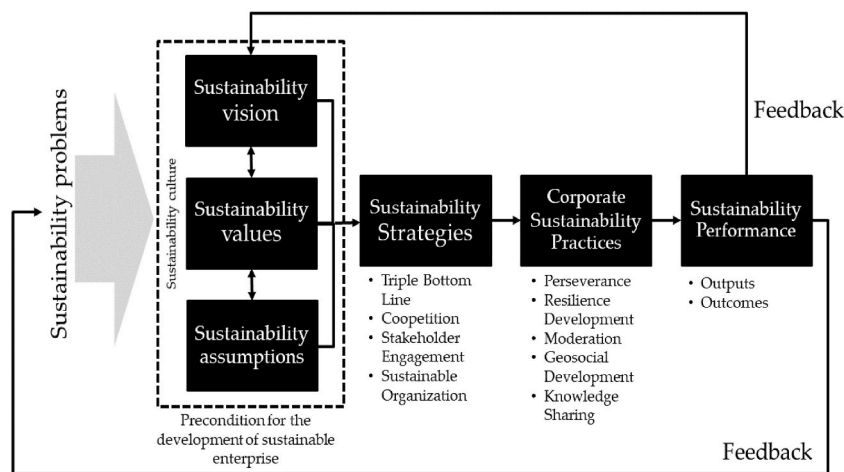


Fig. 4. Sustainability performance management framework
Source: author.

as they reinforce each other, elucidate their individual concepts, and define the philosophy specific to the framework. They offer epistemological presumptions about how the parts actually are and function in the presumptive corporate reality [45]. Below, we outline the components of the framework, as shown in Fig. 4 below, explain their relevance, how they relate to one another and respond to the wicked nature of sustainability problems.

5.1. Sustainability organizational culture

Corporate sustainability performance is significantly influenced by cultural characteristics, as stated by Islam, Tseng, and Karia [49]. Essentially, organizational culture is intricately related to corporate sustainability performance [50,51], as it can have a negative impact on corporate sustainability [52] or be conducive to its achievement [53]. Clearly, having sustainability indicators and its reporting alone is not sufficient to deal with the wicked sustainability problems. They need to be managed via a sustainability organizational culture. Many scholars believe that adopting a sustainability-oriented organizational culture is the key to adopting corporate sustainability principles [26,50]. This is despite the lack of clarity regarding what constitutes corporate sustainability [27] and how to achieve it most effectively. The concept of organizational culture has acquired popularity in the sustainability literature because it provides an entry point for Human Resources and Organizational Behavior to explain the sustainability performance of an organization [50].

However, previous studies conducted by Denison and Mishra [54], Gordon and DiTomaso [55], and Siehl and Martin [56] have yielded limited empirical support for the association between a "strong culture" and organizational success. Later researchers took a contingency approach to the culture-performance relationship, arguing that strong organizational cultures only enhance performance if they are compatible with the organization's strategy and able to adapt to changing environmental conditions [57,58]. Strong, pervasive cultures that do not align with a company's strategy are believed to hinder performance. Thus, organizational culture affects sustainability strategy.

The development of a corporate sustainability strategy should be informed by a sustainability vision [59] that prioritizes the enhancement of long-term wealth and well-being for a broad range of stakeholders, rather than solely focusing on the immediate interests of an individual or a singular organization [27]. In fact, the sustainability vision reveals whether or not corporate executives are genuinely interested in strategic sustainability. According to Paraschiv, Nemoianu, Lang, and Szabó [60], the achievement of sustainability necessitates the integration of social and environmental aspects into an organization's vision, culture, and operations. This implies that future organizational reform and vision are important.

A sustainability organizational culture is one with underlying shared assumptions, values, and beliefs about solving sustainability problems that nurture organizational behavior via corporate decision-making and practices [61]. 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 [62,63].

All three facets of the culture are vitally important, but they have received unequal academic attention. Scholars have more than the others investigated sustainability practices at the level of artifacts [e.g., 64]. 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 corporate sustainability [e.g., 65, 38, 65, 66]. However, there has been little research into organizational vision, a value-level construct [e.g., 67, 68], and the cultural level of assumptions [69]. Since the cultural levels of assumptions, and values and beliefs have been discussed in length elsewhere [e.g., 61], we do not discuss them here.

According to Ketprapakorn and Kantabutra [61], there are three fundamental sustainability assumptions that address the global sustainability challenges. First, it is important to note that every business organization operates as an entity within the broader societal context. The interdependence between business organizations and society is a crucial aspect to consider. Second, there is a notable disparity among the economy, society, and environment. Third, achieving business sustainability necessitates a harmonious equilibrium between the economy, society, and environment. These sustainability assumptions are endorsed by Russell et al. [70] who state that sustainable organizing includes a business with a whole approach that achieves a balance of social, ecological, and financial well-being.

The next level of values and beliefs is manifested into sustainability vision and values. Sustainability vision contains content related to keeping stakeholders satisfied [27]. Sustainability values are typically about altruism [71,72], virtues [73,74], ethics [50,73], responsibility for the society and the environment [60,75], adaptability [76], and innovation [74,77]. In Asia [73,74], there is an emphasis on virtues such as sharing, perseverance, prudence and moderation as sustainability values. These virtuous values help companies to survive in times of crisis, enabling them to rebound and often become even stronger [73]. Frequently, the social and environmental responsibility is integrated in the innovation process that eventually leads to social and environmental innovation, reflecting the sustainability assumptions.

An increasing body of empirical research [e.g., 78,77,74] supports the idea that sustainable businesses promote a "vision" or widely accepted mental model as a component of a broadly accepted corporate culture in order to deal with uncertainties successfully. Fundamental values serve as the guiding principles of such a development. These companies base their everyday decisions and operations on their vision and core values, particularly when it comes to making trade-offs between objectives. As values form the cornerstone of an organization's culture, there is a connection between sustainability vision and values.

Culture and strategy are intertwined [79]. Effective strategies necessitate a relevant culture [80]. In the opposite direction, strategies can influence culture [81]. However, strategy and culture must match to succeed [82–84]. A strong organizational culture aligned with strategy leads to high performance [57,58]. Conversely, a culture that does not align negatively impacts performance. To improve sustainability performance, a corporate culture must match a sustainability strategy. Culture plays a significant role in the

development of business strategy, as it is intricately linked to the values included within the vision. This, in turn, exerts a profound influence on the guiding policies and principles that shape the particular actions taken to achieve coherence and unity within the organization [85]. More crucially, corporate-level strategy is seen as a way to realize the organizational goal [86]. Thus, it makes sense to introduce sustainability strategy next.

5.2. Sustainability strategy

Since strategy is essential to managing and leading for corporate sustainability [87] and stakeholders are essential to achieving it, our literature review finds little knowledge about stakeholder engagement strategy [88]. According to Porter [87], strategy plays a major role in general management, serving as a practical tool to develop a plan that incorporates many inputs, options, and outputs in order to accomplish a company's policy goals and objectives [89]. Thus, stakeholder strategy is critical to corporate sustainability performance.

The literature on strategy is so diverse and vast that any review would be unable to cover all perspectives, views, and positions [90], so a unified definition of strategy that meets both theoretical and practical approaches will never be found because "strategy" encompasses multiple activities and organizational goals that change with business processes and market conditions. The present study defines "sustainability strategy" as a set of organizational goals and activities to achieve corporate sustainability. To better understand corporate sustainability strategy implementation, we examine the success factors needed to bridge strategy design and implementation [91,92]. Salzmann et al. [93] define business sustainability as a profit-driven strategy to address environmental and social challenges created by an organization's activities. Corporate sustainability is difficult to integrate into strategic management because some companies lack a strategic perspective [94,95]. This study seeks to fill this knowledge gap.

According to Epstein and Roy [96], corporate sustainability strategies aim to achieve a harmonious equilibrium between the social, environmental, and economic requirements of both the organization and the broader society. Corporate sustainability strategies may not work for all organizations, according to Salzmann et al. [93]. Company circumstances differ by industrial sector, product or service type, stakeholder needs, policies, market developments, internal structures and processes, etc. Thus, choosing a sustainability strategy is difficult [59]. Corporate sustainability strategy must be carefully adjusted to each company's conditions. This study proposes a set of four stakeholder-focus strategies, as part of an organizational sustainability performance management framework, to fill the knowledge gap: Triple Bottom Line, Coopetition, Stakeholder Engagement and Sustainable Organization.

5.2.1. Triple bottom line (TBL) strategy

To address market failures, institutional voids, environmental degradation, and social issues [97] and to restore trust in capitalism and business as a force for good [98,99], businesses are under pressure to report and improve their environmental and social performance. Business leaders must communicate their identity, prosocial principles, market differentiation, and legitimacy while facing these constraints. The Triple Bottom Line—economic, social, and environmental outputs—must be managed [100].

Clearly, positive triple bottom line performance and impact cannot be consistently achieved through good intentions alone [101]. Businesses must deliberately link triple bottom line strategy to performance and impacts through the formation and implementation of policies, partnerships, and procedures. This approach is strategic and may be referred to as Triple Bottom Line strategy; it is essential for an organization to maintain its competitive advantage [102].

Business must maintain economic growth, employment, and per capita income while widening its vision to satisfy environmental and societal needs [103]. Adapting measurement methodologies for economic, environmental, and social resources is difficult in corporate sustainability management [19,104]. Sustainable organizations must balance economic performance with environmental and social issues [105]. Sustainable firms view investing in society and the environment as a strategic way to get a competitive edge [77,78]. A comprehensive, long-term strategy should target stakeholder results as well as shareholder and customer outcomes. Businesses should consider stakeholder interactions in inclusive growth ecosystems [103]. Enhancing a corporation's ecological and societal performance is fundamentally linked to a range of advantages, including financial benefits such as cost reductions, revenue growth, and improved access to capital. Additionally, there are commercial benefits such as increased customer loyalty, enhanced competitive advantage, and improved branding. Legal and reputational benefits include risk reduction, community support, and collaboration within the supply chain. Furthermore, there are advantages in terms of improved employee recruitment and retention. These findings are supported by Mazzi [106] and Shields and Shelleman [107].

5.2.2. Coopetition strategy

The Triple Bottom Line emphasizes a range of stakeholders. Nevertheless, it is imperative to consider competing businesses as significant entities within the global production and consumption systems. This is due to the fact that excessive resource consumption in specific regions, driven by particular societal segments and economic sectors, stands as a primary catalyst for climate change, biodiversity depletion, and pollution. The coopetition strategy, a corporate sustainability strategy [27], assumes that cooperating competitors can create and share a total value [102], increasing market opportunities and decreasing threats for all competitors. The literature suggests that engaging in cooperative competitions can be advantageous for all involved parties [108–110]. According to Christ et al. [111], strategic partnerships, collaborations, and information exchange can be categorized as forms of coopetition. According to Luo [110] and Gnyawali and Park [112], the practice of coopetition has the potential to decrease costs, mitigate threats, and alleviate uncertainties, while simultaneously enhancing industrial efficiency, quality, and innovation.

In contrast to the widely used Triple Bottom Line strategy, the coopetition strategy necessitates the implementation of several precautions [113]. The concept of coopetition is frequently advantageous in industries that exhibit a restricted number of dominant

participants. This is due to its ability to exert a positive influence on market dynamics by enabling competitors to engage in collaborative efforts for the advancement and marketing of particular technologies, products, or services [112,114,115]. Furthermore, it is important to note that co-competition carries inherent risks, which consequently have the potential to tie up significant resources. A corporation functioning in a highly competitive environment faces challenges in successfully and efficiently collaborating with several competitors. However, directing attention towards a limited selection of strategically chosen competitors could potentially lead to enhanced market and innovation outcomes.

5.2.3. Stakeholder engagement strategy

Corporations' long-term performance depends on stakeholders, any group affected by or able to affect organizational actions [34]. After receiving benefits, stakeholders form a relationship with the corporation to profit and build wealth [116]. Therefore, it is crucial to effectively manage the relationship with stakeholders [117–120]. This is a notable challenge for executives and scholars in the field of stakeholder theory, as they strive to understand strategies for strengthening the relationship between a company and its stakeholders through the provision of benefits via corporate practices and policies. One could posit that the establishment of such a relationship constitutes a noteworthy outcome for a corporation, since it confers benefits and fosters the welfare of its stakeholders or the wider community.

Bhattacharya et al. [121] propose that relationship quality can be seen as a holistic assessment of the strength and durability of a relationship. This assessment is considered to be a composite or multidimensional construct that encompasses multiple interconnected facets of a relationship. The categorization of the relationship between stakeholders and corporations can be delineated into four distinct degrees, namely satisfaction, trust, commitment, and identification. The categorization of these levels is based on many benefits and satisfaction that stakeholders obtain through their affiliation with the company [122,123]. Bhattacharya et al. [121] argue that the improvement of relationship quality is contingent upon the prioritization of stakeholder satisfaction over functional or utilitarian benefits.

Stakeholder satisfaction is assessed for a corporation or organization based on stakeholder experience, as noted by Bhattacharya et al. [121]. According to Kotler [124], the experience of pleasure arises from the process of individuals evaluating the performance of a product or service in relation to their pre-established expectations. Thus, product/service satisfaction occurs when perceived performance meets individual expectations. Stakeholder satisfaction is usually measured by the total experience a firm provides and the resources they must provide to maintain a connection [121].

Trust can be described as the subjective belief in the dependability and ethical behavior of individuals or organizations with whom a company engages in business relationships or encounters [121]. Trust can manifest itself as the stakeholder's anticipation that a company will fulfill its commitments, demonstrating generosity and refraining from taking advantage of stakeholders.

Commitment can be conceptualized as the inclination of stakeholders to sustain a mutually advantageous association with a company, stemming from the cultivation of trust and an emotional connection with the organization [121]. In essence, stakeholders allocate resources to the organization in an effort to cultivate commitment.

Identification unites a person's sense of self with a group to which they belong [121]. Strong identification with a company leads to lobbying [125], assisting firm members [126], and purchasing firm products/services [127]. When referring to organizations, he/she substitutes "I" for "We."

The approach to engaging stakeholders should establish and cultivate satisfaction, trust, commitment, and identity among stakeholders. Thus, it is essential to comprehend the relationship between stakeholder engagement strategy and outcomes [128], as enhanced outcomes indicate that the correct and successful strategy was employed.

Functional and psychological benefits from sustainability strategies boost stakeholders' sustainable wellbeing. Functional or utilitarian benefits refer to the practical benefits provided by services and products. The benefits encompass financial gains, improvements in well-being, and access to amenities. Happiness and other psychological benefits are typically considered subjective well-being [28]. Certain researchers in the field of strategy and organization argue that firms have a responsibility to generate both economic and non-economic value for stakeholders who are not shareholders [129,130]. According to Jones and Felps [131] (2013) and Harrison and Wicks [130], stakeholder theorists advocate for prioritizing happiness or wellbeing. Happiness depends on stakeholders receiving psychological benefits that match their values [121,132]. Avery and Bergsteiner [73] define sustainable wellbeing as the ability of individuals or organizations to be self-reliant, resilient, and able to withstand difficult situations. Maslow [133] posited that sustainable wellbeing encompasses the fulfillment of various human needs, including physiological, safety, social, self-esteem, and self-actualization requirements. These benefits meet people's functional and psychological needs. Corporations must provide employment, training in applicable skills and information, and financial support to help stakeholders become self-sufficient. Strengthening stakeholder-company relationships, corporate sustainability strategy and related initiatives increase the prospect of collective brand equity, to be discussed in the Sustainability Performance section.

Winit and Kantabutra [28] posit that the establishment of confidence among stakeholders towards corporate brands is bolstered when sustainable enterprises successfully ensure the sustainable welfare of these stakeholders. In order to cultivate stakeholder trust and consequently bolster brand equity, it is crucial for a company to offer a combination of functional and emotional benefits. Sustainable enterprises opt to provide functional benefits that enhance psychological benefits, thereby bolstering stakeholder trust and brand equity, correspondingly. Based on empirical data, such a relationship has been recognized as an effective approach for the establishment and nurturing of trust among stakeholders, as well as the augmentation of brand equity [28].

5.2.4. Sustainable organization strategy

In order to ensure long-term, sustainable success, organizations must have a strategy that enables them to effectively sustain

Table 1

Corporate sustainability practices, sustainability strategies and initiatives, adapted from Ketprapakorn & Kantabutra [61].

Corporate Sustainability Practice	Definition	Supportive Theories/Concept	Sustainability Organizational Culture Drivers	Supportive Sustainability Strategy	Example Sustainability Initiatives
Perseverance	Corporations promote members who continuously improve processes, services and products for their wide range of stakeholders	Self-determination theory by Ryan and Deci (2000)	Sustainability vision, values of perseverance, social and environmental responsibility.	Triple Bottom Line; Sustainable Organization	Eco-innovation; New product development.
Geosocial Development	Corporations integrate social and environmental responsibility in their entire operation and genuinely take care of their wide range of stakeholders.	Stakeholder theory by Freeman (1984) and Sustainable Leadership theory by Avery (2005)	Sustainability vision, innovation, and social and environmental responsibility values.	Triple Bottom Line; Sustainable Organization	Sustainability reporting; Sustainable supply chain management.
Resilience Development	Corporations always monitor and invest to prepare for change.	Complexity theory by Lewin (1992)	Sustainability vision, values of perseverance and prudence.	Triple Bottom Line; Sustainable Organization	Risk management; Change management; Organization design.
Moderation	Corporations seek to balance between longterm and short-term performance.	Sustainable Leadership theory by Avery (2005)	Sustainability vision, values of prudence, moderation, social and environmental responsibility.	Triple Bottom Line	Risk management.
Knowledge Sharing	Corporations share knowledge among organizational members and with external stakeholders.	Knowledge-based theory by Nonaka(1994), Dynamic Capabilities theory by Barney (1991), Knowledge Management theory by Tzortzauoki and Mihiotis (2014) and Coopetition concept by Luo (2007)	Sustainability vision, values of social and environmental responsibility, and generosity.	Coopetition; Sustainable Organization	Knowledge management; Organization design

important functions and recover from adverse events [134,135]. Organizations require organizational competencies in order to identify and rectify maladaptive tendencies, hence enabling them to withstand unforeseen and challenging circumstances [136,137].

The ability of an organization to efficiently analyze and react to environmental cues is a crucial aspect [138], which suggests that members of the organization must possess a high level of competence [139] and be well acquainted with the shared organizational objectives and decision-making principles. Additionally, the ability of an organization to effectively generate and acquire versatile resources that may be utilized as interchangeable substitutes is a crucial aspect [140].

Our literature review reveals that resilience is primarily dependent on organizational structures that promote competence, restore efficacy, and encourage development [141]. It equips organizations with the tools necessary to manage increased tension and disruptions [141]. These capabilities increase organizational flexibility and adaptability by expanding informational inputs, relaxing control, and reconfiguring resources [27]. The optimal organizational structure is flexible, adaptable, and stakeholder-centric, allowing organizations to respond quickly and effectively to abrupt changes in the environment [77,78]. Empirical evidence indicates that wholly or partially lattice organizational structures are typically observed in resilient, long-lasting organizations [77,78].

Since a sustainability strategy and its resulting performance must be measured, the present study defines sustainability performance measurement as a system by which an organization monitors its daily operations and evaluates whether it is meeting its sustainability objectives [142]. The function of sustainability performance measurement is fully utilized by establishing a series of sustainability indicators that accurately reflect the corporate sustainability performance. These indicators may be measurable or not [143]. They serve as the common language to help align senior management and organizational members with the vision for sustainability [143]. These sustainability objectives and their corresponding measures facilitate the implementation of sustainability strategies [144].

With the guiding sustainability strategies and their relevant sustainability indicators in place, an execution is needed through the five corporate sustainability practices below.

5.3. Corporate sustainability practices

With the sustainability strategies and their relevant sustainability indicators in place, business organizations must now implement them. This section discusses a set of corporate sustainability practices that are consistent with the strategies and can be used as a guide for the development of sustainability initiatives. Beyond the operation-level implementation of sustainable business practices, corporate sustainability practices emphasize a company's strategic long-term vision for sustainability [145]. They entail a macro-level engagement of stakeholders, alignment with global sustainability frameworks and goals, and the implementation of strategic initiatives that are closely linked to the organization's responsibilities and objectives [146]. While sustainable business practices tend to be more process-driven, corporate sustainability practices are more strategic and comprehensive, encompassing a broader view of sustainability and its impact on the company's overall sustainability performance. Clearly, corporate sustainability practices include the widely adopted Cleaner Production practices [147] and sustainable production and consumption [148].

Kantabutra and Ketprapakorn [27] assert that the integration of a sustainability organizational culture facilitates the assimilation of corporate sustainability practices. The aforementioned practices encompass Perseverance, Resilience Development, Moderation, Geosocial Development, and Knowledge Sharing. Table 1 below presents the practices and their definitions, sustainability culture drivers, relevant sustainability strategies, illustrative sustainability initiatives corresponding to each of the practices. Since these corporate sustainability practices have been discussed in detail elsewhere [e.g., 27,61], we do not discuss them here.

As the consequence from adopting the five corporate sustainability practices, sustainability performance can be delivered, discussed in detail next.

5.4. Sustainability performance: Outputs and outcomes

As the manifestation of the sustainability strategies, corporate sustainability practices contribute to the achievement of sustainability performance. Based on our comprehensive literature analysis, sustainability performance may be classified into two distinct categories, namely output and outcome.

5.4.1. Sustainability performance outputs

The sustainability performance outputs refer to tangible outcomes or consequences that are documented in various forms such as a management plan, permit, or legislation, marking the conclusion of the decision-making process [149–151]. The sustainability outputs of the Triple Bottom Line (TBL) and Stakeholder Engagement strategies typically encompass the direct outputs derived from the corporate sustainability practices and their related activities. These outputs include the rate of reduction in carbon footprint, the employment rate within the community, and the income generated from the sale of environmentally friendly products. Regarding the Cooperation strategy, sustainability outputs can manifest as inventive products, decreased supply chain costs, and augmented market share. Regarding the concept of Sustainable Organization, examples of sustainability outputs include the time required for recovery and the percent of success in addressing unforeseen interruptions. With the sustainability performance outputs, sustainability performance outcomes can be expected below.

5.4.2. Sustainability performance outcomes

Sustainability performance outcomes refer to specific alterations in human perceptions or subsequent actions resulting from the outputs, which are regarded as intermediate effects within a mid-range timeframe [149–151].

According to Kantabutra and Ketprapakorn [27], the implementation of corporate sustainability strategies and practices, and its outputs have resulted in the formation of an organizational brand. This brand serves as a manifestation of the sustainability vision and holds significant importance in the promotion and maintenance of corporate sustainability. The concept of brand equity holds particular significance within the present competitive market landscape, as it has become insufficient to rely exclusively on tangible advantages [28]. The relationship between brand equity and corporate sustainability has received more attention in recent years. The aforementioned acknowledgment arises from the comprehension that brand equity functions as a manifestation of a corporation's standing and impact within the competitive marketplace. According to Hsu [152], the crucial element in brand equity lies in the supplementary value that a brand name bestows upon a product or service. Aaker [153] posits that brand equity encompasses the diverse positive and negative aspects that are associated with a company's name and symbol. The potential exists to either enhance or lessen the value provided by a service or product. The corporate brand can be understood as a representation of a company's historical and anticipated future undertakings, as perceived by various stakeholders. The assessment of the firm's overall appeal to stakeholders, relative to its competitors, is an essential consideration [154]. Brand equity thus refers to the whole worth of a brand, as assessed by stakeholders [28].

Finally, the sustainability strategies, corporate sustainability practices and sustainability outputs lead to the overarching goal of sustainable wellbeing as determined by sustainability outcomes of self-reliance, resilience and immunity [73]. They encompass the ability to stand on one's own, the ability to endure and bounce back from a crisis and the ability to be unaffected by an unforeseen shift in the environment.

In respond to the wicked sustainability problems, the delivery of sustainability performance is not the end of the framework. It needs a feedback loop to allow the company to dynamically evaluate its sustainability performance and at the same time reinforce the entire sustainability performance management system, to be discussed next.

5.5. Feedback loop

In light of the complexity and difficulty of sustainability problems, organizational members engage in self-reflection regarding their own beliefs and values upon the delivery of sustainability performance outputs and outcomes. Vuong [155] states that organization members regularly question and examine their beliefs systematically after each delivery of sustainability performance to relevant stakeholders. Sustainability vision and values are truly accepted by company members when sustainability performance outputs and outcomes address sustainability concerns. Overtime, with a continuing successful delivery of sustainability performance, the vision and values are even more reinforced as the correct way to proceed in the organization. On the opposite, individuals also engage in the process of unlearning previously held personal views and values once they are no longer dealing effectively to the sustainability problems. The personal views and values can be replaced with other ones that are more relevant in dealing with the sustainability problems.

The iterative nature of this learning feedback loop facilitates a cyclical process wherein beliefs and values can be continually examined, validated, and potentially discarded. Simultaneously, the efficacy of the comprehensive Sustainability Performance Management system is augmented.

6. Sustainability performance management framework

Based on the integrative review of the literature above, a Sustainability Performance Management framework is derived as demonstrated in Fig. 4. The framework commences by addressing sustainability issues, which are then integrated into the organization through the cultivation of a sustainability culture. This entails the establishment of sustainability assumptions, vision and corresponding values. Once the vision and values pertaining to sustainability have been established, a comprehensive strategy for sustainability is devised, encompassing concepts such as Triple Bottom Line, Coopetition, Stakeholder Engagement and Sustainable Organization. These sustainability strategies and their associated sustainability indicators are executed in the form of corporate sustainability practices and initiatives, which leads to improving economic, social and environmental outputs and sustainability outcomes of brand equity and sustainable wellbeing as measured by self-reliance, resilience and immunity.

After delivering sustainability performance to stakeholders, a feedback loop is begun to address the wicked sustainability problems. Stakeholder feedback is shared with organizational members. If feedback is positive, organizational members believe the sustainability vision and values are valid and deal effectively with the sustainability problems. They are even more devoted to the assumptions, vision and values, strengthening sustainability strategies, corporate sustainability practices, and initiatives. However, if feedback is unsatisfactory, organizational members feel they must reexamine the assumptions, vision and values. To next deliver sustainable performance to stakeholders, organizational members thus alter the sustainability strategies, corporate sustainability practices, and initiatives. Once the stakeholder is satisfied, the sustainability performance management system reaches a new equilibrium, dealing effectively with the sustainability problems again. If in the second time around, the stakeholder is still not satisfied, the feedback is fed back to the organizational members one more time, and the rest of the feedback loop continues to re-correct its part(s).

Therefore, the following propositions are formed.

P1: Sustainable corporations cultivate a culture of sustainability, which is informed by assumptions, vision and values centered around addressing prevailing sustainability problems.

P2: The establishment of a sustainability organizational culture facilitates the development of a comprehensive sustainability strategy that encompasses the Triple Bottom Line (TBL), Coopetition, Stakeholder Engagement, and/or Sustainable Organization strategies.

P3: Sustainability strategies are executed through Corporate Sustainability Practices of Perseverance, Geosocial Development, Resilience Development, Moderation and Knowledge Sharing.

P4: The implementation of the Corporate Sustainability practices of Perseverance, Geosocial Development, Resilience Development, Moderation, and Knowledge Sharing contributes to the achievement of sustainability performance outputs and outcomes.

P5: Sustainability performance outputs and outcomes play an effective role in addressing the sustainability problems and strengthening the culture of sustainability within a company.

7. Future research directions

Future studies have the potential to investigate the five propositions that have been derived from the aforementioned framework. Qualitatively, future research endeavors may focus on exploring sustainable organizations to investigate whether their organizational cultures align with assumptions, vision and values of sustainability, and whether these are developed in response to the prevailing sustainability problems. Quantitatively, future research endeavors may delve into the potential impact of such cultural factors on the development of corporate sustainability strategies, as well as their alignment with the principles of the Triple Bottom Line (TBL), Cooperation, Stakeholder Engagement, and/or Sustainable Organization strategies to determine if statistically significant relationships exist.

Subsequently, future investigations may quantitatively examine the correlation between sustainability strategies and corporate sustainability practices within sustainable firms, with the aim of determining if the practices align with the strategies. Future research endeavors may quantitatively investigate the potential correlation between Perseverance, Geosocial Development, Resilience Development, Moderation and Knowledge Sharing practices, and the outputs and outcomes of sustainability performance. Initially, future research may define sustainability performance outputs as TBL and brand equity as outcomes because they are more practical to measure.

Next, it is important that future studies qualitatively explore the feedback loop after a sustainability output or outcome is delivered if businesses can deal effectively with relevant sustainability problems, and if it can, whether the success can reinforce the organizational culture and the rest of the framework. These suggested future studies should be done in a large variety of organizations, industries and countries so that a generalization can be made.

Finally, the suggested framework for Sustainability Performance Management can be considered a simple theory [40]. As theory development is an ongoing process, future research can contribute to refining the framework [42] and challenging conventional assumptions to uncover novel and stimulating perspectives [41]. This iterative process may eventually lead to the establishment of a full-blown theory of sustainability performance management.

8. Practical implications

Although the sustainability performance management framework is still subject to further investigation, it is well grounded up the theoretical and empirical literature. Thus, the following important practical implications can be drawn for corporate leaders and managers.

To ensure the effectiveness of sustainability performance delivery, corporate leaders should revisit their organizational vision to make sure that the vision focuses on satisfying a wide range of stakeholders, as opposed to only maximizing short-term shareholder value. They should then revisit their corporate values to make sure that sustainability values or their equivalent are included. These values are social and environmental responsibility, innovation and virtues. With the sustainability vision and values, they should effectively communicate the vision and values to develop and nurture a sustainability organizational culture via leadership role modeling and shared events.

Corporate leaders next are advised to formulate sustainability strategies. They should consider adopting the Triple Bottom Line, Stakeholder Engagement, Cooperation and Sustainable Organization Strategies. Like a typical business strategy, corporate leaders should define sustainability objectives, sustainability indicators and targets, and sustainability initiatives. They should continue to monitor these indicators as they continue to implement their chosen sustainability strategies, and adjust the strategic targets as needed.

After implementing sustainability strategies, corporate executives should adopt the five corporate sustainability practices of Perseverance, Resilience Development, Moderation, Geosocial Development and Knowledge Sharing, and their associated initiatives. These five practices are high-level, and corporate leaders can match the on-going sustainability objectives, indicators and initiatives with them. They can then implement the sustainability initiatives according to the five corporate sustainability practices. While implementing the sustainability practices and initiatives, corporate leaders can focus on the United Nations Sustainable Development Goals (SDGs) by aligning them with the practices and initiatives. The Sustainability Performance Management framework will actually improve the effectiveness of the entire process toward achieving the SDGs since each company has to figure out its own approach to achieve them. The most relevant goals are SDGs 5 (Gender Equality), 8 (Decent Work and Economic Growth), 12 (Responsible Production and Consumption), and 13 (Climate Action).

Finally, after the initiatives are implemented, corporate leaders should consider the results or sustainability outputs and outcomes. If an output is satisfactory, they should communicate the success throughout the entire organization to reinforce the sustainability culture and entire sustainability performance management system. If the output is not satisfactory, they should allow organizational members to improve where relevant until it is satisfactory so that the success can be communicated to reinforce the sustainability culture and the rest of the framework. The same approach should be done when a sustainability outcome is observed.

9. Conclusions

With the three research questions in mind, the present study attempts to develop a sustainability performance management framework to deal effectively with the prevailing wicked sustainability problems. It starts by introducing the “wicked” nature of sustainability problems, followed by presenting the results of co-author and keyword occurrence analyses to confirm that little is known about sustainability performance management. A research methodology to build the sustainability performance management framework to deal with the wicked sustainability problems is introduced, followed by an integrative review to identify the components of the sustainability performance management and their relationships.

The review suggests that the components encompassed in this study are related to the organizational culture of sustainability, which includes the underlying vision and values of the business. The underlying organizational vision focuses on increasing stakeholder satisfaction, while the organizational values are typically about the responsibility for the society and environment, innovation and virtuous values. Additionally, the components include the sustainability strategy employed by the firm. These sustainability strategies are the Triple Bottom Line, Stakeholder Engagement, Coopetition and Sustainability Organization. After the strategy, the corporate sustainability practices are to be implemented. They are Perseverance, Resilience Development, Moderation, Geosocial Development and Knowledge Sharing.

Next, resulting outputs and outcomes are delivered. The resulting outputs are social, environmental and economic outputs, while the resulting outcomes are brand equity and sustainable well-being as determined by self-reliance, resilience and immunity. Overtime, with a continuing successful delivery of sustainability performance, the vision and values are even more reinforced as the correct way in the organization. On the opposite, individuals also engage in the process of unlearning previously held personal views and values once they are no longer dealing effectively to the sustainability problems. The personal views and values can be replaced with other ones that are more relevant in dealing with the sustainability problems.

Finally, a Sustainability Performance Management Framework and its resulting propositions are derived, followed by future research directions, theory building and practical implications.

Data availability

No data was used for the research described in the article.

CRediT authorship contribution statement

Sooksan Kantabutra: Writing – review & editing, Writing – original draft, Validation, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The author declares that he has no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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