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Digitalization and AI for Sustainable Development: Expectations from the Sustainable Action Conference 2024 (SAC 2.0)

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Abstract

This study examines how digitalization and AI may advance sustainable development, using Sustainable Action Conference 2024 (SAC 2.0) findings. The main goals are to evaluate digital technologies' revolutionary potential in addressing environmental and social issues and highlight their hazards and ethical implications. The study synthesizes literature and case studies on the pros and cons of integrating digital solutions into sustainable development frameworks using secondary data. Significant findings show that digitalization can improve resource efficiency, climate action, and social inclusion, but it also increases environmental hazards, inequality, and ethical questions about AI bias and governance. Policy implications stress ethical AI deployment through sustainable digital infrastructure, egalitarian technological access, and robust governance frameworks. The report emphasizes the need for government, corporate sector, and civil society collaboration to create a digital landscape that supports the UN Sustainable Development Goals (SDGs) and a more equal and sustainable future.

Keywords: Digitalization, Artificial Intelligence (AI), Sustainable Development, Sustainable Action Conference 2024, Environmental Sustainability, United Nations Sustainable Development Goals (SDGs)

INTRODUCTION

Digitalization and AI have become revolutionary instruments with great promise for achieving sustainable development in an era of rapid technological advancement and growing global concerns (Rahman et al., 2022; Rodriguez et al., 2019; Talla et al., 2023). Digital technology and AI are essential to addressing climate change, resource depletion, and social inequality. The Sustainable Action Conference 2024 (SAC 2.0) brings together thought leaders, policymakers, researchers, and industry experts to discuss how digital innovation can help achieve the UN's Sustainable Development Goals.

Digitalization—incorporating digital technologies into all elements of society—has transformed industries, governance, and daily life. It can optimize supply chains, reduce energy use, improve public services, and increase education access (Thompson et al., 2022). *AI, a subset of*

digitalization, can analyze massive volumes of data, find patterns, and anticipate to improve efficiency and innovation. These technologies could change how societies create, use, and interact with natural resources, creating more sustainable economies and resilient communities (Kothapalli et al., 2019; Mohammed et al., 2023).

Digitalization and AI promise sustainable growth, yet there are difficulties. Data privacy, technological access disparity, and digital infrastructure's environmental impact require a balanced and inclusive approach to these technologies (Thompson et al., 2019; Ying & Addimulam, 2022; Ying et al., 2022). SAC 2.0 will address this complexity by allowing stakeholders to share ideas, discuss best practices, and co-create sustainable technology innovation initiatives. The conference will examine how AI and digital tools may help achieve global goals in renewable energy, climate action, responsible consumption, and social fairness.

Expectations are high as SAC 2.0 builds on SAC 2022, which stresses the necessity of cross-sector collaboration in achieving sustainability goals. SAC 2.0 provides tangible solutions and frameworks for governments, enterprises, and civil society organizations to integrate digitization and AI into their sustainability objectives. With a focus on practical outcomes, the conference should produce a plan for using digital technology in environmentally responsible, commercially viable, and socially inclusive ways.

This introduction lays the stage for a complete look at how digitization and AI will help sustainable development in the future. SAC 2.0 provides a contemporary venue for redefining innovation's role in global concerns by critically assessing these technologies' opportunities and constraints. AI and digital tools must be integrated into sustainability efforts to ensure that technological progress creates a more egalitarian and resilient planet. SAC 2.0 will shape sustainable development policies, investments, and partnerships in the digital age.

STATEMENT OF THE PROBLEM

Digitalization and AI are transforming many industries, which could solve global environmental issues (Addimulam et al., 2020). These technologies are increasingly used to boost economic growth, improve governance, and manage natural resources, making them crucial to the UN's Sustainable Development Goals (SDGs). Digital technologies and AI have great potential, but using them for sustainable development is complex (Nizamuddin et al., 2020). The lack of comprehensive frameworks that combine digital innovation with sustainable practices across sectors and geographies exacerbates this complexity (Fadziso et al., 2022; Karanam et al., 2018). The Sustainable Action Conference 2024 (SAC 2.0) addresses these issues. However, there is still a need to know how digitalization and AI may be used systematically and inclusively to accomplish SDG targets.

A critical research gap is a lack of straightforward, effective ways to integrate technical advancement with sustainability goals gap. AI for climate monitoring, resource optimization, and intelligent cities has shown promise, but how these technologies can be scaled across geographies and industries is unclear. Concerns exist about equal access to these digital tools, especially in

low-income countries that suffer environmental degradation and need more infrastructure to benefit from AI and digital advancements. Digitalization's environmental and ethical issues, such as data centers' carbon footprints, electronic waste, and AI's potential to worsen inequities through biased algorithms, are another gap. Current research has yet to fully address these challenges, which require a nuanced strategy that balances technical progress with ecological and social responsibility.

Thus, this study has two goals. First, it examines how digitization and AI might promote sustainable development, specifically the SDGs. This includes assessing technical applications and finding ways to scale them across energy, agriculture, transportation, and public health. The second goal is to identify the problems and hazards of the widespread use of these technologies, focusing on digital inequality, environmental sustainability, and ethical governance. This study examines these two elements to gain a holistic knowledge of digitalization and AI in sustainable development and to inform policy and practice.

This study can bridge the gap between technological innovation and sustainable development, providing a roadmap for policymakers, corporations, and civil society to ensure that digital tools contribute to global sustainability rather than undermine it. The international climate problem, resource depletion, and inequality make responsible AI and digitalization use more critical than ever. SAC 2.0 is expected to spark these talks, but crucial insights that could drive future action may be missed without a comprehensive study of the opportunities and challenges ahead. A full investigation of how digitalization and AI can be utilized to meet sustainability goals will address this vacuum and contribute to the increasing conversation on technology and sustainability. Digitalization and AI promise to aid sustainable development, but difficulties persist. This study examines how various technologies affect sustainability to provide actionable suggestions for stakeholders at the Sustainable Action Conference 2024 and beyond.

METHODOLOGY OF THE STUDY

This secondary data-based research examines the impact of digitalization and AI on sustainable development, focusing on SAC 2.0 expectations. Academic publications, international organization reports, industry white papers, and governmental documents on digitalization, AI, and sustainable development are reviewed for the research. Case studies, best practices, and frameworks are analyzed to uncover digital technology sustainability patterns, difficulties, and opportunities. The study also considers sustainability and technology trends and conversations from prior conferences, including SAC 2022. The goal is to integrate current information, identify gaps, and contextualize how digitalization and AI may help achieve the SDGs. SAC 2.0 expectations and actions are also based on this review.

LEVERAGING DIGITALIZATION FOR SUSTAINABLE DEVELOPMENT GOALS

Digitalization is transforming economies, governance, and society. It provides unparalleled chances to advance the UN Sustainable Development Goals (SDGs) to address poverty, inequality, environmental degradation, and access to critical services by 2030. Digital technologies can

improve resource management, economic growth, and social equity across sectors. To maximize the benefits of digitalization for sustainable development, technological advances must be aligned with SDG targets to ensure inclusivity, equity, and environmental responsibility.

How Digitalization Advances the SDGs

Digitalization drives innovation in processes, products, and services by adopting and integrating digital technology throughout industries and society (Natakam et al., 2022). Strategically used digitization may support nearly all SDGs, making the world more efficient, transparent, and connected. Digital technologies promote SDGs 9 (Industry, Innovation, and Infrastructure), 11 (Sustainable Cities and Communities), and 12 (Responsible Consumption and Production) (Linkov et al., 2018). Intelligent infrastructure systems, enabled by IoT and big data analytics, can optimize energy usage, monitor environmental impacts, and decrease waste, supporting SDG 9. Digitalization has enabled intelligent city projects that improve urban mobility, congestion, and public services, supporting SDG 11. Circular economy models and other resource-sharing digital platforms support sustainable consumption and production, helping SDG 12.

Digitalization can accelerate SDG progress by enhancing access to education (SDG 4), healthcare (SDG 3), and renewable energy (SDG 7). Digital learning systems allow remote and inclusive education, especially in underprivileged areas, bridging the gap between quality education and geography. Telemedicine and AI-driven healthcare solutions can improve health outcomes in remote places while lowering infrastructure needs. Smart grids and digital monitoring systems can boost renewable energy efficiency, making it more affordable and reliable.

Digital Inclusion's Role in Bridging Inequality

Digitalization can revolutionize development, but its benefits are not universal. Digital inclusion—ensuring that all people and groups have access to technology—prevents the digital divide from worsening inequality. SDG 10 (Reduced Inequalities) requires fair opportunities for all, and digitization can help achieve this. However, low-income countries, rural areas, and marginalized communities typically lack the infrastructure and resources to participate fully in the digital economy, resulting in severe digital access gaps.

Digital inclusion includes digital literacy and tool use, not just internet or device access. To use digitalization for the SDGs, policy must promote digital education, affordable internet access, and digital infrastructure investment, especially in impoverished countries. Organizations, governments, and enterprises must collaborate to close these gaps to ensure no one is left behind in digital transformation (Banalieva & Dhanaraj, 2019).

Additionally, gender inequalities in digital access must be addressed. Women and girls, especially in developing nations, suffer more significant digital access restrictions due to socio-cultural norms, economic constraints, and lower computer skills (Pasam et al., 2023). Gender-inclusive digital policies can help achieve SDG 5 (gender equality) by providing women and girls with digital education, entrepreneurship, and healthcare.

Environmental Sustainability and Digital Transition

Digitalization can promote environmental sustainability but also introduces risks that must be addressed. Digital infrastructure—data centers, telecom networks, and electronic waste—has a significant and expanding ecological impact. These environmental costs must be addressed for digitalization to assist sustainable development, especially in SDG 13 (Climate Action) and SDG 12 (Responsible Consumption and Production) (Mertens & Wiener, 2018).

Data centers, which power cloud computing, AI, and other digital services, are energy-intensive. Without adequate regulation and investment in renewable energy, digital infrastructure growth might raise carbon emissions, weakening climate progress. Digital gadget creation and disposal generate e-waste, endangering the environment. Policies encouraging sustainable digital device design, production, and recycling reduce these hazards (Rahman, 2017).

Digitalization can also help monitor and reduce environmental problems. AI-driven ecological monitoring systems can detect real-time deforestation, pollution, and biodiversity loss, aiding decision-making. Digital carbon trading and resource-sharing networks can create a circular economy by promoting sustainable consumption and production.

Policy and Governance for Sustainable Digitalization

To achieve the SDGs, digitalization requires robust policy frameworks that combine innovation, sustainability, and inclusivity. Governments create digital technologies, and their adoption supports sustainable development. This includes measures encouraging intelligent energy grids, sustainable urban design, and digital education platforms (Vivitsou, 2019). International collaboration is essential for equitable digital technology access and solving transnational issues, including cybersecurity, digital rights, and data governance. Public-private partnerships can boost digital infrastructure investment in locations where market forces may need to close the digital gap.

Digitalization can expedite progress toward the Sustainable Development Goals by providing new solutions to global energy, education, healthcare, and environmental sustainability issues (Rahman, 2021). Inclusive policies that address digital inequalities, ecological concerns, and ethical technology use are needed for its success. By linking digital innovation with sustainability, stakeholders may use these technologies to create a more equal, affluent, and resilient world. The Sustainable Action Conference 2024 (SAC 2.0) sessions and outcomes will shape sustainable digitalization's future.

AI APPLICATIONS IN ENVIRONMENTAL AND SOCIAL SUSTAINABILITY

AI is one of the most promising technologies for global sustainability. AI can handle massive amounts of data, find trends, and predict, making it a powerful tool for the UN Sustainable Development Goals. AI offers creative solutions to climate change and social fairness that can advance environmental and social sustainability. The Sustainable Action Conference 2024 (SAC 2.0) will emphasize AI's transformational potential and responsible deployment in sustainable development.

Environmental Sustainability with AI

Environmental degradation affects ecosystems, livelihoods, and the planet's future, making it one of the most significant global issues (Addimulam et al., 2021). AI can reduce environmental impact by improving natural resource monitoring, management, and preservation. Through enhanced data analytics, AI improves resource consumption, environmental monitoring, and ecological footprint reduction.

AI for Climate Change Mitigation and Adaptation

AI can mitigate climate change and help societies adapt. In mitigation, AI systems optimize energy use, enhance renewable energy efficiency, and reduce carbon emissions. AI algorithms can optimize smart grids by balancing energy demands in real-time and efficiently integrating renewable energy sources like solar and wind (Mohammed et al., 2017). Buildings using AI-driven energy management systems can reduce energy waste by learning usage patterns and regulating heating, cooling, and lighting.

AI's predictive powers aid climate resilience planning in adaption. AI can anticipate weather, natural disasters, and climate change by evaluating climate models and environmental data, allowing governments and communities to take precautions (Ahmmed et al., 2021). AI-powered flood, drought, and storm early warning systems reduce death and property damage in susceptible areas. These technologies increase catastrophe preparedness and recovery with real-time data, supporting SDG 13 (Climate Action).

AI for Biodiversity and Conservation

AI is crucial to biodiversity conservation and ecological management. Using satellite photos, sensor data, and other environmental inputs, machine learning algorithms can track ecosystems and biodiversity. This helps detect poaching, deforestation, and overfishing in real-time. AI also assists conservationists in evaluating drone and satellite data to assess wildlife numbers and environmental changes (Deming et al., 2023).

AI-powered systems track endangered species and assess coral reef health in marine ecosystems, supporting SDG 14 (Life below Water). AI applications in forestry detect deforestation and assess forest health, supporting SDG 15 (Life on Land). AI helps governments, environmentalists, and other stakeholders protect biodiversity by providing more accurate and timely information.

AI for Sustainable Agriculture

AI is transforming agriculture, a significant contributor to environmental degradation, and a sustainability driver. AI-driven precision agriculture helps farmers monitor soil, water, and crop health, lowering water, fertilizer, and pesticide use. Drones can assess crop health, AI-powered irrigation systems cut water use, and machine learning algorithms can predict weather-based planting and harvesting periods (Rashid, 2019).

AI helps food systems achieve SDG 2 (Zero Hunger) and SDG 12 (Responsible Consumption and Production) by optimizing resource utilization and decreasing environmental consequences. This technology can also enable smallholder farmers in poor nations to obtain information on weather, market, and crop disease, making agriculture more resilient and productive and promoting rural development and food security.

Social Sustainability with AI

AI may solve social issues and promote fairness, diversity, and well-being in addition to environmental ones (Ahmmed et al., 2021a). Social sustainability covers human development challenges, from poverty reduction to education and healthcare. By enhancing service accessibility, efficiency, and equity, AI can help underrepresented populations live better.

AI in Healthcare

AI-driven healthcare solutions could improve access and efficacy, especially in impoverished areas. AI-powered diagnostic systems can scan medical imaging, discover diseases early, and prescribe treatments, relieving healthcare staff and improving patient outcomes (Asadullah et al., 2021). AI-powered telemedicine services allow remote patients to consult with doctors, minimizing the requirement for physical infrastructure.

AI can improve disease prevention and response in public health. AI tracked COVID-19, modeled illness trends, and optimized resource allocation to help governments respond to the epidemic. AI's ability to analyze large-scale health data can track infectious diseases, provide early warnings, and help develop vaccines and therapies, contributing to SDG 3 (Good Health and Well-Being) (Cyrek & Fura, 2019).

AI in Education

AI might make education more personalized, interactive, and accessible. AI-powered learning platforms give students individualized feedback, offer learning pathways, and highlight areas of need. These technologies can democratize quality education, especially for rural or underserved pupils, supporting SDG 4.

AI can also help workers in fast-changing job markets upskill and reskill for lifetime learning. As automation changes industries, AI-driven education systems might help workers adapt, boosting economic resilience and social inclusion.

AI for Social Inclusion and Equity

AI can also reduce inequality and increase social inclusion. For instance, AI systems can discover inequality tendencies and offer targeted remedies utilizing social services, job, housing, and education data. AI can reduce inequality (SDG 10) and promote inclusive economic growth (SDG 8) by identifying underserved people and optimizing service delivery. AI poses hazards in this

aspect. AI systems can reinforce disparities by reflecting data biases if not appropriately managed. AI must be created and used ethically and transparently to maximize social sustainability.

AI can solve some of the world's most complex problems and promote environmental and social sustainability. AI can accelerate SDG progress in climate change, healthcare, and education if implemented ethically, inclusively, and sustainably. SAC 2.0's conversations and outputs will shape AI for sustainable development, ensuring that the technology benefits people and the earth.

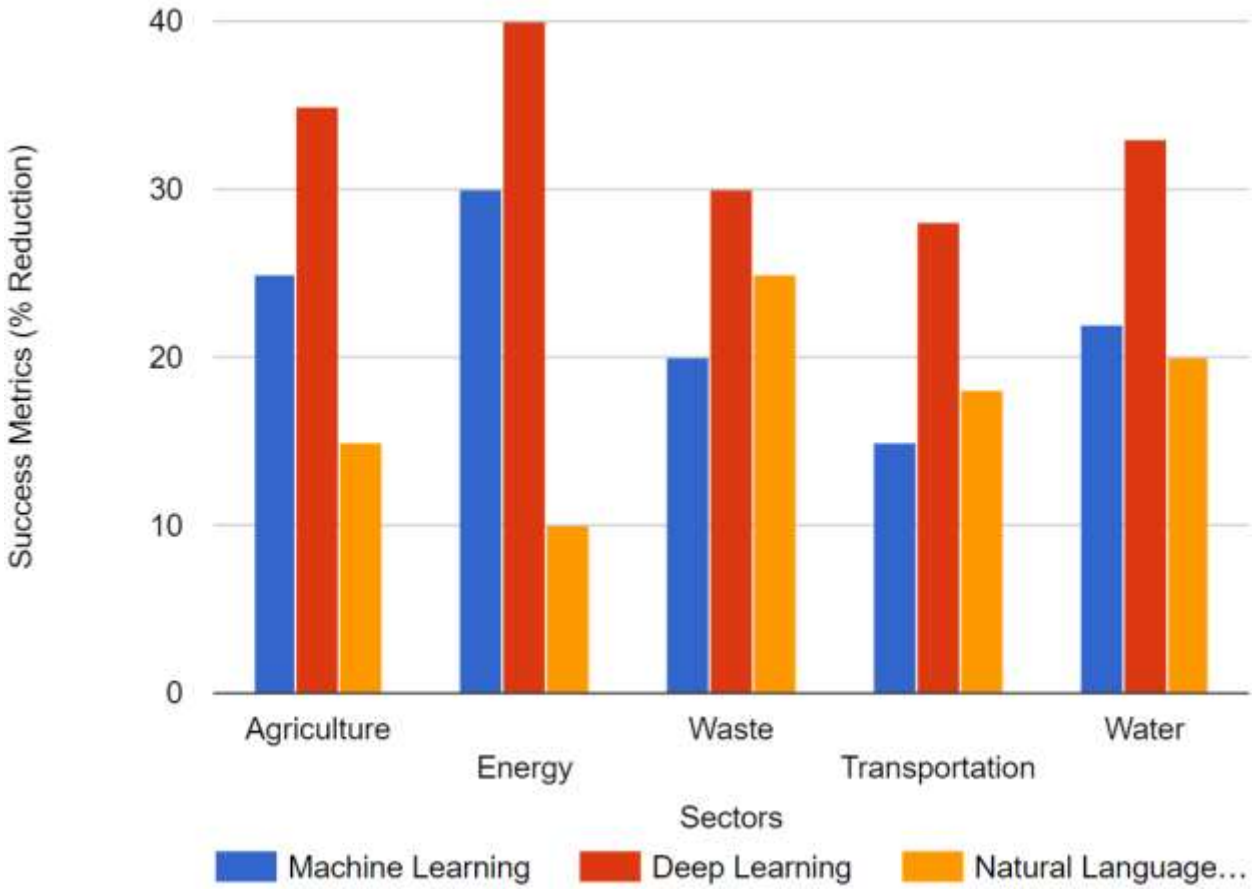

Figure 1: Effectiveness of AI Applications by Sector

This Figure: 1 triple bar graph illustrates the effectiveness of various AI techniques in reducing resource use across five critical sectors: Agriculture, Energy, Waste Management, Transportation, and Water Management.

CHALLENGES AND OPPORTUNITIES IN DIGITAL SUSTAINABILITY

Digitalization and AI allow sustainable development by providing novel solutions to global issues, including climate change, resource management, and social inequality. However, the growing use of digital technologies brings substantial difficulties that must be addressed to maintain

environmental and social sustainability. The Sustainable Action Conference 2024 (SAC 2.0) will examine digital sustainability's prospects and challenges, focusing on how stakeholders may maximize its advantages and minimize its hazards.

Challenges of Digital Sustainability

Digitalization and AI have transformative potential, but various obstacles prevent broad and sustainable adoption. These environmental, social, and governance issues must be addressed to help digital tools and technology achieve the Sustainable Development Goals (Plotnikova, 2019).

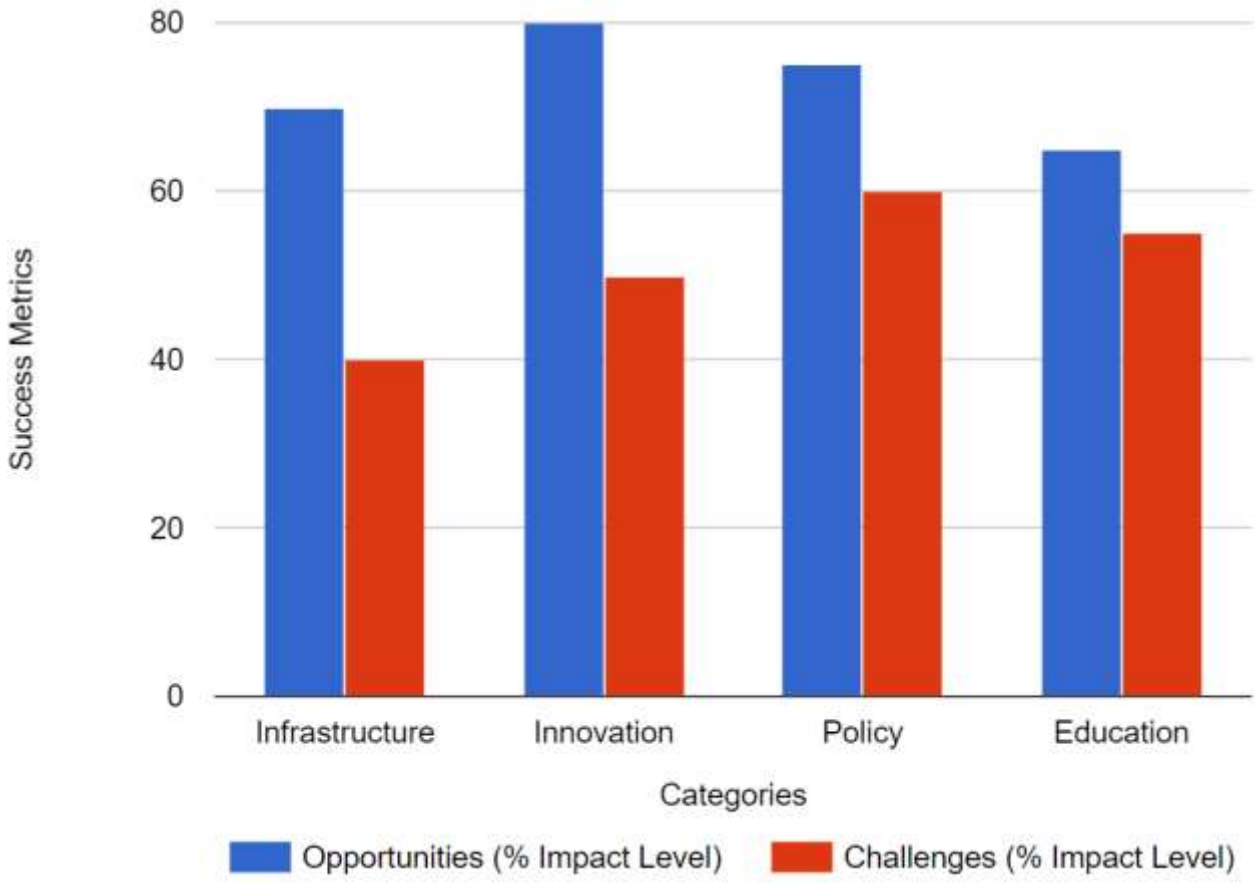

Figure 2: Opportunities vs. Challenges in Digital Sustainability

This Figure 2 double-bar graph provides a comparative analysis of opportunities and challenges in digital sustainability across four critical categories: Infrastructure, Innovation, Policy, and Education.

Environmental Impact of Digital Infrastructure

The environmental impact of digital infrastructure is a crucial issue for digital sustainability. Data centers, cloud computing, and telecoms use a lot of electricity. Data centers, which power AI, big data analytics, and cloud services, are energy-intensive and emit carbon. They consume around 1% of

global electricity, and demand for digital services is rising. Digital infrastructure energy needs could hinder climate change efforts if renewable energy and energy-efficient technology are not used. Digital device production and disposal degrade the environment. Millions of tons of smartphones, computers, and other electronics end up in landfills each year, making e-waste one of the fastest-growing waste streams. This threatens environmental health since many devices employ harmful elements like lead and mercury. Digitalization's ecological impact can be mitigated via sustainable design, recycling, and circular economy models for digital products (SDG 12: Responsible Consumption and Production).

Digital Divide and Inequality

Digitalization has excellent economic and social growth potential but may worsen inequality. The digital divide—the difference between those with and without access to digital technologies—hinders inclusive growth. This disparity is incredibly sharp in low-income areas, rural areas, and marginalized groups like women and disabled persons. Without equitable access to digital tools, millions cannot engage in the digital economy or benefit from AI-driven solutions in education, healthcare, and other sectors. The increasing speed of digital transformation has raised fears about automation-related job loss. AI and automation can boost productivity but may also displace jobs, especially in routine-task industries. How can societies ensure that digitalization gains are spread relatively and that people are assisted in transitioning to new positions in the digital economy? (Parida et al., 2019).

Ethical and Governance Issues

AI and digital technology raise ethical and governance issues. AI systems are educated on massive datasets that may contain biases, resulting in biased decision-making. AI-driven systems can worsen socioeconomic inequities in hiring, criminal justice, and financial services. AI systems must be open, fair, and responsible to prevent discrimination and promote social fairness. Many countries still strive to build regulatory frameworks for data privacy, cybersecurity, and digital rights. The lack of global AI ethics and governance norms threatens sustainable development because poorly governed technology could misuse authority, violate privacy, and concentrate digital riches on a few corporate giants.

Opportunities in Digital Sustainability

Despite these limitations, digitalization and AI provide huge sustainable development prospects. If managed well, digital technology can improve environmental protection, social inclusion, and economic prosperity.

AI and Digital Environmental Management Tools

AI and digital tools in environmental management are promising digital sustainability sectors. AI can improve resource use, decrease waste, and monitor ecosystems in real-time by analyzing massive datasets and making predictions. Conservation efforts can benefit from AI-driven

environmental monitoring systems that track deforestation, pollution, and wildlife populations. Smart grids and energy management systems powered by AI can maximize renewable energy use, lowering carbon emissions and enhancing efficiency. Digital platforms help create circular economy models that reuse, repair, and recycle products and materials. AI can optimize supply chains, making tracing goods and eliminating waste easier, promoting sustainable consumption and manufacturing (Sahlin & Angelis, 2019).

Digital Inclusion and Social Empowerment

Digitalization can empower impoverished people by expanding access to education, healthcare, and financial services. AI-driven remote learning platforms can help underserved kids receive quality education. AI-powered diagnostic tools and telemedicine platforms can improve health outcomes and reduce infrastructure needs in rural locations. Mobile banking and digital payment technologies can help underprivileged communities' access banking and credit. This can assist developing regions in eliminating poverty and thriving economically, supporting SDG 1 (No Poverty) and SDG 9 (Industry, Innovation, and Infrastructure).

Sustainable Digitalization Policy and Governance

Governments and international organizations must ensure digitalization supports sustainable development. Governments may foster innovation and mitigate digital transformation by promoting appropriate digital technology use. This includes investing in digital infrastructure, especially in underdeveloped areas, and establishing data privacy, cybersecurity, and AI ethical regulations (Tasaltin, 2019). Investment in sustainable digital solutions like energy-efficient data centers and AI-driven environmental monitoring systems will require public-private partnerships. By working together, governments, corporations, and civil society can achieve an inclusive, egalitarian, and sustainable digital future.

Digitalization and AI bring many issues, including environmental damage, inequality, and governance, but they also provide excellent prospects for sustainable development. By tackling obstacles and exploiting possibilities, stakeholders can guarantee that digital technologies contribute to a sustainable, equitable, and resilient future. Future digital sustainability will depend on the Sustainable Action Conference 2024 (SAC 2.0) talks and decisions.

MAJOR FINDINGS

The Sustainable Action Conference 2024 (SAC 2.0) discusses digitalization and AI for sustainable development and how they might be used to achieve the UN Sustainable Development Goals. The conversations highlight opportunities and difficulties, emphasizing the need to align digitalization with sustainability strategically. The primary study findings are:

Digitalization's Sustainability Transformation: Digitalization has the potential to accelerate SDG development in energy, urban planning, and resource management. Energy consumption, waste, and resource efficiency are optimized via IoT, big data analytics, and

intelligent infrastructure systems. AI-powered tools track deforestation, pollution, and biodiversity loss in real-time. These technologies can assist SDG 13 (Climate Action), SDG 12 (Responsible Consumption and Production), and SDG 11 (Sustainable Cities and Communities) by improving system efficiency and lowering environmental impact.

AI's Climate Action and Environmental Conservation Role: AI applications are vital to climate change mitigation and conservation. AI-driven intelligent networks optimize energy utilization by better integrating renewable energy sources, reducing carbon emissions. Early warning systems and climate projections from predictive AI algorithms help governments and communities prepare for natural disasters. AI monitors ecosystems using satellite data, drones, and environmental sensors to support SDG 14 (Life Below Water) and SDG 15 (Life on Land). AI technologies' sustainability is threatened by their environmental impacts, such as data center energy use and e-waste.

Addressing the Digital Divide: Digital Inclusion: Digitalization can boost growth, yet the digital gap remains. Digitalization may exclude substantial sectors of the global population due to unequal access to digital technologies, especially in low-income, rural, and marginalized places. The digital divide can worsen social inequality, challenging SDG 10 (Reduced Inequalities) and SDG 8. The report emphasizes digital inclusion methods, which improve affordable internet, digital literacy, and infrastructure in marginalized communities. To ensure digital transformation benefits all populations, this gap must be closed.

AI Ethics and Governance Issues: Rapid AI progress creates ethical problems, specifically bias, transparency, and accountability. AI systems educated on biased datasets can exacerbate socioeconomic inequities in employment, criminal justice, and healthcare. AI systems must be fair, transparent, and discrimination-free to promote societal sustainability. AI and digital technology governance frameworks are lacking, posing concerns like data privacy violations, cybersecurity hazards, and tech company monopolization of digital resources. Effective governance and international norms are needed to solve these concerns and ensure that AI promotes inclusive and ethical development.

Digital Innovation Opportunities in Social Services: AI and digital tools can improve healthcare, education, and financial inclusion. AI-powered healthcare solutions improve diagnosis accuracy, service delivery, and remote access, contributing to SDG 3 (Good Health and Well-Being). AI-driven educational systems are personalizing and making learning more accessible, especially for marginalized populations, supporting SDG 4 (Quality Education). Digital financial services empower underserved communities by providing banking and credit, promoting SDG 1 (No Poverty) and SDG 9 (Industry, Innovation, and Infrastructure).

The findings show that digitization and AI can improve the SDGs, but environmental implications, inequality, and governance must be addressed. SAC 2.0 finds that inclusive policies, ethical AI deployment, and sustainable digital infrastructure are needed to make these technologies sustainable for the environment and society.

LIMITATIONS AND POLICY IMPLICATIONS

Digitalization and AI can transform sustainable development, but there are constraints. Energy-intensive data centers and e-waste make long-term sustainability difficult. Additionally, the digital gap prevents underprivileged communities from fully benefiting, worsening inequality. AI ethical challenges like prejudice, privacy, and transparent governance systems also present obstacles.

To meet these limits, policymakers must prioritize energy efficiency and e-waste management in sustainable digital infrastructure. Digital literacy, inexpensive internet, and equitable technology access in impoverished areas are needed to close the digital divide. Transparency, accountability, and inclusion in AI applications require ethical AI governance frameworks. Public-private collaborations can help digital transformation fit the UN Sustainable Development Goals and stimulate innovation.

CONCLUSION

Digitalization and AI in sustainable development have great potential to advance the UN Sustainable Development Goals. As discussed before the Sustainable Action Conference 2024 (SAC 2.0), these technologies can advance environmental protection, climate action, healthcare, education, and social inclusion. AI can optimize resource utilization, improve climate resilience predictive analytics, and personalize social services, promising dramatic change.

However, the widespread adoption of digital technology is complex. The environmental impact of digital infrastructure, the growing digital divide, and ethical questions about AI's fairness and transparency are all significant challenges. Governments, businesses, and civil society must collaborate to create sustainable, inclusive, and ethical digital solutions. Policymakers must prioritize responsible AI use, invest in fair digital access, and build governance structures that reduce risks and assure accountability. The results of SAC 2.0 will shape digital sustainability. By tackling the potential and challenges of digitalization and AI, stakeholders can create a more equal, resilient, and sustainable global future that uses technology to benefit people and the planet.

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