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Corporate Social Responsibility and Sustainable Development Goal 9

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Synonyms

Corporate social and environmental responsibility (CSER); Environmental, social, and governance (ESG)

Definitions

Corporate social responsibility (CSR) is a concept that describes environmentally sustainable and socially just corporate behavior. There are multiple definitions of CSR, which are discussed in the section "Corporate Social Responsibility and Innovation."

Introduction

With the spread of neoliberalism, corporate social responsibility (CSR) and private governance have become integral parts of corporate behavior. This entry discusses the aspects of Goal 9 (industry, innovation, and infrastructure) of the United Nations Sustainable Development Goals (SDGs) in relation to CSR. Goal 9 emphasizes sustainability, resilience, and equity of corporations, industries, and other social and economic actors in the processes of innovation and advancement of infrastructures. Although the concept of CSR, which represents positive social and environmental influences of corporations, is not explicitly mentioned in Goal 9, it is an important mechanism in accomplishing the objectives of the goal.

This entry has three main sections. "Corporate Social Responsibility and Innovation" reviews the definitions of the key concepts in this article, including social, economic, and environmental dimensions of CSR. In addition, this section also discusses the relationship between CSR and innovation, using studies from responsible research and innovation literature. "The Role of Companies in Environmental, Social, and Governance Issues" examines environmental, social, and governance (ESG) issues, which are used as criteria for making responsible investments among stakeholders. This section of the entry shows the main examples of ESG and analyzes how ESG issues are related to Goal 9 of SDGs. Providing a more practical understanding of CSR compared to "Corporate Social Responsibility and Innovation," this section of the entry argues that Goal 9 is an important representation of corporate sustainable practices. "Innovation and New Emerging Technologies" focuses on three industries,

namely, energy, communication, and transportation, to show that newly emerging technologies are playing salient roles in shaping the discourses of CSR.

This entry suggests that newly emerging technologies will expand the definition of CSR. Previously, the CSR literature only focused on corporate behavior itself but with technological innovation, and CSR as a concept also engages with product design processes, product usage and consumption, and the consequences of product consumption. In this sense, newly emerging technologies and relevant industries are contributing to the objectives specified in Goal 9 of SDGs.

Corporate Social Responsibility and Innovation

CSR was first defined by Bowen (1953) who stated that CSR referred to policies and decisions of businessmen that are considered desirable in terms of the objectives and values of our society. The definitions of CSR became more elaborate as scholars further developed the concept. Frederick (1987) divided CSR into four parts: (1) CSR as an ethical-philosophical concept, (2) CSR as the action-oriented managerial concept of social responsiveness, (3) CSR as a normative element based on ethics and values, and (4) CSR as the basic normative reference for social issues in management. Furthermore, Crane et al. (2013) introduced CSR's core characteristics, which are voluntary, beyond philanthropy, social and economic alignment, multiple stakeholder orientation, managing externalities, and practices and values. Similarly, the World Business Council for Sustainable Development has claimed that CSR is the commitment of a business to contribute to sustainable economic development, working with employees and their families, the local community and society at large to improve their quality of life (Servaes and Tamayo 2013).

To address the diverse definitions of CSR, Dahlsrud (2008) conducted a study on how academic articles defined and studied CSR. This study is particularly useful because it provides an overview of all the definitions of CSR that had been previously discussed. Dahlsrud (2008) identified five main dimensions of CSR and then used the frequency counts from Google of all the definitions referring to a specific dimension. The five dimensions that he idenfieid includes environmental, social, economic, stakeholder, and voluntariness. The environmental dimension referred to the natural environment, and the social dimension referred to the relationship between business and society. The economic dimension, which referred to the socioeconomic or financial aspects, included CSR in terms of a business operation. This involved activities that "contribute to economic development, preserving the profitability, and business operations." The stakeholder dimension described how stakeholders were referred to in discussing CSR, and the voluntariness dimension referred to actions that are not prescribed by law. Dahlsrud (2008) argued that the stakeholder dimension involved interactions and treatment of their stakeholders, such as their employees, suppliers, customers, and communities. He concluded that the environmental dimension received a significantly lower dimension ratio than the others. The stakeholder and social dimensions received the most attention, followed by the economic dimension followed with voluntariness dimension closely behind. He argued that to gain an in-depth understanding of CSR, all five dimensions must be considered.

In short, CSR is not clearly and coherently defined among scholars. Nevertheless, the existing literature tends to focus on corporate action itself as the definition of CSR. The components of CSR tend to vary, but in essence, CSR as a concept examines corporate decision-making processes and their behavior on social and environmental issues. This entry reviews the existing discourses of CSR and show that in industries that deal with emerging technologies, there are other facets of CSR, such as product design processes, product usage and consumption, and the consequences of product consumption.

A group of studies that values processes of design, production, and research is responsible research and innovation (RRI). This literature is

particularly pertinent because it connects CSR with corporate innovation and initiatives. Mostly discussed in the science and technology studies literature, RRI is defined as "transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products (in order to allow a proper embedding of scientific and technological advances in our society)" (Von Schomberg 2013, p. 19). In other words, RRI states that sustainable and socially responsible behavior of political and economic actors, which include corporations, are embedded in innovation processes. RRI clarifies the connections between CSR and innovation. For example, Rainey and Goujon (2011) argued that corporations are one of the main actors, along with governmental agencies and NGOs, that ensure and accelerate responsible research and responsible innovation. They claimed that corporations need to reach beyond the immediate financial gain and market competitiveness, which resembles the core ideas of CSR, with an added emphasis on innovation. Similarly, Schot and Steinmueller (2018) argued that corporations would benefit from RRI by long-term economic growth and business opportunities. In this sense, the literature on RRI and CSR complement each other, as corporations become more involved in innovation, newly emerging technologies, and their social, environmental, and economic consequences.

The Role of Companies in Environmental, Social, and Governance Issues

In making investments, many stakeholders and shareholders take CSR performance into account. In quantifying CSR performance, environmental, social, and governance (ESG) criteria are often used. ESGs are generally considered as a more practical concept than CSR because of its relationship with financial investments. Although the two concepts, ESG and CSR, are technically different, with ESG focusing more on measurements and assessments of companies' actions, the core idea of the two concepts remain the same. Both concepts are trying to promote sustainable and socially responsible behavior of companies. This section of the entry discusses how corporations are contributing to ESG issues and how these issues relate to Goal 9 of the SDGs.

The environmental aspect of ESG addresses the main sustainability challenges that corporations face. Highlighting environmental issues of corporations directly relate to Goal 9, which stresses the importance of sustainable infrastructure (indicators 9.1; 9.4), sustainable industrialization (indicators 9.2; 9.4), and "clean and environmentally sound technologies and industrial processes" (indicator 9.4). Corporations have been a long-time leading polluter, and corporate pollution is often concentrated in a few industries and a few companies within each industry (Freudenburg 2006; Leonard 2006). The most widely discussed examples of this corporate behavior are within the energy industry. For example, the environmental damage that the British Petroleum caused because of the oil spill in April 2010 is still being discussed. A new study indicates that the effects of the spill were much worse than anticipated at the time (Berenshtein 2020). Because of the sheer size of industry-related pollution, corporations are often castigated for their sustainability actions. However, despite all the criticisms, there are some exemplary behavior among corporations. For example, the "We Are Still In" movement, which is comprised of companies that believe Trump's action to leave the Paris Agreement was a mistake, remains strong in the corporate world.

Goal 9 also includes the social dimensions of ESGs. For example, indicator 9.1 stresses "human well-being" and "affordable and equitable access for all" (United Nations 2020, p. 9). Corporations play a significant role in achieving the objectives of Goal 9 because they are one of the most powerful players that determine not only the health of the economy but also social equity and justice through their corporate practices. Many of the social goals that corporations are particularly

concerned with address issues of equality, justice, and the quality of living. For example, in the late 1990s, Nike was berated for exposing their factory workers in Vietnam to harsh chemicals beyond the legal limit and for paying extremely low wages of about 20 cents an hour (Soule 2009). Nevertheless, corporations and executive members have been involved in making a positive social change. The Giving Pledge, which involves billionaires committing to give the vast majority of their wealth to philanthropy, is a good example. As of April 2020, the pledge includes 200 of the world's wealthiest individuals, including Bill and Melinda Gates and Warren Buffett. For more examples of corporate environmental and social misbehavior and relevant movements against corporations, refer to Soule (2009).

Governance refers to the managing of a company that directly and indirectly affect the profit and total return of a company. (For a list of definitions of governance, refer Weiss 2000.) Because governance can affect corporate decisions and actions, they can also determine the adoption of technologies and industrial processes of corporations as well as sustainability-related actions. This reflects the ideas presented in indicator 9.4 (clean and sustainable industry processes). Some of the examples of governance issues include gender and ethnic diversity of board composition, risk and crisis management, and corporate policies. Governance can greatly affect corporate decisions. For example, a number of studies showed that board diversity and networks among executives are important variables in determining corporate decisions, although whether the impact is positive or negative depends on market characteristics and national context (Muttakin et al. 2015; O'Hagan and Green 2004; Rao and Tilt 2016). Moreover, Weber et al. (2009) showed that the education of board members can also affect corporate decisions.

Overall, although Goal 9 does not specifically discuss CSR or ESG, its objectives embody the values that are highly sought after in the CSR literature. Corporations, as major actors of society and economy along with governments, significantly contribute in determining whether the objectives of Goal 9 are achievable.

Innovation and New Emerging Technologies

This section shows how industrial innovation advances the objectives detailed by Goal 9 in specific industries. Among the issues discussed in Goal 9, sustainability, resilience, and equitable access and affordability are particularly relevant to corporations. By incorporating innovation and technological developments into the discourse of CSR, this section shows how the definition of CSR is expanding to include not only corporations' ethical behavior but also how their products are becoming agents of CSR in the stages of design, production, and consumption.

This section focuses on three industries and related technologies: smart grids, smart meters, and microgrids in the energy industry; smart phones and mobile communication in the communication industry; and connected and automated vehicles and electric vehicles in the transportation industry. These three industries are chosen because they are entrenched in people's daily lives and yet are currently going through major technological developments. Additionally, these three industries engage with a number of issues addressed by SDG indicators, such as carbon emission, sustainable energy production and consumption, waste, and equal access to resources.

Sustainability

In the literature of CSR, there are a handful of sustainability challenges faced by corporations. Corporations are responsible for 32% of energy consumption in the United States in 2018, which is more than any other sectors (US Energy Information Administration 2018), and they have also been blamed for dumping toxic sludge, which contaminates drinking water (Spearing-Bowen and Schneider 2017). Corporations, because of their sheer size and dominance over the economy, are responsible for a large share of sustainability issues, such as carbon emission and waste. A group of studies suggest a positive effect of new technologies on sustainability, which is an essential element of CSR. However, some concerns are also raised as the consumption of new technologies increases.

In the energy industry, smart grids and smart meters are considered as the new innovative technology that can reduce overall energy consumption. Smart grids and smart meters, which uses two-way communication between utilities and consumers and electronic management of energy use data, allow consumers to directly oversee and control their energy consumption and bills. Many smart meter technologies currently have or plan to adopt a system, in which consumers can continuously check their energy consumption, set energy goals, and analyze usage. This would enable the consumers to use energy more efficiently (Logenthiran et al. 2012; Shuhaiber 2018). Less energy use can consequently lead to a reduction in carbon emissions and it can also eventually lower the need for new power plants. In this sense, smart grids and smart meters are crucial in understanding future sustainability in the energy industry and they can ultimately change the way consumers perceive their energy consumption.

In the communication industry, smart technologies have become prevalent with the introduction of smartphones. Allowing users to access the internet via phones, smartphones have become an essential device for daily activities for most people. However, mobile phones are criticized for the limited product lifetime. For example, Mont (2008) found that over 90% of all phones are thrown away within 6 weeks of production and only 10% of them are recycled (Wilhelm 2012). Despite this challenge, a group of studies indicates that smartphones have enhanced the quality of sustainability education (Dogbey et al. 2014), and they can also be used to gather environmental information (Hofmeister Tóth et al. 2012).

The transportation industry has been heavily investing in developing connected and automated vehicles (CAVs), which refers to "vehicles that are equipped with driving automation systems and can communicate with other road users" (Lee and Hess 2020, p. 86). The European Commission (2018) estimated that human error causes approximately 94% of accidents and about a quarter of those accidents are caused by driver distraction (Young and Regan 2007). In the long term, with the adoption of CAVs, the number of accidents

will likely reduce, which will lead to a greater lifetime of vehicles and will reduce waste that derives from accidents. Effects of CAVs on carbon emission are not known at present. On the one hand, some studies indicate that CAVs may lead to higher energy efficiency, optimal driving cycle, less idling, and less speed fluctuation, which can reduce the overall carbon emission (Taiebat et al. 2018). On the other hand, a high adoption of CAVs may also lead to no change or even higher levels of carbon emission because people are more likely to travel greater distance compared to manual driving (Papa and Ferreira 2018).

Resilience

Resilience refers to the ability to maintain system functionality after prolonged or unexpected detrimental events. Being able to continue after prolonged poverty and the ability to overcome natural disasters would be good examples of resilience. The United Nations Office for Disaster Risk Reduction (2017) defines resilience as "the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions." Resilience is an important aspect of Goal 9, which stresses reducing the effects of disasters by building sustainable and quality infrastructures. The corporations in the energy, communication, and transportation industries are important actors that significantly contribute to this objective.

In the energy industry, microgrids are considered the leading player in enhancing resilience. Microgrids are a form of distributed energy source, which can act as a single controllable grid. Therefore, a microgrid can connect to the grid or function in an island mode, which makes it a compressed version of the larger electrical grid. Because of this property of microgrids, they are useful during disastrous events. They can be used for power quality control if the larger grid is disconnected (Chen et al. 2015). Moreover, microgrids further enhance resilience by providing cost-effective real-time demand supply

balance, as a source of backup generation (Maharjan et al. 2015; Strbac et al. 2015). Overall, microgrids provide resilience by providing an alternative source of power from the larger grid, which can be overloaded or damaged.

Mobile communication can provide secure and resilient communication services not only through its telecommunication network but also using wireless network (Gardner-Stephen et al. 2013), and smartphone apps can be used as a form of SOS reporting and life and medical resources request and provision using its GPS signals (Li et al. 2017). For example, after the Great East Japan Earthquake and Tsunami, the Japanese society became much more dependent on wireless communication devices, which were used to notify a person's safety to their families and friends (Nishiyama et al. 2014). In short, smartphones are so highly entrenched in people's daily lives that it is perceived as an important tool that can identify a person as well as his or her whereabouts in disastrous times.

In the transportation industry, two technologies are pertinent in regard to resilience. First, electric vehicles (EVs) are being introduced as potential temporary power supplies to operate critical facilities such as hospitals during emergencies (Maharjan et al. 2015). Similarly, EVs can be used when some infrastructures such as gas stations are no longer available after a disaster, such as a hurricane (Rahimi and Davoudi 2018). Second, CAVs are expected to be useful for resilience. Studies found that a greater penetration of CAVs into the existing infrastructure improved both travel time and capacity during several disaster scenarios (Ahmed et al. 2019). Moreover, because smooth communication with road users is a crucial characteristic of CAVs, this will, in turn, also improve the communication and wireless network infrastructures, which will also improve resilience.

Equitable Access and Affordability

Equitable access and affordability are important social goals that further promote social equality and justice. Because corporations are involved in designing, building, and maintaining infrastructures, they also, to an extent, determine who gets access to infrastructures by setting price points. Because corporations' main goals are to make profit, they may be inclined to set the highest price possible to access infrastructures. However, due to many other social reasons, such as brand image and stakeholder relations, corporations may decide that providing equitable access and affordability would benefit them in the short term and provide corporate stability in the long run. The three industries that this entry is concerned with are involved in some of the most essential infrastructures. With new emerging technologies, corporations often design their new products and systems with equitable access and affordability in mind.

The energy industry, with support from governments, has been heavily involved in making renewable energy more affordable and accessible and lowering energy bills using new technologies and infrastructures. In New York, energy service companies, solar developers, and utility providers are involved in shared solar, which refers to solar installations that allow individuals to co-own. Shared solar projects have been particularly useful for renters who do not have the authority to set up solar panels on the roof or people who may not have the money to buy solar panels outright (Hess and Lee 2020). Another energy-related technology that is relevant to equitable access and affordability is smart meters. Because smart meters encourage efficient energy use, they can reduce the energy bill. Stromback et al. (2011) found that dynamic pricing, such as real-time pricing, critical peak pricing, time of use, and critical peak rebate can lead to 3–13% lower energy bills.

Smartphones or other digital connectivity in the communication industry has been heavily criticized for neglecting vulnerable populations, such as the homeless (Humphry 2014). However, Polonetsky and Gray (2017) argued that alternative forms of payments, such as pay-as-you-go and prepaid services, can expand consumers' accessibility. Moreover, digital devices can aid visually impaired, mobility limited, and hearing-impaired populations by providing both visual and audial forms of communication. Despite the social and economic importance of

Corporate Social Responsibility and Sustainable Development Goal 9, Table 1 Summary of Innovation with Respect to Environmental and Social Issues

	Sustainability	Resilience	Equitable Access and Affordability
Energy industry	Smart grids and smart meters lead to more efficient energy consumption, which will reduce CO_2 emission	Microgrids are used to have energy independence and can be used as a back up source of energy	Companies are involved in alternative renewable energy infrastructures; smart meters can be used to reduce energy bills
Communication industry	Throwing away smartphones and communication gadgets increase waste; smartphones can be used in sustainability education and environmental data collection	Communication during times of disaster is crucial; smartphone apps can be used for SOS and medical request reporting	Smartphones and digital connection have alternative payment systems for lower income individuals but still need to work on equitable access and affordability
Transportation industry	CAVs can lead to less accidents and more efficient driving, which will reduce waste and CO_2 emission	EVs can be used as alternative energy source in emergencies; EVs can be used when gas is not available; CAVs can reduce travel time and capacity	Because CAVs are expected to be expensive, industries are considering selling rides, not cars; future infrastructures for CAVs need to be not too expensive

smartphones and other digital connectivity, there is certainly a challenge of accessibility. The International Telecommunication Union (2015) reported that in Mexico, Brazil, and Colombia, equipment costs and service costs were chosen as the most important reasons for not having internet access at home. Further corporate efforts to build infrastructures for digital connection in developing countries would resolve this discrepancy.

In the transportation industry, CAVs are contributing to accessibility of vehicles to a wider group of consumers. Because CAVs are expected to be too expensive for individual ownership, it is more likely that there will be more car-sharing schemes and corporations will be selling rides, not cars (Lee and Hess 2020). With the development of the technology, it would become more feasible to sell rides to areas with less demand, because with the lack of driver, there would be less human cost. Because CAVs that are fully automated are not yet deployed, it is difficult to completely comprehend the cost of the infrastructures that CAVs will require. However, Yang et al. stated that "the guidance system on the vehicle and the road infrastructures should not be too expensive" (2006, p. 8).

Summary

The idea of CSR, which was previously focused on ethical actions of corporations, is now expanding to incorporate the design, production, and consumption of newly emerging technologies. Table 1 summarizes CSR issues in relation to Goal 9, in the energy, communication, and transportation industries.

Evidently, corporations still need to improve on certain issues, particularly in relation to equitable access and affordability of smartphones and digital connection. Nevertheless, Table 1 shows that corporations complement governments in achieving the objectives of Goal 9, in which the idea of CSR becomes not only pertinent but central. The role of new emerging technologies in CSR involves the ethical behavior of a corporation, the product design processes (e.g., CAVs' infrastructure design; advancement of communication infrastructures; dissemination of microgrids, smart meters, and smart grids), product usage and consumption (e.g., educational use and SOS and medical reporting for smartphones, being in control of energy consumption, and joining shared solar), and the consequences of product consumption (e.g., reduction of carbon emission in using smart meters and

CAVs). In this sense, I argue that the definition of CSR is expanding from the five dimensions that Dahlsrud (2008) had discussed and includes the sixth dimension, "design, production, and consumption."

Conclusion

The concept of corporate social responsibility is tightly connected to the objectives of Goal 9: industry, innovation, and infrastructure. The main industry-related issues addressed in Goal 9 are sustainability, resilience, and equitable access and affordability. Focusing on three industries, this entry shows that newly emerging technologies within these three industries are shaping and contributing to the targets specified in Goal 9 of SDGs. In addition to corporations' key role in carrying out the objectives of Goal 9, newly emerging innovations are contributing to the expanding definition of CSR. The previous literature focused on corporations' actions in assessing CSR performance but industry innovations show that CSR should be multifaceted and consider product design processes, product usage and consumption, and the consequences of product consumption.

Innovation and technological advancements within these three industries has been particularly expeditious. Consequently, it has become increasingly difficult for government regulations or other monitoring agencies to keep pace with the technologies. In this sense, CSR, RRI, and private governance have become essential forms of regulating corporate action and technological developments.

In the future, studies on CSR should focus more on responsible innovation and industry transformations due to technological developments. The existing frameworks of CSR provide a solid foundation that allows the scholarship to further develop the discourses on corporate responsible innovation. In this sense, the merging of the research on CSR and responsible innovation will expand the definition and scope of CSR to include the new social and environmental responsibilities of corporations that come with

new technological advancements. In guiding corporate behavior in times of such transition, global objectives published by international organizations, such as the SDGs, will become much more pertinent and relevant.

Cross-References

▶ Corporate Social Performance
▶ Responsible Research and Innovation

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