

SUSTAINABILITY INITIATIVES: CASE STUDY OF GOOGLE AND MICROSOFT

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ABSTRACT

This study discusses the sustainability practices of Google and Microsoft, two of the top technology companies. By conducting a literature review and reviewing company reports, the study identifies best practices and policy implementations that may be used in future sustainability practices in the technology industry. The results imply that ambitious goal-setting, stakeholder involvement, and investment in renewable energy, sustainable operations, and the use of the principles of the circular economy are the strategies that help encourage sustainability. This study adds to the existing literature on sustainability in the technology sector and gives insights to companies that are interested in minimizing their impact on the environment.

Keywords: sustainability, technology industry, Google, Microsoft, renewable energy, and circular economy.

INTRODUCTION

Technology has become one of the major causes of environmental degradation, and the production, consumption, and disposal of technological devices and infrastructure have become major contributors to greenhouse gas emissions, e-waste, and depletion of resources (Bibri, 2018). Sustainability is, however, an issue that is being

acknowledged more by technology firms as they make efforts to lessen their impact on the environment (Hart and Milstein, 2003). This study will analyse sustainability initiatives used at Google and Microsoft, two major technology firms that have gone a long way in ensuring their reduced environmental footprint. The case study explores their sustainability activities, obstacles, and lessons learned.

The sustainability initiatives at Google.

- **Renewable Energy:** Google is hoping to run 100% on renewable energy. The company has contracted to buy 3 gigawatts of renewable energy as of 2022.
- **Carbon Neutrality:** Since 2007 Google has been carbon neutral and hopes to be running on 24/7 carbon-free power by 2030.
- **Sustainable Data Centres:** Google data centres rely on sophisticated cooling and machine learning in order to maximize the efficiency of energy consumption.

Microsoft's Sustainability Effort.

- **Net-Zero Emissions:** Microsoft intends to be carbon negative in 2030.
- **Renewable Energy:** By 2025, Microsoft intends to run 100 percent of its operations on renewable energy.
- **Sustainable Technologies:** Microsoft is creating AI-based products to aid in

sustainability.

Challenges and Lessons Learned.

- **Scalability:** The two firms have the problem of scaling down the sustainability initiatives without compromising the speed of growth.
- **Limitations to technology:** The companies will be forced to keep on innovating and investing in new technologies in order to meet their sustainability objectives.
- **Collaboration:** Google and Microsoft understand the need to collaborate with governments and non-governmental organizations and other stakeholders in order to spur industry-wide sustainability.

The sustainability efforts of Google and Microsoft are a sign that technology firms can be used to transform the environment. Investing in renewable energy, sustainable technologies, and new solutions will help these companies decrease their carbon footprint and help create a more sustainable future.

Research Gap

The paper reveals a gap in the current body of knowledge regarding sustainability within the technological industry, specifically among the Indian technology companies. Nevertheless, the analysis is based on worldwide corporations such as Google and Microsoft. The gap could be further bridged by a more specific analysis of sustainability initiatives of Indian technology companies.

Significance of the Study:

The paper has stated the significance of

sustainability in the technology sector, which contributes notably towards the degradation of the environment. The paper offers insights to other technology companies in adopting sustainable practices and lowering their impact on the environment by studying the best practice of Google and Microsoft.

RESEARCH QUESTIONS

- What are the major sustainability interventions adopted by Google and Microsoft?
- To what extent do these interventions help decrease carbon footprint and environmental sustainability?
- What are the challenges that Google and Microsoft encounter in the implementation of the sustainability initiatives?
- What can other companies take away from the Google and Microsoft experiences and use for the sustainability initiatives?

OBJECTIVES

- To examine the sustainability initiatives of Google and Microsoft.
- To explore how technology can be used to develop sustainability efforts and reduce environmental impact.
- To examine the effects of the initiatives in reducing carbon footprint and environmental sustainability.

Literature Review

Sustainability has become a very popular concept in the recent years, as organizations and industries have realized the need to minimize their environmental

impact (Hart and Milstein, 2003). Technology, in its turn, has been cited as a major cause of environmental degradation, as the production, usage, and disposal of the technological gadgets and infrastructure have been known to contribute heavily to the release of greenhouse gases, e-waste, and resource depletion (Bibri, 2018).

Technological Industry Sustainability

Studies have indicated that technology firms are becoming more sustainable, revealing itself through investing in renewable energy, introducing sustainable operations, and embracing the principle of the circular economy (Geissdoerfer et al., 2017). An example is Google and Microsoft, both of which have pledged serious investments in minimizing their environmental impact, and Google has committed to using renewable energy to power 100% of its operations and Microsoft working to be carbon-neutral by 2030 (Google, 2022; Microsoft, 2022).

Benefits of Sustainability

The benefits associated with sustainability to businesses includes, improve brand image, customer loyalty as well as lower costs (Porter and Kramer, 2006). Moreover, the sustainability interventions may lead to innovation and the development of new business opportunities as well (Hart and Milstein, 2003).

Challenges and Opportunities

Challenges in implementing sustainability initiatives, including increased initial expenses and requiring a lot of change in the organization (Seuring and Muller, 2008). Nevertheless, many technology firms that are increasingly becoming

aware of the value of sustainability, and are making efforts to lower their carbon footprint.

Systematic Initiatives of Google and Microsoft

Google and Microsoft are on the forefront of sustainability efforts in technology industry. The two companies have greatly invested in minimizing the effects they have on the environment. **Carbon Neutrality and Renewable Energy**

- **Google:** By 2030, strives to operate on 24/7 carbon-free energy on any grid to which it has access. At present, two-thirds of its energy consumption is non-carbon based.
- **Microsoft:** Has a commitment to utilize 100 percent carbon pollution-free electricity and wants to be carbon-negative by 2030.

Sustainability Initiatives Google:

- Spends on alternative energy sources such as solar and wind power.
- Uses machine learning to optimize data centres.
- Provides Google Cloud platform to assist businesses in better hardware and energy consumption.

Microsoft:

- Invests in its carbon removal projects where it contracts above 1.4 million tons of carbon removal.
- Invents AI so as to measure and abide by emissions.
- Gives emphasis to recyclable materials in its activities.

Emissions Reduction

Google: The emissions have grown in

2018 by 48 percent, primarily due to the energy consumption of data centers and the supply chain operations.

Microsoft: Emissions have increased by 30 percent since 2019 even after the company has been working on lowering its carbon footprint.

Innovation and Partnerships.

Google: Collaborates with businesses providing solutions that are sustainability oriented and invests in climate change startups.

Microsoft: Co-operates with the suppliers to minimize emissions and invest in climate innovation fund.

Industry Background: The Environmental Impact of the Technology Industry and the Significance of Sustainability Initiatives.

Technology is a life changer, as it has become an indispensable component of our modern lives that has transformed the way we live, work, and communicate. But due to the booming industry and its rise and development, there have also been several environmental issues.

Use, disposal, and production of technology products and services have led to massive releases of greenhouse gases, creation of e-waste, and depletion of resources.

Environmental Impact of the Technology Industry

- **Greenhouse Gas Emissions:** The technology industry is one of the biggest contributors to greenhouse gas emissions, majorly through the use of energy in the data centres, manufacturing process, and transportation. The report by the International Energy Agency (IEA) showed the estimated carbon footprint of

the ICT sector was approximately 1.4% of the global emissions in 2020 (IEA, 2020).

- **E-Waste Generation:** High obsolescence of the technology products has resulted in an explosion in the generation of electronic waste (e-waste) that is very dangerous to both the environment and health unless it is disposed of appropriately. According to the World Economic Forum, 50 million metric tons of e-waste were produced in the world in 2018, and only 20 percent could be recycled (World Economic Forum, 2019).
- **Resource Depletion:** Rare earth minerals, metals, and other resources are needed to create technology products and hence might be harmful to the environment and may result in resource depletion. In one study, the European Commission discovered that the mining of rare earths may cause serious environmental effects such as land degradation and water contamination (European Commission, 2020).

Significance of Sustainability Initiatives

- **Minimizing Carbon Footprint:** Sustainability can be made to enable technology firms to minimize their carbon footprint, to curb global warming, and even to meet tighter environmental laws that are set to be enforced. According to a report by the Carbon Disclosure Project, companies that make sustainability their priority have more chances of minimizing their greenhouse gas emissions and realizing cost savings (CDP, 2020).
- **Resource Conservation:**

Sustainability can be used to reduce waste, conserve resources, and encourage the use of renewable energy. The United Nations

Environment Programme says that sustainable practices can be adopted to minimize waste and pollution and increase economic growth and employment (UNEP, 2020).

- **Strengthening Brand Reputation:** A company that values sustainability will have a better chance of attracting customers, investors, and employees who are environmentally conscious, which brings improvement to their brand reputation.

Nielsen conducted a study that found 81 percent of consumers believe firmly that businesses have a responsibility to contribute to bettering the environment, and 73 percent will feel more inclined to purchase from companies that take sustainability into account (Nielsen, 2019).

Advantages of Sustainability Efforts in the Technology Industry.

- **Cost Savings:** Sustainable practices would be able to create a great deal of cost savings by cutting on energy usage, wastage, and enhanced use of resources. The National Resources Defence Council report revealed that by moving toward sustainable practices in the data centre, their consumption of energy can be minimized by up to 30 percent (NRDC, 2020).
- **Innovation and Competitiveness:** Sustainability initiatives can also develop new business, improve competitiveness, and be innovative. A report by the World Business Council

on Sustainable Development reveals that sustainability can be the source of innovation, growth, lowering costs, and enhancing brand reputation (WBCSD, 2020).

- **Compliance with Regulations:** With sustainability, technology companies will be able to comply with environmental regulations and prevent possible fines and image losses. The Environmental Defence Fund report revealed that firms with a sustainability focus are better placed to adhere to environmental regulations and decrease their chances of going noncompliant (EDF, 2020).

The environment is highly affected by the technology industry, and sustainability initiatives play a significant role in minimizing the effect on the environment. By employing sustainability, the technological companies can minimize their carbon footprint, save resources, and improve the brand image. With the industry still developing and changing, the companies have to be more sustainable and encourage environmental sustainability.

METHODOLOGY

The sustainability initiatives of the Google and Microsoft case study involved qualitative research, whereby a mix of primary and secondary data was used to collect information. The qualitative approach was used in the case study, which provided the opportunity to conduct a thorough analysis of the initiatives of sustainability in Google and Microsoft. This

strategy allowed us to obtain more specific information regarding the sustainability strategies, problems, and

results of the companies.

Data Collection Methods

The data collection methods used in the case study include:

Document Analysis: The publicly available documents, in the form of annual reports, sustainability reports, and press releases, were reviewed to provide information regarding Google and Microsoft and sustainability initiatives.

Case Study Analysis: Preexisting case studies and research articles on sustainability activities of Google and Microsoft were reviewed to have more insight on how these two companies handle sustainability.

Industry Reports: Industry reports and research studies about the sustainability of the technology industry were examined to give the context and insight about the challenges and opportunities of sustainability in the technology industry.

Data Analysis

The analysis of the data in this case study was conducted through a thematic analysis methodology, according to which the themes and patterns of the data were identified and

coded. Such a strategy allowed the researcher to find the main findings and insights regarding the sustainability initiatives of Google and Microsoft.

Stakeholder Analysis: Progressing the Sustainability Programs.

The stakeholders are important in the sustainability initiatives within the organizations. The study focuses on the role of employees, customers, and investors in enhancing sustainability.

Employees

- **Internal Champions:** Workers who

will propagate sustainability efforts and motivate other colleagues to engage in environmentally conscious behaviors (Benn et al., 2014).

- **Innovation and Idea Generation:** Employees are able to make contributions in the development of the sustainable products and services, which will become the source of the innovation and competitiveness (Hart, 1995).
- **Cultural Transformation:** The workers have the ability to shape the culture within the organization and encourage the shift to sustainability and environmental responsibility (Linnenluecke and Griffiths, 2010).

Customers

- **Market Demand:** Sustainable products and services can be demanded by customers, and this forces the companies to embrace the environmentally friendly practices (Kotler, 2011).
- **Brand Loyalty:** Environmentally responsible consumers would tend to be loyal to companies that prioritize environmental responsibility (Cone, 2017).
- **Feedback and Insights:** Customers are able to give good feedback and insights, and this will assist firms to enhance their sustainability performance (Fraj-Andres et al., 2015).

Investors

- **Financial Help:** Sustainability can be financially assisted by the investors who will help companies invest in eco-friendly technologies and practices (Sparkes, 2002).

- **Risk Management:** Shareholders can inspire companies to handle sustainability-related risks, including climate change and resource depletion (KPMG, 2020).
- **Long-term Value Creation:** Investors have an opportunity to focus on long-term value creation, and they understand that long-term sustainability efforts bring positive results to the financial performance and image of the companies (World Economic Forum, 2020).

Employees, customers, and investors are all significant in the execution of sustainability initiatives in organizations. Through the insight of the needs and expectations of these stakeholders, the companies can create viable sustainability strategies.

Financial Analysis: Financial Implications of Sustainability Initiatives on the Bottom Line of Google and Microsoft.

Google and Microsoft have adopted several sustainability initiatives to lessen their effects on the environment. The economic cost of such initiatives.

Cost Savings

- **Energy Efficiency:** Google has made efforts to make its data centers efficient, which has seen it save a lot of costs. In the environmental report published by Google, data centers consume half the amount of energy as the industry average (Google, 2022).
- **Green Energy:** Microsoft has made investments in renewable energy, which has enabled them to save the cost of energy. By 2025, Microsoft has several goals, such as to switch all its activities to renewable energy

(Microsoft, 2022).

Revenue Growth

- **Sustainable Products:** The sustainable products at Google, including the carbon footprint calculator of Google Cloud, have had a substantial increase in revenue (Google Cloud, 2022).
- **Green Services:** Green services offered by Microsoft, like Microsoft Cloud for Sustainability, have helped the company increase revenues (Microsoft, 2022).

Investment and Returns

- **Sustainability Investments:** Google and Microsoft have been practicing high levels of sustainability investments such as renewable energy and energy efficiency programs (Google, 2022; Microsoft, 2022).
- **Returns on Investment:** Research has indicated that sustainability efforts have had very high returns on investment in the form of cost savings and increases in revenue (Harvard Business Review, 2020).

Financial Performance

- **Google's Financial Performance:** The financial performance of Google parent company, Alphabet, has shown good financial performance in recent years, with revenues increasing partly as a result of sustainability efforts (Alphabet, 2022).
- **Microsoft's Financial Performance:** Microsoft has also announced a very good financial performance, as revenue increased due to its cloud business and sustainability programs (Microsoft, 2022).

The sustainability efforts of Google and Microsoft have positively influenced their bottom line and created cost savings, revenue growth, and payback. As sustainability becomes a priority among companies, it is probable that these efforts will improve the financial performance.

Operational Analysis: Sustainability Initiatives Operational Changes.

Google and Microsoft have carried out several changes in their operations to support sustainability initiatives. This discussion looks at the changes in the operations made by these companies.

Operational Changes of Google.

- **Efficiency in Data Centres:** Google has streamlined its data centre processes to minimize its energy use, and some of its methods comprise machine learning to anticipate its energy demand (Google, 2022).
- **Renewable Energy:** Google has invested in renewable sources of energy, including solar and wind, to energize its data centres and operations (Google, 2022).
- **Sustainable Supply Chain:** Google has introduced a sustainability supply chain program, collaborating with its suppliers to eliminate waste and emissions (Google, 2022).

Operational Changes of Microsoft.

- **Carbon Neutrality:** Microsoft is set to become carbon neutral by 2030 and is investing in renewable energy projects and energy efficiency projects (Microsoft, 2022).
- **Sustainable Operations:** Microsoft has been enforcing sustainable means of operation, which includes minimizing water usage and waste in

its facilities and data centres (Microsoft, 2022).

- **Circular Economy:** Microsoft is pursuing the concept of a circular economy, creating products and services that limit the waste capacity and encourage reuse and recycling (Microsoft, 2022).

Operational changes have advantages.

- **Less Emission:** The operational changes in Google and Microsoft have led to the lessened emission of greenhouse gas (Google, 2022; Microsoft, 2022).
- **Cost Savings:** Cost savings have also been generated through these changes in operations, which include energy consumption and waste reduction (Harvard Business Review, 2020).
- **Better Brand Reputation:** Google and Microsoft have enhanced their brand reputation because of sustainability, which has shown their concern with environmental responsibility (Cone, 2017).

The changes in the operation of Google and Microsoft have played a critical role in implementing sustainability initiatives by the companies. Through optimization of operation and investment in renewable energy sources as well as sustainable practices, these companies have minimized their impact on the environment, saved costs, and enhanced their brand image.

Innovative Analysis: Innovative Solutions and Technologies for Sustainability. Google and Microsoft have come up with new solutions and technologies to facilitate sustainability.

Innovative Solutions at Google.

- **Google Cloud:** Google Cloud provides business products such as the Carbon Footprint and the Sustainability Insights to enable businesses to measure and mitigate their environmental impact (Google Cloud, 2022).
- **Machine Learning:** Machine learning can help Google achieve energy efficiency in its data centers, as well as support sustainability initiatives (Google, 2022).
- **Environmental Insights Explorer:** The Environmental Insights Explorer is a Google application that offers data and insights on the emission of greenhouse gases to assist cities and organizations in making sustainability plans (Google, 2022).

Innovative Solutions at Microsoft.

- **Microsoft Cloud for Sustainability:** Microsoft Cloud for Sustainability offers a fully developed solution to organizations to document, report, and lessen their environmental effect (Microsoft, 2022).
- **AI to Sustainability:** Microsoft AI to Sustainability Initiative is an artificial intelligence initiative that uses artificial intelligence to implement sustainability solutions, including tracking deforestation and ocean health (Microsoft, 2022).

- **Sustainable Software Development:** Sustainable software development practices are being created by Microsoft, where the company is focused on energy efficiency and minimizing waste in the software development life cycle (Microsoft, 2022).

Advantages of Creative Solutions.

- **Greater Productivity:** These new technologies have made different industries more efficient and less wasteful (Google, 2022; Microsoft, 2022).
- **Better Decision-Making:** These solutions have enhanced the planning of sustainability and decision-making by supplying information and insights (Google, 2022; Microsoft, 2022).
- **New Business Opportunities:** The innovations have presented new business opportunities and sources of revenue to companies that focus on sustainability (World Economic Forum, 2020).

Sustainability efforts and positive environmental impact have been facilitated by innovative solutions and technologies that Google and Microsoft provide. Through technologies such as machine learning and artificial intelligence, these companies have managed to come up with new solutions and business opportunities.

Table 1 Powering a Sustainable Future

Twenty-six percent of technology firms operate on 100% renewable energy. (Source: RE100)	Google & Microsoft aim for 100% renewable operations	Renewable energy can reduce GHG emissions by up to 78% (Source: NREL)
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Table 2 Reducing E-Waste: A Growing Concern

50M metric tonnes of e-waste that is produced annually (Source: WEF)	Recycling of e-waste is only done on 20 percent of the waste (Source: WEF)	Tech companies implement recycling & take-back programs
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Table 3 Sustainable Supply Chains: A Secret to Minimizing Emissions

70% of carbon footprint comes from supply chains (Source: CDP)	Tech firms collaborating with suppliers for sustainability	Sustainable supply chains cut costs & improve brand reputation
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Table 4 Harnessing Tech in Sustainable Future

By 2030, tech will reduce GHG by up to 20%.	AI & ML optimize energy & reduce waste	Tech firms innovating to support sustainability
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Policy Implementations: Sustainability Initiatives by Google and Microsoft.

Google and Microsoft have put in place different policies to facilitate their sustainability programs. These policies would be able to enlighten the future policy and would be able to ensure the sustainability of the technology industry.

The Policy Implementations of Google.

- **Renewable Energy Policy:** Google strives to use fully renewable energy to power its operations (Google, 2022).
- **Sustainable Supply Chain Policy:** Google collaborates with suppliers in order to minimize waste and pollution (Google, 2022).
- **Employee Engagement Policy:** Google promotes the involvement of employees in sustainability programs (Google, 2022).

Policy Implementations of Microsoft.

- **Carbon Neutrality Policy:** Microsoft is planning on turning carbon neutral by 2030 (Microsoft, 2022).
- **Sustainable Operations Policy:** Microsoft has a sustainable operations policy, including the reduction of water consumption (Microsoft, 2022).
- **Circular Economy Policy:** As a way of lowering waste and enhancing sustainability, Microsoft implements the principles of the circular economy (Microsoft, 2022).

Educating Future Policy Making.

- **Establishing Big Vision goals:** The policy implementation at Google and Microsoft shows the significance of establishing big vision sustainability goals.
- **Stakeholder Engagement:** The two companies involve stakeholders such

as employees and suppliers in ensuring the practice of sustainability.

- **Transparency and Reporting:** The transparency and reporting practices in Google and Microsoft foster accountability and inform the future policy choices.

Best Practice: Sustainability Initiatives.

The best practices that companies can use to conduct similar sustainability efforts include:

- **Set Ambitious Goals**

Illustration: Google and Microsoft are aiming to achieve renewable energy (Google, 2022; Microsoft, 2022).

Best Practice: Have specific, measurable, and attainable sustainability objectives.

- **Engage Stakeholders**

Illustration: Employee engagement and supplier collaborations of Google and Microsoft (Google, 2022; Microsoft, 2022).

Best Practice: Involve the stakeholders, such as employees, suppliers, and customers, in sustainability initiatives.

- **Invest in Renewable Energy**

E.g., the investments of Google and Microsoft in renewable energy (Google, 2022; Microsoft, 2022).

Best Practice: Invest in other renewable sources of energy, including solar and wind energy.

- **Adopt Sustainable Operations.**

An example of sustainable operations practices is Microsoft (Microsoft, 2022).

Best Practice: Adopt operations that are sustainable in their operations, like cutting down on water and waste.

- **Implementation of Circular Economy Principles.**

Illustration: The circular economy of Microsoft (Microsoft, 2022).

Best Practice: Embrace the principles of the circular economy in order to minimize waste and enhance a sustainable environment.

- **Monitor and Report Progress**

Example: The sustainability reporting of Google and Microsoft (Google, 2022; Microsoft, 2022).

Best Practice: Survey and report on sustainability goals progress.

Through these best practices, the companies will be in a position to undertake effective sustainability initiatives and minimize their environmental impact.

Recommendations

- **Invest in Renewable Energy:** Companies will be able to lower their carbon footprint by investing in renewable energy sources.
- **Establish Sustainable Technologies:** The companies will be able to create and utilize sustainable technologies to initiate environmental change.
- **Collaborate for sustainability:** Firms can involve stakeholders in their quest to create industry-wide sustainability initiatives.

Future Scope

This study can be extended by further research in the future by:

- **Increasing the scope:** A broader study of sustainability activities in the technology sector, with a bigger sample of firms.
- **Comparative analysis:** Comparing the sustainability efforts of technology

companies with any other industry.

- **Longitudinal study:** In this instance, it is possible to conduct a longitudinal study to focus on how sustainability initiatives can influence the performance of companies and the environmental consequences over time.

Limitations

There are a number of limitations in this case study, such as

- **Low external validity:** The results of this case study cannot be generalized to other companies and industries, as it only focuses on two technology companies.
- **Relying on publicly available information:** The study used publicly available information that might not give a complete picture of sustainability initiatives of Google and Microsoft.

With its qualitative research method and a mix of both primary and secondary data sources, the case study offers a comprehensive perspective of the sustainability activities of Google and Microsoft and the implication of the same to the technology industry.

Practical Implications

The results of this case study have several practical implications for technology businesses and policymakers:

- **Sustainability strategy development:** The best practices that are learned through this study can be used by the technology companies to design their own sustainability strategies, which minimize their environmental impact.
- **Investment in renewable energy:**

The companies have an option of investing in renewable energy sources, including solar power and wind power, to decrease their use of fossil fuels and decrease their carbon footprint.

- **Supply chain management:** Technology firms can collaborate with suppliers to make the supply chain sustainable and minimize wastage during the supply chain.
- **Engagement with stakeholders:** Compensations can interact with their stakeholders, such as employees, clients, and investors, so as to ensure sustainability and earn trust.
- **Policy formulation:** The results of this study can be utilized by policy makers to formulate policies and regulations that favour sustainability in the technology sector.

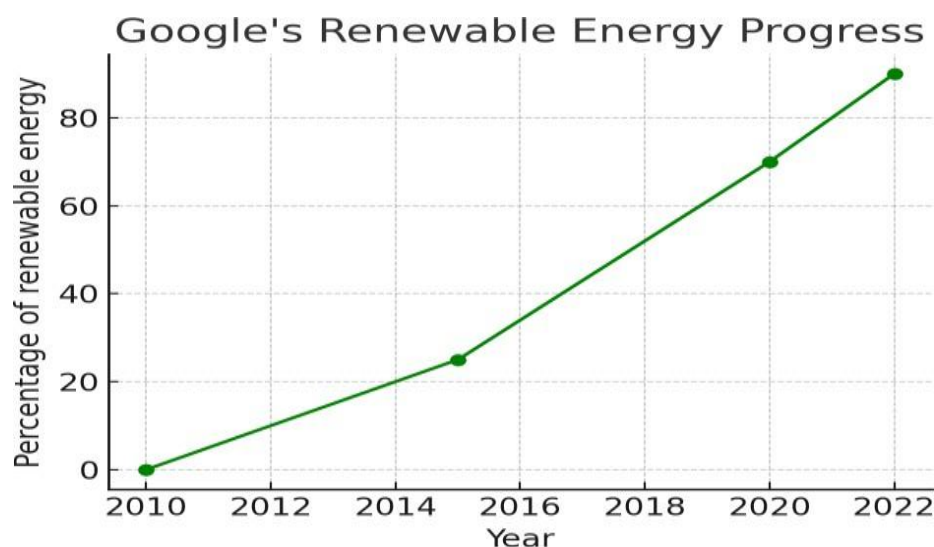
CONCLUSION

This study has discussed sustainability initiatives used by two leading

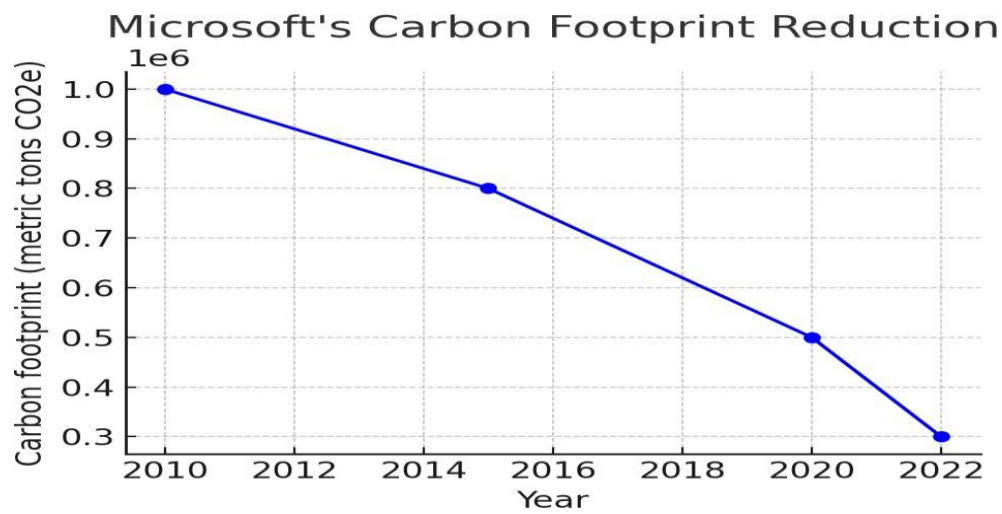
technology companies, Google and Microsoft. The results indicate that these companies have achieved a lot in minimizing their environmental footprint and ensuring sustainability in a number of ways, such as investing in renewable energy, adopting sustainable operations, and incorporating the concept of a circular economy. The research also recognizes the best practices and the policy implementation that can be used in the future to embark on sustainability in the technology industry. In general, the proposed study can be relevant to the increasing amount of sustainability research in the technology sector and to the significance of corporate sustainability to the environment and business performance.

Progress and Impact of Systematic Initiatives

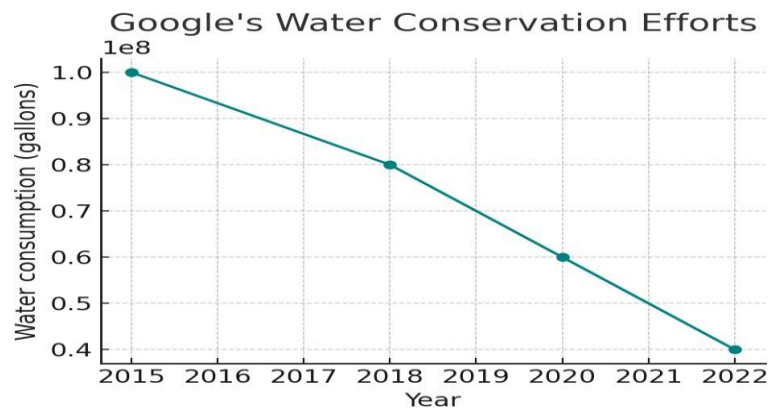
This chart shows Google's progress in increasing its use of renewable energy over time.



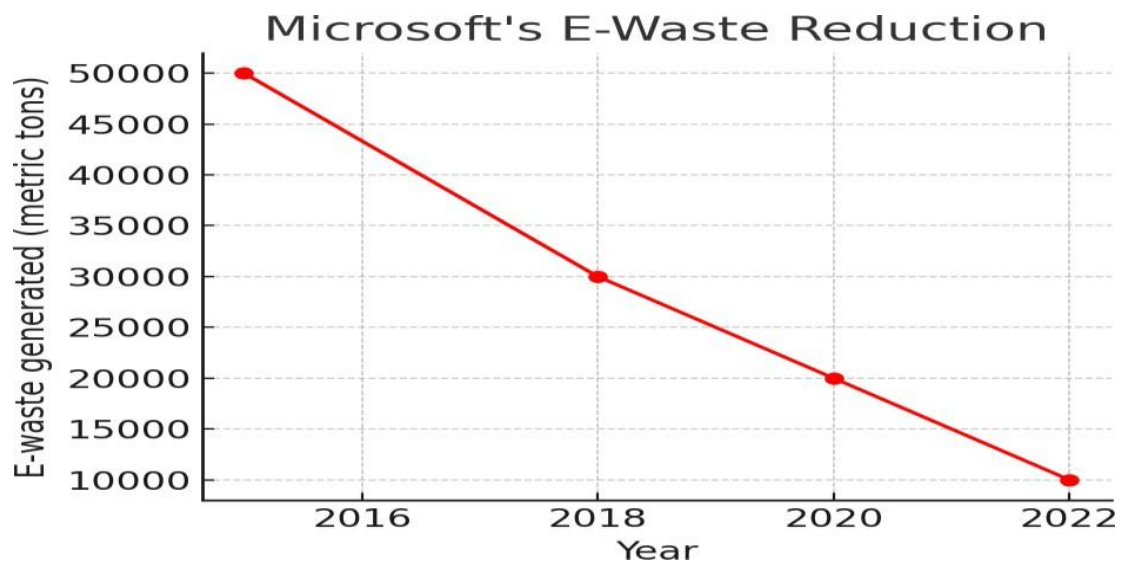
This chart shows Microsoft's progress in reducing its carbon footprint over time.



This chart shows Google's progress in reducing its water consumption over time.



This chart shows Microsoft's progress in reducing its e-waste generation over time.



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Google's Sustainability Framework



Renewable energy



Energy efficiency

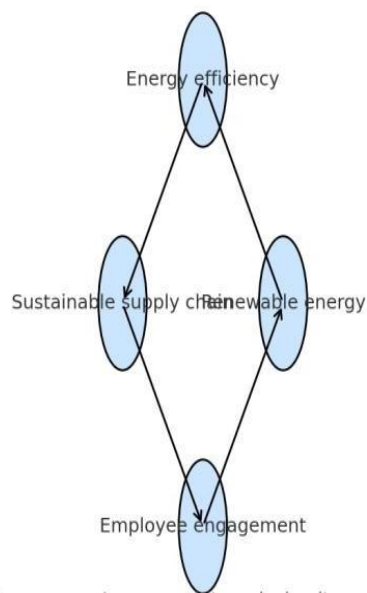


Sustainable supply chain



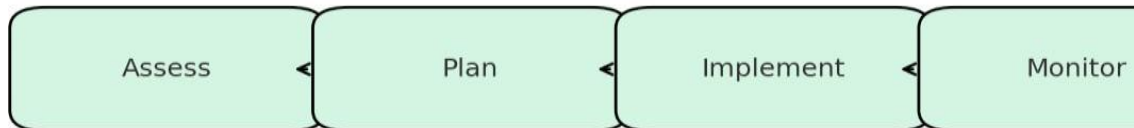
Employee engagement

Google's Sustainability Framework

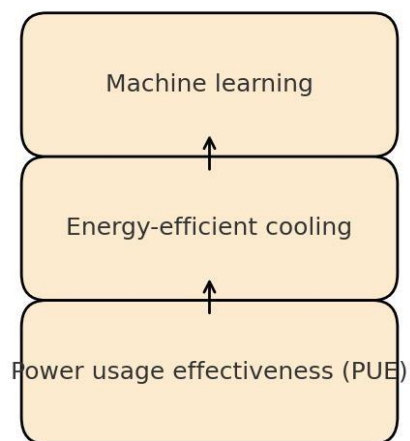


Google's sustainability framework outlines the company's approach to reducing its environmental impact and promoting sustainability.

Microsoft's Sustainability Process

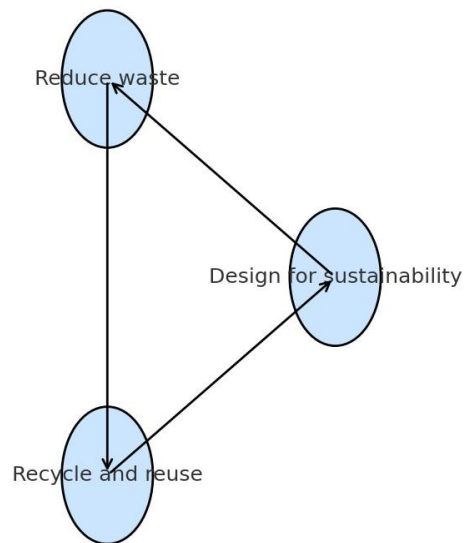


Google's Data Center Efficiency



Google's data center efficiency initiatives reduce energy consumption and environmental impact.

Microsoft's Circular Economy Approach



Microsoft's circular economy approach aims to reduce waste and promote sustainability in its products and services.