



# Quantitative Research on Corporate Social Responsibility: A Quest for Relevance and Rigor in a Quickly Evolving, Turbulent World

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Received: 21 March 2022 / Accepted: 13 November 2022 / Published online: 25 November 2022  
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## Abstract

In this article, the co-editors of the corporate responsibility: quantitative issues section of the journal provide an overview of the quantitative CSR field and offer some new perspectives on where the field is going. They highlight key issues in developing impactful, theory-driven, and ethically grounded research and call for research that examines complex problems facing businesses and the society (e.g., big data and artificial intelligence, political polarization, and the role of CSR in generating social impact). By examining topics that are under-researched, forward-looking, and socially oriented, scholars can expand the boundary of CSR's substantive domain and produce research that helps businesses act in a long-term, socially responsible way in this quickly evolving, turbulent environment. They also discuss ways to enhance the methodological rigor of quantitative CSR research and encourage scholars to employ cutting-edge, innovative methods to shed light on the micro-level mechanisms of CSR and reveal patterns and relationships hidden in unstructured big data.

**Keywords** Corporate social responsibility · Social impact · Theory-driven · Methodology · Quantitative

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## Introduction

Research on corporate social responsibility (CSR) has flourished over the last few decades, providing significant insights into whether and how corporations should enact their societal obligations and stakeholder responsibilities. Sustainable and socially responsible development is a grand challenge for our society due to climate change, dwindling natural resources, and exacerbating social and economic inequity. Responding to this grand challenge, more than 12,000 businesses in 160 countries are signatories to the United Nations' Global Compact, committing to aligning their business strategies and operations with socially responsible principles on human rights, labor, environment, and anti-corruption. In 2019, the CEOs of the Business Roundtable, representing the largest US companies, released a new "Statement on the Purpose of a Corporation" that supersedes previously endorsed principles of shareholder primacy and outlines a modern standard for corporate responsibility (Business Roundtable, 2019). Without a doubt, CSR has entered the domain of mainstream business strategy, permeating key aspects of business decision making. At the same time, we live in a quickly evolving, turbulent world, facing unprecedented challenges, including disruptive technologies (e.g., big data, the Internet of Things, artificial intelligence, and

blockchain technology), political polarization, shifting geopolitics and international relations, and post-pandemic economic and social issues. These trends present new opportunities and challenges for corporations seeking to fulfill their social responsibility. Thus, the sizable body of CSR literature notwithstanding, we need more, not less, relevant and rigorous CSR research that examines complex and nuanced challenges and tradeoffs facing businesses today and that pushes the boundaries of the field by increasing the breadth and depth of CSR research topics.

Reflecting the prominence of CSR and the widespread scholarly enthusiasm with the topic, the CSR quantitative section of the *Journal of Business Ethics* receives several hundred submissions annually, of which only a small percentage are accepted for publication. The standards for publication are significantly higher than in the past for several reasons. First, as the field of CSR quantitative research matures, it becomes more difficult to provide novel and significant theoretical contributions. Previous studies on CSR have already examined many key outcomes (e.g., corporate financial performance, innovation, goodwill effect, stakeholder satisfaction and loyalty; Godfrey et al., 2009; Servaes & Tamayo, 2013; Valentine & Fleischman, 2008), antecedents (e.g., board and CEO characteristics, stakeholder pressure; Jia & Zhang, 2013; Perez-Batres et al., 2012), underlying psychological processes (e.g., identification, CSR attribution; Gond et al., 2017; Sen & Bhattacharya, 2001), and contingencies (e.g., corporate reputation, CSR fit, stakeholder characteristics; Sen et al., 2016). To generate significant theoretical contributions, CSR scholars need to either incrementally advance current CSR knowledge or offer an original, dramatically new perspective on CSR-related phenomena (e.g., strategic silence on CSR communication; Carlos & Lewis, 2017; Wang et al., 2021a, 2021b), both of which become increasingly difficult as the body of CSR quantitative research expands. There are, however, plenty of opportunities for relevant and rigorous CSR research that tackles current and emerging social problems and issues, such as those related to big data and artificial intelligence and those related to political polarization. In line with the most recent JBE editorial that emphasizes “reconnecting to the social in business ethics” (Islam & Greenwood, 2021), CSR scholarship should be future-oriented and have some degree of foresight or prescience (Corley & Gioia, 2011) in trying to anticipate, conceptualize, and influence significant future problems related to firms’ social responsibility. It is important to conceptualize emerging topics and engage in research that shapes the future of the business world by questioning accepted practices and promulgating new ways of doing business responsibly.

The second reason that the standards for publications are higher is methodological. The journal and reviewers have set the bar high regarding methodological clarity and

rigor. Papers with a strong method section should provide a clear rationale for sample selection and construct operationalization, explain and justify model specification and data analysis approaches, and sufficiently address key methodological concerns, such as construct validity, common method bias, endogeneity issues, and robustness tests. Innovative approaches in methods, such as utilizing multiple study designs (e.g., a laboratory experiment coupled with a field survey or an archival study) and employing cutting-edge technologies in data collection and analysis (e.g., eye tracking, neuroscience tools, textual analysis, and natural language processing), are highly appreciated.

Looking at the papers submitted to the CSR quantitative section, we find that rejected papers often exhibit one or more of the following characteristics: (1) weak theoretical contribution, sometimes due to a paper’s focus on a narrow and highly incremental topic or its lack of finer-grained conceptualization and insights (e.g., main effect hypotheses with little insight into the underlying mechanism and/or contingent factors); (2) questionable methods, sometimes due to weaknesses in the study design, sampling, measurement, or data analysis or a lack of empirical support for the hypotheses; and (3) poor writing, which manifests in various ways, ranging from substantive aspects such as unconvincing motivation for the study and incoherent or weak explanatory logic for the hypotheses, to technical aspects such as grammatical and punctuation errors, typos, and improper formatting. It is not uncommon for poor writing to hinder an otherwise promising paper.

In contrast, accepted papers tend to not only focus on an important topic and have a strong theory section but also demonstrate methodological rigor and offer rich insights with theoretical and practical value. To illustrate, while most previous CSR research examines business outcomes but neglects the social outcomes of corporate social initiatives, Boodoo et al. (2022) focus on the social outcomes of corporate philanthropy in the case of health grants by corporate foundations and find that, paradoxically, health grants are less likely to go to areas with more severe health needs, thus exacerbating health inequity. This research has important implications for the social efficacy of corporate philanthropy and calls for a data-driven and needs-based approach to the distribution of corporate donations and resources. Another example is the paper by Miller et al. (2022) examining the interplay between firms and individuals in the same geographic communities and finding that firms with high CSR performance positively influence the social distancing behaviors of individuals during the COVID-19 pandemic. This research breaks new ground by expanding the scope of CSR outcomes and revealing a previously unexamined effect of CSR: how a firm’s CSR influences individuals’ ethical behavior in their communities.

As the section editors of the CSR quantitative section, we would like to share our view of where the field of CSR quantitative research is going, highlight several substantive topic areas that are timely but under-researched, as well as discuss ways to enhance the methodological rigor of research and call for the utilization of innovative methodological techniques. This editorial seeks to stimulate research on relevant, forward-looking topics and increase emphasis on methodological rigor and innovativeness.

## Developing Impactful, Theory-Driven, and Ethically Grounded CSR Research

Research on CSR has been criticized for both a lack of theoretical foundations (Wang et al., 2020) and deficient practical impact (Barnett et al., 2020). Despite the tremendous growth of CSR research, we still question the value of the field and critique its insightfulness for managerial and organizational practices. The “countless” corporate investment in terms of time and money in CSR initiatives notwithstanding (Davidson et al., 2019), firms still struggle to determine how, where and when to devote their social and environmental efforts (Wang et al., 2020). Quantitative CSR researchers should move toward more novel theoretical development, stronger scientific rigor, and broader applied insight rather than filling gaps in the literature and refining analytic methods.

### Impactful CSR Research

There are multiple ways to increase the potential impact of CSR research. First, we call for more research to quantitatively examine the societal and environmental outcomes of CSR. Until recently, CSR research was mainly dominated by a business-centric focus, primarily concerned with the business case of CSR and how CSR can improve firm-level outcomes such as financial performance, reputation, and competitive advantage. As a result, we know most about CSR’s impact on businesses and the various benefits for businesses, and least about how CSR affects the major societal issues it was intended to tackle (Blowfield, 2007). Calling for a shift in CSR research from a business-centric to a society-centric focus, Wickert (2021, p. 15) urged, “We need to know more about how to effectively capture the impact of CSR beyond financial performance, as well as how different social and ecological outcomes are linked to what businesses do in the name of CSR.” Quantitative CSR research should investigate cause-effect relationships between CSR initiatives and societal outcomes such as workers’ health, equality and inclusion, biodiversity and natural environment resilience, and labor conditions and sustainable sourcing in global supply chains. It is also important to go beyond a short-term focus to examine the long-term, multifaceted,

and sometimes double-edged impact of CSR on society and the environment (e.g., Luo et al., 2018; Wood, 2010). Such a socially oriented approach to quantitative CSR research will be more impactful and will broaden the predominant business case logic with social, ecological, and ethical cases (Wickert, 2021).

Second, producing impactful CSR research requires researchers to embrace new and bolder ideas instead of only focusing on theoretical “gaps” or methodological refinements. Impact should go beyond the narrower metric of research citations and measure whether a study pushes the boundary of existing CSR literature by tackling local and global societal problems in a quickly evolving, volatile, uncertain, and complex context. In addition to investigating “grand challenges” such as poverty, health, inequality, and climate change, researchers can produce novel insights into emergent phenomena that are significant and important to individuals, corporations, and the society, such as the changing role of CSR in an environment characterized by big data and smart technologies (Du & Xie, 2021) and political polarization and shifting geopolitical dynamics (Korschun et al., 2020), as well as the role of CSR in generating social impact and building societal resilience during major crises (e.g., the Covid pandemic and the Russia-Ukraine War). Impact also comes from adopting multiple levels of analyses and innovative and rich methodological approaches such as field experiments and textual analysis using machine learning algorithms.

In summary, impactful CSR research investigates new, significant, and societally relevant topics and utilizes rich data analytic methods that better determine causation rather than just ascertain correlation. Theoretical and empirical rigor is not opposed to but rather contributes to the greater impact of quantitative CSR research.

### Theory-Driven CSR Research

Theory-driven quantitative CSR research is important for several reasons. First, we need a theory-driven approach precisely because quantitative CSR research has often been criticized for being undertheorized (Wang et al., 2020). The field lacks both theoretical foundation and coherence despite the application of multiple theoretical perspectives, including stakeholder theory, agency theory, upper echelons theory, economic theories of information and incentives at the macro level and social exchange theory, identity theory, attribution theory, and justice theory at the micro-level. Many such theories, originated in other fields and based on the primacy of shareholder interests, either do not fit well within the CSR context or could not adequately account for the complexity of the intersection between economic, social, environmental, and governance interests that characterize the CSR field (Hilliard, 2019; Wang et al., 2020).

Moreover, the field of CSR has been mainly practice-driven and empirically focused on the business case examining the relationship between CSR and corporate financial performance. This phenomena-driven focus, more prominent in earlier CSR research, has hindered the theoretical development of the field, limited its theoretical insights, and favored a loose application of theories and a lack of investigation of the underlying causal mechanisms and boundary conditions (Wang et al., 2020).

Second, a theory-driven approach to quantitative CSR research is necessary because using sophisticated empirical methods without theory-based causal analysis at best yields shallow and misleading results (Simmons et al., 2011). Theory provides guidance to research questions and logical reasoning, forces discipline in methodology (i.e., measurement, data collection, analysis), and imparts meaning to empirical results (Cortina, 2016; Van de Ven, 2007; Van Maanen et al., 2007). Third, when authors build their quantitative study upon a strong and relevant theoretical framework from the beginning, they can more clearly explain their theoretical contributions and show what is novel, significant, and insightful in their work beyond what we already know at a theoretical level. Starting with a solid theoretical framework is crucial for producing novel and impactful insights because “identifying the uniqueness and novelty of a given approach is difficult in the absence of a solid understanding of what is already known or assumed to be true in the literature” (Shaw, 2017, p. 821).

### Responsible and Ethically Grounded CSR Research

It is simplistic to say that all CSR research will contribute to making organizations more ethical and more socially responsible. Rather than describing and taking for granted what is socially responsible and ethical in corporate actions, CSR researchers should critically investigate and assess the ethical premises and the potential positive and negative social impact of these actions. We need to not only understand the role of ethics in business, but also use principles of ethics to evaluate and prescribe the role of business in society (Islam & Greenwood, 2021, p. 1). For example, previous research has shown that CSR actions can cause unintended harm to some stakeholders who are vulnerable and beleaguered (Willness, 2019) and can lead to moral hazards where firms use CSR as reputation insurance to benefit themselves at the cost of society (Luo et al., 2018). Responsible research on CSR implies the importance of assessing the potential unintended negative effects of CSR practices and avoiding promoting organizational practices that are harmful to vulnerable stakeholders and society.

To promote responsible quantitative CSR research, scholars need to go beyond a narrow business case perspective when examining CSR phenomena and incorporate an

evaluative element to orient ethical and socially responsible corporate actions. For example, when certain CSR actions may have negative effects on firm performance, rather than suggesting that firms should not practice these socially responsible actions, responsible CSR research should reveal the underlying mechanisms for why such negative impacts might occur, understand how to minimize the negative impacts, and examine the ways that firms could better approach these CSR actions to create positive social and business value (Hideg et al., 2020). To make quantitative CSR research more responsible, a crucial step is to deepen the study of CSR’s nonfinancial, social and environmental impact, such as the nuanced effects of CSR on community and stakeholder well-being, poverty reduction, diversity and inclusion, and climate change.

Furthermore, when studying the social impact of CSR, researchers should examine not only antecedents and outcomes, but also the underlying processes and boundary conditions of CSR actions. A deeper understanding of the causal mechanisms and contingencies will provide guidance for more effective CSR decision making and implementation and, in turn, accentuate the social impact of organizations’ CSR initiatives. Finally, responsible and ethically grounded CSR research should take into account conflicts of interest among various stakeholder groups to help organizations better understand the priorities and the nonintentional effects of CSR on various groups. To that end, research should shift from considering CSR as an aggregate and homogeneous construct to the analysis of specific subdimensions of sustainable development. The United Nation’s 17 sustainable development goals (SDGs)<sup>1</sup> include an array of more concrete, diverse and comprehensive goals as compared to the often-used broad categorization of environmental, social, and governance performance. We encourage future quantitative CSR research to examine whether and how firms’ CSR could advance specific SDGs.

### Substantive Topic Areas that are Under-Researched and Forward-Looking

Our society is rapidly transforming and faces unprecedented challenges, including disruptive technologies (e.g., big data, artificial intelligence, and blockchain technology), political

<sup>1</sup> United Nation’s 17 sustainable development goals are: no poverty, zero hunger, good health and well-being, quality education, gender equality, clean water and sanitation, affordable and clean energy, decent work and economic growth, industry, innovation and infrastructure, reduced inequality, sustainable cities and communities, responsible consumption and production, climate action, life below water, life on land, peace and justice strong institutions, partnerships to achieve goals.



polarization, shifting geopolitics and international relations, and post-pandemic economic and social issues. By examining research topics that are under-researched, forward-looking, and socially oriented, quantitative CSR scholars can expand the boundary of the field's substantive domain and produce impactful research that helps businesses act in a long-term, socially responsible way in this fast evolving, turbulent environment.

### **CSR in the Era of Datafication and Artificial Intelligence**

Big data and artificial intelligence (AI) are perhaps today's most dominant trends, transforming businesses and individual lives and presenting abundant opportunities for CSR research in the era of datafication and AI. AI refers to the ability of machines to carry out tasks by displaying intelligent, human-like behaviors (e.g., machine learning, computer vision, speech recognition, and natural language processing; Russell & Norvig, 2016). Over the last decade, AI technologies have experienced exponential growth and are being deployed on a rapidly increasing scale in many industries ranging from manufacturing, transportation, and communications, to retail, healthcare, and financial services. Powered by big data and continuously improving algorithms, AI systems can automate decision making, boost productivity and economy, and liberate individuals from tedious and repetitive work. The promised benefits of AI are numerous. For example, self-driving cars can dramatically reduce car accidents; AI-based healthcare could help solve the elderly care crisis in many developed countries; and smart and precision agriculture can reduce the usage of water, fertilizer, and pesticides while increasing yield.

At the same time, however, increasing datafication and the widespread deployment of AI have triggered many ethical and social issues and raised many urgent research questions for CSR scholars. Forward-looking scholars should broaden and deepen the conceptualization of CSR to better address the emerging ethical and societal challenges in the era of datafication and AI. For example, companies have an unprecedented responsibility to enhance the cybersecurity of their information systems and sensitive data and protect the data privacy of their stakeholders. Data breaches now occur more frequently than ever (Martin et al., 2017), exposing sensitive and confidential personal information of stakeholders and causing emotional stress, humiliation, and possibly financial loss. Researchers should examine the characteristics of effective cybersecurity practices that minimize the occurrence of data breaches. Relatedly, there is an urgent need to conceptualize and examine corporate responsibility in the digital space related to protecting stakeholder privacy and well-being. Individual consumers' demographic information

and behavioral data are being continuously tracked and analyzed, and the resultant insights are used in targeted advertising, content customization, and other ethically questionable business practices to achieve profit maximization (Zuboff, 2019). We call for research on socially responsible privacy practices that are centered around stakeholder well-being. One important research question is to examine the characteristics of corporate responsible data practices that are effective in protecting the privacy and security of stakeholders' sensitive data. Researchers can also examine how a firm's (ir) responsible data privacy practices influence its CSR reputation and stakeholder relationships.

Another area for future research relates to addressing the various limitations of AI and the associated ethical and social issues. Research suggests that most AI algorithms exhibit biases against minority and underprivileged groups, mirroring deep imbalances in the institutional environment and reinforcing social injustice (Zou & Schiebinger, 2018). Such AI biases will have profound negative social impact, especially considering that AI technologies are being deployed in many high-stakes domains, ranging from self-driving cars and mortgage lending to medical diagnosis and law enforcement. Future research can investigate the ethics of AI algorithms and the effects of AI applications on firms' diversity, equity, and inclusion performance in the workplace and the marketplace. CSR scholars should compare and contrast various corporate approaches to dealing with AI biases and examine their efficacy in terms of the consequent social outcomes (e.g., inclusion and social equity metrics, well-being of vulnerable and disadvantaged stakeholders).

Finally, the increasing deployment of AI triggers other societal issues, such as potential large-scale unemployment due to automation and the widespread social media and smartphone addiction, all with far-reaching societal and political implications. These issues are fertile ground for relevant and impactful CSR research projects. For example, one promising area of research is to examine what are characteristics of effective corporate initiatives that reskill or upskill their employees to help them thrive in a digital, AI-mediated economy. It is also important to assess the social and business outcome of such employee-oriented CSR initiatives as well as contingent factors.

Overall, the ethical and societal challenges of datafication and AI are fertile ground for impactful CSR research. As companies navigate the uncharted territories of an increasingly AI-mediated economy, they could benefit from CSR research that sheds light on how companies can shape the future of ethical and socially responsible AI and achieve symbiosis between AI technologies and society. Relatedly, the emergence and availability of massive, unstructured big data and AI-enabled machine learning technologies (e.g., natural language processing, image processing, text, and

sentiment analysis) also provide opportunities for quantitative researchers to explore new CSR topics and advance knowledge on existing topics.

### CSR in a Politically Polarized Environment

We live in a world that is more politically polarized than ever, with a global political system that is undergoing profound transformation. In the United States, the disagreement has become nearly irreconcilable between Democrats and Republicans on the economy, racial justice, climate change, law enforcement, international engagement, and a long list of other issues (Pew Research Center, 2020). In Europe, Brexit has polarized British politics, and the rise of right-wing populism has disrupted party systems in other European countries, such as France, Germany, and Austria (Noury & Roland, 2020). Political polarization has also manifested itself in the global south in countries such as Brazil, India, and Kenya (Carothers & O'Donohue, 2019). This widening ideological divide is caused in part by economic factors related to globalization and trade openness, rising inequality, and economic crises and anxiety; in part by a cultural backlash against the multiculturalism and cultural evolution of the last 50 years (i.e., evolution toward gender equality, laws against the discrimination of ethnic and sexual minorities, etc., Inglehart & Norris, 2016); and in part by the prevalence of social media, the social media filter bubble, and fake news (Spohr 2017).

Against this backdrop of the widening political fissure, corporate political activism has become a frontier area of CSR (Moorman, 2020; Smith & Korschun, 2018), as is evident from the uptick in the number of companies taking a stand on politically controversial issues. For example, the US apparel company Patagonia created a space in its stores for customers to sign a petition against President Trump's executive order discontinuing protections of large swaths of federal parklands (Stanley, 2020). Dick's Sporting Goods took a highly publicized stance on gun control by removing guns from its stores after the 2018 Parkland, Florida school shooting (Bomey, 2018). Irish airline company Ryanair ran newspaper advertisements in 2016 against Brexit, arguing that consumers would end up paying more to fly outside of the United Kingdom (Davies, 2016). Indeed, business leaders increasingly consider it appropriate for companies to take a stand on political issues; according to a CMO survey (Moorman, 2020), 47.2% of marketing leaders consider it appropriate to make changes to products and services in response to political issues, and 33.3% consider it appropriate to have executives speak out on political issues. Comparing CSR and corporate activism, Eilert and Cherup (2020) note that while CSR generally focuses on issues that are widely favored or accepted in the institutional environment (e.g., supporting education, community outreach), corporate

activism tends to focus on issues that are controversial in the institutional environment (e.g., gun control, transgender rights, racial equity) and thus has a moderate to high likelihood of triggering negative stakeholder reactions. These controversial sociopolitical issues are "salient unresolved social matters on which societal and institutional opinion is split, thus potentially engendering acrimonious debate among groups" (Nalick et al., 2016, p. 386). Corporate activism pushes the boundary of traditional CSR in the sense that while both seek to "do good" for society, corporate activism addresses issues that face barriers in their progress toward a solution and promotes social change by "placing pressures on institutions" (Den Hond & De Bakker, 2007, p. 901).

In this polarized environment, stakeholders are more likely to view companies through a political lens and expect companies to engage in partisan and controversial sociopolitical issues (Korschun et al., 2020). Recent research has begun to examine important questions about corporate sociopolitical activism, such as investor reactions to corporate activism (Bhagwat et al., 2020), various mental models of corporate activism (Moorman, 2020), and the efficacy of CEO activism (Chatterji & Toffel, 2019). As the frontier area of CSR research, there are many promising avenues for future research on corporate sociopolitical activism. Future research can investigate key antecedent conditions of corporate sociopolitical activism (e.g., issue-, company-, and stakeholder-specific characteristics) and examine how stakeholders react differently to corporate sociopolitical activism as compared to traditional CSR initiatives. Additionally, given the inherent business risks and controversial nature of sociopolitical activism, CSR scholars should identify strategic levers that companies can use to reduce business risks while enhancing the social and business outcomes of corporate activism and investigate the underlying mechanisms for corporate sociopolitical activism to create positive social change. It is also worth examining how firms could best communicate their corporate activism initiatives and how corporate activism affects consumer reactions (e.g., consumer attitudes, relationships with the brand, and purchase decisions) and employee reactions (e.g., job satisfaction, retention rate, etc.).

### A New Mode of CSR Research: Strengthening Theoretical Perspectives on the Social Impact of CSR

Decades of CSR research notwithstanding, scholars have mostly focused on the business case of CSR (i.e., how CSR could affect a firm's financial performance) but have largely neglected the social impact of CSR (Barnett et al., 2020). As a result, whereas there are extensive insights as to whether, how, and when CSR contributes to the financial bottom line of a company, there are extremely limited insights as to whether, how, and when CSR activities produce their

intended social impact. Together with worsening climate change, widening social and economic inequalities, recent crises such as the COVID-19 pandemic and the Russia-Ukraine war have accentuated and accelerated the need for CSR scholars to take a societal turn and focus on social issues and grand challenges such as poverty, social justice, human rights, healthy societies, and a sustainable environment. We call for a new mode of CSR research, urging quantitative CSR researchers to adopt a society-centric focus and examine the social and ecological impact of CSR. Understanding and quantifying the social impacts attributable to specific CSR initiatives is a necessary first step in better guiding firms' resource allocation to CSR and the effective design of CSR programs. Along the same line, Barnett et al., (2020, p. 955) advocate a design approach in CSR research, "Taking a design approach, CSR scholars transform from passive observers and assessors of organizations into active agents in designing and redesigning organizations to create a better world. Guiding managerial decision making toward the most efficient and effective means of achieving specific impacts—positive social changes—becomes the objective of CSR research."

It is important to strengthen the theoretical underpinning when examining the social impact of CSR. We encourage researchers to adopt a diverse range of theoretical perspectives to deepen current understanding of whether, how, and when CSR could create social impact and benefit the targeted stakeholder groups. For example, resource-based view (Barney, 2001; Branco & Rodrigues, 2006) would be pertinent in linking a firm's unique resources and capabilities to the social efficacy of its CSR initiatives; researchers can examine whether and how CSR initiatives that leverage a firm's unique capabilities (e.g., technical expertise, marketing capabilities, human talents) are likely to produce greater social impact. Theories on social network and social capital (Burt, 1997; Inkpen & Tsang, 2005) can add conceptual depth when examining corporate alliances, cross-sector partnerships, and stakeholder collaborations aimed at addressing complex societal and environmental problems.

Theoretical perspectives are also essential when researchers attempt to capture, categorize, and quantify the different forms and various dimensions of CSR's social impact. Barnett et al. (2020) use the literature on development economics to highlight the need to assess not only immediate outputs from CSR activities (e.g., number of beneficiaries served, emissions, and financial performance) and outcomes associated with CSR activities (i.e., correlational evidence on societal outcomes such as reduced emissions and improved work environment), but more importantly, causal impacts attributable to CSR activities (i.e., societal outcome improvement caused by CSR activities). Innovation is a key outcome of social impact due to its power in generating positive social change (Porter & Kramer, 2011), thus

future research on social impact can draw upon theoretical perspectives on responsible innovation (Stilgoe et al., 2013) and sustainable innovation (Adams et al., 2016; Varadarajan, 2017) to predict, measure, and monitor the outcomes of social and sustainable innovation attributable to CSR activities. Finally, behavioral change is an essential aspect of social impact since for many social issues, ranging from health to diversity to environmental protection, it is often the behavioral change adopted by individual stakeholders that creates the most lasting impact in the effort to solve the issue. In this sense, theories from social psychology such as theory of planned behavior (Ajzen, 1991) and social cognitive theory (Bandura, 2001) are applicable theoretical lens for examining processes and outcomes of desired behavioral change.

We call for more quantitative CSR research to rigorously examine the antecedents, processes, and outcomes of the social impact of CSR activities and to draw more broadly and deeply from relevant disciplinary fields like development economics, sociology, social and cognitive psychology, social work, public health, and public policy. Deepening the theoretical perspectives for this new model of socially oriented CSR research would help us accumulate new insights and help firms design CSR initiatives for greater social impact.

## Enhancing the Methodological Rigor of Quantitative CSR Research

Methodological rigor contributes to the credibility of research results and is critical to the overall quality of quantitative CSR research. CSR scholars should strengthen the rigor of methodology, including research design, construct measurement, data analyses, robustness testing, ruling out alternative explanations, and so on. Below we discuss two key issues in detail, construct measurement and the issue of endogeneity.

### Construct Measurement

Since measurement is the lens through which we operationalize focal constructs (as well as all control variables), measurement accuracy should be paramount even in theory specification. Quantitative CSR research may suffer from low construct validity and a weak link between CSR constructs and their observed indicators. Many published articles in the quantitative CSR field do not provide sufficient evidence to draw strong conclusions about construct validity. Construct validity indicates the confidence that researchers have that the indicators used (i.e., measures) are good proxies of the targeted constructs (Aguinis & Vandenberg, 2014). In the

absence of strong evidence of construct validity, substantive research results are generally inconclusive.

Poor construct measurement poses a serious threat to quantitative CSR research. Indeed, there are some critical and difficult issues that hinder the development, evaluation, and refinement of good measures of critical constructs in quantitative research methods. This includes the lack of precision of the underlying constructs, the use of single indicators and categorical measures to represent complex concepts, the inadequate assessment of reliability when self-reported scales are used, and insufficient attention to measurement levels and measurement invariance (Aguinis & Edwards, 2014; Cortina et al., 2017). To mitigate these measurement concerns, quantitative CSR researchers should more clearly define constructs, ensure that measures are conceptually related to their constructs, and carefully specify the nature and direction of relationships between concepts and measures (Aguinis & Edwards, 2014; Cortina et al., 2017). Finally, quantitative CSR research needs to establish more validity generalizations through meta-analyses and structural equation modeling (Cortina et al., 2017).

### Causal Inferences and the Issue of Endogeneity

Causal claims are important and frequently made in quantitative CSR studies. However, to draw causal inferences, empirical studies must satisfy three conditions: (a) the cause must precede the effect temporally, (b) the cause and effect must be reliably associated, and (c) the relationship between the cause and effect must not be explained by other causes (Antonakis et al., 2010). The clearest way to establish causality is through randomized experiments. Unfortunately, random assignment is often impractical in CSR research, where studies are conducted in organizational settings or involve units of observation at higher levels of analysis than the individual, such as firms. Since CSR actions are not randomly assigned, nonexperimental studies are prevalent in quantitative CSR research. A major threat to the validity of these nonexperimental studies (e.g., those based on archival data or survey data) is endogeneity. Researchers should address the issue of endogeneity with a combination of theoretical logic, research design, statistical analysis, and post hoc robustness tests.

Endogeneity can arise from various sources, such as omitted variables (i.e., unobserved heterogeneity), simultaneity (i.e., reverse causality or feedback loop), measurement error (i.e., systematic error or common method variance), or selection (i.e., self-selection or sample bias) (Wooldridge, 2010), which have various impacts and necessitate different remedies (Clougherty et al., 2016; Hill et al., 2021; Semadeni et al., 2014). Multiple methodological reviews show that statistical techniques used to deal with endogeneity, such as the instrumental variable method, are frequently misapplied

or not adequately justified and explained (Wolffolds & Siegel, 2019). Moreover, even if multiple causes of endogeneity can affect the same estimated relationship in a single study, there is a need to clearly focus on specific causes of endogeneity, as there is no generic remedy for general endogeneity issues, but there is an extensive toolbox of methods adequate to deal with specific causes of endogeneity (Hill et al., 2021). Table 1 provides a summary of the different causes of endogeneity and the appropriate remedies.

Specifically, when endogeneity is caused by omitted variable bias, techniques such as control variables, fixed effects, sensitivity analysis, and instrumental variables may offer solutions to help remedy endogeneity (Wu et al., 2022). When the cause of endogeneity is simultaneity, dynamic panel techniques, instrumental variables, using exogenous events, or lagging the endogenous variable can be used to address endogeneity. For measurement error, the use of latent variable methods, instrumental estimation and CMV treatment are used to address endogeneity. Finally, Heckman method, differences in differences, and regression discontinuity are the more appropriate techniques when endogeneity is caused by selection biases. While it is impossible for any one study to fully mitigate all endogeneity concerns, we echo the recommendation by Hill et al. (2021) that, to sufficiently address endogeneity issues, researchers need to (i) offer a clear diagnosis of the endogeneity threat and explicitly establish whether and why a specific cause of endogeneity exists in a study, (ii) justify and clearly explain why the chosen technique is appropriate for addressing the specific source of endogeneity in the context of the focal study, and (iii) increase the transparency in the resulting prognosis and make precise claims about the conclusions regarding endogeneity treatment.

### Employing Innovative Methods to Test Hypotheses

Different methods have their respective strengths and weaknesses. Field surveys and archival studies have higher external validity but tend to suffer from issues such as common method biases, inadequate construct measurement, and endogeneity. Randomized laboratory experiments ensure internal validity and shed light into causal links between constructs, yet they often have low external validity. Innovative methods have been employed to strengthen traditional laboratory experiments, field surveys, and/or archival studies. With the booming development of science and technology, we have seen increasing applications of innovative technologies in quantitative research methods, such as eye trackers, face readers, and cognitive neuroscience techniques. These high-tech approaches allow researchers to directly observe the cognitive, emotional and neural



**Table 1** Different causes of endogeneity and the appropriate remedies

Source of endogeneity	Description and similar terms	Associated solutions and techniques	Recommendations
General endogeneity	The existence of a correlation between the predictor, $x$ , and the residual, $u$	Minimizing endogeneity threats through design: laboratory experiment, field experiment, natural experiment, and quasi-experiments	Make a clear diagnosis of the specific causes of endogeneity. Ensure random assignment in the control and treatment groups to the extent possible
Omitted variable	Missing variable, unobserved heterogeneity, confounding variable, unmeasured variable problem	Include control variables, make a sensitivity analysis, include fixed effects, instrumental variables with a two-step or simultaneous equation technique: (a) instrumental specification tests and (b) instrumental variable estimators (e.g., two-stage least squares (2SLS) or generalized method of moments (GMM))	Avoid arbitrary inclusion of control variables and explain theoretically the rationale for inclusion. Avoid weak instruments that can be worse than no instruments
Simultaneity	Feedback loop, reciprocal reverse causality, interdependence	Dynamic panel techniques, instrumental variables, lagging the endogenous variable, using exogenous events (i.e., quasi-experiments)	The instrumental variable must be related to the endogenous variable but unrelated to the unobserved residual
Measurement error	Errors-in-variables, Common Method Variance (CMV)	Model the measurement error (i.e., use a latent variable method (SEM)), address CMV issues	Choose reliable and valid measures and strengthen data collection strategies
Selection into sample	Self-selection, sample selection bias, range restriction	Heckman selection correction	An instrument is preferred
Selection of treatment	Treatment effect, self-selection, endogenous choice	Difference in Differences, Heckman treatment estimate, regression discontinuity, synthetic control groups	In Difference in Differences, the treatment must be exogenously chosen

Adapted from Hill et al. (2021) and Wooldridge (2010)

Please refer to Hill et al. (2021) for an in-depth and comprehensive review of the causes and remedies of endogeneity

processes underlying individual reactions to CSR, shedding light on the micro-level mechanism of how individual stakeholders process CSR-related information and corroborating research findings based on self-reported measures. Below we discuss several state-of-art experimental study technologies that are suitable for CSR research.

## Eye Tracking

Eye tracking is a tool to measure eye movements (Holmqvist et al., 2011; Meissner & Oll, 2019). Eye-tracking studies generally focus on determining where people distribute their attention (such as fixation points or gaze points); to be more specific, eye tracking is used to locate pupil positions and to calculate fixation times and durations with the help of digital images (Ashby et al., 2016). One of the most common basic principles of eye tracking is the “eye-mind assumption,” which asserts that people’s attention at certain information is controlled by their brain. Therefore, through monitoring eye movements, eye tracking can reveal what is going on in the brain. For instance, assuming a researcher wants to understand how stakeholders read a CSR report and which parts of the report hold their attention, traditional research methods, such as self-reported behavior, can be inaccurate and misleading. Using eye-tracking data, we can directly assess readers’ fixation duration and times on target areas, thus helping us better understand how stakeholders read a CSR report and differentially process various parts of the report content.

The eye is the window of the soul, and approximately 80% of the external information received by people comes from the visual channel via the eyes; meanwhile, the processes of people’s psychological activities are reflected through their eyes. In an experimental setup, eye-tracking systems allow researchers to record the movements of a participant’s eyes during behavioral processes, thus providing “insights into the cognitive processes underlying a wide variety of human behaviors” (Ashby et al., 2016, p. 96). Eye-tracking technology is an intuitive and effective method that could be employed in lab experimental settings to reveal the micro-level cognitive processes of stakeholders’ reaction to CSR activities.

## Neuroscience Tools

Neuroscience tools enable researchers to have a deeper and more direct understanding of brain activities during decision making (Robertson et al., 2017). Common neuroscience tools include fMRI (functional magnetic resonance imaging), EEG (electroencephalogram), and fNIRS (functional near-infrared spectroscopy). The basic principle of these neuroscience tools is that an individual’s specific psychological activities will give rise to the activation and excitement

of a certain brain area or neurons and thus changes in blood dynamics. Neuroscientific technology can help researchers observe the underlying neural and psychological mechanisms of individual reactions. For instance, deontic justice theory holds that individuals often feel principled moral obligations to uphold norms of justice; however, there is still no coherent framework for explaining how individuals produce and experience deontic justice. Cropanzano et al. (2017) advanced a theoretical model to provide further understanding into the underlying neural and psychological mechanisms of deontic justice with the help of neuroscience tools. If researchers want to explore what stakeholders think when they make judgments about firms’ CSR activities, the neuroscience techniques could be very useful.

Apart from changes in attention and the brain, facial expression variations also provide researchers with useful information, as facial expressions generally reflect an individual’s emotions and affective states. FaceReader is an advanced tool to automatically analyze people’s facial expressions and provides researchers with an objective evaluation of subjects’ affective states (Noldus, 2014). In many cases, scholars need to test how subjects react after reading some critical information about firms. Instead of designing a survey to measure individuals’ emotions and feelings in an indirect way, it is more direct and more reliable to observe their facial expression changes with the help of FaceReader.

## Machine Learning and Analysis of Unstructured Data

Eye tracker, FaceReader, and a variety of neuroscience tools could be employed in experimental studies to reveal the cognitive and affective mechanisms of stakeholder reactions to CSR, further enhancing the internal validity of experimental studies. On the other hand, tools such as machine learning and analysis of unstructured data are very useful and allow researchers to systematically extract the patterns and relationships hidden in massive amounts of unstructured data.

Unstructured data are commonly understood as “information that either does not have a predefined data model or is not organized in a predefined manner” (Wikipedia, 2022). An estimated 80% of data held by firms today are unstructured data, and they are growing 15 times faster than structured data (Balducci & Marinova, 2018). Unstructured data are multifaceted and include verbal (e.g., text, audio) and nonverbal (e.g., image, facial expression, geographic/spatial location) data. As compared to structured data, unstructured data allow researchers to have more flexibility for theoretical discovery and uncover richer conceptual and managerial insights (Balducci & Marinova, 2018; Li et al., 2019). Table 2 provides a summary of different types of unstructured data and some illustrative examples of prior literature analyzing these unstructured data.

**Table 2** Analyzing unstructured data: Illustrative examples

Example	Type of unstructured data	Measures	Machine learning method	Main findings
Muslu et al. (2019)	Text (CSR reports)	Tone, readability, length, numerical content, Horizon content	N/A	A disclosure score is calculated based on the tone, readability, length, and the numeric and horizon content of CSR report. CSR reports with high disclosure scores are associated with more accurate analyst forecasts
Eitter et al. (2018)	Text (Tweets)	Sentiments (negative, neutral, and positive)	A supervised classification model based on a training set to classify sentiments	Positive and negative sentiments in tweets reveal individuals' affective reaction to the focal organization and are indicators of organizational legitimacy
Brown et al. (2020)	Text (10-K narratives)	Thematic content of various topics	Latent dirichlet allocation (LDA) topic modeling	Thematic content of financial statement disclosures (labeled <i>topic</i> ) is incrementally informative in predicting intentional misreporting
Li et al. (2021)	Text (Earnings call transcripts)	Corporate culture	Word embedding model	Corporate culture (innovation, integrity, quality, respect, and teamwork) plays an important rôle in deal incidence and merger pairing
Wang et al., (2021a, 2021b)	Audio	Focus, stress, extreme emotions	QA5 system, a cutting-edge voice analysis technology provided by Nemesysco Ltd	A successful persuasion attempt is associated with vocal tones denoting focus, low stress, and stable emotions because these vocal tone dimensions allow receivers to make inferences about a persuader's competence
Liu et al., (2020)	Image	Brand image attributes	A multilabel deep convolutional neural network model	Brand portrayal in consumer-created images is highly consistent with consumer brand perceptions collected through traditional survey tools
Li et al. (2019)	Video	Visual variation and video content	CNN-based image recognition	Using an online crowdfunding platform as the empirical context, visual variation and video content significantly influence the likelihood of project success
Lee and Kang (2015)	Geospatial location	Theme, Heatmap, Imagery	Complex event processing (CEP), Spatial online analytical processing (SOLAP)	Analytics of geospatial big data presents opportunities for sustainable innovations that could lead to fuel and time saving, revenue increase, urban planning, and healthcare

Machine learning can undertake complex analysis with massive amounts of unstructured data. Machine learning techniques in the natural language processing field include topic modeling and word embedding models. Specifically, topic modeling assumes that documents are generated by certain topics, and one topic consists of a set of key words and phrases. Topic modeling extracts latent themes contained in a set of documents and represents the main content in the texts. Latent dirichlet allocation (LDA) is one of the most robust methods in topic modeling (Blei et al., 2003), which is an unsupervised machine learning technique that automatically extracts potential topics without human-labeled texts. Topic modeling infers the probability distribution of keywords across topics and the distribution of topics across documents by analyzing the patterns of word occurrence in a voluminous corpus. Based on the outputs of LDA analysis, researchers need to interpret and label certain themes based on the top keywords comprising the topic distribution. Topic modeling can be utilized to analyze key characteristics of CSR practices from corporate disclosures such as annual reports and sustainability reports. For corporate unethical behaviors, Brown et al. (2020) employed a Bayesian topic modeling algorithm to analyze public firms' 10-K narratives and produce a valid set of semantically meaningful topics to detect financial misreporting.

In addition to topic modeling, the word embedding model is based on the logic that words illustrate similar meanings when they co-occur with the same neighboring words (Harris, 1954). The model can encode words or phrases as numeric vectors through a number of iterations based on a large textual corpus, which provides an effective way to measure the semantics. The new technology of "word2vec" is a breakthrough in natural language processing to quantify word vectors (Mikolov et al., 2013). Additionally, word vectors allow us to explore the relationship between two words via simple vector arithmetic, such as the cosine similarity, and find the synonyms of seed words. Employing the word embedding model, scholars have analyzed various unstructured data to describe corporate culture (Li et al., 2021), measure CEOs' personality traits (Harrison et al., 2019), and identify customer needs (Timoshenko & Hauser, 2019).

There are other ways to employ textual analysis to distill the essential facts and trends in the textual information and to reveal the hidden and meaningful information contained in these texts. Prior studies on textual analysis utilize lexical analysis and syntactic structure, such as textual tone, readability, vagueness, and concreteness (Du & Kun, 2021; Fabrizio & Kim, 2019; Muslu et al., 2019). For example, Fabrizio and Kim (2019) find that firms are likely to use more obfuscating language to disclose their negative environmental information to blur the negative content and increase the information processing costs of the recipient (Fabrizio & Kim, 2019). Muslu et al. (2019) find that

high-quality CSR disclosure, calculated based on tone, readability, length, and the numeric and horizon content of CSR report narrative, are associated with more accurate analyst forecasts. Sentiment analysis is another useful approach to detect individuals' affect or opinions from unstructured data (e.g., online product reviews, social media posts). Sentiment analysis detects the polarity of texts, assessing whether individuals are expressing any form of positive or negative sentiment toward an object. Etter et al. (2018) employ sentiment analysis of social media data to evaluate affective responses of individuals toward an organization. Overall, unstructured data and cutting-edge machine learning techniques provide exciting opportunities for CSR researchers to examine new topics and extend literature in innovative ways.

## Conclusion

We hope this editorial offers new perspectives on how to conduct impactful and rigorous quantitative CSR research. The field of quantitative CSR research has grown dramatically over the last several decades, accumulating a great deal of insights, yet at the same time, it becomes harder to publish papers in this field due to increasing expectations for theoretical contributions and methodological rigor. We hope this editorial can spur more quantitative CSR research that examines complex problems facing businesses today, that expands the substantive domain of the field by increasing the breadth and depth of research topics, and that employs rigorous and innovative methods to test hypotheses.

**Funding** There is no funding for this research

## Declarations

**Conflict of interest** None

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