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The Role of Technology in Sustainable Development

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Abstract :

The development of information technologies is linked with the process of globalization. Information technologies caused that information spread from one region of the world to another at the speed of thought. Just like with any modern thing, in addition to the many advantages it has, it is necessary to take a look at certain disadvantages which can be overcome through time and practice. The paper focuses on the basic elements of e-commerce, pointing to contemporary discoveries and improvements to the business by developing digital or internet economy. As a result, these business styles have changed interpersonal relationships, creating a different dimension in the relationship between society, economy and the environment. The paper places an emphasis on sustainable business through the modern flows of internet or digital economy. Economics summarizes economic processes of business, and modern technologies have greatly facilitated classical business, while enabling easier communication and simpler flows of existence. By making business easier and faster, humanity has also improved the environment by reducing the costs and adverse effects that traditional business activities carried with it. Today, there is a rapid flow of information that is important for business continuity as well as for accelerating various administrative activities. The authors of the paper present three relationships in terms of information technologies, economic and environmental aspects and business sustainability.

Keywords :- Information Technology, Globalization, Digital, E-Commerce

Introduction :

One of greatest challenges that countries - especially developing countries - face in realizing sustainable development is obtaining and putting in place the necessary technologies. While access to technology depends to some extent on financial resources, it is not only a financial issue. In many instances, legal and institutional frameworks impede the development, import/export, transfer, and use of technologies for sustainable development. Quotas and tariffs can affect the ability to import technologies. Similarly, subsidies may promote the use of technologies that may waste energy, water, or other resources. Moreover, decision makers should consider cultural norms when selecting and putting in place technologies.

Latest studies have found that more than 70% of global consumers are willing to transform their consumption habits to mitigate their environmental footprint. For constantly striving in the competitive world, businesses are required to provide services that leverage not only consumers but also the environment. For instance, worldwide energy usage is projected to grow by nearly 50% by 2050. Investing in green energy that is accessible, clean, affordable, and sustainable, is now becoming a priority for organizations and the people.

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The role of technology in sustainable development is helping businesses with net-zero and other environmental, social, and governance goals.

Leading companies are already benefitting from technology accelerators to realize sustainability goals. For example, Lot , data analytics, and sensors are facilitating to decarbonize industry operations and solving issues by:

Networking and communicating : Sharing information across networks, machines, and devices proficiently.

Monitoring and tracking : Capturing Real-time data and reporting of operational performance within the connected devices.

Analyzing, improving, and forecasting : Getting insights from data for improved decision-making on process efficiencies for the future.

Augmenting and automating : Linking the digital and physical worlds with remote management and the construction of autonomous systems.

"Every business must be a sustainable business and technology is a critical and fundamental enabler - from improving transparency and traceability in global supply chains, to helping measure and reduce carbon emissions," said Sanjay Podder, Technology Sustainability Innovation lead at Accenture. "It is no longer simply optional to put sustainability at the core of how organizations operate. A sustainable technology strategy - one that embeds sustainability in technology, drives sustainability by technology, and scales sustainability by engaging the ecosystem - will help companies deliver 360° value and contribute to the achievement of their broader sustainability goals."

An effective sustainable technology strategy helps drive business growth and ESG performance by delivering on three key imperatives:

Sustainability by Technology : Using the power of technology to enable and accelerate sustainability efforts across the organization. Ninety-two percent of companies surveyed aim to achieve net-zero targets by 2030, which will require deployment of advanced technologies to measure, reduce and remove an organization's carbon footprint. Technology is also key for moving toward responsible value chains; promoting sustainable choices for customers; and building a sustainable organization. Of the companies surveyed that successfully reduced emissions in production and operations, 70% used artificial intelligence (AI) to do it.

Sustainability in Technology : Protecting people and the planet by making technology itself progressively more sustainable. As more people go online and the use of technology increases, so do the carbon emissions from IT. Embracing green software that is both carbon efficient and carbon aware; building trustworthy systems that incorporate privacy, fairness, transparency, robustness and accessibility; and instituting the right governance mechanisms must be prioritized. Only two of the 560 companies surveyed said they consider energy efficiency at all stages of the software development lifecycle, indicating considerable room for improvement. The report identifies a robust green software development framework that prioritizes material emissions areas including the software development life cycle, as well as green digital experience, cloud, edge, data centers, AI, distributed ledger technology and infrastructure.

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Sustainability at Scale : Pursuing breakthrough innovation with ecosystem partners to develop radically different and more sustainable ways of doing business in the future. No organization can address global sustainability challenges at scale on its own. Companies must work beyond the boundaries of their own organizations to meet the United Nations Sustainable Development Goals (SDGs). Forty-three percent of companies surveyed are now joining industry collaborations, alliances and advocacy groups focused on eco-friendly technology.

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Leading companies understand that achieving ambitious sustainability goals requires a systemic approach to transformation-one that takes a 360-degree view of the challenge. Building sustainability as a competitive advantage, however, requires integrating technology and data from the very beginning.

The role of tech goes well beyond "green IT." As more companies think about their technology and sustainability agendas in concert, management teams should ask whether they are bringing game-changing technology and digital thinking to the task of meeting sustainability goals-or whether this critical business issue is missing an important dimension.

THE TECHNOLOGY ECO ADVANTAGE :

For companies willing to think broadly about how to advance their sustainability initiatives, technology can act as a major accelerant. We call this mindset "technology eco-advantage"-using advanced technologies and ways of working to enable profitable solutions that also have a positive impact on net zero and other environmental, social, and governance goals.

Digitized Operations : Frontrunners in this area create inherently more sustainable operations and processes-for example, new manufacturing or materials technologies that leverage alternative inputs to reduce emissions and waste-and win consumer and investor reward as a result. Digitized operations also can improve business resilience; some of the processes and technologies involved even become industry standards. Schneider Electric transformed itself from an installer of industrial electrical equipment to a global leader in efficiency-as-a-service, generating revenues from reducing customers' CO2 emissions. The greater the environmental and social impact that Schneider creates through energy savings and emissions reductions, the more it is financially rewarded by customers and the faster its business expands.

Digital Products and Services : Leading companies create new distribution channels that break economic constraints to expand reach, scale, and access for beneficial societal impact at affordable costs. Apps that digitize and facilitate access to essential goods and services are one example. A major

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city transportation authority designed three customer-centric sustainability solutions that reimagined how parcels are delivered while reducing emissions, transforming the customer experience, and delivering sustainable growth and profit.

Cloud, IoT, and Block chain. Advanced digital technologies and tools-such as connected IoT sensors and monitors, cloud-based data platforms, and block chain - enabled tracking systems-unlock new capabilities for the measurement and tracking of environmental and social impact across value chains. Companies, in turn, can better improve management and investment decisions and improve their performance against ESG goals. For example, value chain transparency solutions that use block chain technology guarantee the integrity and safety of products from supply source to producer to retailer to consumer.

AI and Advanced Analytics : These technologies generate data and insights on the environmental and social impact of a product, service, or process. Digital platforms integrate capabilities, share data, and create transparency and accountability among partners. Frontrunners leverage these capabilities to develop and finetune offerings, engage customers, and improve performance over time; IoT- and AI-based solutions also optimize energy efficiency in real time, reducing emissions and saving money all at once. In Brazil, Nubank is using such solutions to accelerate financial inclusion for the country's 55 million unbanked consumers. With its fully digital model, Nubank uses unique data sources and algorithms to build a financial picture of potential customers, providing them with access to credit with no fees and at 50% lower interest rates than traditional banks.

Data Sharing and Ecosystems : Data sharing enables new models of collaboration within or across industries or sectors to develop novel solutions to environmental and social issues. Companies can more easily pool resources, fill capability gaps, access new markets, and expand reach. For example, software platforms that integrate insurance underwriters and telecommunications providers can deliver microinsurance via phone subscriptions to underserved populations.

BCG research into the impact of data sharing on big societal challenges has shown that data sharing generates value in five ways: enabling innovation, creating trust, facilitating coordination, raising awareness, and validating hypotheses. Fertilizer producer Yara is developing a new business unit to become an IoT and digitally enabled "smart agriculture" leader that improves sustainability by reducing the need for chemical fertilizers by up to 90%. New science based on data the company collects informs the development of next-generation regenerative crop-nutrition solutions.

A key differentiator for these frontrunner companies was using digital capabilities and technologies to break economic constraints and unlock new solutions. But success depends on leveraging technology and data from the very start. Before making a major commitment of time, management energy, and company resources, management should take a forward-looking and strategic view of how advanced technology and data can accelerate the journey to sustainability advantage.

The role of technology in sustainable development like AI is essentially changing the way we think, live, work, and relate to one another and the external world. Business operations and processes can be optimized with such AI-enabled systems. While companies are using AI to augment efficiency and output and lower energy costs, training AI demands a lot of energy. Hence, to sustain an enterprise's

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efforts to mitigate its environmental footprint, it must also look at decreasing the carbon outputs of its AI/ML models. However, organizations are also using the power of AI to simultaneously reduce their carbon footprints and mitigate material risks.

AI models must be as efficient as possible so that training the AI model does not need large amounts of energy or computing power to augment accuracy and performance. Enterprises are requiring to conduct an efficiency vs accuracy test to determine if the resource utilized is justified from both a business and an environmental perspective.

Following are the four ways technology can accelerate net-zero ambitions:

Process optimization and digitization : Creating sustainable operations that take stakeholder preference and enhance business resilience

Accepting advanced technologies, like cloud-native architectures for data-driven optimization of processes. It is helping businesses meet their emission reduction goals. As well as setting new industry standards. Such measures are having the potential to yield significant CO2 reduction.

Carbon data transparency : Utilizing technology-led solutions that guide organizations with carbon accounting across the value chainIoT and blockchain-enabled sustainability solutions are facilitating transparency across all levels of an organization. Data and guidance are accessible and visible to all key stakeholders, which facilitates sustainable decision-making.

Circular products and services : Building products and services that are reusable and sustainable with zero pollutants.

The role of technology in sustainable development is involving the implementation of new types of product innovations and value chain solutions to fine-tune offerings. Engaging consumers and improving performance over time. Such solutions are enabling companies to create. Eventually, encouraging zero-waste products while improving ROI and building new revenue streams.

Data ecosystems and ventures : Adopting cross-industry data-sharing ecosystems that are enabling compliance with sustainability regulations

Data ecosystems are providing valuable, shared, and real-time insights into the environmental and societal impacts of a product or service. All while allowing organizations to meet their sustainability targets and compliance goals.

Conclusion :

The success of frontrunner companies is depending on leveraging technology from the very beginning. Through advanced technologies such as AI, IoT, or blockchain companies are analyzing, reducing, or optimizing their environmental impact. However, the role of technology in sustainable development is most definitely part of the solution. The sustainable development

is very important in today's world. It increases the growth of every country. It will provided so many opportunities to workers and to those who want employment.

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