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How Wicked Problems Drive Business Performance: A Review of the Academic Literature

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HOW WICKED PROBLEMS DRIVE BUSINESS PERFORMANCE

A review of the academic literature

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CONTENTS

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HOW WICKED PROBLEMS DRIVE BUSINESS PERFORMANCE	1
Abstract	3
Introduction.....	4
Process & methods	4
Defining wicked problems	5
A wicked problem definition based on common themes across the literature	5
Examples of wicked problems	6
Business problems as wicked problems	7
Typical elements of successful vs. unsuccessful approaches, outside of the business context.....	8
Evaluating business impact of addressing wicked problems	10
Financial Performance	10
Market Performance.....	12
Innovation	15
Risk mitigation.....	16
Firm reputation	16
Employee engagement and retention	17
Consumer engagement and retention.....	18
Perceived benefits after addressing wicked problems	19
Defining success factors for businesses that engage in wicked problems.....	21
At the individual level	22
At the firm level	24
At the ecosystem level	27
Understanding how wicked problems' success factors have generalizable business impact	28
At the individual level	28
At the firm level	31
At the ecosystem level	36
Discussion	37
BIBLIOGRAPHY	38

Abstract

Recent years have seen a rise in the number of businesses engaged in the pursuit of “purposeful” activities – that is, activities that engage with the broader community in ways that expand beyond the pursuit of shareholder value. Many of these activities involve engagement with complex social challenges that are often described as “wicked problems” (e.g., economic inequality, environmental sustainability, food security). While many businesses are engaging with purposeful activity and/or wicked problems, knowledge on the business effects of wicked problem engagement remains fragmented. The goal of this paper is to collate and summarize the existing literature to provide a more complete view of what we know and what we do not know about the business impact of wicked problem engagement. We aim to lay the foundation for further research into the relationship between wicked problem engagement and firm performance.

Introduction

Business engagement with “purposeful” activities has seen an increase in recent years. Many of these activities involve engagement with complex social issues that are often described as “wicked problems.” We have explored this phenomenon (business involvement in such problems, and the literature describing what such involvement typically constitutes) in a separate paper.

While some business leaders may find it sufficiently compelling that engaging in such pursuits is the “right thing to do,” it is important to understand the potential ramifications of engaging in such activities. To effectively engage in this kind of pursuit, it is critical that business leaders – and indeed, leaders in society – understand the nature of such involvement. Does engaging in Wicked Problems necessarily come at the cost of business success? If not, under what circumstances can such engagement lead to neutral or even positive outcomes? And, if engaging in Wicked Problems does seem to drive improved business performance, what is the mechanism for this improvement?

These are broad questions, and other teams have attempted to break them down into more concrete, answerable problems. The following paper is our attempt to review the existing body of work to establish a more complete view of what we know – and what we still need to understand – about how tackling Wicked Problems might change the way a business operates, for better or worse. The materials are structured as follows:

- An overview of the concept of Wicked Problems and the elements of successful approaches
- A review of the literature that evaluates changed outcomes at firms that pursue Wicked Problems, across a variety of areas: financial outcomes, innovation, reputation, talent management, consumer preference, and others
- A review of success factors that are associated with “successful” approaches to tackling Wicked Problems, for each of the identified factors, an overview of research connecting these factors to business performance

Process & methods

The team combined both structured searches and broader literature review to determine the appropriate materials to include in this literature review. Because the literature on wicked problems and business is extensive and not well-connected, we used several key search terms to ensure we are capturing a wide range of disciplines, perspectives, and research studies. We searched for “wicked problems,” “ESG,” “corporate social responsibility,” “sustainability and business,” “business and SDGs,” “shared value,” and “purpose-driven business” for published journal articles. We limited the scope of research to thematic areas reasonably related to wicked problems and business. We reviewed quality of the results by looking at citations, journal accreditation, and author credentials. Each article was then reviewed to determine relevance. Some articles pointed to additional references which we then searched online, including business magazines, books, and reports from international bodies and NGOs. We used several key

literature reviews and authors to guide our search, including books by George Serafeim and Alex Edmans (two of the most prolific researchers in this space).

After this “top down” approach, we also took a tactical approach to filling in the remaining gaps with existing research. Where we found “holes” in logic, we did our best to supplement the literature review with specific searches to test the necessary hypotheses. The team made sure to include both the research that most strongly supported our theses as well as those that may contradict the perspective detailed above. Papers were only excluded from the review if later findings demonstrated contradictory results that were explained as the result of a societal shift (e.g., the perspectives of investors on the value of ESG involvement by businesses may rationally have changed over time).

Defining wicked problems

A wicked problem definition based on common themes across the literature

The term wicked problem was first used in the context of urban planning and policy in 1973. Rittel and Webber (1973) used the term to describe a class of problems that cannot be definitively described, lack an objective definition of equity, and lack optimal solutions in terms of definitive and objective answers.¹ Since 1973, the use of the term wicked problems has increased substantially, particularly throughout the 1990s and 2000s. In 2010, there were as many citations of Rittel and Webber’s paper in one year as there had been across the entire decade of the 1990s.²

However, many academics critique the overuse of the term ‘wicked problem,’ arguing that it is used as a buzzword to describe any problem that is complex and challenging to solve and that the term lacks analytical precision.^{3 4 5 6 7} Recent research has focused on developing a more precise understanding of what constitutes a wicked problem.

Academics today tend to align on three wicked problem dimensions – conflict, complexity, and uncertainty – and conceptualize wickedness as a matter of degree. The conflict dimension concerns the heterogeneity of stakeholder beliefs, incentives, and goals. Wicked problems involve a large number of stakeholders who hold conflicting interests, beliefs, incentives, and/or goals, which makes aligning on a proposed solution or collaborating towards a shared goal near impossible.^{8 9 10 11} The complexity dimension concerns the number, dynamics, and interconnections of variables. Wicked problems involve many interdependent, non-linear variable relationships across multiple temporal and psychical scales and

¹ (Rittel & Webber, 1973)

² (Crowley & Head, 2017)

³ (Head & Alford, 2013)

⁴ (Peters, 2017)

⁵ (Turnbull & Hoppe, 2019)

⁶ (Kirschke, Franke, Newig, & Borchardt, 2019)

⁷ (Alford & Head, 2017)

⁸ (Alford & Head, 2017)

⁹ (Kirschke, Franke, Newig, & Borchardt, 2019)

¹⁰ (Bannink & Trommel, 2019)

¹¹ (Termeer & Dewulf, 2019)

are often entangled with other problems.^{12 13} As a result of such interdependency, wicked problem interventions often have unintended consequences and can even create new, unforeseen problems. The uncertainty dimension relates to the large amount of information missing for problem-solving. Wicked problems have low knowability and a large number of unknowns. As a result of this informational uncertainty, wicked problems resist both a clear problem statement and a clear solution.^{14 15 16}

Some academics believe that conflict is a result of the factual uncertainty of the issue. Bannink and Trommel (2019) argue that a conflict on the normative dimension, combined with complexity on the factual dimension, leads to problems that are wicked. Any normatively preferred solution that an actor may propose involves its own factually "correct" justification; however, the justification brings forth dispute from other actors. Many actors put forth conflicting truth claims and preferences. The dispute is possible because of the factual uncertainty of the issue.¹⁷

Examples of wicked problems

Canonical wicked problems like climate change, food insecurity, and poverty, are characterized by high conflict among stakeholders, high complexity as a result of multiple and interconnected variables, and high uncertainty where the information required for problem solving is missing or unknown. McBeth et al. argue that environmental problems are wicked due to a lack of policy solutions, and the lack of policy solutions is a result of the wicked nature of the problem, which they describe as involving multiple, competing interests, high levels of uncertainty, and proposed solutions that fail to resolve or may even intensify policy conflict.¹⁸

Food insecurity is also described as a wicked problem. Multiple causes underpin food insecurity, including poverty, poor nutritional quality of available food, food system infrastructure gaps, among others.¹⁹ The causes have many interdependencies: food systems are heavily influenced by globalization and trade, climate change, urbanization, income levels and distribution, etc. Changes in one of these factors can impact the entire food system at a local-level, country-level, or even global scale.²⁰ Different food insecurity stakeholders also have different interpretations of the underlying problem and have conflicting beliefs and goals. For example, economists may view food as a commodity, while the global environmental change discourse sees food as an ecosystem service, and ethicists consider food to be a basic human right.²¹ Stakeholders disagree over whether the underlying problem is a problem of distribution, a problem of infrastructure, or a problem of production levels.²²

¹² (Kirschke, Franke, Newig, & Borchardt, 2019)

¹³ (Termeer & Dewulf, 2019)

¹⁴ (Termeer & Dewulf, 2019)

¹⁵ (Peters, 2017)

¹⁶ (Bannink & Trommel, 2019)

¹⁷ (Bannink & Trommel, 2019)

¹⁸ (McBeth & Shanahan, 2004)

¹⁹ (Barrett & Lentz, 2010)

²⁰ <https://foodsystemsdashboard.org/about-food-system>

²¹ (Eakin, et al., 2010)

²² (Mentan, 2014)

An increasing number of studies examine the role of business in tackling canonical wicked problems and offer theoretical management frameworks. Reinecke and Ansari (2015) argued that businesses are increasingly responsible for taming wicked problems because of shifting boundaries between public and private responsibilities.²³ Studies discuss how businesses can address wicked problems such as climate change^{24,25}, food insecurity²⁶, poverty²⁷, and other SDGs.²⁸

Business problems as wicked problems

The term has been used less frequently for describing problems of a wicked nature in the business context. One significant article comes from Camillus in 2008 when he wrote “Strategy as a Wicked Problem,” published in HBR.²⁹ His research looked at wicked strategy problems and how companies can ‘tame’ such problems. Camillus explained that wicked issues in the business context cannot be resolved by traditional business processes and that wicked issues cannot be solved, but rather only addressed, ameliorated, or mitigated (i.e., tamed). Camillus later published a book where he offers a five key characteristics of a wicked problem in a business context: 1) the perceived problem is unusual and unprecedented; 2) there are multiple, significant stakeholders that are affected and have conflicting values and priorities; 3) the problem has multiple causes and the causes are entangled; 4) whether the best or correct solution has been reached is impossible to determine; and 5) the understanding of the problem changes as solutions are proposed and evaluated.³⁰

In his book, Camillus (2016) describes three mega-forces that interact to produce wicked problems in the business environment: the inescapability of globalization, the requirement of innovation, and the growing impact of diverse stakeholders who merit and demand shared value.³¹ Together, these three mega-forces fuel uncertainty and complexity in the business environment, along with stakeholder conflict across a heterogeneity of goals and priorities, ultimately creating wicked problems.³²

²³ (Reinecke & Ansari, 2015)

²⁴ (Jennifer Howard-Grenville, 2014)

²⁵ (Pollitt, 2015)

²⁶ (Ralph Hamann, 2011)

²⁷ (Gerard George A. M., 2012)

²⁸ (Gerard George J. H.-G., 2016)

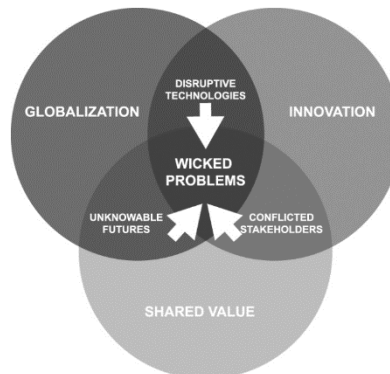
²⁹ (Camillus J. , Strategy as a Wicked Problem, 2008)

³⁰ (Camillus, 2016)

³¹ (Camillus J. , The wicked challenge of the business environment, 2016)

³² (Camillus, 2016)

Figure 1: The Interactions of the Mega-Forces



The strategic challenges created by the interactions of the mega-forces – disruptive technologies, conflicted stakeholders, and unknowable futures – create the context in which wicked problems emerge. They underpin a rapidly transforming business environment, in which established models of profitability and success are undergoing unpredictable changes. Camillus offers insight into how wicked problems arise in the business context and a framework for dealing with such problems, but his work is limited to wicked business problems, rather than wicked societal problems. We discuss the application of his wicked business problem-solving framework in a separate paper, but the focus of this paper is assessing firm engagement with societal wicked problems.

Typical elements of successful vs. unsuccessful approaches, outside of the business context

As discussed, traditional problem-solving approaches fail in the face of a wicked problem. Wicked problems cannot be solved, but can only be addressed, ameliorated, or mitigated. Daviter (2017) explains that wicked problems are unique and have varying dimensions of wickedness so therefore have no holistic approach to problem solving. Each wicked problem requires greater analysis to determine its governance through coping, taming, or solving the problem.³³

Here we highlight elements of successful and unsuccessful wicked problems approaches to offer context for what tackling wicked problems entails. We explore business involvement in such problems, and the literature describing what such involvement typically constitutes, in detail in a separate paper.

Acting without consensus and applying problem-solving paradigms that work in “tamer” contexts to the wicked problem space are key pitfalls commonly highlighted in the literature for those attempting to approach wicked problems. Scholars emphasize the need for stakeholder collaboration and alignment to mitigate the challenges associated with the conflict dimension of wicked problems. Governance strategies that are designed to encourage cross-agency coordination and network-based cooperation are

³³ (Daviter, 2017)

considered as effective mechanisms for driving alignment and coordinated action.^{34 35 36 37} Similarly, strategies that take inputs from a broad range of stakeholders and require information sharing, knowledge synthesis, and trust building underscore a successful approach for tackling wicked problems.^{38 39 40 41 42}

Applying the right problem-solving paradigm to the wicked problem space is critical. By nature, wicked problems do not allow for ‘perfect’ solutions. Academics argue that partial solutions to wicked problems are the only way forward.^{43 44 45} For instance, Bannink and Trommel (2019) argue that wicked problems require imperfect, but intelligent responses. Responses are imperfect because they do not completely cover the problem but are intelligent because they truly acknowledge problem wickedness.⁴⁶ Termeer and Dewulf’s (2019) ‘small wins’ similarly rejects the unrealistic expectation of addressing wicked problems rapidly, radically, and comprehensively. Their approach is rooted in making progress through the accumulation of small wins.⁴⁷

Effective approaches for tackling wicked problems apply problem-solving paradigms that consider the complexity and interconnectedness of the problem and are effective when dealing with informational uncertainty. For example, successful approaches to climate policy consider the multiple timescales of climate change. Levin et al. argue that the “applied forward reasoning” approach may help social scientists who seek to address climate change. The approach can drive increased attention to the path-dependencies of policy interventions to ensure policies will not constrain later events or decisions.⁴⁸ Governance approaches have been critiqued for being ineffective when they rely on singular rationality, whereas approaches based on poly-rationality are thought to be more effective. A governance approach that combines different governance capabilities, including reflexivity, responsiveness, resilience, revitalization, and rescaling, is argued to be more effective, as it can account for the complexity of the problem.⁴⁹ Academics emphasize the need for a similarly iterative and adaptable approach when dealing with uncertainty. Kwakkel, Walker, and Haasnoot (2016) discuss two approaches to cope with the wickedness of public policy problems: robust decision making (RDM) and dynamic adaptive policy pathways (DAPP), which address different aspects of problem wickedness. RDM is an iterative approach which tests across numerous scenarios to facilitate trade-off analysis and iterative learning about a policy

³⁴ (Allen, 2013)

³⁵ (Van Bueren, Hans Klijn, & Koppenjan, 2003)

³⁶ (Roberts, Wicked problems and network approaches to resolution, 2000)

³⁷ (Torfing, Peters, Pierre, & Sorensen, Interactive Governance: Advancing the paradigm, 2013)

³⁸ (Khan & Neis, 2010)

³⁹ (Turnheim, et al., 2015)

⁴⁰ (Waddock, Meszoely, Waddell, & Dentoni, 2015)

⁴¹ (Zijp, Posthuma, Wintersen, & Devilee, 2016)

⁴² (Woodford, et al., 2016)

⁴³ (Bannink & Trommel, 2019)

⁴⁴ (Termeer, Dewulf, & Biesbroek, A critical assessment of the wicked problem concept: relevance and usefulness for policy science and practice, 2019)

⁴⁵ (Turnbull & Hoppe, 2019)

⁴⁶ (Bannink & Trommel, 2019)

⁴⁷ (Termeer & Dewulf, A small wins framework to overcome the evaluation paradox of governing wicked problems, 2019)

⁴⁸ (Levin, Cashore, Bernstein, & Auld, 2012)

⁴⁹ (Termeer C. , Dewulf, Karlsson-Vinkhuyzen, Vink, & Vliet, 2016)

problem. DAPP recognizes that the future is uncertain and so plans need to be adaptable, involving strategic vision with a framework to guide future actions based on the results of short-term actions.⁵⁰ Gunderson and Light (2006) add that dealing with complex systems with multiple uncertainties requires adaptive forms of experimentation and governance.⁵¹

Evaluating business impact of addressing wicked problems

The previous sections offer insight into the nature of wicked problems and what tackling wicked problems entails. While addressing wicked problems can seem daunting, wicked problem engagement does not need to come at the cost of doing business and instead can have a positive impact. Here, we review the literature that evaluates changed outcomes at firms that pursue wicked problems, across a variety of areas: financial outcomes, innovation, reputation, talent management, consumer preference, and others. The majority of existing literature studies business impact of engagement with ESG, CSR, and SDG involvement. Therefore, this section will use business ESG, CSR, and SDG activity as a proxy for wicked problem engagement, which has limitations but offers directional insight.

There is evidence that correlates business ESG, CSR, and SDG involvement with improved financial and reputational outcomes, increased innovation, improved talent retention, and increased consumer preference. Additionally, there is some research that suggests that businesses that choose to address wicked problems demonstrate distinct operating differences that may contribute to long-term sustainability. Business leaders who reflect on their experiences engaging with ESG issues seem to prioritize their ability to develop their network and ecosystem value. Finally, these businesses are rewarded by long-term investors who trade their stocks at a premium and are willing to hold onto the stocks even in the face of crises.

Financial Performance

There is a well-documented correlation between improved ESG performance and company financial performance. This may vary by industry, with some research suggesting that the correlation between issue spreads and ESG scores could be either positive or negative based on the industry context. Research demonstrating a causal relationship between ESG performance and financial performance remains limited. These papers additionally do not discuss any mechanism for this improved financial performance, leaving open the possibility that better businesses simply have more mindshare to dedicate to improving themselves.

Meta-studies looking at the relationship between ESG performance and financial performance find the majority of papers point to a positive relationship. A meta-analysis by Margolis and Walsh of 127 studies between 1972 and 2002 finds that 54 of studies pointed to a positive association between a company's social performance and financial performance (defined variably as market performance, accounting, market share, and other business outcomes metrics), with only seven studies suggesting a negative relationship.⁵² A 2003 meta-analysis of 52 studies suggests that both social responsibility and environmental responsibility result in improved accounting-based measures of firm performance and are

⁵⁰ (Haasnoot, Kwakkel, Walker, & Maat, 2013)

⁵¹ (Gunderson & Light, 2006)

⁵² (Margolis & Walsh, 2003)

also (with a lower magnitude) implicated in market-based indicators. The study also notes that CSP reputational indices are correlated with financial performance outcomes.⁵³ A meta-analysis of 2,200 empirical studies looking at the relationship between ESG and financial performance also finds that the majority of the studies suggest a positive relationship.⁵⁴

Studies find a positive relationship between ESG/CSR and firm performance across a number of performance metrics. There is a positive relationship between CSR and firm financial returns.⁵⁵ Firms that make investments in material ESG issues produce results in terms of profit increase and stock returns.⁵⁷ Businesses that adopt “close-call” CSR proposals demonstrate improved productivity and sales growth relative to those who narrowly miss adopting such proposals.⁵⁸ Firms with strong CSR have been found to experience greater returns than firms with weak CSR on a mid- and long-run investment horizon.⁵⁹ Firm ESG ratings have also been found to be positively correlated with Tobin’s q⁶⁰ and firm value.⁶¹ Firms with higher ESG ratings have been found to have stronger operating performance and greater free cash flow.⁶² Increases in ESG activity driven by directors is correlated with improved ROA and firm operating performance.⁶³

Companies with substantial ESG programs often outperform competitors without such programs. Companies that adopt “High Sustainability” practices, including making changes to their governance mechanisms, improving stakeholder engagement via activities such as reporting, changing their communications to reflect a longer time-horizon, adapting their supplier selection processes, and more transparent nonfinancial disclosures, outperform their “Low Sustainability” counterparts in terms of accounting rates of return as well as stock performance; this impact is particularly noticeable in B2C companies.⁶⁴ ESG funds also outperformed the market during the first year of COVID-19.⁶⁵

In specific industries – agriculture, forestry, fishing, mining, and manufacturing – there was an inverse correlation between environmental-social scores (including environmental components) and issue spreads, suggesting that positive ESG scores were correlated with lower cost of capital; in other industries – examples being transportation, communication, and trade – this trend was flipped, with improved scores increasing the issue spread.⁶⁶

⁵³ (Orlitzky, Schmidt, & Rynes, 2003)

⁵⁴ (Friede, Busch, & Bassen, 2015)

⁵⁵ (Lins, Servaes, & Tamayo, 2017)

⁵⁶ (Albuquerque, Koskinen, & Zhang, 2019)

⁵⁷ (Khan, Serafeim, & Yoon, 2016)

⁵⁸ (Flammer, 2015)

⁵⁹ (Gregor Dorfleitner, 2017)

⁶⁰ (Zhang L. G., 2015)

⁶¹ (Allen Ferrell, 2016)

⁶² (Richard Borghesi, 2014)

⁶³ (Roth, Directors and Corporate Sustainability, 2020)

⁶⁴ (Eccles, Ioannou, & Serafeim, 2014)

⁶⁵ (Esther Whieldon, 2021)

⁶⁶ (Halling, Yu, & Zechner, 2021)

No studies reviewed identified a causal relationship between wicked problems engagement and financial performance. However, one meta-analysis of 893 empirical estimates from 142 studies suggests that the causality between environmental performance and financial performance depends on the time horizon, where increasing environmental performance benefits a firm's long-term financial performance but has less of an effect on short-term performance.⁶⁷

While the majority of research points to a positive relationship between wicked problems engagement and firm performance, some studies find a negative or non-existent relationship. A 2014 study found negative relationship between changes in a firm's CSR policies and stock returns and ROA over a 3-year time horizon, suggesting a loss of firm financial value when engaging in CSR activities.⁶⁸ Several studies have found no relationship between ESG investment and stock returns.^{69 70 71} A 2012 study found no relation between environmental performance and firm performance and suggests that ESG investment incurs neither financial costs nor benefits in terms of risk or return.⁷²

Market Performance

Companies with high ESG scores are often perceived by investors as unlikely to produce competitive shareholder returns, largely based on studies showing low returns in the 1990s.⁷³ However, recent studies have shown that businesses that engage with material wicked problems (those that are relevant to their business) typically trade at a premium and outperform both those that do not engage at all and those that engage in immaterial issues. Investors with long time-horizons show a particular preference for their stocks and are typically willing to "wait out" short-term shocks and crises. At the same time, investors are vulnerable to the influences of public sentiment towards ESG, and this can positively or negatively impact investors' valuation of ESG activities. These relationships may also vary by industry.

Type of engagement

The market rewards businesses that engage with material wicked problems. Investors may reward firms reporting on materiality, i.e., financially material sustainability information as defined by SASB standards, which were selected by industry representatives. Institutional investors report the primary reason for using ESG data is because ESG issues are or will become financially material.⁷⁴ Disclosure of information on material ESG issues helps investors compare companies, understand a company's unique competitive positioning, and make accurate conclusions about disclosures and their effects.⁷⁵ This idea is empirically supported, as purpose-driven organizations and companies improving their performance on material ESG issues outperform competitors by more than 3% annually in terms of stock returns.⁷⁶

⁶⁷ (Geyer-Klingenberg, 2019)

⁶⁸ (Alberta Guili, 2014)

⁶⁹ (Patrick Bolton, 2020)

⁷⁰ (Chava, 2014)

⁷¹ (Jae-Joon Han, 2016)

⁷² (Jacquelyn Humphrey, 2012)

⁷³ (Serafeim I. I., 2015)

⁷⁴ (Amir Amel-Zadeh, 2018)

⁷⁵ (Grewal, Hauptmann, & Serafeim, 2021)

⁷⁶ (Khan, Serafeim, & Yoon, 2016)

The market rewards companies issuing green bonds as well. Stock prices positively respond to green bond issuance.^{77 78} Companies that issue green bonds experience an increase in green and long-term investors,⁷⁹ increased stock liquidity, and increased institutional ownership.⁸⁰ However, in general, shareholders have reduced the market rewards for eco-friendly initiatives, while increasing the punishment for eco-harmful behavior, suggesting that increasingly “going green” is seen as a business norm.⁸¹

Certain other types of engagement are less favored by the market. Investors have been found to reduce their valuation of firm cash holdings as corporate giving increases, suggesting corporate philanthropic contributions may not be valued by investors.⁸²

ESG scores

Markets tend to reward firms with higher ESG and CSR-related rating and performance. Companies with higher scores on product-related environmental-social metrics (product quality, product safety) may have a lower cost of capital as demonstrated in bonds spreads.⁸³ Likewise, companies with high ESG/CSR performance enjoy higher credit ratings⁸⁴, while firms with poor ESG performance have lower credit ratings.⁸⁵ Investors may demand a carbon risk premium on stocks of high CO2 emitting firms. While such stocks have been found to have higher returns, this may be a result of investors demanding compensation for exposure to carbon emission risk.⁸⁶

In the context of mandatory reporting on ESG/CSR related performance, investors similarly tend to reward firms with higher investment and performance. Investors expect mandatory disclosure of nonfinancial issues to benefit some firms (those that invest in ESG performance) and to disadvantage others (those with weak ESG reporting and performance). A 2019 study examined equity market's reaction to EU Directive 2014/95, which required certain companies to disclose in their annual management report information relating to environmental matters, social and employee aspects, respect for human rights, and diversity in their board of directors. The study found that the equity market perceived that enforcing nonfinancial disclosures resulted in net costs for firms, particularly in those with weaker nonfinancial disclosure and performance prior to the directive. However, firms that had invested in improvements to ESG performance and reporting were expected to have net benefits.⁸⁷

Not all industries are punished for poor ESG behavior. Firms in candy and soda, steel works, banking, and insurance industries are “most susceptible to investors’ repercussions” in terms of stock performance

⁷⁷ (Zhang D. T., 2018)

⁷⁸ (Flammer, Corporate green bonds, 2021)

⁷⁹ (Flammer, Corporate green bonds, 2021)

⁸⁰ (Zhang D. T., 2018)

⁸¹ (Flammer, Corporate social responsibility and shareholder reaction: The environmental awareness of investors, 2013)

⁸² (Reza, 2015)

⁸³ (Halling, Yu, & Zechner, 2021)

⁸⁴ (Pornsit Jiraporn, 2013)

⁸⁵ (Leon Seltzer, 2020)

⁸⁶ (Patrick Bolton, 2020)

⁸⁷ (Jody Grewal, 2015)

from adverse media coverage of ESG issues. However, stock performance of companies in the ‘sin’ triumvirate (i.e., alcohol, tobacco, and gaming) is not significantly affected by negative ESG media coverage.⁸⁸ This study implies that firms in certain industries are punished (on the stock market at least) for poor ESG behavior.

Long time horizons

The market rewards performance across long time-horizons. Across a number of ESG metrics, the market rewards a “pie-growing” approach to creating social good on long time-horizons rather than immediate ones.⁸⁹ When reacting to short-term underperformance, mutual funds demonstrate a willingness to hold high-ESG stocks longer than low-ESG ones, suggesting they are willing to “wait out” short-term fluctuations in anticipation of long-term value.⁹⁰

However, it may be the case that companies with high ESG performance attracts investors with longer time-horizons in general. Starks, Venkat, and Zhu (2017) suggest that investors with longer time-horizons tend to have a higher preference for high ESG-rated stocks.⁹¹

Contrary to the aforementioned findings, a 2020 study finds that investors in Korea would rather sell ESG stocks right after they realize short-term gains soon after disclosure, rather than holding the stocks as a longer-term investment from which they might suffer poor stock market returns after the third year.⁹²

External factors

Public sentiment towards ESG activities can affect their valuation. In the presence of negative public sentiment towards ESG activities, ESG activities are valued less, whereas in times of positive public sentiment, ESG performance trades at a premium.⁹³ Investor interest in impact investing grew during the pandemic as a result of heightened awareness of social challenges including unequal access to healthcare and racial and gender inequality.⁹⁴ Likewise, firms with high CSR scores may perform better in periods of low trust. Businesses with high CSR intensity scores had stock returns that were 4-7% higher than those with lower scores during the 2008-2009 financial crisis⁹⁵, suggesting that businesses that are perceived to better tackle wicked problems may be better able to weather crises and may perform better in periods of low trust. Cheema (2021) adds to this idea, finding that scoring high on a “crisis response” measure, which is based on human capital, supply chain, and products and services ESG sentiment, was correlated with 1.4-2.7% higher stock returns during the COVID-19 crisis.⁹⁶

In flourishing business environments (times of economic upswing), investors may not reward ESG/CSR engagement. A 2021 study examining the effects of corporate social performance on the likelihood of

⁸⁸ (Wong & Zhang, 2022)

⁸⁹ (Edmans, Grow the Pie: How Great Companies Deliver Both Purpose and Profit, 2020)

⁹⁰ (Starks, Venkat, & Zhu, 2017)

⁹¹ (Starks, Venkat, & Zhu, 2017)

⁹² (Yeonwoo Do, 2020)

⁹³ (Serafeim G. , Public Sentiment and the Price of Corporate Sustainability, 2020)

⁹⁴ (Investing for Impact, 2021)

⁹⁵ (Lins, Servaes, & Tamayo, 2017)

⁹⁶ (Alex Cheema-Fox, 2021)

bankruptcy in times of economic upswing found no relationship between the level of firms' CSP and bankruptcy likelihood. Instead, the study found that increasing CSP in times of economic upswing increased bankruptcy likelihood. The authors posit that this is likely a result of the costs of increasing CSP exceeding their immediate positive effects.⁹⁷

Industry variation

When (and if) a market rewards businesses for engaging with ESG issues can vary by industry. Firms in candy and soda, steel works, banking, and insurance industries are “most susceptible to investors' repercussions” in terms of stock performance from adverse media coverage of ESG issues. However, stock performance of companies in the ‘sin’ triumvirate (i.e., alcohol, tobacco, and gaming) is not significantly affected by negative ESG media coverage.⁹⁸ This study implies that firms in certain industries are punished (on the stock market at least) for poor ESG behavior.

Investors may demand a carbon risk premium on stocks of high CO2 emitting firms. Such stocks have been found to have higher returns, as investors demand compensation for exposure to carbon emission risk.⁹⁹

Innovation

Businesses that are demonstrably “forced” to engage with wicked problems produce more and higher-quality patents, suggesting that tackling wicked problems may induce innovation by forcing businesses to rethink their operating assumptions. Additionally, the type of approach to wicked problem engagement may impact the level of innovation experienced. Firms that adopt a proactive approach to wicked problems engagement rather than a reactive approach may be more innovative.

Tackling wicked problems may induce innovation by forcing businesses to rethink their operating assumptions. Public, high-emissions firms that experience “price pressure” from investors to become more green produce more patents than comparable private firms and already “clean” firms¹⁰⁰, suggesting that the pursuit of improved sustainability may drive innovation. Likewise, Large, multinational firms that are exposed to more stringent environmental regulations (by dint of their operating countries) produce more green patents; this effect is more pronounced in more polluting industries like mining & oil than less polluting ones like sales and service.¹⁰¹ This also suggests that wicked problems innovations may need to be driven by expertise in an area (more polluting vs less polluting). “Forcing” companies to solve wicked problems at the core of their businesses may enable the development of new technologies by causing companies to systematically rethink their approach to the products and services they offer.

A 2020 study by Cohen et al. similarly finds that firms with lower ESG scores (so low that they are excluded from ESG funds) are key innovators in the U.S.'s green patent landscape.¹⁰² These firms are

⁹⁷ (Florian Habermann, 2021)

⁹⁸ (Wong & Zhang, 2022)

⁹⁹ (Patrick Bolton, 2020)

¹⁰⁰ (Choi, Gao, Jiang, & Zhang, 2022)

¹⁰¹ (Kim, Pantzalis, & Zhang, 2021)

¹⁰² (Lauren Cohen, 2021)

often oil, gas, and energy producing firms and they not only produce more, but they also produce significantly higher quality green innovation.

Firms adopting a strategic approach to CSR may be more innovative than firms with a reactive approach. A 2013 empirical analysis of 266 Luxembourg firms found that firms with a strategic approach to CSR are more likely to be innovative in their products and processes than firms with a responsive approach to CSR. Further, a responsive approach to CSR by firms may create barriers to firms' innovation.¹⁰³ However, the relationship is correlational, leaving open the possibility that firms that are more innovative tend to adopt strategic approaches in general.

Risk mitigation

There is a well-documented relationship between strong CSR/ESG performance and lower levels of firm risk, which may contribute to long-term business success. The studies are correlational rather than causal, which leaves open the possibility that these businesses naturally tend to be risk-adverse and have dedicated more resources to risk management and governance.

Companies with strong CSR/ESG performance and/or strong CSR/ESG scores may have lower risk. Studies suggest such companies face lower risk as a result of a relatively less price elastic demand¹⁰⁴, a wider investor base^{105 106}, a lower cost of capital^{107 108}, favorable bond ratings¹⁰⁹, and reduced downside risks.^{110 111} In addition, firms that engage in ESG may also face less litigation-related risk.^{112 113}

The relationship may vary by industry. A 2016 empirical study examining the relationship between corporate environmental responsibility and risk in U.S. public firms found that environmentally responsible firms experience lower risk, but the CER-risk association mainly comes from the manufacturing sectors, whereas in the service sector, CER can increase firm risk.¹¹⁴

Firm reputation

A firm's social and environmental reputation emerges from its sustainable operations or from its communication strategy. Companies with better ESG performance may have better reputations in the business and social landscape as well as among investors. Firms with strong ESG communication strategies may also have better reputations, even if this communication does not translate to ESG

¹⁰³ (Rachel Bocquet, 2013)

¹⁰⁴ (Albuquerque, Koskinen, & Zhang, 2019)

¹⁰⁵ (Sadok Ghoul, 2011)

¹⁰⁶ (Hong & Kacperczyk, 2009)

¹⁰⁷ (Sadok Ghoul, 2011)

¹⁰⁸ (Hong & Kacperczyk, 2009)

¹⁰⁹ (Pornsit Jiraporn, 2013)

¹¹⁰ (Andreas Hoepner, 2018)

¹¹¹ (Li Cai, 2016)

¹¹² (Hong & Kacperczyk, 2009)

¹¹³ (Liskovich, 2015)

¹¹⁴ (Li Cai, 2016)

performance. Research in this area should evaluate a firm's operations or strategy over its ESG communication strategy.

A number of studies find that CSR initiatives have been found to have positive influence on firm reputation^{115 116 117}, while poor CSR negatively affects firm reputation.¹¹⁸ ESG activities and performance contribute to membership on Fortune's World's Most Admired Companies List, which can improve firm reputation.^{119 120} The quality of sustainability reporting increases the likelihood of having higher corporate reputation.¹²¹ CSR activities can also protect a firm's reputation in the face of adverse events.¹²²

It is important to note that simply communicating about ESG action can improve firm reputation, even without ESG performance. ESG communication can improve firm reputation, but there can be a gap between a firm's sustainability talk and performance, whereby an organization can have a "false" sustainability reputation perpetuated by corporate talk rather than action.¹²³ Likewise, CEOs who have a large influence on Twitter post 5.97 times more CSR-related messages (related to UN SDGs) as compared to fortune 200 CEOs, which may have led to better corporate reputation, in terms of shares and likes by social capital present on Twitter.¹²⁴

Not all studies have found the relationship between firm reputation and CSR to be positive. One study looking at banks found that while the relationship between social performance and reputation is positive, the relationship between corporate governance and environmental performance and reputation is negative.¹²⁵

Employee engagement and retention

Firms may attract more talent and highly motivated employees with CSR initiatives and hire talent at a lower cost. After the recruitment process, firms also benefit from CSR initiatives through improved employee retention. Firms that engage in CSR initiatives may be able to retain high-performing talent at a lower cost and drive improved organizational commitment and job satisfaction.

Firms with higher social performance ratings attract more applicants and can hire them for less money; this impact is most pronounced in high-performing workers.¹²⁶ When recruiting talent, firms can use their CSR reputation to screen for highly motivated employees.¹²⁷ These highly motivated employees are more important to firms in industries where unobservable effort by employees is important for productivity. After

¹¹⁵ (Zia ur Rehman, 2020)

¹¹⁶ (Sandra A. Waddock, 1997)

¹¹⁷ (Ping-Sheng Koh, 2013)

¹¹⁸ (Kwang-Ho Kim, 2015)

¹¹⁹ (Maaloul, Zeghal, Amar, & Mansour, 2021)

¹²⁰ (Scott Jeffrey, 2018)

¹²¹ (María D. Odriozola, 2017)

¹²² (Dylan Minor, 2011)

¹²³ (Park, 2017)

¹²⁴ (Grover, Kumar Kar, & Ilavarasan, 2019)

¹²⁵ (Stefano Dell'Atti, 2017)

¹²⁶ (Burbano, 2016)

¹²⁷ (Kjell Arne Brekke, 2008)

starting at an equilibrium of socially responsible and non-responsible firms, when unobservable effort is important, the share of socially responsible firms can be expected to increase because CSR firms can outcompete non-responsible firms based on acquisition of talent.

Several studies suggest that firms engaging in ESG and CSR initiatives may be able to better retain talent. Flammer (2015) finds that firms adopting CSR initiatives experience an increase in labor productivity and sales growth, which can improve job satisfaction.¹²⁸ Firms that adopt environmental standards may have higher labor productivity than firms that do not adopt,¹²⁹ implying that firms tackling sustainability may have more satisfied employees.

CSR activities are found to positively affect internal employee motivation and employee performance, which can enhance organizational commitment.¹³⁰ Based on analysis of a financial services company's employees, researchers find that external CSR is positively related to organizational commitment and CSR is at least as important as job satisfaction for organizational commitment.¹³¹ Based on an empirical analysis of 377 higher education institution in Pakistan, researchers found that internal CSR activities and internal branding increased employees' likelihood of staying with the firm.¹³²

Firms also use CSR activity to drive retention. The correlation between higher state unemployment insurance benefits and firm CSR engagement suggests that firms employ CSR activity as a strategic lever to increase employee engagement and retention.¹³³ Firms reacted to the rejection of the inevitable disclosure doctrine (a framework that allowed companies to restrict employees from leaving to work at rival firms) by increasing their CSR engagement, suggesting that firms perceive that CSR activity may make employees less likely to join rivals and less likely to leak proprietary information if they do.¹³⁴

Consumer engagement and retention

Consumers are somewhat more likely to select products and services from businesses that engage with wicked problems, although their purchase decisions are typically mediated by a number of other confounding factors (price, perceived efficacy, issue materiality, etc.).

Several studies have found that consumers prefer products from socially and environmentally responsible businesses. Consumers are more likely to prefer products they perceive to be socially responsible and will select such products both in lab settings and field ones, particularly when that choice is an identity-affirming one.¹³⁵ Corporate CSR engagement may preference consumer choice in areas of optional consumption. This effect is most pronounced when businesses engage in CSR activities above and

¹²⁸ (Flammer, Does Corporate Social Responsibility Lead to Superior Financial Performance? A Regression Discontinuity Approach, 2015)

¹²⁹ (Delmas, 2013)

¹³⁰ (Oh, Han, & Park, 2021)

¹³¹ (Stephen Brammer, 2007)

¹³² (Amir Ikram, 2021)

¹³³ (Flammer & Luo, 2017)

¹³⁴ (Flammer & Kacperczyk, 2019)

¹³⁵ (Sen, Du, & Bhattacharya, 2016)

beyond philanthropy and can demonstrate externally verified proof of engagement.¹³⁶ Kronthal-Sacco & Whelan (2021) add that sustainably marketed CPG products may be preferred among upper income, millennials, college-educated, and urban consumers. NYU Stern Center for Sustainable Business (CSB) partnered with IRI to assess the state of sustainable CPG products from 2015-2019. Sustainability-marketed products grew 7.1x faster than products not marketed as sustainable from 2015 to 2019. Upper income, millennials, college-educated, and urban consumers are more likely to buy these sustainability-marketed products.¹³⁷ This finding is not extensible to other industries.

However, there are mixed reactions to “green” products, with some consumers describing them more favorably and others describing them as less effective and / or weaker. A perception of high CSR engagement may mediate customers’ negative feelings after a poor service experience.¹³⁸ There are also mixed results on the importance of business relevance to consumers: some research suggests that consumers, unlike investors, may not care about “fit” or relevance when it comes to corporate choice, and may value both proactive and reactive approaches to CSR¹³⁹; other research suggests that when consumers perceive that a brand has limited impact on a CSR issue, brand engagement with that issue may negatively impact their brand preference, particularly when the issue is seen as important.¹⁴⁰

Perceived benefits after addressing wicked problems

Businesses perceived a number of benefits after ESG-related initiatives, including improvements in financial-, organizational-, human-, and physical-capital.

When CSR was a newer concept, firms saw cost reduction benefits from engaging in CSR. Over time, firms have come to also view CSR as strategic for sustainability because of risk reduction benefits, strengthened reputation, and other competitive advantages (e.g., increased employee motivation, above industry average sales performance).¹⁴¹

Businesses experience improved accounting performance, improved governance, and increased institutional ownership after successful ESG engagements.¹⁴² Although businesses rarely initiate CSR with the main aim of driving employee motivation, when evaluating results of CSR efforts, employee motivation often emerges as a main benefit.¹⁴³

Superior performance on CSR strategies has also been found to result in better access to financing, as firms that perform better on social and environmental dimensions of CSR have enhanced stakeholder

¹³⁶ (Kuokkanen & Sun, 2020)

¹³⁷ (Kronthal-Sacco & Whelan, 2021)

¹³⁸ (Sen, Du, & Bhattacharya, 2016)

¹³⁹ (Kuokkanen & Sun, 2020)

¹⁴⁰ (Sen, Du, & Bhattacharya, 2016)

¹⁴¹ (Lars Isaksson, 2014)

¹⁴² (Elroy Dimson, Active Ownership, 2015)

¹⁴³ (Chung Hee Kim, 2013)

engagement (which reduces agency costs) and increased transparency (which reduces informational asymmetry).¹⁴⁴

Companies perceive significant value creation after successful ESG engagement with investors. In a 2018 study commissioned by the UNEP Finance Initiative and the UN Global Compact, researchers conducted 36 interviews with representatives of large, listed companies to understand engagement between companies and investors. They found that three ESG engagement dynamics create distinct types of value for companies (and investors): (1) communicative dynamics, i.e., communicative value through the exchange of information, (2) learning dynamics, i.e., learning value through diffusion of ESG knowledge, and (3) political dynamics, i.e., political value through facilitating diverse relationships (internal and external).¹⁴⁵

According to a 2019-2020 cross-sectional survey of 71 business representatives involved in cross-sector social partnerships looking at benefits of engaging in sustainability partnerships, businesses achieved the outcomes listed in Table 1, ordered from most (1) to least (5) valuable, and experienced benefits across organizational, human, sustainability, physical, and financial capital.¹⁴⁶

Table 1: Sustainability Partnership Outcomes

Outcome	Type of capital	<i>M</i>	<i>Mode</i>	<i>SD</i>
Built new relationships	Organizational	1.99	2	0.88
Shared own experiences	Human	2.00	1	1.02
Contributed positively to environmental challenges	Sustainability	2.01	1	1.08
Networking	Organizational	2.06	1	1.03
Gained knowledge/learning	Human	2.09	2	0.97
Contributed positively to community sustainability	Sustainability	2.10	1	1.13
Engaged with the community	Organizational	2.12	1	1.14
Improved reputation	Organizational	2.15	2	0.96
Collaborated with others	Organizational	2.24	2	1.07
Contributed positively to social challenges	Sustainability	2.27	2	1.07
Gained expertise	Human	2.27	2	1.08
Contributed to the plan's sustainability goals	Sustainability	2.33	2	1.04
Improved the organization's sustainability	Organizational	2.37	2	1.15
Gained legitimacy	Organizational	2.43	2	1.06
Improved competencies	Human	2.45	2	1.10
Became more influential	Organizational	2.57	3	0.99
Developed innovation capacity	Organizational	2.60	2	1.09
Found marketing opportunities	Organizational	2.69	3	1.03
Improved relationship with authorities	Organizational	2.69	3	1.12
Accessed new markets	Organizational	2.70	3	1.10
Contributed positively to economic challenges	Sustainability	2.72	3	1.15
Improved relationship with NGOs	Organizational	2.85	3	1.21
Improved processes	Physical	3.30	3	1.29
Made new businesses	Financial	3.33	3	1.22
Developed new products/services	Financial	3.34	3	1.27
Reduced costs	Financial	3.42	3	1.29
Improved financial performance	Financial	3.45	3	1.13
Increased resources	Physical	3.46	3	1.27
Found funding opportunities	Financial	3.48	3	1.15
Attracted new investors	Financial	3.63	3	1.19
Increased financial resources	Financial	3.67	3	1.15

¹⁴⁴ (Beiting Cheng, 2014)

¹⁴⁵ (Gond, et al., 2018)

¹⁴⁶ (Ordóñez-Ponce, Clarke, & MacDonald, 2021)

Defining success factors for businesses that engage in wicked problems

The current review of research suggests that investigations into precisely which factors *cause* success in addressing wicked problems is sparse. This is potentially due to the difficulty both in identifying and measuring true business success, and in causally linking that success to specific business characteristics while excluding other confounders. However, research demonstrates that successful engagement with wicked problems involves individual leadership, firm-level engagement, and ecosystem participation. At the individual level, senior level leaders play a key role in championing changes and crafting and delivering the cultural meta-narrative that allows firm stakeholders to absorb and react to a complex new problem. The importance of these individual leaders is emphasized by the role of CEO compensation in enabling businesses to reflect a longer-term mindset and realize ESG improvements. At the firm level, organizational culture, capabilities, and governance may play important roles in ensuring the success of a shift towards approaching wicked problems. Empirical studies that examine the relationship between tech intensity and wicked problems performance are limited. Instead, the existing research is focused on the opportunities that digital transformation provides for achieving sustainability (which we do not list here). At the ecosystem level, firms that engage in partnerships are more likely to successfully address their intended wicked problem's purpose.

Table 2: Characteristics of High Sustainability Companies¹⁴⁷

Characteristic	Statement
<i>Governance structure</i>	
Board responsibility	High sustainability companies assign responsibility to board of directors for sustainability and form a separate board committee for sustainability
Executive compensation	High sustainability companies make executive compensation a function of environmental, social, and external perception (e.g., customer satisfaction) metrics
<i>Extent of stakeholder engagement</i>	
Formal stakeholder engagement process	High sustainability companies establish formal stakeholder engagement process where risks and opportunities are identified, scope of engagement is defined ex ante, managers are trained in stakeholder engagement
Key stakeholders identified	High sustainability companies identify key stakeholders
Engagement results reported	High sustainability companies report results from the engagement process both internally and externally
Feedback from stakeholders	High sustainability companies give feedback from stakeholders to the board of directors
<i>Extent of long-term orientation in corporate communications and investor base</i>	
Long-term investors	High sustainability companies have an investor base with more long-term oriented investors

¹⁴⁷ (Eccles, Ioannou, & Serafeim, 2014)

Characteristic	Statement
Communicate long-term	High sustainability companies communicate more long-term information in their conference calls with sell-side and buy-side analysts
<i>Measurement and disclosure of nonfinancial information</i>	
Measure stakeholder metrics	High sustainability companies are more likely to measure information related to key stakeholders such as employees, customers, and suppliers
Auditing procedures	High sustainability companies increase credibility of measures using auditing procedures
Data disclosure	High sustainability companies disclose more data related to nonfinancial performance

At the individual level

A leadership style emphasizing community building and employee empowerment, along with clear communication of the company vision and ESG-related targets, is associated with improved wicked problem engagement. Additionally, there is well-documented correlation between corporate governance (i.e., CEO compensation tied to social performance and long-term performance, separation of CEO and chair roles) and high levels of board diversity and CSG/ESG performance.

Senior leadership

Firms with successful wicked problems engagement may have leaders who encourage community building and employee empowerment, and who clearly communicate the firm's ESG-related goals. The Harvard Kennedy School CSR Initiative published a report, *Business and the Sustainable Development Goals: Building Blocks for Success at Scale*, which discusses the importance of senior-level champions for change. They argue that senior leadership (on the board, in the C-suite, and on executive teams) should communicate the vision of the company's role, set incentives at all levels, allow and encourage intrapreneurship and partnership, and demand reasonable results and accountability.¹⁴⁸

The leadership style is supported by empirical evidence. Studies show that a leadership style emphasizing community building and employee engagement, which often presents in women leaders, helps to drive corporate social responsibility. Firms with gender and age diverse leadership teams are more effective at pursuing environmentally friendly strategies than those lacking gender diverse leadership teams. A 2015 paper found that women leaders place more emphasis on community building than do men, which helps drive social responsibility.¹⁴⁹ Younger CEOs and female CEOs may be more likely to invest in CSR initiatives and have higher CSR scores.¹⁵⁰ CEO's intellectually stimulating behavior (i.e., encouraging employees to speak up about new perspectives or innovative approaches) is associated with higher levels of firm CSR engagement.¹⁵¹

¹⁴⁸ (Nelson, Jenkins, & Gilbert, 2015)

¹⁴⁹ (Glass, 2016)

¹⁵⁰ (Richard Borghesi, 2014)

¹⁵¹ (David Waldman, 2006)

Leaders' previous experience engaging or interacting with wicked or complex problems also impacts firms' success with wicked problems engagement. CEOs with international experience and experience in an output functional background such as sales or marketing have been found to be positively associated with greater CSR performance.¹⁵² Appointing a CSO with prior sustainability expertise is associated with improved sustainability performance in firms that were already high performers, but not in firms that were poor performers. CSOs without prior expertise are associated with sustainability performance decreases in poor performing firms.¹⁵³ A 2010 study found a strong correlation between firm CSR performance and CEO having a degree in humanities, having a breadth of career experience, and being female.

CEO compensation

CEO compensation has been tied to social performance and long-term performance. CSR contracting – policies that tie CEO compensation to firm CSR outcomes – has become more prevalent over time and is shown to increase CEOs' long-term orientation and the involvement of their firms in social & environmental initiatives. From a sustainability perspective, CSR contracting also demonstrably leads firms to reduce emissions and increase their rate of green innovations.¹⁵⁴ A 2016 study found that direct CSR incentives increase social performance, and that firms with shareholder-friendly corporate governance are more likely to compensate executives based on firm social performance outcomes.¹⁵⁵ At the same time, excess CEO pay has been found to be negatively correlated with CSR scores, and CEOs with high pay unrelated to performance may invest less in CSR activities, supporting the good governance view.¹⁵⁶

In some cases, CEO compensation may be negatively associated with CSR investment. Lee et al (2015) found that CEOs are rewarded via compensation for optimal levels of CSR investment, but CEOs receive lower compensation when CSR investment exceeds the expected amount.¹⁵⁷

Board composition & imperatives

The strength of firms' internal corporate governance is a determining factor in firms' propensity to address and success in achieving SDGs. Firms with a separation of function between the CEO and chairperson, a greater percentage of independent board directors, and a greater number of board meetings are more likely to address SDGs in their sustainability reports and are associated with greater sustainability performance.¹⁵⁸ ¹⁵⁹ Firms with board members who are exposed to sustainability reforms in foreign countries experience an increase in ESG/CSR performance.¹⁶⁰

¹⁵² (Dixon-Fowler, 2009)

¹⁵³ (Gary F. Peters, 2019)

¹⁵⁴ (Flammer, Hong, & Minor, Corporate governance and the rise of integrating corporate social responsibility criteria in executive compensation: effectiveness and implications for firm outcomes, 2019)

¹⁵⁵ (Hong L. a., 2016)

¹⁵⁶ (Allen Ferrell, 2016)

¹⁵⁷ (Lee M. J.-W., 2015)

¹⁵⁸ (Martinez-Ferrero & Garcia-Meca, 2020)

¹⁵⁹ (Naciti, 2019)

¹⁶⁰ (Roth, Directors And Corporate Sustainability, 2021)

Board diversity is also related to wicked problems performance. Firms with more diversity on the board are found to have higher sustainability (in the context of UN SDGs) performance,¹⁶¹ while firms with boards that are less diverse see worse environmental performance.¹⁶² Many studies suggest that a higher proportion of female board directors leads to increased ESG reporting^{163 164}, ESG involvement¹⁶⁵, and ESG performance.^{166 167} Likewise, having women on the board can have a positive effect on attitudes towards sustainability.¹⁶⁸ Interlinked female board members has also been found to strengthen sustainability strategic plans.¹⁶⁹ Younger board members are also more likely to address SDGs.¹⁷⁰

At the firm level

Research seems to support the importance of organizational culture and change management practices, the integration of sustainability practices in human resource management, and firm dynamic and innovative capabilities in enabling businesses to approach wicked problems. Businesses with a clear organizational identity, a culture of transparency and support, and a demonstrated long-term perspective may be better able to tackle wicked problems. There is mixed evidence relating to reporting capabilities on wicked problems performance, which is unsurprising due to the heterogeneity of ESG/CSR measurements and reporting practices. Research linking tech intensity and wicked problems performance is limited.

Organizational culture & structure

Setting up or changing to an explicitly mission-driven organizational identity may provide a helpful “meta-narrative” that enables organizational participants to align across differing goals to effect meaningful change.¹⁷¹ The importance of organizational identity is reflected in Silvestri and Gulati’s (2015) study of 30 organizations to understand which firms embraced sustainability. They found three mutually reinforcing differences between orgs that put sustainability at the core vs periphery. First, firms that have a concrete understanding of sustainability and a focus on internal identity as well as external image engage with sustainability more at its core. Second, firms that have a formal sustainability strategy integrated with the business strategy, sustainability efforts focused on innovation and growth, constantly invest in sustainability even in lean years, and actively measure and communicate performance as an indicator of overall business value. The third component involves the role of the C-suite. When the C-suite executive is in charge of sustainability and is fully empowered, sustainability function is woven into pre-

¹⁶¹ (Naciti, 2019)

¹⁶² (Judith Walls, 2012)

¹⁶³ (Belen Fernandex-Feijoo, 2012)

¹⁶⁴ (Belen Fernandez-Feijoo, 2014)

¹⁶⁵ (Jizi, 2017)

¹⁶⁶ (Glass, 2016)

¹⁶⁷ (Alexander Dyck, 2021)

¹⁶⁸ (Li, 2017)

¹⁶⁹ (Glass, 2016)

¹⁷⁰ (Rosati & Faria, 2019)

¹⁷¹ (Lashitew, Bals, & Van Tulder, Inclusive Business at the Base of the Pyramid: The Role of Embeddedness for Enabling Social Innovations, 2020)

existing activities, and one or more board members specifically selected for knowledge and experience with sustainability.¹⁷²

Having an explicit mission is likewise central to Henderson (2021) and Guerci (2015) studies. Henderson (2021) argues that companies that embrace purpose, i.e., companies that are publicly committed to a goal beyond profit maximization and routinely sacrifice short-term profits to pursue purpose, are more innovative and can better tackle architectural/systemic innovation than conventional rivals.¹⁷³ Guerci (2015) focused on the positive role that corporate sustainability orientation plays in establishing benevolent and principled ethical cultures and in aligning employees towards ethical behavior. An organizational strategy that makes the company's orientation towards sustainability clear to employees, which requires vertical integration between an organization's overall strategy and its people-related strategy and strong collaboration between departments, is more successful in impacting ethical climates.¹⁷⁴

Human resource management strategies also influence culture and wicked problems performance. A 2018 paper reviews the literature on the role of sustainable human resource management (SHRM) in the attainment of SDGs. SHRM entails involving human capital in societal activities, effectively managing natural resource allocation and consumption, and driving awareness and responsibility among individuals. The paper finds that sustainability predictors include "green" HR functions, a collectivistic organizational identity, and an organizational culture characterized by transparency and support.¹⁷⁵

The cultural context in which firms operate may also influence wicked problems engagement. Companies whose host countries' culture valued a long-term perspective and a more "feminine" approach tended to receive enhanced value from green innovations.¹⁷⁶

Capabilities

Organizational capabilities such as dynamic capabilities – the integration and reconfiguration of organizational skills and resources in response to environmental volatility – and coordination capability – the integration of members across different functions into the innovation process – have been found to be positively related to green product innovation and green process innovation.¹⁷⁷ Organizations with high innovativeness capability may see greater customer satisfaction and market value when engaging in CSR.¹⁷⁸

¹⁷² (Silvestri & Gulati, From Periphery to Core: A Process Model for Embracing Sustainability, 2015)

¹⁷³ (Henderson R. , Innovation in the 21st Century, 2021)

¹⁷⁴ (M. Guerci, 2015)

¹⁷⁵ (Chams & Garcia-Blandon, 2019)

¹⁷⁶ (Kim, Pantzalis, & Zhang, 2021)

¹⁷⁷ (Jing-Wen Huang, 2017)

¹⁷⁸ (Bhattacharya, 2006)

Firms with long-term orientation make more investments in R&D and stakeholder engagement pertaining to employees and the natural environment.¹⁷⁹ Likewise, firms with higher R&D activity are more likely to get involved with CSR activities.¹⁸⁰

Employee environmental training has been shown to impact a firm's overall environmental orientation, which, if positive, helps to improve performance in sustainable development. Training and leader involvement leads to changes in attitudes and an increase in motivation towards sustainable development.¹⁸¹

Reporting & Governance

Reporting practices and firm governance is also associated with wicked problem performance. Looking at GRI and Orbis data for 408 organizations worldwide, early adoption of SDG reporting is related to a higher commitment to sustainability frameworks and external assurance, larger size, and a higher level of intangible assets.¹⁸² Integrated Reporting has also been associated with superior ESG outcomes over stand-alone reports for ESG.¹⁸³ ¹⁸⁴ Using management control tools - target setting and the provision of monetary incentives - plays an important role in an organization's ability to achieve high environmental performance.¹⁸⁵ Well-governed firms that suffer less from agency concerns (e.g., conflicts of interest between company management and company stockholders, such as less cash abundance, small control wedge, or positive pay-for-performance) engage more in CSR.¹⁸⁶ Firms with ineffective corporate governance generate fewer green patents relative to other innovations. Ineffective governance therefore may be a major obstacle to environmental performance.¹⁸⁷

Several studies look at the effectiveness of reporting or governance practices and critique sustainability reporting as ineffective for improving sustainability performance,¹⁸⁸ perhaps a reflection of the lack of measurement and reporting standards that render ESG/CSR scores unreliable. One study examined the impact of a Corporate Sustainability Officer on CSR performance. Peters et al. (2019) argue that the creation of a CSO position may be more of a symbolic versus substantive governance mechanism, finding no association between CSO and post-appointment sustainability performance for firms that perform poorly on sustainability concerns. However, firms with higher levels of sustainability performance tend to experience performance improvements after 3 years of CSO appointment.¹⁸⁹ Another study found

¹⁷⁹ (Flammer & Bansal, Does a long-term orientation create value? Evidence from a regression discontinuity, 2017)

¹⁸⁰ (Erhemjamts, 2013)

¹⁸¹ (Ji Li, 2011)

¹⁸² (Rosati & Faria, 2019)

¹⁸³ (Laura Mervelskemper, 2016)

¹⁸⁴ (Cécile Churet, 2014)

¹⁸⁵ (Ioannou, Li, & Serafeim, The Effect of Target Difficulty on Target Completion: The Case of Reducing Carbon Emissions, 2016)

¹⁸⁶ (Allen Ferrell, 2016)

¹⁸⁷ (Bennedsen, 2016)

¹⁸⁸ (Gray, 2013)

¹⁸⁹ (Gary F. Peters, 2019)

that explicit environmental pay policies and environmental committees may play only a symbolic role in environmental performance.¹⁹⁰

Tech intensity

Firms' use of big data analytics has the potential to help organizations realize opportunities in support of sustainably development. A 2021 study provides theoretical insight into the use of technological innovations as a mechanism to achieve SDGs. The study suggests that internal factors, such as organizational and technical capabilities, and external factors, such as competitors and regulatory environments, influence the extent to which big data analytics can be used within an organization.¹⁹¹

At the ecosystem level

Partnerships and network relationships serve both as a catalyst for firms to engage in social responsibility activities and a core element of driving sustainable impact.

Partnerships enable organizations to pool information and assets and drive new innovation together, and can take a variety of forms, including multi-stakeholder platforms designed to facilitate coordination and collaboration to tackle longer-term, complex problems.¹⁹² "Social embeddedness" – the existence and depth of partnerships in the community of interest – can be a key factor in both driving an organization to accept a social purpose and in enabling its success in addressing that purpose via its business.¹⁹³ Companies engaging in partnerships with the goal of wide societal impact tend to have more successful and impactful engagement with sustainability than partnerships focusing on reputation and image. Businesses that engage in the former embed sustainability into their operations and key objectives while empowering stakeholders and communities.¹⁹⁴

In the context of public policy, Head and Alford (2013) discuss how collaboration and partnership can lead to better understanding of the problem and potential solutions as a result of the involvement of diverse set of stakeholders with unique insights. Partnerships further can improve the implementation of solutions when the implementation strategy drives coordination of pooled resources and autonomy.¹⁹⁵

However, multi-stakeholder partnerships have been critiqued for their limited effectiveness.¹⁹⁶ ¹⁹⁷ A meta-analysis of 340 partnerships found that 211 partnerships were inactive, lacked outputs, or fails to meet their stated ambition. The partnerships lacked organizational capacity, resources, and transparency necessary for achieving their goals.

¹⁹⁰ (Gomez-Mejia, 2009)

¹⁹¹ (El-Haddadeh, 2021)

¹⁹² (Nelson, Jenkins, & Gilbert, 2015)

¹⁹³ (Lashitew, Bals, & Van Tulder, Inclusive Business at the Base of the Pyramid: The Role of Embeddedness for Enabling Social Innovations, 2020)

¹⁹⁴ (Barbara Gray, 2013)

¹⁹⁵ (Head & Alford, 2013)

¹⁹⁶ (Pattberg & Widerberg, 2016)

¹⁹⁷ (Simone Schriger, 2021)

Understanding how wicked problems' success factors have generalizable business impact

While there is a large body of work that implicates specific factors in long-term business success, it is difficult to narrow the literature down due to the aforementioned lack of research identifying factors that drive success in addressing wicked problems. Of the hypotheses that have been tested, leadership styles, CEO compensation, organizational culture, and capabilities have been researched the most extensively, and have demonstrated, generalizable business impacts. Much of the research on tech intensity / digital transformation focuses on describing the current changes in the field, rather than explaining how it drives business outcomes and impact. Similarly, much research on partnerships focuses on the characteristics that make partnerships more or less successful, rather than describing how partnerships create longer-term business improvements at a participant firm.

At the individual level

At the individual level, leadership styles that encourage employee empowerment and drive employee satisfaction and commitment have been positively associated with firm performance. Executive compensation design also influences firm performance, though most research points to the negative impact of ineffective compensation designs on performance. Research in this space is correlational rather than causal.

Senior leadership

The previous section described certain leadership styles (i.e., those that encourage community building, employee empowerment, clear communication of company vision, setting of incentives), leader demographics (i.e., gender, age), and prior experience as factors associated with successful engagement with wicked problems. Here we describe how these success factors have generalizable business impact.

Leadership styles that emphasize employee empowerment and setting clear visions/goals have found to be positively associated with firm performance. For instance, CEO transformational leadership has been found to play a positive role in shaping firm financial performance, job satisfaction, employee motivation, organizational commitment, task performance, and leader effectiveness.^{198 199 200 201 202} Transformational leaders are those who influence employees through idealized influence (i.e., behaviors that allow leaders to serve as role models and receive respect and trust), inspirational motivation (i.e., the effective communication of firm/project vision and the ability to provide meaning and challenge to employees' work), intellectual stimulation (i.e., empowering employees to engage in innovative and creative problem solving), and individualized consideration (i.e., supporting followers' growth by acting as a coach or mentor). Jensen, Potocnik, and Chaundry (2020) found a positive correlation between inspirational motivation with net profit margin and return on assets, intellectual stimulation with operating profit margin and net profit margin, and individualized consideration with operating profit margin and return on

¹⁹⁸ (Jensen, Potocnik, & Chaudhry, 2020)

¹⁹⁹ (Ling, Simsek, Lubatkin, & Veiga, 2008)

²⁰⁰ (Wang, Oh, Courtright, & Colbert, 2011)

²⁰¹ (Judge & Piccolo, 2004)

²⁰² (DeGroot, Kiker, & Cross, 2000)

assets.²⁰³ Ethical leadership, a term used to describe a leadership style emphasizing relationships and the needs of employees, employee diversity, and employee and environmental welfare, is found to positively influence firm performance as well.²⁰⁴

Several studies look at the relationship between CEO experience and firm performance. Studies find a positive relationship between firm performance and CEO experience and quality, generally suggesting that an executive's experience and quality (tenure divided by age) influence his or her decision-making abilities.^{205 206 207} Executives with long experience and longer tenure tend to outperform less-experienced executives, which may be a result of firm- and task-specific knowledge or a large network of business contacts from which experienced executives can benefit.²⁰⁸ Peni (2014) found that CEOs holding multiple board seats was negatively associated with firm performance, while CEO duality has a positive relationship with Tobin's Q and return on assets.²⁰⁹ The studies generally find that older CEOs outperform younger CEOs; however, it is not the overall experience of life (i.e., age) that creates the competitive advantage, but rather having executives with long tenures in the same position. These findings are not necessarily misaligned with the previous research that firms with younger CEOs tend to have higher ESG scores.

Several studies find that female-controlled firms outperform male-controlled firms.^{210 211} Peni (2014) found a positive relationship between the presence of female CEOs or Chairs and firm performance and suggests that female participation in management improves corporate governance and firm performance.²¹²

CEO compensation

When correctly designed, CEO compensation has a demonstrable effect on firm outcomes. When improperly designed, CEO compensation can incentivize short-term thinking and bad behavior that leads to decreased investment and innovation.

CEO compensation tied to nonfinancial metrics not only leads to improved ESG/CSR performance but improved business outcomes. The adoption of "close-call" shareholder proposals on long-term executive compensation leads to increased firm value and operating performance, as well as increased investment in innovation and stakeholder relationships. Specifically, such proposals seem to temporarily decrease

²⁰³ (Jensen, Potocnik, & Chaudhry, 2020)

²⁰⁴ (Wang, Feng, & Lawton, Linking Ethical Leadership with Firm Performance: A Multi-dimensional Perspective, 2017)

²⁰⁵ (Bhagat & Bolton, 2008)

²⁰⁶ (Davidson, Xie, Xu, & Ning, 2007)

²⁰⁷ (Kim, Al-Shammari, Kim, & Lee, 2009)

²⁰⁸ (Peni, 2014)

²⁰⁹ (Peni, 2014)

²¹⁰ (Krishnan & Park, 2005)

²¹¹ (Smith, Smith, & Verner, 2006)

²¹² (Peni, 2014)

operating performance, but drive increased long-run operating performance, suggesting an increased propensity to invest in costly but important long-term projects.²¹³

Excess CEO pay is negatively correlated with CSR performance²¹⁴, but the relationship between CEO pay and business outcomes is more nuanced and depends on whether the disparity between CEO and worker pay is explained. “Explained” pay disparity between CEOs and the average worker is positively correlated with future firm performance, whereas “unexplained pay disparity” is negatively correlated with future firm performance and is more pronounced in firms with weak governance and those with high rates of employee turnover.²¹⁵

CEO compensation contingent on a single goal can negatively impact firm performance potential. Simple, absolute goals focused on a single metric is associated with firms barely exceeding their goals. In other words, absolute goals provide perverse incentives for management to “just exceed” the target.²¹⁶ This may also suggest that absolute goals incentivize leaders to underreport success to lower future targets to make them easier to reach.

The amount of CEO equity that is set to vest in a given quarter is negatively related to the growth in investment across R&D and capital expenditures, suggesting that CEOs may reduce company investment to reduce expenditure in anticipation of vesting stock options.^{217,218} This likely reduces the ability of firms to successfully innovate and suggests that CEO comp may be improved by longer time-horizons. CEOs with high power and in firms with high “human capital intensity” seem to “rig” their compensation contracts to overweight the metrics on which they / the firm were most performant, which ultimately negatively impacts long-term firm value.²¹⁹

Board composition & imperatives

Some studies have pointed to an association between higher levels of board diversity with improved firm performance. However, results are mixed across different firm sizes and cultural contexts, suggesting that board composition and board attributes may not be a strong metric for predicting firm performance.

Generational diversity on boards encourages companies to adopt a more sustainable approach to business, with a more effective design of vision and strategies with regards to financial and non-financial aspects.²²⁰ Firms with more female directors are correlated with higher firm performance by market and accounting measures.²²¹ Age diversity is found to have a positive effect on performance for both insider

²¹³ (Flammer & Bansal, Does a long-term orientation create value? Evidence from a regression discontinuity, 2017)

²¹⁴ (Allen Ferrell, 2016)

²¹⁵ (Rouen, 2020)

²¹⁶ (Bennett, Bettis, Gopalan, & Milbourn, 2017)

²¹⁷ (Edmans, Fang, & Lewellen, Equity vesting and investment, 2017)

²¹⁸ (Ladika & Sautner, 2020)

²¹⁹ (Morse, Nanda, & Seru, 2011)

²²⁰ (Idoya Ferrero-Ferrero, 2015)

²²¹ (Terjesen, Couto, & Francisco, 2015)

and outsider directors.²²² The same study found nationality mix is positively correlated with firm performance for insider directors only.²²³

At the same time, a study of 34,798 SMEs located in the U.K. found generational diversity and gender diversity to have a negative association with firm performance.²²⁴ A study of Spanish firms similarly finds no relationship between gender diversity and performance.²²⁵

Several studies find that an increasing number of independent (or outside) board directors enhances firm value.^{226 227} However, the results are similarly mixed, with several studies finding a negative or no relationship between board composition and firm performance.^{228 229 230} One study found that the presence of external independent directors is not positively correlated with firm performance unless the board is gender diversified.²³¹

At the firm level

A large body of research suggests that organizations with a clear purpose outperform those without; further research points to the impact that organizational culture has on employee satisfaction and motivation, which are correlated with improved financial outcomes. Both long-term- and stakeholder-orientation are also positively correlated with business performance, as are dynamic capabilities, coordination capabilities, innovative capacity, and R&D investment. Reporting on nonfinancial metrics can positively influence firm valuation and setting difficult but attainable targets and providing monetary incentives drives employee engagement and productivity, which can improve firm performance. Research measuring the impact of tech intensity on firm performance is more limited.

Organizational culture & structure

Organizations that have employees with a strong sense of meaning and purpose at work, and a strong clarity of purpose communicated by senior management have higher future accounting and stock market performance.²³² Henderson connects strong purpose, i.e., when a company has publicly committed to a goal beyond profit maximization and routinely sacrifices short-term profits to pursue purpose, to performance (recognition and pursuit of architectural innovation) in her review of the literature on architectural innovation and purpose.²³³ Firms with middle managers that feel high purpose and high clarity have a 6-7% premium in stock price per year.²³⁴

²²² (Fernandez-Temprano & Tejerina-Gaite, 2019)

²²³ (Fernandez-Temprano & Tejerina-Gaite, 2019)

²²⁴ (Shehata, Salhin, & El-Helaly, 2017)

²²⁵ (Fernandez-Temprano & Tejerina-Gaite, 2019)

²²⁶ (Ma & Tian, 2014)

²²⁷ (Abdurrouf, 2011)

²²⁸ (Bhagat & Bolton, 2008)

²²⁹ (Bozec, 2005)

²³⁰ (Fuzia, Halim, & Julizaerma, 2016)

²³¹ (Terjesen, Couto, & Francisco, 2015)

²³² (Gartenberg, Prat, & Serafeim, 2019)

²³³ (Henderson R. , Innovation in the 21st Century, 2021)

²³⁴ (Gartenberg, Prat, & Serafeim, 2019)

Employees who perceive their work as more purposeful perform better and exhibit higher levels of job satisfaction. Edmans finds that businesses with greater employee satisfaction score (based on the list of “100 Best Companies to Work for in America”) have better future stock returns (2.3-3.8% per year over a 28 year period), suggesting that greater employee satisfaction is causally related to improved financial performance; however, he also finds that the stock market does not fully value these intangibles and so managers may need to be incentivized to prioritize long-term growth over short-term stock gains.^{235, 236} Additionally, this effect is more pronounced in countries with high labor market flexibility (the US and the UK) vs low labor market flexibility (Germany), which suggests that employee satisfaction is a differentiated advantage only in circumstances where firms have high control over hiring and firing²³⁷ (and can therefore meaningfully recruit the highest performers, who experience greater marginal benefits from working at companies they know will create a good experience).

Long-term orientation and stakeholder-orientation are correlated with positive business outcomes. Long-term orientation results in an increase in firm value and improvements in operating performance.²³⁸ Stakeholder-orientation has been found to foster an environment that is more tolerant of failure. As a result, stakeholder-orientation can encourage experimentation and enhance innovation.²³⁹

Human resource management (HRM) systems can affect the overarching ethical values of a firm in which employees are embedded. HRM systems that comprise of ability-enhancing processes (e.g., training) and opportunity-enhancing practices (e.g., employee involvement) influence ethical work climates. Benevolent and principled ethical climates are linked to positive outcomes in the workplace, including employee well-being, employee satisfaction, and employee commitment/loyalty,²⁴⁰ each of which are linked to improved firm performance.^{241 242 243}

Capabilities

In the previous section, we highlighted several organizational capabilities that are associated with improved wicked problems engagement. Dynamic capabilities, coordination capabilities, innovative capacity, R&D investment/activity, and employee environmental training are found to be positively correlated with firm ESG/CSR performance. While the research on the impact of employee environmental

²³⁵ (Edmans, Does the Stock Market Fully Value Intangibles? Employee Satisfaction and Equity Prices, 2011)

²³⁶ (Edmans, The Link between Job Satisfaction and Firm Value, with Implications for Corporate Social Responsibility, 2012)

²³⁷ (Edmans, Li, & Zhang, Employee satisfaction, labor market flexibility, and stock returns around the world, 2014)

²³⁸ (Flammer, Does Corporate Social Responsibility Lead to Superior Financial Performance? A Regression Discontinuity Approach, 2015)

²³⁹ (Kacperczyk, 2016)

²⁴⁰ (M. Guerzi, 2015)

²⁴¹ (Edmans, Does the Stock Market Fully Value Intangibles? Employee Satisfaction and Equity Prices, 2011)

²⁴² (Yee, Yeung, & Cheng, 2010)

²⁴³ (Krekel, et al., 2019)

training on firm performance is limited, dynamic capabilities, coordination capabilities, innovative capacity, and R&D investment are often associated with enhanced firm performance.

Research generally suggests that dynamic capabilities have an indirect rather than direct impact on firm performance. Teece (2007) suggests that dynamic capabilities enable firms to create, deploy, and protect assets that support improved, long-run business performance.²⁴⁴ Teece (2007) explains that firms with dynamic capabilities tend to be highly entrepreneurial, as they can adapt to business ecosystems as well as shape ecosystems through innovation and collaboration with other firms. Dynamic capabilities are found to impact operational capabilities, such as the reconfiguration and development of new marketing and technological capabilities, which in turn have a positive effect on firm performance in terms of market share and profitability.²⁴⁵ The relationship between dynamic capabilities and firm performance is found to be mediated by organizational learning, whereby dynamic capabilities drive improved organizational learning processes, and organizational learning processes are argued to be a primary source of competitive advantage.^{246 247 248} An analysis of the impact of dynamic capabilities on the performance of 1,000 Taiwanese companies indicates that dynamic capabilities can mediate firm valuable, rare, inimitable, and non-substitutable (VRIN) resources to improve performance.²⁴⁹ The effect is strongest for dynamic learning capability. Some studies frame dynamic capabilities as complex, codified routines and provide evidence of a positive correlation between codified routines and firm performance.^{250 251 252}

Coordination capabilities (sometimes described as a subcomponent of dynamic capability) enable firms to develop assets and capabilities of high strategic value in dynamic competitive environments, the coordination and integration of such assets increases firm value.²⁵³ This value often comes in the form of new product development^{254 255} and linking technological and market opportunities with existing capabilities.²⁵⁶ Helfat and Raubitschek (2000) argue that coordination capabilities allow firms to deliver their products in a more cost effective way and acquire more information about customer needs, as coordination capabilities enhance the coordination and integration of implicit and explicit knowledge across an organization.²⁵⁷ Coordination capabilities can also enhance a firm's ability to make required "architectural" or system innovations to stay competitive or to drive innovation.²⁵⁸

²⁴⁴ (Teece, 2007)

²⁴⁵ (Protogerou, Caloghirou, & Lioukas, 2011)

²⁴⁶ (Giniuniene & Jurksiene, 2015)

²⁴⁷ (Shane & Venkataraman, 2000)

²⁴⁸ (Breznik & Hisrich, 2014)

²⁴⁹ (Lin & Wu, 2014)

²⁵⁰ (Zollo & Winter, Deliberate learning and the evolution of dynamic capabilities, 2002)

²⁵¹ (Zollo & Singh, Deliberate learning in corporate acquisitions: post-acquisition strategies and integration capability in U.S. bank mergers, 2004)

²⁵² (Kale & Singh, 2007)

²⁵³ (Teece, 2007)

²⁵⁴ (Helfat & Raubitschek, 2000)

²⁵⁵ (Clark & Fujimoto, 1991)

²⁵⁶ (Dosi, Nelson, & Winter, 2002)

²⁵⁷ (Helfat & Raubitschek, 2000)

²⁵⁸ (Henderson & Clark, 1990)

Innovation capability (also commonly thought of a dynamic capability or otherwise linked with other dynamic capabilities) is broadly described as a firm's ability to generate new ideas and transform knowledge into new products, processes, and systems – or a firm's ability to innovate.²⁵⁹ Innovation is well-documented as a key driver of firm performance, as well as long-term profits and market leadership.^{260 261 262 263 264 265} R&D investment is often used as a proxy for measuring innovation. Longer-term orientation benefits companies by fostering innovation (by way of increased R&D expenditures) and improving stakeholder relationships (by way of social capital investments that enhance legitimacy, reputation, and trust).²⁶⁶

The relationship between R&D investment and firm performance is a popular topic in the literature. However, existing research into the mechanisms for how R&D investment affects firm performance is limited. Most studies find firm financial and long-term performance to be positively associated with higher levels of R&D investment.^{267 268 269 270 271 272} The impact of R&D performance may depend on the level of R&D intensity, where the relationship may only be significant after a critical mass of investments or after a critical mass of knowledge is accumulated.^{273 274} Several studies challenge the direction of the association. Coad and Rao (2010) argue that profit growth is not associated with R&D investments, but rather, that firms tend to increase their R&D investment after a growth in sales.²⁷⁵ Cainelli et al (2006) highlight the two-way nature of the relationship, finding that innovation and productivity act as a self-reinforcing mechanism that leads to improved financial performance.²⁷⁶ Schimke and Brenner (2014) suggests the impact of R&D investment on performance depends on the risk profile of the project. They indicate that some R&D investments are risky and uncertain, and such projects can negatively impact firm growth.²⁷⁷

²⁵⁹ (Breznik & Hisrich, 2014)

²⁶⁰ (Henderson & Clark, 1990)

²⁶¹ (Porter, 1990)

²⁶² (Shoham & Fiegenbaum, 2002)

²⁶³ (Roberts, Product innovation, product-market competition and persistent profitability in the U.S. pharmaceutical industry, 1999)

²⁶⁴ (Artz, Norma, Hatfield, & Cardinal, 2010)

²⁶⁵ (Gunday, Ulusoy, Kilic, & Alpkan, 2011)

²⁶⁶ (Flammer & Bansal, Does a long-term orientation create value? Evidence from a regression discontinuity, 2017)

²⁶⁷ (Chan, Lakonishok, & Sougiannis, 2001)

²⁶⁸ (Ehie & Olibe, 2010)

²⁶⁹ (Anagnostopoulou & Levis, 2008)

²⁷⁰ (Hall & Oriani, 2006)

²⁷¹ (Monte & Papagni, 2003)

²⁷² (Lome, Heggseth, & Moen, 2016)

²⁷³ (Trachuk & Linder, 2018)

²⁷⁴ (Kancs & Siliverstovs, 2016)

²⁷⁵ (Coad A, 2010)

²⁷⁶ (Cainelli, Evangelista, & Savona, 2006)

²⁷⁷ (Schimke & Brenner, 2014)

Reporting & Governance

This paper has identified certain reporting practices (i.e., integrated reporting) and governance strategies (i.e., management control tools) that are associated with wicked problem engagement. This section highlights research that looks at the relationship between these components and business impact.

Quality integrated reporting is positively associated with firm valuation.^{278 279 280} The relationship is stronger for firms with higher organizational complexity, which suggests integrated reporting may improve the information environment and reduce informational asymmetry.²⁸¹ Further, firms that practice integrated reporting have long-term oriented investor bases.²⁸² Long-term investors are found to strengthen governance and increase innovation, ultimately driving higher profitability for the firm.²⁸³ It is important to note that these are correlational rather than causal relationships, which leaves open the possibility that the relationship between integrated reporting and long-term investors is two-way in nature.

Reporting solely on financial efficiency metrics may impede long-term firm value. While reporting on financial / “hard” efficiency metrics typically raises financial efficiency and reduces the cost of capital, the practice may influence managers to focus on hard results and deprioritize “soft” investments that create long-run value.²⁸⁴

On the topic of management control tools, several studies point to the effectiveness of target setting and monetary incentives for achieving financial objectives (albeit short-term).^{285 286 287} The right balance of target difficulty and monetary incentives can motivate and elicit greater efforts from employees. However, beyond a certain threshold, target stretching decreases the percentage of target completion.²⁸⁸

Monetary incentives in the form of employee ownership can drive improved business performance in specific circumstances – businesses that are too large or share too much stock may not see improved performance as a result of such programs. However, in the right context the research suggests that employee ownership may drive increased cooperation and monitoring for “bad actors.” Employee stock ownership programs (ESOPs) can sometimes create productivity gains, shared by employees and shareholders, when small ESOPs are adopted by smaller firms: such firms also have higher average wages, employment rates, and shareholder value. Larger firms are susceptible to free-rider problems that decrease the incentive to produce, and sales of shares are often restricted which further decreases the incentive. Larger ESOPs are often instituted to either 1) conserve cash by substituting wages for equity; or 2) ally with workers and prevent hostile takeovers; neither of which incentivize increased productivity.

²⁷⁸ (Velte, 2021)

²⁷⁹ (Lee & Yeo, 2016)

²⁸⁰ (Barth, Cahan, Chen, & Venter, 2017)

²⁸¹ (Lee & Yeo, 2016)

²⁸² (Serafeim G. , Integrated Reporting and Investor Clientele, 2015)

²⁸³ (Harford, Kecskes, & Mansi, 2018)

²⁸⁴ (Edmans, Heinle, & Huang, The real costs of financial efficiency when some information is soft, 2016)

²⁸⁵ (Kaplan & Norton, 1996)

²⁸⁶ (Thompson, Hochwarter, & Mathys, 1997)

²⁸⁷ (Chen & Jones, 2005)

²⁸⁸ (Ioannou, Li, & Serafeim, The Effect of Target Difficulty on Target Completion: The Case of Reducing Carbon Emissions, 2016)

When such plans are adopted at smaller firms, productivity may increase but gains are not shared with investors.²⁸⁹

Non-executive stock options that are granted as a matter of practice to non-executive employees at small firms have a causal relationship with increases in firm stock value, which may relate to increased employee cooperation and mutual monitoring.²⁹⁰

Tech intensity

Improved tech intensity, specifically improved data architecture, drives productivity gains that are caused by technological innovation.²⁹¹

At the ecosystem level

Cross-sector partnerships have been found to increase organizational learning and knowledge and result in new capabilities. Trust and interaction between members of a business partnership can create a vector for improved organizational learning.²⁹² Inkpen discusses several knowledge types which can arise from partnerships: 1) knowledge for designing and managing alliances, 2) access to knowledge and skills of another business without incorporating it in their own organization, and 3) new knowledge that allows improvement in operations and strategy of the business.²⁹³ Le Pennec and Raufflet also discuss specific types of learning that occurs at each stage of value creation, based on a case study of an inter-organization partnership within an international development project in Guatemala: 1) *associational value* is created by selecting a partner on the basis of resources, competencies, or reputation which the org is then associated with; 2) the exchange of skills, tools, methods, and financial resources results in *transferred value* (tangible and intangible) as managers use the new tools to become better managers; 3) the *interactional value* which through participating in the partnership helps the organization better understand itself and the partnership; and 4) the *synergistic value* which allows the partners to broaden perspectives, challenge the status quo, and innovate because of the collective impact provided by the partnership.²⁹⁴ Dentoni et al. note that companies participating in cross-sector partnerships developed dynamic capabilities for working with stakeholders early on and then their capabilities decreased at later stages possibly because of developing more proactive rather than reactive corporate strategies, which could be beneficial for society and a risk in the context of wicked problems.²⁹⁵

Cross-sector partnerships may also improve firm reputation and reduce risk. Cross-sector collaboration between social enterprises and private sector businesses increases companies social image and reputation, according to Urmanaviciene et al.'s analysis of collaboration in Baltic states.²⁹⁶ When describing outcomes for tri-sector (government, business, and nonprofit) partnerships, Warner notes four in particular which help to increase competitive advantage for business: community building to make it

²⁸⁹ (Kim & Ouimet, 2014)

²⁹⁰ (Hochberg & Lindsey, 2010)

²⁹¹ (Cao & Iansiti, 2022)

²⁹² (Liu, Ghauri, & Sinkovics, 2010)

²⁹³ (Inkpen, 2002)

²⁹⁴ (Le Pennec & Raufflet, 2018)

²⁹⁵ (Dentoni, 2015)

²⁹⁶ (Urmanaviciene, Chantzi, & Tambari, 2021)

easier to resolve future local disputes, community recognition as a reputable and trustworthy company, reduced risk from negative publicity, and increased attractiveness to prospective employees.²⁹⁷

Discussion

The current literature on business engagement with wicked problems is certainly promising. At a high level, the existing literature suggests that businesses that engage with wicked problems are likely to reap financial and market-based rewards, and that the pursuit of wicked problems can drive improved innovation, customer loyalty, and employee retention. Additionally, the academic literature supports the importance of the “three levels” of engagement with wicked problems – individual leadership, firm transformation, and ecosystem integration.

However, there seem to be gaps in the current work that it would be prudent (and interesting!) to explore. Much of the current work assumes that stock market performance serves as an effective proxy for realized business outcomes – but Serafeim’s work shows that certain firms “fly under the radar” for their wicked problems engagement, suggesting that stock prices are an imperfect signal for success at best. Additionally, much of the current research has focused on sustainability and environmental signals (potentially because of the improved reporting consistency in this area), with less coverage of the importance of tackling other wicked problems. The current body of work also relies heavily on external ESG rating indices as a proxy for successful business approaches – but these ratings typically measure corporate risk due to ESG factors rather than successful approaches to ESG goals²⁹⁸. Perhaps most frustratingly, there are few detailed descriptions that create a clear “how-to” for firms who wish to take on wicked problems themselves – the research describing the success factors tends to stay high-level, without clear indications of how firms get involved and maintain engagement as they transform.

While the current research leaves a tantalizing trail of breadcrumbs, further research is required to demonstrate 1) why firms get involved in wicked problems; 2) how businesses evaluate success and navigate the change process; and 3) how approaching wicked problems changes their business operations in a way that could drive longer-term transformational impacts.

²⁹⁷ (Warner & Sullivan, 2004)

²⁹⁸ (Taparia, 2021)

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