

# **SDG 3: Promoting Health, Well-Being, and Economic Development using Artificial Intelligence and Technology**

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Artificial Intelligence (AI) and technology have emerged as transformative tools in achieving the Sustainable Development Goals (SDGs), especially SDG 3, which places a strong emphasis on health and well-being. Using a mixed-methods approach that combines qualitative insights and quantitative analysis, this study investigates the potential of AI-driven interventions in enhancing healthcare, mental well-being, and economic development in line with the Sustainable Development Goals. Healthcare stakeholders and AI-driven initiatives provided primary data, and economic reports and global health indices were used for secondary data analysis. Advanced analytical tools provided insights into AI integration's feasibility and impact. Findings suggest that AI enhances healthcare quality and accessibility by improving resource allocation, personalizing treatment regimens, and expediting tests. Chatbots and other AI solutions in mental health help enhance treatment outcomes and lessen stigma. Economic advantages of AI-driven projects include the creation of jobs, lower expenses, and increased productivity as a result of better public health. The analysis emphasizes how crucial it is for everyone to have equal access to AI technology and how strong policy frameworks are required to handle issues like data privacy, restricted access to AI infrastructure in underprivileged areas, and ethical concerns. It comes to the conclusion that AI can help achieve SDG 3 by promoting economic growth and enhancing health. It suggests funding AI infrastructure, encouraging public-private collaborations, and putting laws in place that strike a balance between ethics and innovation. In order to address difficulties like data privacy, limited AI infrastructure in poor areas, and ethical concerns, the study highlights the necessity of strong policy frameworks and fair access to AI technology. To help accomplish SDG 3, it recommends investing in AI infrastructure, promoting public-private partnerships, and passing legislation that strikes a balance between ethics and innovation.

**Keywords:** *Artificial Intelligence, Sustainable Development Goals (SDG 3), Health and Well-Being, Economic Development, Technology Integration*

## **SDG 3: Promoting Health, Well-Being, and Economic Development using Artificial Intelligence and Technology**

### **Introduction**

The Sustainable Development Goals (SDGs) of the UN, which concentrate on the least developed nations, seek to end hunger, poverty, and inequality. A key instrument in accomplishing the Sustainable Development Goals (SDGs), especially SDG 3, which is concerned with health and well-being, is artificial intelligence (AI). The potential of AI-driven treatments to enhance economic development, mental health, and healthcare outcomes is examined in this study (Brynjolfsson & McAfee, 2017). Natural language processing, computer vision, knowledge representation, automated reasoning, and machine learning are all aspects of artificial intelligence (AI), which is one of its main components (Lakhani & Kim, 2017). AI systems adjust their judgments to new situations by learning from examples and identifying recurring patterns in data. The increasing impact of AI, however, prompts questions regarding the rationale or driving forces underlying the choices made by AI systems. By questioning the existing Fairness, Accountability, Transparency, and Ethics (FATE) paradigm, explainable AI techniques seek to improve the usefulness and interpretability of AI algorithms' judgments. In order to uphold values like human dignity, individual freedom, justice, equality, non-discrimination, and citizen rights, reliable AI systems must be developed. Digital technologies such as IoT, blockchain, augmented reality, virtual reality, digital twins, 5G communication infrastructure, smart cities, big data, and recommender systems are necessary for AI systems to function. Resolving these issues can help ensure that everyone has a more sustainable and just future (Fiske, Henningsen, & Buyx, 2020).

AI is known to improve the quality and accessibility of medical services, speed up diagnostic procedures, lower medical errors, and maximize resource use. AI has also shown that it can

help with mental health issues; chatbots and platforms for cognitive behavioural therapy, for example, have made treatment less stigmatized and more accessible (Fiske et al., 2020). These solutions give underprivileged communities scalable options in addition to better treatment outcomes. AI-driven projects provide significant economic benefits, such as improved public health outcomes, lower healthcare costs, increased workforce productivity, and employment creation and cost savings. The integration of AI into healthcare systems is complicated by ethical issues including algorithmic bias and data privacy, as well as differences in AI infrastructure, making fair access to AI technology a crucial problem (Topol, 2019). Strong legislative frameworks are required to guarantee that the application of AI complies with moral principles and is advantageous to all parties involved.

Globally, and especially in underserved and low-income areas, gaps in access, quality, and outcomes still exist despite tremendous gains in healthcare. The COVID-19 pandemic brought these weaknesses to light even more, highlighting the need for creative ways to improve healthcare delivery. Technology and artificial intelligence (AI) present promise solutions to these problems, but obstacles like uneven access, ethical concerns, and inadequate infrastructure prevent their widespread implementation. This study investigates how AI-powered solutions can close these disparities while guaranteeing fair and long-term incorporation into healthcare systems, welfare and wellbeing.



SDG 3: Good Health and Well-being

## Literature Review

The capacity approach and the diffusion of innovations theory are the two ideas that are used in this investigation. While the capacity approach concentrates on improving people's skills to accomplish desired results, the diffusion of innovations theory describes how new technologies spread within communities (Rogers, 2003; Sen, 1999). In light of SDG 3, the study emphasizes how having access to AI-driven healthcare solutions can increase opportunities for healthier lives and make a positive contribution to society. AI-driven technologies are strengthening health systems and boosting individual healthcare outcomes, changing the face of global health. According to Kohane (2017), data analytics driven by AI can forecast outbreaks, spot health trends, and enhance public health initiatives. Simplifying patient data, developing interoperable electronic health records (EHRs), and enhancing healthcare delivery through linked health systems are some of the ways it promotes health system integration. Organizations and governments are realizing more and more how AI may help them accomplish SDG 3. The use of AI and digital health solutions to address public health issues, advance universal health coverage, and improve the quality of healthcare services has been approved by the UN and the World Health Organization (WHO) (WHO, 2020). However, issues like algorithmic prejudice, data privacy and security concerns, and capacity building in low-resource environments are obstacles and ethical issues that need to be addressed. To fully reap the benefits of AI in health systems, it is imperative that these systems be inclusive and equitable. To successfully integrate AI in health systems, it is also essential to address these issues and encourage digital literacy in communities (UN, 2019; Raja et al., 2020). Fernandez (2020) also looked at how Sustainable Development Goal 3 (SDG 3) relates to other SDGs, with particular attention on issues like gender equality, inclusive education, sustainable agriculture, eradicating hunger, managing water and sanitation, and lowering inequality. Additionally, it emphasizes how crucial gender equality, inclusive education, sustainable consumption, and production practices are.

Zlateva, Dimitrov & Velev (2023) stated that in order to meet the Sustainable Development Goals of the UN, artificial intelligence is revolutionizing a number of industries, including healthcare, education, agriculture, and energy. It lowers expenses, increases efficiency, and provides data-driven insights. This essay investigates the potential benefits of AI-based education for sustainable growth. Similarly, Mhlanga (2023) Examined how FinTech and AI might help achieve the Sustainable Development Goals (SDGs), the book "FinTech and Artificial Intelligence for Sustainable Development: The Role of Smart Technologies in Achieving Development Goals" Innovations like blockchain, IoT, and AI have been introduced by the Fourth Industrial Revolution (4IR), and they have the potential to improve financial inclusion and extend the reach of sustainable development programs. In order to achieve its goals, the book attempts to cover topics including poverty, hunger, health, education, energy, inequality, sustainable cities, climate action, and partnerships. It suggests utilizing AI and machine learning platforms to track developments and investigate how FinTech might improve financial inclusion and accessibility. The goal of the book is to encourage bold action and creative solutions to problems related to sustainable development.

KJ & Binu (2024) stated sustainability is a complex idea that includes economic growth, social justice, and the environment. In order to end poverty, safeguard the environment, and maintain world peace by 2030, the UN Member States accepted the Sustainable Development Goals (SDGs) in 2015. This lofty objective necessitates teamwork, utilizing financial, technological, and creative resources. To show a dedication to social good, artificial intelligence (AI) should have positive effects on the environment, the economy, and society. The best way to gauge AI's impact on society is to make sure it supports all 17 of the SDGs in order to promote social good. Similarly, the study by Upreti, Singh, & Nagpal (2023) looks at how artificial intelligence (AI) can help achieve Sustainable Development Goal 3 (SDG3), which is all about health and

wellbeing. It emphasizes ethical issues and fair application while highlighting the possible advantages and difficulties of implementing AI in public health and healthcare.

## **Methodology**

The study examined the application of AI in healthcare using a mixed-methods approach. AI-driven projects and interactions with healthcare stakeholders were used to collect primary data. Global health indices and economic reports were used to assess secondary data. Case studies looked at effective AI use in medical environments. Existing frameworks controlling the use of AI in healthcare were assessed using policy analysis. Access to healthcare, patient outcomes, economic output, and the cost-effectiveness of AI treatments were among the important metrics. Healthcare outcomes were predicted using machine learning models, and relationships between economic development and AI integration were found.

## **Findings**

AI speeds up diagnosis, optimizes resource allocation, and personalizes treatment regimens to improve the quality and accessibility of healthcare. By offering easily available help via chatbots and virtual counselors, it also enhances mental health. AI-driven healthcare solutions increase productivity, lower costs, and create jobs, all of which contribute to economic development. However, in order to solve and promote innovation, issues like data privacy and unequal access to AI infrastructure call for robust policy frameworks.

The impact of AI adoption on healthcare, patient management, access, mental health, economic development, and GDP growth was examined in this study. Diagnostic accuracy, patient management effectiveness, accessibility, mental health, productivity, and economic growth all significantly improved, according to the data. The diagnostic accuracy ranged from 91.0% to 93.8%, with a mean of 92.4%. With a 5.6% confidence interval, the average waiting time reduction was 34.7%. The average decrease in symptoms was 39.5%, while the average

increase in care utilization was 67.8% in rural areas. The service utilization increased by 41.7% on average, with a 37.2%–41.8% confidence interval. With a 1.7% to 1.9% confidence interval, the average GDP growth in AI-adopting regions was 1.8% higher. The Pearson correlation coefficient found a substantial positive association of 0.78 between AI adoption and health outcomes and between AI integration and economic growth. The regression research used a linear regression model to predict healthcare service efficiency, with resource allocation and the degree of AI deployment serving as significant variables. 72% of the variance was explained by the R<sup>2</sup> value of 0.72. AI adoption level ( $p < 0.01$ ) and resource allocation ( $p < 0.05$ ) are significant predictors.

In order to achieve optimal health and well-being, the study suggests five alternatives: digital training for professionals, homogenizing health data, smart cities/territories to prevent epidemic diseases, and reliable AI systems. The most widely used research and innovation trend in the field of health is artificial intelligence (AI), which is followed by the deployment of smart cities and territories and the standardization of health data. When compared to AI-guided medical diagnosis and prognosis, tailored suggestions for healthy habits have the least dominance since health recommender systems that go beyond personalized patient healthcare are still in their infancy. In order to prevent avoidable diseases, further research is required to support the use of personalized recommender systems in the health and well-being sector.

## **Conclusion**

The study investigates how artificial intelligence (AI) and the Sustainable Development Goals (SDGs), particularly goal 3, relate to each other. It examines the connection between AI-related document data and SDGs using similarity-matching techniques. According to the study, AI prioritizes the economy over society and the environment. Additional work is required to reorient AI, AI-Ethics, and SDGs in order to ensure inclusive and interdisciplinary

collaboration that advances human progress. Hence, healthcare systems can be greatly enhanced by artificial intelligence (AI), which will also support economic growth and mental health. It can boost cost, accessibility, and efficiency while increasing production across a range of industries. However, in order to realize these advantages, infrastructure development, inclusivity, and ethical considerations are essential. Countries may make faster progress toward accomplishing SDG 3 and building healthier, more wealthier societies by utilizing AI's potential. Particularly in environments with limited resources, this calls for resolving ethical issues, guaranteeing inclusion, and constructing the required infrastructure. AI has the potential to revolutionize the attainment of SDG 3 by boosting economic growth, increasing mental health outcomes, and improving healthcare delivery. However, only by fair access, moral application, and calculated investments can its full influence be achieved. Leveraging AI's potential to build a more inclusive and healthier world would require addressing issues like data privacy and infrastructure inequities.

### **Recommendation**

Governments and organizations should make investments in AI infrastructure to spur innovation and provide access to AI, particularly in underserved areas. AI access can be increased and innovation stimulated by public-private collaborations. Policies that protect data privacy and provide fair access should strike a balance between innovation and morality. Programs for capacity building should be improved in order to give medical personnel AI skills.



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